

**COMMUNICATION STRATEGIES OF AN ARAB CHILD
WITH DEVELOPMENTAL DISORDERS**

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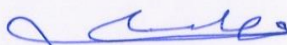
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ABSTRACT

A qualitative case study was conducted on an Arab boy (AE) aged 7 years, who is a native speaker of Aleppine (North-Syrian) dialect to determine his communicative competence and the strategies he uses to compensate for his difficulties. Although having no apparent developmental delay in early childhood, he experienced several unique difficulties in communication, language acquisition and behaviour (i.e. ADHD, and a few autistic traits). The observation technique and several formal and informal assessment procedures were used to collect authentic data from the subject between (6;10 -7;4 years). Checklists adopted in this study are Bishop's CCC (1998); Abu Nab'a's Checklist for Language Development in Typical Arab Children; and Grunwell (1985a) PACS and others to fit AE's phonological processes in the Aleppine Arabic dialect. Data of different types (Expressive and Receptive) are documented through a few selected tasks to identify his strengths and weaknesses, and to draw a holistic picture of the subject's communicative competence. Analysis suggests inconsistent episodes of both acquired dysphasia (Dysnomia) and dyspraxia that is parallel to findings in the clinical and the neurolinguistic literature of brain white matter disorders (i.e. Childhood MS). No signs of Dyslexia or Dysarthria are detected. Analysis also reveals a phonological disorder comprising mainly *Metathesis* and *Substitution* at the syllabic level and other unusual processes. The findings reveal AE's compensation via positive non-verbal strategies to sustain communication with family members. The communicative types in an idiosyncratic model of paediatric neuropsychiatric co-morbidity are discussed in relation to typical and atypical language theories.

ABSTRAK

Kajian kualitatif ini dijalankan ke atas seorang kanak-kanak lelaki keturunan Arab berusia 7 tahun, yang merupakan penutur asli dialek Aleppine (Syria Utara) untuk tujuan menentukan kemampuan komunikasinya dan strategi yang digunakannya bagi mengatasi kesukaran yang dihadapi. Walaupun tidak mengalami kelengahan perkembangan atau kenanguhan semasa kecil, dia mengalami beberapa cabaran unik dalam berkomunikasi, penguasaan bahasa dan tingkahlaku. (iaitu ADHD, dan beberapa ciri ciri autistik) Teknik pemerhatian dan beberapa prosedur prosedur penilaian formal dan tidak formal telah dijalankan untuk mengumpul data data yang sahih dari subjek tersebut antara usia (6:10-7:4) tahun. Senarai semak yang digunakan dalam kajian ini adalah Bishop's CCC (1998); Senarai semak Abu Naba untuk Perkembangan Bahasa bagi Kanak Kanak Arab yang biasa; dan Grunwell (1985) PACS dan lain-lainnya selepas pengubahsuaian untuk memenuhi proses fonologi AE dalam dialek Arab Aleppine. Beberapa jenis data (Ekspresif dan Interaktif) telah didokumentasikan melalui beberapa tugas terpilih untuk mengenalkan kelebihan dan kelemahan, dan untuk mendapatkan satu gambaran holistik tentang kemahiran komunikasi subjek tersebut. Analisis menunjukkan episod episod yang tidak konsisten bagi dysphasia yang diperolehi (Dysnomia) dan dyspraxia dan penemuan ini selaras dengan literatur klinikal dan neurolinguistik mengenai gangguan bahagian putih otak. (iaitu Childhood MS). Tiada sebarang tanda tanda Dyslexia atau Dysarthria yang telah dikesan. Analisis menunjukkan gangguan fonologi yang terdiri terutamanya daripada *Metathesis* dan *Substitution* pada peringkat sukukut dan lain lain proses yang luar biasa. Analisis juga menggambarkan penggunaan strategi strategi lisan yang positif untuk mengekalkan komunikasi dengan ahli keluarga. Jenis-jenis komunikasi dalam-model idiosinkratik neuropsikiatri di kalangan kanak-kanak dibincangkan dalam modal idiosyncratic dengan memberi respon kepada teori-teori bahasa tipikal dan bukan tipikal.

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LIST OF ABBREVIATIONS

ADHD	Attention-deficit hyperactivity disorder
ADD	Attention-deficit disorder
APA	American Psychological Association
AS	Asperger's Syndrome
ASD	Autistic Spectrum Disorders
ASHA	American Speech-Language-Hearing Association
CAS	Childhood Apraxia of Speech
CCC	Children Communication Checklist
COS	Childhood Onset Schizophrenia
EF	Executive Functions
EEG	Electroencephalogram
fMRI	Functional magnetic resonance imaging which maps changes in oxygen concentration that correspond to nerve cell activity.
¹ H-MRS	Used to detect abnormalities in brain regions that appear normal in MRI
IPL	Inferior Parietal Lobule
IQ	Intelligence Quotient
L1	First Language (Mother Tongue)
L2	Second Language
LHD	Left Hemisphere Dysfunction
MCH	Maternity Children Hospital
MRI	Magnetic Resonance Imaging
MS	Multiple Sclerosis
PDD-NOS	Pervasive Developmental Disorder, not otherwise specified
RHD	Right Hemisphere Dysfunction
SD	Standard Deviation
SLI	Specific Language Impairment
SPECT	Single Photon Emission Computed Tomography uses radioactive tracers to visualise the circulation and volume of blood in the brain.
TBI	Traumatic Brain Injury
WM	Brain White Matter

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CHAPTER 1

INTRODUCTION

1.0 Background to the Study

Communication is a human characteristic process, which requires a vast repertoire of skills and is an essential requirement for an individual's success in educational performance and everyday living. Breakdowns in communication due to speech and language impairments can critically affect first language acquisition and literacy skills such as reading, spelling, writing and social interactions. Hence, there has been a lot of interest on research for better understanding of developmental language acquisition, communication disorders and learning difficulties in order to provide effective assessment, early intervention and appropriate therapy procedures. However, most of these researches have been carried out in the western world particularly, and not much has been done on the speech and language disorders in the Arabic-speaking populations.

Recently, the importance of addressing problems on speech and language deficiencies has led several Arab countries such as Jordan, Kuwait, Egypt and Saudi Arabia to carry out research in the field of speech pathology. Although a few studies have examined impaired speech in the different Arabic dialects, there has been no study yet on the developmental speech-language disorders in the North- Syrian (Aleppine) Arabic dialect.

As communication disorders seen in children involve a wide variety of problems in speech, language, and hearing, the data collected in this study is unique, not only

because it exposes the Aleppine Arabic dialect, but also because the data comes from a child professionally diagnosed with attention problems and autistic traits in the presence of a neurological (Dysmyelinating) disorder in the brain white matter, negatively affecting his performance at school, and everyday functioning. Psychological and neurological co-morbidity in children can cause case-specific difficulties in speech, language, and social interaction.

For instance, Autism is a rare neurodevelopmental disorder of genetic origin. Among the primary characteristics of autism are impairments not only in language, but also in imaginative, and social skills. The social impairments cause serious problems in everyday life, and are often combined with other areas of deficit, such as communication skills, behaviour, and interests.

1.1 Statement of the Problem

Since early school years emphasise language development, socio-emotional growth and readiness, it is quite significant to identify language delays or deficiencies in young children that prevent them from not only fully mastering the language, but lead to feelings of failure, low self-esteem, and poor academic and social performance. Children suffering from breakdowns in communication, whether their difficulties are congenital, developmental, or acquired, are consequently faced with learning difficulties and definitely find academic achievement a challenge. To have to do so without the ability to communicate, the difficulties they face with people who might be able to help them overcome these difficulties makes the challenges even bigger. For such children, they may have to depend on their parents, siblings, or caregivers to help them function on a day-to-day basis. Another issue is that teachers might not

have the time or expertise to address the special needs of such children in mainstream schools particularly. As such, it is important for caregivers to understand the ways these children try to convey their needs, which may be different from the ways typically developing children communicate. It is also important, through this understanding, to develop and document the alternative ways they spontaneously use to express their needs so that other people such as teachers can understand their needs and be more informed of the ways to meet them.

In trying to understand children with communication difficulties function at a level that will allow a wider range of communicators to interact with them effectively, it is important to identify and describe the communication difficulties they have. As a start, it would be more appropriate to explore this in the home setting, where the child is more familiar with the interlocutors. The sessions prepared to collect the data would be learning experiences and activities during meal time, play time and study or homework time. It is the contention of this study that by analysing the types of data collected from the child, the caregiver will understand the child's strengths, weaknesses and communication patterns, and assist him to use language more effectively with the interlocutors at school.

Studying language development in children with developmental communication disorders is not an easy task for caregivers as these children may have problems relating to familial members in familiar home settings (American Psychiatric Association, 1994). Therefore, using multiple methods to elicit data is recommended by experts to draw a complete picture of the individual's communication ability.

1.2 Objectives

The objectives of this study therefore are:

1. To identify the subject's difficulties in his Expressive (Productive) and Receptive Language from three aspects: form, content and function.
2. To document the subject's verbal and non-verbal strategies used to sustain communication with his family members.
3. To determine the subject's language strengths and weaknesses, comparing them with the language abilities of typically developing children of the same dialect and chronological age.

1.3 Research Questions

In order to meet the objectives set, this study will gather relevant information to answer the following research questions:

1. What are the communication difficulties seen in the subject's first language concerning form, content, and function?
2. How does the subject communicate verbally and non-verbally with his interlocutor in conversations?
3. What are the subject's communicative strengths and weaknesses that assist to determine his communicative competence?

1.4 Significance of the Study

The analysis of data collected from this atypical single case study will present a profile of communication difficulties that will assist the child at home and possibly at school, and build on his strengths to enhance his communication abilities. This profile and the methods used to establish it will also be useful for caregivers and teachers in dealing with developmental communication difficulties, and for speech-language pathologists

in planning interventions. Moreover, it may aid in designing educational tasks and curricula that facilitate teaching and assessing Arab children with communication difficulties in the future.

Although this study is limited to one child, the data collected and results can also help to increase the knowledge about developmental language difficulties in the North-Syrian Aleppine Arabic dialect specifically.

1.5 Scope and Limitations of the Study

This study observes the verbal and non-verbal communication patterns and repetitive strategies used by the subject (AE) over a period of six months in different contexts. Observation will be limited to one child (AE) who is communicating with his mother (the researcher), as the primary caregiver and his two elder sibling in home settings. The analysis will not provide detailed explanations of the subject's phonological deficiencies and voice abnormalities as this does not fall within the scope of this study.

Moreover, this study is only looking at one case of an Arab child who speaks the Syrian Aleppine dialect and is residing in Malaysia. AE is facing challenges in acquiring English as a second language. As a result, formal assessment of his speech and language abilities is linguistically and culturally biased because the subject (AE) is unable to communicate with the Malaysian assessors who either use English or Malay languages to carry out the assessment procedure.

Finally, the results of this study cannot be generalised or applicable to a wide segment of a population because they come from a study of one particular case of an atypical Arab child who communicates using Syrian Aleppine dialect.

1.6 Definition of Terms

This section will present the definition of terminology of the different speech and language disorders relevant to this case and offer a brief explanation of conditions similar to the subject's manifestation.

1.6.1 Speech disorders are defined according to Wang and Ann Baron (1997) as disorders that affect the ability to produce speech but not the ability to express or to understand language. These may occur as isolated speech problems or together with language and other developmental disabilities (Ruscello, St. Louis, & Mason, 1991). Speech Disorders may involve several disorders in articulation, resonance, voice, fluency, dysarthria, dyspraxia, childhood apraxia of speech (CAS) and dyslexia. Definitions relevant to this study are as follows:

(a) Childhood Apraxia of Speech (CAS).

In Reference to the American Speech-Language-Hearing Association (ASHA, 2007), CAS also known as "Verbal Dyspraxia" is a neurological paediatric speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits (e.g., abnormal reflexes, abnormal tone). CAS may occur in children in three clinical contexts as a result of a known neurological impairment, in association with complex neurobehavioral disorders (e.g., genetic, metabolic) of known or unknown origin (e.g. ASD and ADHD), or as an idiopathic neurogenic speech sound disorder. The core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody. ASHA's (2007) committee's review of the research literature indicates that, at present, there is no validated list of diagnostic

features of CAS that differentiates this symptom complex from other types of childhood speech sound disorders, as phonological-level delay or neuromuscular disorder (dysarthria). Three segmental and suprasegmental features consistent with a deficit in planning and programming speech movements that have gained some consensus among CAS investigators are:

- (a) Inconsistent errors on consonants and vowels in repeated productions of syllables or words.
- (b) Lengthened and disrupted coarticulatory transitions between sounds and syllables.
- (c) Inappropriate prosody, especially in the realisation of lexical or phrasal stress. Importantly, other reported signs change in their relative occurrence frequencies with task complexity, severity of involvement, and age; and some complex behavioural features associated with CAS places a child at increased risk for early and persistent problems in speech, expressive language, and the phonological foundations of literacy (ASHA, 2007).

(b) Dysarthria and Dyspraxia.

Dysarthria refers to dysfunction in the neuromotor control of the muscles used for speech. It may occur either in isolation or as part of a general condition such as cerebral palsy or Traumatic Brain Injury (TBI). Depending on the particular muscles involved, articulation is the mostly affected then resonance, voicing, and other components of speech. Dyspraxia is a somewhat similar condition in which the voluntary but not reflexive control of muscles is impaired. Here, too, articulation is commonly affected (Aram & Horwitz, 1983). The precise neurological mechanisms of dyspraxia are unknown, though it may follow TBI (as cited in Wang & Ann Baron, 1997). Children typically go through a developmental progression in their articulation skills when some sounds are correctly pronounced before other sounds, for example, the "b" sound before "t" and "sh". Articulation problems are much more common than disorders of voice, resonance, or fluency. Most children with impaired articulation

have no known cause for their problems, but hearing impairments should be considered when there are multiple articulation errors (as cited in Wang & Ann Baron, 1997).

(c) Dysfluency.

Dysfluency is a breakdown in the forward flow of speech. For young children, it is a part of the normal development of speech and language ability, especially during the preschool years. Virtually all children go through a period of dysfluency when learning to speak (Molt, Menkes, & Yaruss, 2009). Dysfluency can take the form of unusual hesitations or pauses, repetition of words or syllables, and the interjection of non-speech sounds. Early identification and careful efforts to encourage the child's confidence in his or her speaking ability are central to the successful treatment (Leung & Robson, 1990). *Scanning Speech* characterised by sliding and stretching of words, and slurring of phonation, which is associated with cerebellar defects, often accompanied by inappropriate rate, range, force, and direction of voluntary movements (McGraw-Hill Concise Dictionary of Modern Medicine, 2002).

(d) Voice disorders.

Voice disorders or (Dysphonia) are abnormalities in pitch, loudness, softness, and hoarseness (Wang & Ann Baron, 1997). A *Prosody deficit* can appear in many conditions, e.g. in Dysarthria allied with MS (Miller, 2008); in early right hemispheric dysfunction (RHD) (Shields, 1991), in ASD (Peppe & McCann, 2003); and in Schizophrenia (Koeda et al., 2006).

1.6.2 Language Disorders

Until the mid-1970s, language disorders were thought to occur less frequently than speech disorders (Wang & Ann Baron, 1997). However, several studies suggest this

may not be the case. For example, Beitchman, Nair, Clegg, and Patel (1986) found evidence for language disorders in about 8% of all 5-year-olds tested. Unlike speech disorders, language disorders generally are not classified according to the component of language that is affected because children do not present with disorders restricted to only one component of language. Although Rapin and Allen (1988) have suggested a component-based classification scheme, their "lexical-syntactic" and "semantic-pragmatic" groupings can be difficult to describe or recognise, and their classification is not wide in clinical use. Instead, childhood language disorders commonly are classified according to whether the disorder is specific to language or is part of a more general cognitive disorder; and whether comprehension, expression, or both are affected (as cited in Wang & Ann Baron, 1997).

Expressive versus Receptive Language Disorders

Children whose language skills are significantly below their general cognitive abilities are said to have SLI. If their difficulties are primarily in the expression of thoughts and ideas, they are said to have an expressive language disorder (APA, 1994). If they also have difficulties in understanding language, then they are said to have a mixed receptive-expressive language disorder. It is rare for children to have only a receptive language disorder (APA, 1994).

In language disorders, the severity and particular language functions affected vary greatly. One child may have severe difficulties comprehending lengthy, grammatically complex sentences, while another may have no trouble in grammatical comprehension but have difficulty in finding the right word to express his or her thoughts. A third child might have particular difficulties in using prepositions that indicate spatial

relationships ("through," "beside," "into"), (as cited in Wang & Ann Baron, 1997). Therefore, every child with a language disorder should have a thorough individualised evaluation.

General Impairments Cause Language Impairments

Children who have mental retardation or global developmental delays almost always have language delays as well. Regardless of the etiology of their general impairments it is extremely rare for a child's language level to be more advanced than his or her general ability level (Wang & Ann Baron, 1997). This fact and other evidence have led many psychologists to hypothesise that language development depends on certain underlying cognitive skills and cannot advance beyond the level of those skills (as cited in Wang & Ann Baron, 1997).

Causes of Language Disorders

Childhood language disorders are variable in their manifestations, in addition to the factors that underlie them because of the complexity of language, the neural mechanisms that underlie it, and how the different factors relate to each other (Wang & Ann Baron, 1997). Language disorders are also subdivided into *acquired* and *congenital* (present from birth and far more frequent). For acquired language disorders, the etiology is often apparent from the child's medical history, e.g. TBI and rarely Landau-Kleffner Syndrome (LKS) (Paquier, Van Dongen, & Loonen, 1992) when language skills deteriorate after typical development sometimes misdiagnosed as having autism. Because LKS children often have abnormal electroencephalograms (EEGs) and seizures, they lose the ability to process complex auditory signals such as speech causing impairment in both expressive and receptive language. ASD children

typically show other distinctive symptoms including impairments in non-verbal communication as well as verbal communication, stereotyped behaviours, unusually focused interests, and social skills impairment (Roberts et al., 1995).

Tallal et al. (1996) suggest that the fundamental impairment for many SLI children lies in their inability to process rapidly changing auditory stimuli despite normal hearing, an abnormality called a "temporal processing deficit" (Anderson, Brown & Tallal, 1993).

Magnetic resonance imaging (MRI) studies of live subjects and pathological studies of autopsy brains have identified differences between the brains of people with and without SLI (Jernigan, Hesselink, Sowell, & Tallal, 1991) including abnormal patterns of left-right symmetry in language areas and the presence of cortical neurons in inappropriate places (Galaburda, Sherman, Rosen, Aboitiz, & Geschwind, 1984). A genetic contribution to the development of SLI is strongly supported by familial studies showing much higher speech-language disorders in the parents of affected children than in parents of unaffected children (Tallal, Ross, & Curtiss, 1989; Tomblin, 1989). A specific inherited inability to form the past tense of verbs in members of one family has also been detected, Gopnik and Crago (1991, as cited in Wang & Ann Baron, 1997).

Alternatively, neurologically based language deficiencies, e.g. Childhood Multiple Sclerosis influenced by genetic and environmental factors affecting the nervous system and disrupting communication between the brain and other parts of the body is reported to have influence on communication including speech difficulties, and

problems with thinking and memory as well as emotional changes (Banwell et al. 2003). Several studies conducted show evidence for a deficit in *prosody* that can appear in *Dysarthria* allied with MS (Miller, 2008); and episodes of *dysfluency* (Banwell et al., 2003).

On the other hand, **Language Disorders** can also occur in MS as naming deficiencies and word retrieval difficulties (Lethlean & Murdoch, 1994a; 1994b; 1997) confirming a deficit in semantic memory (Henry & Beatty, 2006).

(a) Dysnomia as a type Expressive Dysphasia.

Dysnomia is defined as the difficulty to recall vocabulary or find the right way to say something, and because all aphasics omit words or use inappropriate ones, anomia is primary symptom of all forms of aphasia (Rull, 2009).

(b) Conduction Aphasia.

Lesions are around the arcuate fasciculus, posterior parietal and temporal regions cause Conduction Aphasia. Symptoms are naming deficits, inability to repeat non-meaningful words and word strings, although there is apparently normal speech comprehension and production. Patients are aware of their difficulties (Rull, 2009). Speech is fluent, but major impairment is in repetition (phonemic paraphasias, i.e., phone substitution errors, transpositions of sounds (metathesis). Comprehension is good, but reading and writing skills are poor (Anzaki & Izumi, 2001). In MS specifically, these types of dysphasias might appear during a relapse and fade away afterwards.

1.7 Summary

This chapter introduced the objectives, research questions, significance, and the background of this present study to show in a rare case of neuropsychiatric comorbidity how speech and language difficulties can affect school-aged children and interrupt language acquisition and academic performance. Despite of the study being conducted on a Syrian Arab child bounded with few substantial limitations regarding the Arab world, it will enhance knowledge on cross-linguistic comparative studies. Finally, the definition of some developmental disorders relevant to this study that have effects on both speech and language are introduced including some of their main causes as well.

CHAPTER 2

THE LITERATURE REVIEW

2.0 Introduction

Communication Disorders in children include verbal (speech and language) and non-verbal difficulties. These can also be interpreted according to two main aspects: the Psychological and Neurological, since communication disorders can result from a variety of etiologies (i.e. congenital, genetic, and acquired). This review of literature will focus on communication deficiencies caused by psychological and neurological co-morbidity disorders related to slow progressive changes in the brain white matter (Dysmyelinating Disorder) occurring in paediatric populations. This literature review is also aimed at describing how the emergence of a White Matter (WM) disorder phenotype, whether Childhood Multiple Sclerosis or any other leukodystrophy, has affected the language acquisition process and the development of communication and literacy competence in a child when motor speech production organs seem intact. A review of some methodologies and procedures used in formal and informal assessment are discussed subsequently showing constraints related to the Arabic language and specifically the Syrian Aleppine dialect.

2.1 Studies in Communication Disorders among Children

Communication Disorders in children are described and classified from different perspectives; psychological, neurological, developmental, or acquired. According to the ASHA (2008), communication deficiencies in children can be developmental or acquired, yet it is not easy to draw a clear line between communication deficiencies of

neurological and psychiatric origins. Advances in brain neuroimaging assist in establishing this notion since recent trends in neuropsychiatric studies have proven the association between brain dysfunction and behaviour disturbance in childhood (Sheth, Tibrewala, Pai, Dube, & Desai, 1991; Baird & Santosh, 2003). However, other experts consider the matter as still unfeasible since brain neuroimaging is not always significant to rely on for linguistic deficiencies and other behavioural problems (Pearce, 1992). Therefore, the review of literature will state relevant developmental and acquired disorders that have effects on communication from two perspectives: the psychological and the neurological.

In a published interview, Dr. Mintz (2010) answered (Q.7) that Neurology and Psychiatry are very closely related and overlapping fields of medicine. Because chronic psychiatric conditions have a neurological basis and most neurological disorders have psychiatric manifestations. Therefore, this review of literature will discuss relevant developmental and acquired disorders affecting communicative competence in this case of comorbidity having different neurological and psychological manifestations (i.e. ADHD, ASD and Childhood MS).

2.1.1 Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is a disorder of childhood and adolescence characterised by a pattern of extreme, pervasive, persistent, inattention, over-activity, and impulsiveness. Children with ADHD are more likely than their peers to experience educational under-achievement, social isolation and antisocial behaviour during their school years and to go on to have significant difficulties in the post-school years (Sonuga-Barke et al., 2005). It is thought that ADHD is a developmental disorder that could be *inherited*

(Pauls, 1991; Sherman, Iacono & McGue, 1997) or *acquired* as in cases of head injuries, intoxications and infections. Its prevalence is similar across cultures, but differs based on diagnostic criteria used (Goldman, Genel, Bezman, & Slanetz, 1998). In pooled worldwide studies on ADHD, prevalence in children based on 102 studies comprising 171,756 subjects (18 years or younger) reported that ADHD forms 5.29% of the total disorders (Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2007).

Research on ADHD is scarce in developing countries and the Arab World (Al-Sharbati, Al-Hussaini & Sajjeev, 2003). For instance, in Oman, diagnosis is only confirmed when the child starts school using an Arabic translation and validated version of Conners' Rating Scale (Daradkeh, 1993), a screening tool widely used in both community and hospital studies to detect ADHD. Omani school based studies reported 7.8% ADHD cases among schoolboys, and 5.1% among schoolgirls (Al-Sharbati, 2008).

Beitchman, Hood, Rochon and Peterson (1989) found that the ADHD group formed the biggest group of children with psychiatric disorders having specific deficits, (i.e. poor auditory comprehension or articulation problems) due to neurodevelopmental immaturity postulated to cause linguistic impairment and psychiatric disorder.

The *American Psychological Association* (APA, 2000) includes speech and language items in the diagnostic list of ADHD. Although ADHD is classified as a psychiatric-neurological disorder, it has significant effects on several linguistic domains. For example, some ADHD children have learning disabilities that affect their speech and

language, therefore evaluation of each child's individual speech and language ability is critical when developing an appropriate treatment plan.

Parigger and Baker (2005, as cited in Parigger, 2007) reported subtle problems in language comprehension among ADHD children, with more apparent problems in language production, pragmatics, and syntax. Geurts (2007, cited in Parigger, 2007) additional problems in cognition, narration skills, and semantics (confusing words of similar meaning e.g. hammer vs. screwdriver).

Timler (2007) presented some language characteristics in ADHD as delayed onset of first words and word combinations, poor performance on standardised measures (CELF-R Formulated sentences) as well as pragmatic difficulties, e.g. excessive verbal output in spontaneous conversations, decreased verbal output, and dysfluencies in narrative tasks that require planning and organisation.

Regarding ADHD assessment, Bishop's Children's Communication Checklists CCC (1998) and CCC-2 (2003) have a privilege to be implemented in both research and clinical studies when screening for communication competence apart from clinical screening tools as the DSM-IV criteria for ADHD, and the Conners' Parent Rating Scales (CPRS, 1994). Both the long and short versions are implicated in clinical qualitative research to screen children between 3-17 years for ADHD.

Aaron, Joshi, and Phipps (2004) studied language difficulties (LD) associated with ADHD. They used the Conner's Continuous Performance Test (CPT) that measures inconsistency of attention. The expectation was that the performance of children who

have higher listening comprehension scores (the ADHD group) than the reading comprehension scores (the Dyslexics group) will not show signs of inconsistent attention on the (CPT). In contrast, children with higher reading comprehension scores than listening comprehension scores will show a profile of inconsistent attention on the (CPT). Administering the test described above and analysing the scores for statistical significance, the following pairs of tests were successful in separating dyslexic from ADHD children: (1) Reading comprehension test vs. Listening comprehension test; (2) Reading comprehension test in Cloze format vs. Reading comprehension test in Paragraph format; (3) Administration of reading comprehension test in one session vs. administering an equivalent format in two sessions.

From the anatomical perspective, Waldie (1998) added that although both the parietal and occipital lobes are not considered key language hosts areas as Broca's and Wernicke's, they still play a role in coordination and integration among different linguistic, motor and sensory functions significant in effective human communication. Occipital/Parietal dysfunctions not only affect turn taking and communication, they can cause specific learning difficulties as Dyslexia. In the literature, there are several frameworks for distinguishing LD in relation to attention problems in ADHD/ADD groups of children.

Additionally, the Australian Guidelines on ADHD (2009) recommended a thorough medical history and examination to identify any acquired brain injury or other neurological condition that require comprehensive neuropsychological evaluation. Brain insult, particularly that causes damage or disruption of brain areas involved in mediating attention (e.g. frontal regions, white matter, parietal lobes), increases the

risk of ADHD-like symptoms, specifically, inattention and impulsivity (Australian Guidelines on ADHD, 2009, p.47). In fact, such attention impairments may be the hallmark features of such conditions. Although these conditions do not necessarily fit all the criteria for diagnosis of ADHD (e.g. age at symptoms onset), difficulties usually exist in the context of broader cognitive and social aspects.

2.1.2 Autistic Spectrum Disorder (ASD)

Smalley, Asarnow, and Spence (1988), and Smalley (1991) proposed that autism resulted from multifactorial inheritance and genetic heterogeneity. Kanner (1943); (1946) described 11 childhood disorders characterised by impaired social relationships, abnormal language (either delayed or showing regression), and restricted and repetitive interests.

Bloch-Rosen (1999) studied the neuropathology of Autism illuminating that Autistic children exhibit intellectual functioning ranging from the mentally retarded to the intellectually superior. They may be mute or have highly developed language skills; and their stereotypic rituals and social impairments may range from mild to severe. Its prevalence is 7-16 per 10,000 children (Baron-Cohen, 1995) with a male: female ratio closer to 2-3:1 in reviews of 16 population studies of autism by Wing (1993); Gillberg (1995, as cited in Bloch-Rosen, 1999).

Miranda-Linné (2001) mentioned research after Kanner (1943) on severe language impairments in virtually all autistic children. She has confirmed that all ASD children show a retarded development of spoken language; about half do not acquire speech; and of those who do acquire speech, over 75% show abnormal speech features, such as

echolalia or pronominal reversal, Baltaxe and Simmons (1981, as cited in Miranda-Linné, 2001). Only about 30% of those who are able to speak develop somewhat useful language (DeMyer, Hingtgen, & Jackson, 1981).

Belkadi (2006) illustrated in Figure 2.1 a re-evaluation of autism in the context of research findings in different fields (*Linguistics, Genetics, and Neurobiology*) studying the cognitive deficits underlying the range of social and communicative disorders. Autism is found to cause deficits in four main areas: social interaction and communication (i.e. ToM), Executive functions, IQ and language.

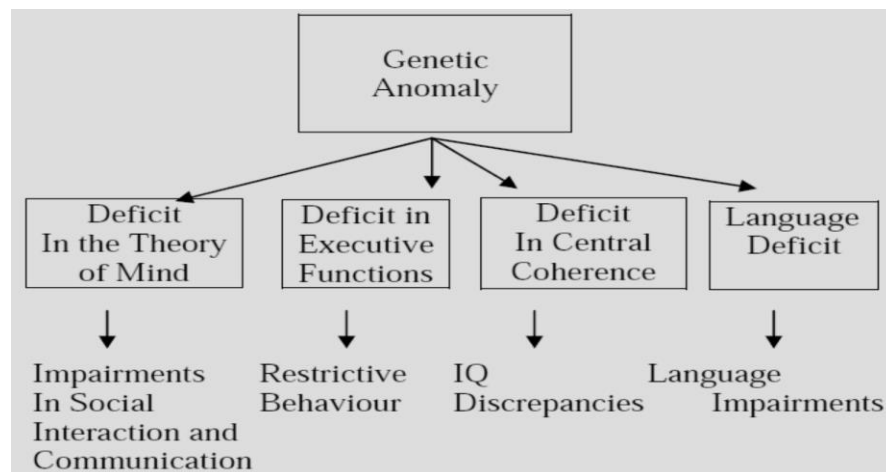


Figure 2.1. The range of impairments found in ASD:
A modular model adopted from Belkadi (2006).

Johnson (2004) specified deficits in *social* domains among ASD children, such as joint attention, social orienting and pretend play, and in *pragmatics* where an autistic child may develop simple speech acts as requesting and protesting, but have difficulty learning more developed ones as expressing opinion or negotiating. Lord and Paul (1997); Tager-Flusberg (1981a) stated other pragmatic striking features in autistic language, such as lack of turn taking skills and rapport use appropriately; also being unresponsive to the conversational initiations of others, and unable to understand non-

verbal cues. In addition, Gershkoff-Stowe, Connell and Smith (2006) considered the delay in lexical development allied with ASD in the occurrence of type/types of “Overgeneralisation” (Gershkoff-Stowe, 2002) and a limited vocabulary span when compared to typically developing children.

Mastrangelo (2009) mentioned that ASD children differ in their play than typically-developing children. These children may show a variety of features in their play (e.g. inflexibility, concreteness, constrictedness, impulsivity, irrationality, unreliability, and inability to engage in or sustain imaginative play) that are not generally accepted in the definition of play, Hellendoorn, Van der Kooij, and Sutton-Smith (1994, in Mastrangelo, 2009).

Regarding ASD assessment, Volkmar, Cook, Pomeroy, Realmuto, and Tanguay (2000) argued that assessing communication in social contexts (i.e. conversation abilities and role-play) in ASD children is an important indicator of impairment to reveal restricted interests and unusual behaviour, unusual features of language, such as *stereotyped language, echolalia, pronoun reversal, overly literal (pedantic) use of language, monotonic voice quality, and so forth*.

Furthermore, Bloch-Rosen (1999) stated that a speech and language evaluation should include both qualitative as well as quantitative aspects of the child’s functioning. The typical test battery that focuses primarily on formal language (i.e. *vocabulary, articulation, comprehension, and sentence construction*) indicates only areas of strength in most AS individuals. Language assessment should thus also incorporate measures of *nonverbal communication, non-literal language* (e.g., absurdities,

metaphor, and humour) *speech prosody* (melody, volume, and pitch), and *pragmatics* (i.e., turn taking, sensitivity to cues, adherence to rules of conversation). This latter group of language skills are more apt to reveal significant deficits in AS individuals. A language assessment should also note perseveration on restricted topics and social reciprocity.

Recent studies investigated the relatively overlap in symptom domains of motor coordination, executive functions, and socialisation in ASD and ADHD (Connor, 2008). Soorya and Halpern (2009) also found intriguing overlaps between ASD and ADHD disorders from genetic, neurobiology, and neuropsychological perspectives. Their data on motor coordination difficulties suggests the presence of motor dysfunction across many developmental disorders, including ADHD and autism. These findings may relate to the relative vulnerability of the motor system to developmental insult. Research on executive functions deficits suggest that they may be qualitatively different in ADHD and ASD. Psychosocial treatments for behavioural dysregulation related to executive function in both disorders have strong empirical support and primarily include behavioural interventions based in operant conditioning theory.

In an attempt to distinguish the language abnormalities of autism (Churchill, 1972) proposed that there are no qualitative distinctions between developmental aphasia and autism, and that they differ only by degree (as cited in Currin, 2002). On the other hand, Bishop (2010);Tager-Flusberg and Joseph (2003) investigated whether core language impairments found in SLI were also present in autism. Later, Tager-Flusberg (2004) studied overlaps among ASD, Down syndrome and SLI and found

striking similarities among the three disorders despite very different intellectual and social capabilities and cognitive deficits.

2.1.3 Brain White Matter Disorders in Children (i.e Childhood Multiple Sclerosis)

From the neurological point of view considering the biology and anatomy of brain White Matter disorders, Filley (2005) states that dysfunction in the Central Nervous System (CNS) could be genetic, demyelinating, infectious, inflammatory, toxic, metabolic, vascular, traumatic, neoplastic, and hydrocephalic. Each classification signifies a distinct disease process and within these classifications, diseases vary greatly as commonalities among more than 100 white matter disorders are in how they affect brain and behaviour. They are all associated with cognitive or emotional dysfunction of some kind and similarities in brain-behaviour dysfunction cut across disease categories. The ranges of clinical features that demonstrate the onset of brain white matter involvement are extremely broad: inattention, executive dysfunction, confusion, memory loss, personality change, depression, somnolence, and fatigue (Filley, 2005). In this study, the “Myelin Sheath”, the protective coating around the nerve cells that facilitates nerve conduction, illustrated in Figure 2.2, failed to generate properly and caused a dysmyelinating disorder to occur causing a wide range of symptoms. Such diseases have high prevalence in Saudi Arabia and Arab communities due to high rate of consanguinity (Jan, 2004).

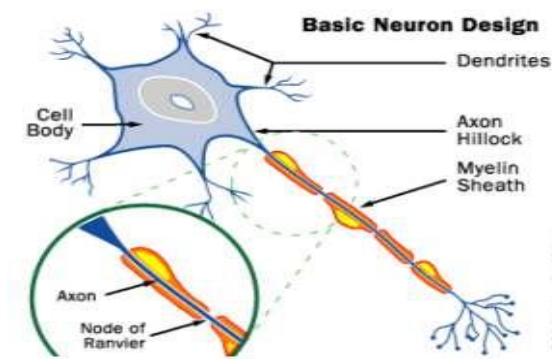


Figure 2.2. The basic neuron design.
 Source: <http://static.howstuffworks.com/gif/brain-neuron.gif>

Dysmyelinating disorders in brain white matter can present with secondary language disorders i.e. speech and language deficiencies depending on the Spectrum, location and size of multifocal cerebral lesions (Filley, 2005). As confirmed in recent neuropsychological literature, cerebral lesions can cause deficiencies in communication as *Dysarthria*, *Dyspraxia*, *Ataxia*, and/or *Dysphasia* ranging from moderate to mild, in addition to mild inconsistent cognitive dysfunction, confusion, and specific learning difficulties as well. The most common disease among these WM disorders is MS that is defined as follows:

Childhood Multiple Sclerosis (MS)

Childhood MS is an unpredictable neurological autoimmune disease that affects the central nervous system (CNS) and causes the body to attack its own tissue, primarily targeting myelin and resulting in damage to the nerve cells and interruption in the transmission of nerve impulses. Childhood MS symptoms can cause fatigue, muscle weakness, ataxia, tremor, spasticity, sensory symptoms, temperature, pain (moderate to severe), speech disturbances, vision disturbances, vertigo, bladder and bowel dysfunction, depression, and cognitive abnormalities (Banwell et al., 2003). In

children of early onset, the Remission/ Relapse type of Multiple Sclerosis (RRMS) is the most common when episodes last from days to weeks or months (Boiko, 2002; Kidd, 2001). Among various ethnic groups, *Paediatric Multiple Sclerosis* is reported similar to the adult-onset form in Asia Pacific (Chong et al., 2007) while it shows higher prevalence among children of Middle Eastern ancestry than the adult-onset (Kennedy et al., 2006).

There is not much information available on Childhood MS in the neurolinguistic literature. Investigation into the deficiencies in communication and cognition in adults, where MS is more dominant, reveals speech difficulties, problems with thinking and memory as well as emotional changes (Banwell et al. 2003). As any other case of speech and language impairment, assessment in MS requires investigating social communicative competence that describes deficiencies not only in the expressive and receptive abilities, but also in several linguistic domains, in order to gain insight about the quality and quantity of problems to see how far he/she is from a competent communicator.

To assess speech and language in MS, most studies focus on assessing communication in adult patients because of the disease's more frequent occurrence among adults than children (Jan, 2005). Those studies relied on qualitative interviews (Yorkston, Klasner, & Swanson, 2001), or personal questionnaires (Yorkston et al., 2003) that cannot be applied to MS children because these questionnaires involved a 178-item survey, a 22-page questionnaire designed to collect information from individuals with MS regarding the demographics and physical or psychosocial consequences of MS that cannot be answered by a child. Therefore, other methodologies have to be

considered to measure language development and deficiencies in MS children such as parental observation and the parental reply to checklists. King (2009) focused on the language characteristics of MS and cited a study by Wallace and Holmes (1993) using the Arizona Battery for Communication Disorders (ABCD). Its subtests sensitively measured subtle linguistic impairments in the MS population, including impairments in written and spoken language formulation and discourse, which may be suitable for assessing children.

When designing tasks to assess speech and language difficulties in MS children, it is significant to carefully select materials and topics that will reveal the disorders (e.g. dysnomia, dysphasia, dyspraxia, and dysrathria). These tasks should investigate conversation skills, both speech and language aspects, expressive and receptive, verbal and non-verbal abilities, writing and drawing skills. For example, when Goodglass and Kaplan (1972) constructed the Boston Diagnostic Aphasia Examination for assessing aphasia in adults, they considered conversational and expository speech, auditory comprehension, oral expression, understanding written language, and writing. On the other hand, careful assessment is required in Acquired Childhood Aphasia (ACA) to establish a profile in the differential diagnosis of listening, understanding speaking, and gesture (Whurr & Evans, 1998). Children with ACA were traditionally assessed on adapted batteries often used for adults before designing The Children's Acquired Aphasia Screening Test (CAAST), which evaluates linguistic and non-linguistic functions in brain-damaged children aged between 3-7 years (Whurr & Evans, 1998). In addition to Dysarthria that may be associated with MS ranging from mild, moderate, to severe, Yorkston et al. (2003) as cited in Charcot's original description of speech disorders associated with MS in (1868) including three hallmark features:

nystagmus (involuntary eye movement), *intention tremor*, and *scanning speech* (defined as slow and drawling speech with words spoken as if measured or scanned, with a pause after every syllable, and syllables pronounced slowly and hesitantly (Darley, Aronson, & Brown, 1975). Yorkston, Klasner, and Swanson (2001) confirmed the existence of speech impairment in MS by focusing on the component of phonatory instability, corresponding with results published in a review by the subcommittee of speech-language pathologists formed by the Consortium of MS Centres (Sorensen, Brown, Logemann, Wilson & Herndon, 1994) who found many “unknowns” in childhood phonological presentations similar to the idiosyncratic phonological processes in AE’s case. Moreover, a deficit in acoustic acuity evident in the hyposensitivity to some sounds and phonetic inaccuracy, Luria (1958, as cited in Anzaki & Izumi, 2001) who reported patients having impairment in discriminating disjunctive phonemes such as p-b, t-d, and s-z, as well as related phonemes such as m-n in the speech-sound discrimination test. This is a unique characteristic of *Acoustico-gnostic Aphasia*.

Arnett et al. (1997) provided evidence of the frequent existence of verbal fluency deficits in MS patients. Banwell et al. (2003) also documented episodes of dysfluency to occur in Childhood MS. A fluency disorder characterised by deviations in the continuity, smoothness, rhythm, and/or effort with which phonologic, lexical, morphologic, and/or syntactic language units are spoken (ASHA, 1999). Zhu and Penn (2006) studied dysfluency markers that appear in spontaneous conversations which are normally used to coordinate interaction between speakers. These are hesitations, repetitions, some stuttering, false starts, empty and filled pauses, and incomplete sentences.

Furthermore, Smit (2004) investigated signs for Apraxia, such as high frequency of assimilation, metathesis (Transposition) and vowel processes, and distinguished *verbal apraxia* from *dysarthria* and *aphasia*, while Dittrich and Tutt (2008) added later that Apraxia could co-exist with other disorders as ADHD and Aspergers.

Another phonological characteristic of MS comprises having difficulty controlling voice loudness and adjusting voice volume according to other's needs. A *Prosody deficit* can appear in many conditions, e.g. in *Dysarthria allied with MS* (Miller, 2008); in early *right hemispheric dysfunction (RHD)* (Shields, 1991); in *ASD* (Peppe & McCann, 2003); and in *Schizophrenia* (Koeda et al., 2006).

On the other hand, King (2009) states that language impairments in MS have received much less attention than speech characteristics. With a rare exception to this notion, Anzola et al. (1990) assumes that language in MS is not to be impaired. However, recent research has demonstrated the existence of high-level language dysfunction in MS (Lethlean & Murdoch, 1993; 1994a; 1994b; 1997). These studies showed that individuals with MS have difficulties understanding ambiguous sentences and metaphoric expressions, making inferences, and recreating sentences. They also exhibited poor performance on vocabulary and semantic tasks compared to control subjects.

Yamada (1990, as cited in Fromkin, 1997) reported children who display well-developed phonological, morphological and syntactic linguistic abilities, but have less developed lexical, semantic, or referential aspects of language and deficits in non-linguistic cognitive development. Such cases suggest that syntax can be acquired even

with severely impaired or limited conceptual and cognitive development. Researchers have reported changes in verbal and written organisation in MS (Yorkston, Kiasner, & Swanson, 2001), and tested high-level language abilities using standard batteries of languages, (Lethlean & Murdoch, 1993; Wallace & Holmes, 1993). Results indicated a variety of subtle, high-level language problems associated with general slowness of information processing, cognitive changes, or fatigue (Yorkston et al., 2003).

Among the language disorders found in MS, Henry and Beatty (2006) reported a deficit in the semantic memory. *Dysnomia*, a type of (Expressive Dysphasia), defined as the loss of power to name objects and difficulty in word-finding (Rull, 2009). Lesions in the brain around the arcuate fasciculus, posterior parietal and temporal regions can also cause *Conduction Aphasia* when symptoms are naming deficits, inability to repeat non-meaningful words and word strings, although there is apparently normal speech comprehension and production. Patients are aware of their difficulties (Rull, 2009). In MS specifically, these types of dysphasias might appear during a relapse and fade away afterwards.

The naming deficiency in MS can be selective as reported in some of the anomic cases in the literature, e.g. Semenza and Zettin (1989) studied a rare selective case of anomia exhibiting disturbance in proper and common names. Fromkin (1997) scanned for evidence in earlier studies where distinct neural systems were required for the retrieval of *actions* words versus those denoting *objects*. A double dissociation was also found where some patients with lesions in one area of the brain could not access action words but had no problem with objects; and other patients with lesions in nonoverlapping areas showed the reverse problem. On the other hand, the SLI group

studied by Sheng and McGregor (2010) showed a reversed model where action naming is more affected.

Another linguistic deficiency at the lexical level detected in some cases is *Echolalia*, a non-communicative repetition of words or utterances spoken by another person in pathological conditions (Ford, 1989). Oelschlaeger and Damico (2000) suggest it to result from some cognitive impairment; as detected in cases of *Juvenile Multiple Sclerosis* (Amato, 2008); in *ASD* children (Schneider, 2004); in cases of *Wernicke's aphasia* (Laakso, 2003) or other psychosis morbidity such as *Childhood Onset Schizophrenia (COS)* (Russell, 1994).

Foley et al. (1994) investigate conversation deficiencies as a cognitive difficulty encountered in MS in terms of its impact on fundamental elements of communication, including accuracy in listening, capacity for empathy, making requests to others, making compromises, and giving others feedback about the impact of their behaviour, due to impaired executive functions and lack of coordination between different brain lobes. Burks and Johnson (2000) identified different types of memory impairment in MS, such as the *verbal memory* deficit often referred to as 'the tip of the tongue' phenomenon. Also several studies of '*Primary Memory*' (memory operating over a period of few seconds) have suggested that *Short term Memory* (e.g. memory observed after the immediate repetition of a string of digits) is relatively intact in MS patients, whereas *Working Memory* (the brain system that provides temporary storage and manipulation of the information necessary for complex cognitive tasks as language comprehension, learning, and reasoning, and has been found to require the simultaneous storage and processing of information, Baddeley, 1986; 1992) is impaired.

Another problem affecting communication in MS patients is discussed in Wishart, Benedict, and Rao (2008) known as '*Episodic Memory*' when focusing on one word selected from context to show recollection of an individual's previous incident experienced, which is distinct from the recollection of general or semantic knowledge. The neural substrate of episodic memory is thought to include prefrontal and medial temporal regions responsible for cognitive processes associated with episodic memory including novelty detection, encoding, consolidation and retrieval (Wishart et al., 2008). Banwell et al. (2003) mention that the language deficits in children and adolescents tend to be quite subtle. These are generally related to the speed of information processing and usually involve reduction in fluency. As a result, naming and word finding deficits occur, often referred to as "circumlocution", causing embarrassment and frustration in social situations or when speaking aloud in school. It is also relevant to this study to consider conclusions reached by Gupta, MacWhinney, Feldman, and Sacco (2003); Baddeley (1993) on neuropsychologically impaired children with early brain injury in whom language function is largely preserved except for selective deficits in immediate serial recall in non-word repetition and word learning ability.

Yorkston, Klasner, and Swanson (2001) illustrate in (Figure 2.3) a schematic representation of the limitations and restrictions in communicative participation in mild MS patients showing that these do not arise solely from the impairment of the speech and language production system, but from many types of impairment, e.g. speech and language, cognition, fatigue, motor, and vision.

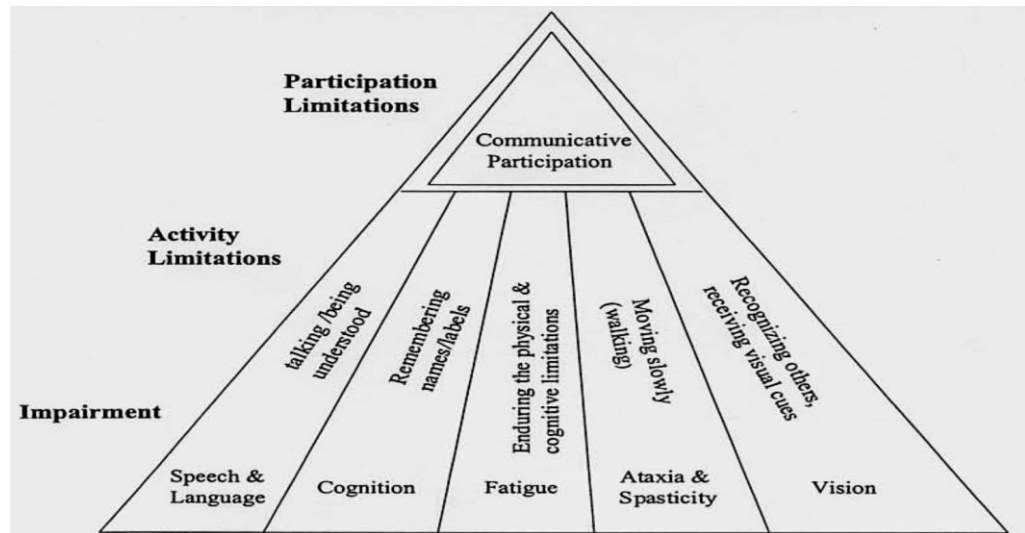


Figure 2.3. A schematic representation of the limitations and restrictions in communicative participation for mild MS patients (Yorkston et al., 2001)

Gorman, Healy, Polgar-Turcsanyi, and Chitnis (2009) confirm in their comparative studies that MS patients with paediatric-onset MS do indeed have more relapses than adult-onset MS, despite the disease progressing more slowly in children. They also mention that "this discrepancy may suggest greater plasticity, less neurodegeneration and potentially more repair and remyelination in the younger nervous system" (p.58). Despite paediatric cases have shown evidence of synaptic activity and better dynamic changes of cortical reorganisation (Comi, Rocca, & Filippi, 2004), still cognitive dysfunction is more apparent due to acquisition of new skills in life, as there is evidence of thalamic gray matter loss investigated in (Mesaros et al., 2008). Although very few MS cases are reported under the age of ten (Banwell et al., 2003), it has been determined that the earlier the onset, the worse the language acquisition outcomes are due to proposed deficiency, not only in the dominant areas hosting language, but in the cognitive and executive functions as well (Arnett et al., 1997).

2.2 Linguistic Aspects and Language Development in Children

The linguistic development in children is a dynamic process implying three dimensions: universal cross-language similarities (i.e. innately available universal properties of linguistic structure and grammatical rules), language-specific features (the child's ability to do some inferences on the basis of the linguistic input that surrounds him/her, particularly in order to discover the specific properties which characterise his/her native language, i.e. Arabic), and child-specific development phases (Typical/Disordered).

Ab Wahid and Abd Ghani (2002) studied phonological development in Kelantanese children aged (2-5) years using comparative data from four languages: Arabic, English, Cantonese, and Kelantan Malay. Data analysis showed cross-language similarities among the four languages on the approximate age typical pre-schoolers take to acquire some of their L1 sounds.

In another cross-language study, Fern-Pollak (2008) found from behavioural and neuroimaging studies support for the notion that different levels of orthographic transparency may entail distinct types of cognitive process in different languages. Even among non-impaired individuals, a wide-ranging observation confirms that reading acquisition in different languages is attained at different rates (Seymour, Aro, & Erskine, 2003, reviewed by Ziegler & Goswami, 2006). For example, learning to read in English is a more lengthy process than in more orthographically transparent languages such as *Italian* (Thorstad, 1991); *Czech* (Caravolas & Bruck, 1993); *Greek* (Goswami, Porpodas & Wheelwright, 1997); *Spanish* (Goswami, Gombert & de

Barrara, 1998); *German* (Frith, Wimmer & Landerl, 1998) and *Welsh*, Spencer and Hanley (2003, as cited in Fern-Pollak, 2008).

Language-Specific Features: Modern Standard Arabic vs. the North-Syrian (Aleppine) Dialect

Arabic is a Semitic language that consists of 28 letters and possesses three long vowels and no letters to indicate short vowels. Instead, these are depicted by diacritical marks (small signs and symbols placed above or under the consonants to facilitate the correct sound pronunciation). All Arabic speaking children acquire first the dialectal variety as their mother tongue and are introduced to the Modern Standard Arabic later through literacy at school. Table 2.1 presents inventories of Arabic and English phonemes with the Arabic consonants encircled.

Table 2.1. Arabic and English Consonants, adopted from (Kopczynski & Mellani, 1993).

Place Manner	bila- bial	labio- dent.	inter- dent.	den- tal	alveo- lar	post- alv.	alv.- pal	pala- tal	vel- ar	uvu- lar	phar- yng- eal	glot- tal
STOPS	p b (b)			t d (t) (d)					k g (k) (g)			ʔ
AFFRI- CATES						tr dr	tʃ dʒ					
FRICA- TIVES		f v (f)	θ ð (θ) (ð)	s z (s) (z)			/ʃ (ʃ) (ʒ)			χ ʁ (χ) (ʁ)	ħ ʕ (ħ) (ʕ)	h (h)
NASALS	m (m)			n (n)					ŋ (ŋ)			
LATER- ALS				l (l)								
FLAP				r (r)								
SEMI- VOWELS	w (w)				r			j (j)				

Apart from Modern Standard Arabic (MSA), this literature review exposes some main features of the North-Syrian (Aleppine) dialect spoken by 4.4 million people in the

second biggest city of Syria, Aleppo [ˈhalab]. North Syrian Arabic has few distinctions from General Syrian or North Levantine in terms of phonology and morphology, and it exhibits marked regional, socio-economic, and community-based variations.

The major difference between Damascus and Aleppo dialects is the presence of the classical Najdi shift from /ā/ to [ē] (*imāla*) in Aleppine Arabic, which is phonemic (it can change the meaning of a word). The other distinctive feature is that it has many lexical peculiarities, e.g. it uses more Aramaic vocabulary than elsewhere in Levant, and contains words of Turkish and Persian origin as (*çay*, *çarşaf*, *çanta* and *çekic*).

Regarding its consonants, [dʒ] ج is more often realised as [dʒ] than [ʒ]; [q] ق is pronounced [ʔ] and more pharyngealised than the southern Levantine variant; [s] س is sometimes pronounced [ʃ] only in words common with Aramaic; and [dʒ] ج is pronounced [tʃ] in some loaned words (Almbark, 2008;2012), whilst the Syrian Arabic vowel system is assumed to consist of /i iː e eː a aː ə o oː u uː/, Cowell (1964, as cited in Almbark, 2012).

2.2.1 Milestones in Arabic Language Development.

Most research on typical and disordered developmental language is conducted in English, whilst not enough studies have been done on other languages, such as Arabic. Research work based on a variety of Arabic dialects, includes those that studied the acquisition of *phonology* (Amayreh & Dyson, 1998; Shahin, 1995; 2006), *morphology* (Ravid, 2002; Ravid & Hayek, 2003), and *syntax* (Abdulkarim, 1995; Aljenaie, 2000). Each of these papers focuses on a particular aspect and a specific dialect of Arabic.

Therefore, even though these studies are considered useful in enhancing our understanding of Arabic language acquisition and the different stages that children undergo, they remain of a limited and narrow scope due to the lack of naturalistic data on the acquisition of the various regional dialects of Arabic.

Omar (1973) studied Arabic Phonological development in Arab children and pointed to the important particularities in the phases of Arabic language acquisition presented in the language inventories. In Table 2.2, he listed the five stages of phonological acquisition for Arabic consonants in typically developing Arabic children according to their chronological age.

Table 2.2. Stages of Typical Acquisition of Arabic Consonants (Amayreh & Dyson, 2000b; Omar, 1973).					
	Babbling	14-24 ms	2-3:10 yrs	4-6:4 yrs	6:5-8 yrs
Stops	b, p	b, d, t, ʔ	k, q, g		ṭ, ḍ
Fricatives/Affricates	h	š, ʕ, ḥ, ḥ	f	s, ʁ, ð, ɣ, θ, ɗʒ, ʒ	ṣ, z
Sonorants/Liquids	m	m, n, l		r	
Glides	w, y	w, y			
Totals	6	13	4	8	4

In a cross-linguistic comparative study between Arabic and English on Phonological Development conducted by Shereef (2001) who traced the period for consonant acquisition in *English* children by Smit and Hand (1997), and in *Arabic* children by Amayreh and Dyson (1998). Shereef (2001) found an earlier onset of Arabic children learning their consonants over English children, indicated by an age range of 2:0-6:6 years in Arabic to an English age range of 3:0-7:0 years in English children.

2.2.2 Challenges and Issues Related to Assessing Disorders in Arabic.

The Arabic language is among the least transparent alphabetic orthographies when vowels are depicted by diacritical marks (points and dashes placed under or above consonants) if these are omitted in everyday texts, they cause difficulties in reading consonants and phonemic information (Fern-Pollak, 2008). Two linguistic phenomena with significant impact on Arabic literacy learning are *Diglossia* (the distance between classical and spoken versions of a language) and *Transparency* (the association between written symbols and language sounds) (as cited in Ramadan, 2009). Accordingly, this suggests that different levels of orthographic transparency influence the efficiency and speed at which fluent reading is achieved by young children (Ziegler & Goswami, 2005;2006) as well as to give rise to different symptoms of acquired and developmental reading disorders, Be'landa, and Mimouni (2001, as cited in Ramadan, 2009).

Regarding language assessment, the reliance on English speaking assessors evaluating Arabic children simply because a foreign assessor (probably English-speaking) is assumed to be better equipped than an Arabic-speaking assessor. However, a non-Arabic speaking assessor may not have sufficient knowledge of the Arabic varieties to enable him or her to carry out a thorough assessment on the first language competence, Elbeheri et al. (2006, as cited in Ramadan, 2009).

On the other hand, the use of a high Arabic language level to try to get rid of the negative impact of dialects on the diagnosis and treatment of disorders (Ramadan, 2009) is biased because young Arab children are not yet introduced to MSA at school. Therefore, it is suggested that there is a need for standardised diagnostic and treatment

instruments in the five major regional dialects depending on geographic areas, *e.g. the Levantine (Syrio-Labanese), the Egyptian, the Arabian Peninsula, the Iraqi, and the North-African* to overcome the varieties of dialects among the Arabic Nations that make studies in one dialect hardly applicable as well as generalised (Shahin, 2010).

2.3 Methodologies for Assessing Communication Difficulties

Children with communication difficulties demonstrate a broad range of difficulties, *e.g.* problems with new word acquisition, storage and organisation of known words, and lexical access/retrieval that put a child at risk of potential failure in school, work, and social interactions. Therefore, Bellermaann (1994, p.17) notes that when investigating LD in children, it is essential to look at three forms of language output, *i.e. Spontaneous, Demand and Social* language capabilities. *Spontaneous* refers to when the speaker is initiating and selecting a subject/topic to talk about, organising his/her thoughts and choosing the appropriate words before saying them. *On Demand* refers to when the child is asked to answer a question or communicate using the right/appropriate words within a brief period of time. Most LD children have problems with "demand language" as they can talk spontaneously about a wide range of topics but freeze when asked a question. *Social language skills* refer to skills needed to carry on a conversation with peers and others or ask for help or get his/her needs met.

Brown (1973) contributed to the methodological and conceptual advances in the modern study of child language development including the automatic morphosyntactic analysis to enrich the Child Language Data Exchange System (CHILDES). This database now contains over 44 million spoken words from 28 different languages, forming the largest corpus of conversational spoken language data currently in

existence (MacWhinney, 1993). Additionally, Brown found the observation approach as the most appropriate method for studying development in young children. It is seen as the most open-ended and the least structured approach to study child language as it allows researchers to view children in a natural context without the external constraints or task demands that might not be understood by the child (Tager-Flusberg, 2008). It also allows for a detailed assessment in different contexts, *e.g. at home, when travelling, meeting visitors, and during weekend activities*, which cannot be carried out in clinical settings. It carries the benefits of relevance and objectivity if carried out appropriately. Hence, it might be the best method when dealing with ADHD and ASD children who have language limitations and deficits in social interaction and lack the ability to cooperate in formal settings.

Dewart and Summer (1995) developed a clinical assessment framework for identifying how children communicate their different intentions in everyday contexts. Categories are derived from the Pragmatics Profile of Everyday Communication in Children.

Marshall and Harris Wright (2007) studied items in the Kentucky Aphasia Test (KAT), a clinician-friendly aphasic test to differentiate aphasic from non-aphasic comprising items assessing expressive and receptive language functions in adults and children that can be adopted for assessment purposes.

2.3.1 Classifying Deficiencies under (Form-Content-Use).

Bloom and Lahey (1978) identified the essential components of communication (*form, content and use of language*), a model that is helpful in showing how the key language skills interrelate. They propose that, if each skill area is not well developed,

the communication process will not be straightforward. However, this model neither includes important areas of attention/listening and memory, nor distinguishes between understanding and expression. As illustrated in Figure 2.4, Bloom and Lahey (1978) identified the three areas as:

- **'Form'**: grammar, shown in word order, word endings, verb tenses, and the ability to put together a grammatical sentence.
- **'Content'**: picking the appropriate words to get the message across involving the use of vocabulary, concepts, and meaning of words.
- **'Use'**: making use of language in a variety of different ways, such as for greeting, describing, and arguing. It also involves subtle communication, such as the use of body language, facial expression, voice tone, and non-verbal language as well as knowing how to take turns in talking.

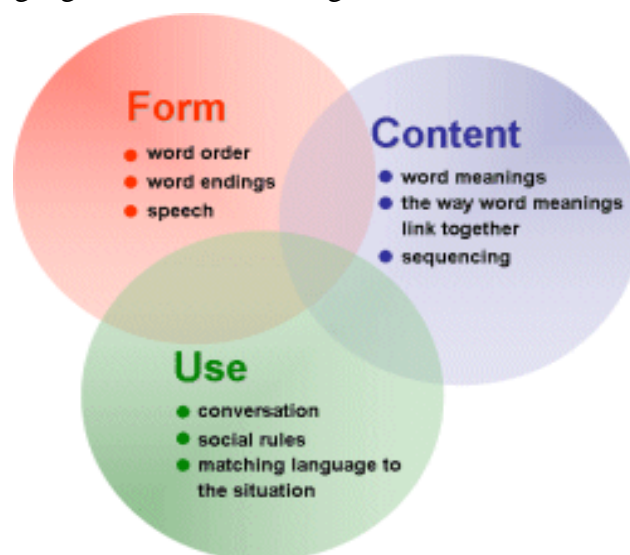


Figure 2.4. Language development and language disorders (Bloom & Lahey, 1978).

Source: www.slc.cambridgeshire.nhs.uk/ActivitiesIdeasandInfo/ChildDevelopmentAgesand Stages/BloomandLaheysmodel/tabid/1324/language/en-GB/Default.aspx

In Bloom and Lahey (1978) and Lahey's (1988) framework for disordered language, under **Form**, are aspects of Phonology (imprecise articulation, use of phonological processes, fluency and perceptual abilities-acuity/ discrimination), Voice Quality (pitch, intonation, stress and speed), Morphology (frequency of errors in grammatical

markers and reversal of pronouns) and Syntax (length of utterance and limited grammatical patterns). **Content** comprises Semantics, vocabulary range, word retrieval difficulties, echolalia, jargon and neologism. **Use** includes communicative interactions: illocutionary force, communicative acts, and speech acts.

Therefore, Bloom and Lahey (1978) and Lahey's (1988) classification of disordered language (form, content, and use) along with other methodologies, such as *clinical observations, formal and informal assessments, language sampling, and parental reports*, makes it possible to draw a line between typically developing and disordered aspects of language and to identify areas of strength and weakness in a child's communication outcomes as in this case.

2.3.2 Assessing Phonological Aspects.

Because of the “diglossic” nature of Arabic, there are very limited assessment tools available at the moment for Arab children with phonological disorders creating a gap in cross-linguistic research. In addition to this, very little research has been conducted on the different dialects of Arabic and no study yet has been presented in the Syrian (Aleppine) dialect to address specific aspects on language acquisition and development.

Amayreh and Dyson (2000) studied phonological errors and sound changes in Arabic-speaking children before the age of 4;4 years. However, because the subject in this current study is 6;10 years and speaks the Arabic Aleppine dialect and produces mostly “metathesis” and “substitutions”, several western frameworks constructed for disordered phonology in children are adopted to account for a wide range of

phonological disordered processes, such as *the Phonological Assessment of Child Speech (PACS)* Grunwell (1985a;1985b); *Procedures for Phonological Analysis of Children's Language (PPACL)* Ingram (1981); Smit (2004); Stoel-Gammon and Dunn (1985); Hodson's (1980) *Assessment of Phonological Processes (APP)*.

Initially, Grunwell's PACS (1985a) is an assessment tool aimed at providing detailed phonological analysis of children's speech at any age. It follows two different approaches of data analysis depending on the sample taken, i.e. the contrastive analysis and the phonological process analysis. Comparisons may be made of the child's sound system with that of an adult from the same dialect, and with the linguistic production of typically age-matched peers. Data are analysed, interpreted and organised to provide diagnostic indications that can establish a framework for a speech therapist to plan a remediation programme, see Kersner (1992, p. 61). Grunwell (1991) classified three types of phonological abnormality: *delayed*, *uneven*, and *deviant development*.

A similar study is done by Dodd, Leahy and Hambly (1989) who tested the nature of the deficits underlying three subgroups of children with phonological disorder. The three groups of subjects are selected according to the nature of their surface errors: 'delayed'-children using normal developmental processes that are inappropriate for their chronological age; 'deviant inconsistent'-children who exhibited many apparently non-rule governed errors; and 'deviant consistent'-children using some non-developmental processes. Their production errors are compared in imitation, picture naming and spontaneous speech.

Smit (2004) grouped phonological processes by the ages at which they are typically suppressed based on data collected from Stoel-Gammon and Dunn (1985), Smit and Hand (1997). In Table 2.3, twelve phonological processes grouped into four groups are identified according to the chronological age, e.g. five processes suppressed at the age of 3; two processes at the age of 4; three processes at the age of 5; and two processes at the age of 7 years.

Table 2.3 Phonological processes grouped by the ages at which they are typically suppressed, adopted from Smit (2004).	
Processes used up to 3 years	Processes used up to 4 years
Final Consonant Deletion Consonant Assimilation Prevocalic Voicing Velar Fronting (SG-D)* Weak Syllable Deletion (SG-D)*	Stopping Velar Fronting (S-H)*
Processes used up to 5 years	Processes used up to 7 years
Depalatalisation Weak Syllable Deletion (S-H)* Reduction of Clusters with /s/	Gliding Vocalisation
Note: *Data from Stoel-Gammon and Dunn (SG-D 1985); Smit and Hand (S-H 1997)	

Hodson's (1980) *Assessment of Phonological Processes (APP)* is adopted for classifying 'metathesis' under *Miscellaneous Processes* rather than Basic Processes because frequent metathesis errors (transposition of sound or syllable in words) can be an indication of Childhood Apraxia of Speech (CAS) (Clopton, 2008) common to occur in childhood MS (Gorman et al., 2009; Jaffe et al., 2003; & Boiko et al., 2002) taking the form of remission and relapses.

Regarding language sampling, it is valuable to classify child language into *Expressive and Receptive* abilities in order to look at deficiencies in communication from different angles. Such classification is implemented in this research collecting verbal

and non-verbal, spontaneous and elicited data (task-oriented) samples. The collection of several types of data enables the study to look at different patterns of communication produced by the subject.

2.3.3 Expressive Language Abilities.

Girbau and Boada (2004) suggest that many tasks, settings, and procedures have emerged from different methodological approaches. Communication research can basically be grouped under two traditions: *referential* and *sociolinguistic* (Dickson, 1981). The main difference between them is that traditionally, the *referential* paradigm examines communication via experimental tasks, whereas *sociolinguistic* research uses natural settings and observational methodology for data collection also called the “naturalistic approach.” This latter strategy may well produce more reliable conclusions than the one based exclusively on experimental tasks, and may also help to predict natural communicative behaviours from laboratory tasks.

Tager-Flusberg (2007); Tager-Flusberg et al. (2009) recommend that assessments of Expressive Language in ASD children should include natural language samples, a parent report, and direct standardised assessment derived from multiple sources.

Norbury and Bishop (2003) stated that narrative assessment is a good way of assessing linguistic ability in older children having impairments in communication. It also enables one to see how narrative deficits are qualitatively different in SLI and ASD groups, and how language and pragmatic abilities may influence narrative competence. Narrative retelling is useful for identifying children who may be at risk

for later academic problems in reading and writing as it requires integration of more advanced cognitive facilities, Hudson and Shapiro (1991, as cited in Wellman, 2009). Herbert, Racette, Gagnon, and Peretz (2003) suggest Alphabet Recitation, a well-known children's song, for assessing expressive aphasia, looking at rhyming and retrieval ability for familiar and unfamiliar songs, and differences between speaking and singing.

Whitebread and Jameson (2010) reported the impact of pretence play on deductive reasoning and social competence in 5-7 years old children, and of socio-dramatic play on improved 'self-regulation' among young children who are prone to be highly impulsive. Therefore, social interaction, adaptation and flexibility supported by Vygotsky's (1978) insights are significant areas to be assessed in children. Similarly, Bergen (2002) states the role of pretend play and cognition in children's cognitive, social, and academic development, and that there are clear links between pretend play and social and linguistic competence.

Rustin and Kuhr (1999) found that speech and language impaired patients often have difficulty maintaining turns in conversations by breaking into a conversation as well as relinquishing their turn, lacking non-verbal signals given by eye-contact and inflection of voice, to indicate when someone is ready to complete their turn. Deficiency is sometimes due to a problem of eye-hand coordination resulting from discord among processing and motor centres that control physical movements in the brain. Prust, Beun, and Van Eijk (2008) provided similar evidence.

When Prior (1977 in Miranda-Linné, 2001) compared the language abilities of 20 autistic and 20 children with mental retardation, he found that expressive verbal and gestural performance was particularly impoverished in the autism group indicating a severe deficit in spontaneous communicative ability. Currin (2002) explored aspects of behaviour which have secondary effects on communicating with ASD populations including their tendency to display tantrums, aggression, and other avoidances, escape, or attention-seeking behaviours that can persist throughout life unless intervention is provided.

Evans, Alibali, and McNeil (2001) investigated specifically non-verbal deficiencies in SLI children, while Kalb (2004) found that deficiencies in turn taking might be due to impairments in executive functions associated with ADHD.

Expressive abilities also comprise *paralanguage* elements and *non verbal* manifestations as described in Poyatos (2002), whilst *facial expressions* are presented in Ekman, Friesen, and Ellsworth (1972 in De Vito, 2002); Ekman and Friesen (1969 in Beebe & Masterson, 2006) reported *eye contact* aspects and functions, i.e. a *cognitive* function (thought process); a *monitoring* function (allows feedback); an *expressive* function (feelings, emotions and attitudes). They also reported another function, the *regulatory* function, which provides signals if the communication channel is open and closed for one to interact. Furthermore, Tidwell (2008) mentioned eye behaviour in Arabic cultures, when making prolonged eye-contact is to show interest and helps understand truthfulness of the other person. While in other cultures, not looking directly into another's eyes is to show respect, e.g. Japan (Tidwell, 2008).

The use of hand gestures has been known to occur simultaneously with speech in children; and to accompany speech in aphasia (McNeill, 1985). Speech and gesture can be seen to interact in creating meaning, and body movement may be seen not just as an alternative to speech but as part of a multichannel system of communication to convey meaning (see Bull, 2001, p. 647).

2.3.4 Receptive Language Abilities.

Receptive language assessment looks at a wider range of behaviours associated with communication rather than comprehension. Rapin and Allen (1987 in Lees, 1993) found several language-disorder subtypes in receptive language assessment, i.e. *verbal auditory agnosia (word deafness)*, *semantic pragmatic deficit*, *lexical-syntactic deficit*, and *phonological programming deficit*. In elicited data samples, comprehension of the form of request, the content of language, attention and distracted behaviours are considered as well as the communicative prototypes and strategies used.

Tasks investigating *non-word repetition* abilities are also relevant when looking at receptive language. Nonword repetition (asking a child to repeat meaningless sequences of syllables, such as “perplisteronk” or “blonterstaping”) was derived from a theory that attributes SLI to impairment in a system specialised for holding verbal material in memory for short periods of time labelled *phonological short-term memory* (STM). SLI children, for instance, are usually extremely poor at this task; even if they can produce the individual speech sounds accurately (Bishop, 2006).

Similarly, *rapid naming* is considered by some researchers to be subsumed under phonological skills (Felton & Brown, 1990; Shaywitz, 2003) and by others as a marker

for processing speed (Ackerman et al., 2001; Hammill & Mather, 2003). It also predicts reading development, as poor readers are slower at rapid naming of letters, digits, colours, and familiar objects (Wolf & Obergon, 1992; Fawcett & Nicolson, 2001). Naming speed can be distinguished among ADHD, reading disabled children, and those with other learning disabilities, Felton et al. (1987, as cited in German, 2000).

Lezak (1983);(1995) suggested investigating naming skills as a verbal linguistic function when screening for communication problems. Jefferies and Lambon Ralph (2006) utilised naming colours in their study, while Shinobu et al. (2000); Denes, Cappelletti, Zilli, Dalla Porta, and Gallana (2000) recommended naming body parts to be significant when considering problems in self-recognition (Autotopagnosia) related to parietal lobe dysfunction. Temple (1986) investigated anomia in the animal sub-category of nouns, and Zingeser and Berndt (1990) compared action naming to noun naming in anomic patients.

Lethlean and Murdoch (1994a) ;(1994b) explored naming deficiencies in MS groups as a receptive skill. They concluded that naming disturbances might result from disruption at the perceptual level or the semantic system in language processing. However, word retrieval difficulties are reported as a cognitive deficit in MS individuals (Barrera, 2007). Hurley et al. (2009) concluded that accurate naming requires knowledge of the object, knowledge of the word that denotes the object, linkage of the object representation to its corresponding lexical representation, and the capacity to retrieve and phonologically encode the appropriate word, DeLeon et al. (2007; Mesulam et al., 2009; as cited in Hurley et al., 2009).

Dysphasia commonly coexists with MS in the neurolinguistic literature and cases of *selective deficiencies* in naming and word retrieval have also been reported. It is widely accepted in the neurological literature that selective anomias for objects, actions, symbols, and colours can occur. Clinical studies also have reported differential impairments in recognising, identifying and in naming objects presented in the visual, verbal, and tactile modalities (Geschwind, 1967; Warrington, 1975). For example, Yamadori and Albert (1973) conducted a single case study on a patient with a generalised nominal deficit (except that colours were spared) who failed to comprehend words from only two categories "body parts" and "common room" objects.

Semenza and Zettin (1989) found selective naming deficits in an anomic case unable to name any famous faces or places, while being able to name without error sets of body parts, types of pasta, fruits, vegetables, vehicles, colours, and furniture. Rohrer et al. (2008) recommend that results on naming tasks should be cautiously interpreted because patients had been found to offer no response at all or produce circumlocutions, semantically or phonologically related alternatives to the target item, either due to aberrant activation in the alternative stored word codes or in an attempt to compensate for their naming difficulty.

McKenna and Warrington (1978) studied one patient having significantly greater difficulty in comprehending *concrete* words than *abstract* words when his naming of countries was superior to that of any other explored category (i.e. colours, animals, objects, body parts); whereas *action naming* was better than *noun naming* in the case for a second patient. Similarly, Sheng and McGregor (2010) investigated action and

object naming in an SLI group and found that action naming was more affected than object naming showing immaturities in semantic representations.

Regarding word finding difficulties in MS children, Banwell, Calder, Kalb, Krupp, Milazzo, and McCurdy Smith (2003) described *non-fluency behaviours* showing verbal inaccuracy, semantic and phonological paraphasias, giving two or three alternatives, or asking for assistance, prompts and probes; and *non-verbal behaviours* indicating difficulty in recalling (i.e. hesitations, facial expressions and hand movements).

An additional naming skill suitable for children implemented by Girbau and Boada (2004) is known as *referential communication* to test comprehension, lexicon perception, and processing speed in typical school children. A child is required to recognise familiar things described orally and to guess the meaning from context impulsively or reflectively. This type of task can be used to assess receptive language in children with communication difficulties as well.

Goodglass and Kaplan (1972) reported that when assessing aphasia in adults and children, it is important to consider conversational and expository speech, auditory comprehension, oral expression, understanding written language, and writing as implemented in the Boston Diagnostic Aphasia Examination.

Yee (2005) studied deficits in *conversation skills* in Chinese schoolchildren with autistic traits. They are found to take the passive role, give no response to questions, and produce less questions and comments than affirmatives in a study on patterns of

communication and speech acts implemented in conversations. On the contrary, Sherman and Shulman (1995) found in their study that such ASD manifestations could appear in typically developing children during topic initiation, topic change and topic maintenance after taking into account gender differences.

2.3.5 The Role of Parental Observation.

In qualitative case studies, Davis and Marcus (1980) emphasised the role of family, with the mother in particular as an observer, to promote the child's language development in an appropriate manner in chronic difficulties, to enhance metalinguistic skills through the use of language, and to aid the child assessors in identifying strengths and weaknesses. Involvement of parents is of great importance especially when the child has near-normal development but requires intense interventional plans over time in several areas.

Bloch-Rosen (1999) recommends that assessment should begin with a comprehensive history, in addition to the typical practice of collecting data on early development, e.g. medical history, educational and family aspects, and areas of particular relevance to the diagnosis of ASD. These include an exploration of the onset of or first recognition of problems; practical use of language; and his/her special areas of interest. Emphasis should be placed on difficulties in social interaction, patterns of attachment to family members, development of friendships, self-concept and self-esteem, and mood presentation.

Apart from professional assessment, it is also important to seek other sources that may help to estimate a child's level of difficulties and to identify accurately specific

challenging areas in communication, expressive and receptive abilities a child faces. Therefore, it is relevant to implement reliable tools such as *Bishop's Children's Communication Checklist CCC (1998)*. The CCC (1998) is a valid research and clinical tool for evaluating generally social/pragmatic interaction deficits in children ranging between 7 and 9 years identified as having language problems without additional handicaps. The CCC (1998) can be answered by parents, teachers, speech-language therapists, and related professionals who have sufficient knowledge about the child for at least three months (Bishop, 1998).

Ketelaars (2009) stated that the CCC (1998) not only identifies children with a Pragmatic Composite score at or below 132 as having Pragmatic Language Impairment (PLI) and discriminates them from SLI children but it has also proved useful to classify children with autism, ADHD, William's syndrome, learning disorders and/or behavioural problems (Cohen et al., 1998; Geurts et al., 2004; Laws & Bishop, 2004). The fact that the CCC produces distinct profiles for different disorders is taken as evidence for its validity as a research instrument. The children identified by the CCC as having PLI were often characterised by their teachers as having socio-emotional problems, language problems or combined problems.

Ketelaars (2010) suggested not to rely solely on CCC for making a diagnosis of a child because it constitutes only a first step towards a better understanding of pragmatic language problems in the general population. More in-depth studies with detailed observations and additional test data are needed to further unravel the underlying issues concerning language and social skills (p.38). Therefore, different communication prototypes and sources of data are investigated in this research.

Charman et al. (2007) compared the Social Communication Questionnaire (SCQ), the Social Responsiveness Scale (SRS) and the Children's Communication Checklist (CCC), and found that a CCC (1998) pragmatic composite score of 132 best identified children with PLI. This cut off score also discriminated well between children with and without autism in a clinical sample, but less well among individuals with subtypes of ASD such as Asperger's syndrome or pervasive developmental disorder, not otherwise specified (PDD-NOS) and those with ADHD, Bishop and Baird (2001, in Charman et al., 2007).

Geurts, Verté, Oosterlaan, Roeyers, Hartman, Mulder et al. (2004) used Bishop's (1998) CCC to distinguish among the language profiles of ADHD, ASD & SLI in children; while Geurts (2007) later used Bishop's (2003) CCC-2 to do so through the calculation of the *Semantics Subscale* (SEM), *Coherence Subscale* (COH), and *Pragmatic Composite* (PC). On the other hand, Geurts and Embrechts (2008) found that developmental disorders (i.e. ADHD, SLI, and ASD) might differ in their language profiles when relying on parental reports than when applying Bishop's CCC-2 (2003) in clinical settings. Therefore, it is useful to evaluate the communication abilities (expressive and receptive) of children regularly in the course of development and take ADHD and ASD characteristics into account.

2.3.6 Other Checklists.

A comprehensive linguistic assessment requires looking at a child's direct verbal, non-verbal, expressive and receptive communication skills and other related skills, such as attention, memory and cognition, in addition to his/her history of language acquisition as well as behavioural, psychological and educational backgrounds. Since there is

neither assessment test nor battery of tests that is 100% reliable, using several tools and checklists is recommended (Girbau & Boada, 2004; Tager-Flusberg, Rogers, Cooper, Landa, Lord, Paul et al., 2009). Thus, this research utilises a checklist comprising the ‘Fourth Stage’ of Language Development in Typical Arab Children for ages (5-7) years constructed in Arabic by Abu Nab’a (n.d.) and designed to determine 33 basic skills in Jordanian schoolchildren (Table 2.4) for checking both linguistic and developmental skills, and is found to be appropriate because of ethno-cultural similarities between Jordanian and Syrian children in terms of the geographical location, dialect, lifestyle and history. To the researcher’s knowledge there is no published work about normal or atypical Syrian children to check the linguistic development and atypical phonological inventory. The checklist contains comprehensive sections on the acquisition of the different grammatical components of Arabic, including the phonological system and the morphological and syntactic structures of the language. It covers essential linguistic and literacy skills detected in average children taking into consideration other domains of development essential for a child’s interpersonal development, i.e. cognitive and social skills.

Table 2.4. A summary of the 4th stage (5-7 years) of typical language development in Arabic children by Abu Nab’a (n.d.).

No	Linguistic and Developmental Skills
1	Recognises 3 dimensional shapes & 6 colours.
2	Can play with a team.
3	Able to follow a three- sequence order.
4	Asks how things happen.
5	Uses and responds to salutations properly.
6	More accuracy using verb tenses.
7	Able to combine sentences together.
8	Understands more than 13,000 words.
9	Able to give antonyms.
10	Able to say the days of the week in order.
11	Can count till 30.
12	Vast increase in vocabulary.
13	Sentences length 4-6 words.

14	Able to share knowledge.
15	Able to give details in sentences.
16	Able to narrate stories properly.
17	Can sing and repeat a full song.
18	Communicates easily with adults and children.
19	Good grammatical sentences most of the time.
20	Understands directions.
21	Increased ability in description complexity.
22	Can participate in a discussion.
23	Understands more than 20,000 words.
24	Sentences of 6 words length.
25	Understands almost all time concepts.
26	Can recite the alphabet by heart.
27	Can count till 100.
28	Accuracy in grammar and morphology is almost like adults.
29	Able to compare.
30	Able to act and describe actions.
31	Begins reading and writing.
32	Able to recognise things if described orally.
33	Between 4-6 years, the child should have acquired: /z, o, j, r, h, x, s /.

Moreover, Abo Ras, Aref, El-Raghy, Gaber, and El-Maghraby (2009) constructed the *Comprehensive Arabic Language Test (CALT)*, as a Tool for Assessing Delayed Language Impaired Egyptian Children. Domains tested were phonology, semantics, syntax and pragmatic skills. Language sampling included *Spontaneous*, *Elicited* and *Language Comprehension*.

2.4 Theories for Typical and Atypical Language Development

When studying developmental communication disorders in children, it is important to look at the classical and contemporary theories on typical and atypical language acquisition and learning which consider the psychological and neurological conditions relevant to this study.

2.4.1 First Language Acquisition Theories for Typically Developing Children

Krashen (1982) distinguished between learning and acquisition defining ‘learning’ as an explicit, conscious short term process that results in learning of grammatical rules and ‘knowing about’ the language, whereas ‘acquisition’ is an implicit, subconscious long term process which results in the knowledge of a language following the stable order of acquisition. Early language acquisition theories added to our overall understanding of different aspects of the process. These theories do not conflict each other, suggesting one notion rather than another, but can be placed in a sequence, e.g. Chomsky’s theory, described as *Nativist*, shows that children's language development is much more complex than supported by the *Behaviourist’s* view due to the special biological language Acquisition Device “LAD” (Chomsky,1965).

Piaget (1970’s) argued that cognitive development preceded language development and theorised that language was simply a reflection of thought and did not contribute to the development of thinking. Unlike Chomsky and Piaget, Vygotsky's theory (1978) views language first as social communication, gradually promoting both language itself and cognition. Theorists who also follow this tradition include Bakhtin (1984); Bruner (1991) who recognise children as active learners co-constructing their worlds, and language development is part of their holistic development, emerging from cognitive, emotional, and social interactions that promote language learning.

Concerning second language learning in naturalistic settings, Fillmore (1976) examined cognitive and social factors that enhance children’s ability. Rogoff (1998) pointed out that in play, children contribute to each other’s learning as well as to their own development. Also Blum-Kulka and Snow (2004) studied the developmental

contributions of peer talk to language learning and socialisation through mutual observation and interaction, which are also compatible with Vygotsky's theory (1978) of how higher mental functioning in humans, such as *thinking, reasoning, and voluntary attention*, is derived from interaction and participation in social life (Vygotsky, 1981; Wertsch, 1991).

Furthermore, intentionality theories have existed since Aristotle, presenting a model of language development that draws on Piaget (1969), acknowledging the importance of cognitive development. However, 'intentionality' emphasises holistic development including emotions and other aspects of growth and learning. It considers the adult's role, actions and speech with the child between 18 months and four years of age. Increases in cognitive capabilities consequently give children better understanding of both verbal and non-verbal categories leading to the use of fewer 'over-extended categories'.

Apart from the *Localisationists*, as Landreth and Richardson (2004), Lecours et al. (1984, p. 223) who ascribe language to specific well-known areas (*i.e. Broca's and Wernicke's*). Geschwind's (1984) call among neurolinguists twenty years ago, *Connectionists*, as Christiansen (1999); Elam (1998), in a new approach for explaining language learning, processing and production focus on integration among different brain areas. Indeed, the literature is full of positive results of recovery of right hemisphere (RH) homologues, as well as prefrontal, parietal, temporal regions, both cerebellar and sub-cortical. Findings suggest integration among different brain areas and correlation between raw anatomic brain knowledge and neurolinguistic

discoveries, see Al-Sibai (2004). This gives space to discuss the nature of brain plasticity in children in the next section.

2.4.2 Theories of Atypical Language Acquisition

Lenneberg (1967) recommended the search for the biological basis of mental grammar and the language faculty, which underlies much neurolinguistic research when describing the communication difficulties in children. Several theories are considered to explain common characteristics among neuropsychological conditions relevant to this study.

(a) The Regression Hypothesis. Regression of skills is reported in the literature of some ASD patients and acquired aphasic cases (Tuchman, 2006). Parents of autistic children most often report the first sign to be either the absence of language, or the loss of language that had begun to develop in the second year of life, Kurita (1985; Lord & Paul, 1997, as cited in Tager-Flusberg, 2008). Accordingly, a linguistic theory has to be adopted, i.e. *the Regression Hypothesis* by Jakobson (1956), which is still the basis for much research (see Fromkin, 1997) who identified that “any description and classification of aphasic syndromes must begin with the question of what aspects of language are impaired” (p. 13). This hypothesis helps interpret the emergence of acquired disorders, which appear after a period of normal linguistic development.

(b) The Central Coherence Theory. Jarrold, Butler, Cottington, and Jimenez (2000) mentioned Frith and Happé (1994); Frith’s (1989b) definition of “Central Coherence” as the normal tendency to integrate local information in the search for global meaning to focus on the whole rather than the parts of any stimulus. Begeer, Rieffe, Terwogt,

and Stockmann (2003) cited that ASD children lack central coherence known as the theory of mind (ToM) causing difficulty understanding behaviours regulated by mental states, such as *beliefs*, *desires*, and *intentions*, and not by objective reality (Baron-Cohen, Tager-Flusberg, & Cohen, 1993). Potential links between ToM deficits and central coherence bias have also been considered by Frith (1989b); Happé (1994b); Happe´ and Frith (2006), but these domains are typically viewed as separate from one another (see Jarrold et al., 2000).

The right hemisphere (RH) plays a specific role in creating coherence and integrating different sources of information to produce a meaningful whole. Sabbagh (2002) concluded that children with Right Hemisphere Dysfunction (RHD) exhibit deficits in understanding the communication intentions of their interlocutors similar to that of autistic children and the ones with frontal lobe dysfunction have impairments in executive functions (Martin & McDonald, 2003).

(c) The Dysconnectivity Hypothesis. Coleman (2003) cited several scholars who consider the view of the *Brain Dysconnectivity Hypothesis*, such as McAlonan et al. (2005) based on Geschwind (1968), who introduced the concept of the “Cerebral Dysconnection Syndromes” suggesting lesions in parts of Broca's and Wernicke's areas to cause apraxia, prosopagnosia, colour anomia, and amnesia. For example, cases of Wernicke's aphasia or Broca's aphasia were originally based on reports of the effect of lesions in a localised brain area. However, different lesion sites produce differential language breakdowns that reinforced the search for localised areas of the brain and led to the construction of diagrams and models representing anatomical and functional centres and connections between them (Fromkin 1997).

The ***Inferior Parietal Lobule (IPL)***, also known as, “Geschwind’s territory” includes the *angular gyrus* and *supramarginal gyrus*, which are connected by large bundles of nerve fibres to both Broca’s area and Wernicke’s area. Information might therefore travel between these last two areas either directly, via the *arcuate fasciculus*, or by a second parallel route that passes through the inferior parietal lobule (Dick & Tremblay, 2012). The advent of brain-imaging technologies confirmed scientists’ beliefs regarding the anatomical and functional boundaries of Broca’s area, Wernicke’s area, and the (IPL) change a great deal. For example, Fridriksson (2010) found that the Parietal lobe is the epicentre of anomic aphasia. Figure 2.5 shows the (IPL) and the integration among different brain areas for processing and producing language, distributed in the cerebral cortex beyond the Broca and Wernicke’s areas.

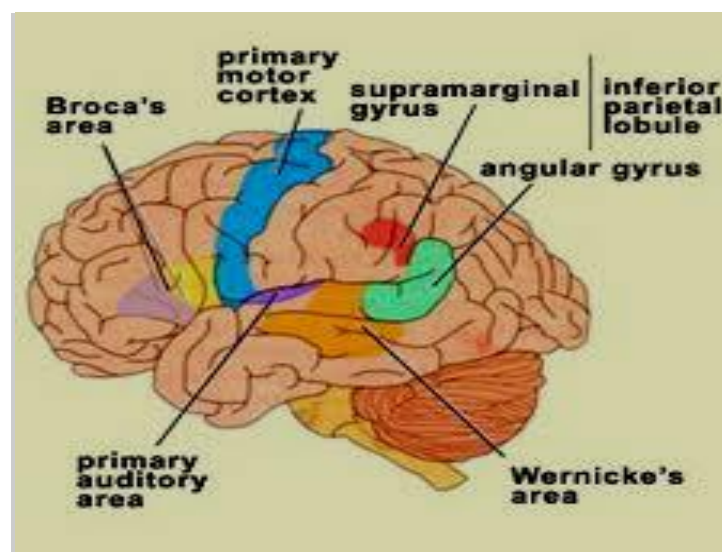


Figure 2.5. The IPL and the integration among different brain areas in processing language.
Source: http://thebrain.mcgill.ca/flash/a/a_12/a_12_cr/a_12_cr_con/a_12_cr_con.html

Uhlhaas and Singer (2006), on the other hand, investigated more serious brain disorders, such as Schizophrenia, Epilepsy, Autism, Alzheimer’s, and Parkinson’s diseases associated with abnormal neural synchronisation in the shed of the dysconnectivity hypothesis. The data suggest close correlations between abnormalities

in neuronal synchronisation and cognitive dysfunctions emphasising the importance of temporal coordination. There is also evidence for functional abnormalities and metabolic dysconnectivity in ‘social brain’ circuitry in some conditions, but the structural basis has proved difficult to establish reliably when correlated with a single anatomical location in neuropsychiatric disorders.

On the contrary, *Connectionism*, as an interdisciplinary approach integrating raw anatomic brain knowledge with new neurolinguistics discoveries, focuses on learning from experience gained in relation to one’s environment and then storing what is learned in a form of weighted connections between neurons Elman (1998; Jagota, 1998; Christiansen, 1999, in Al-Sibai, 2004).

(d) The Right-Shift Theory. In a useful review, Andersen, Garrison, and Andersen (1979) related non-verbal communication to the RH processing, while verbal communication to the LH processing (as cited in Buck & VanLear, 2002, p. 524).

Alexander and Annett (1996) suggest the language shift to the RH in atypical cerebral dominance compatible with the Right-Shift theory. For example, many studies have shown that brain atrophy is present from the earliest stages of MS and tends to progress with the evolution of the disease (Miller et al., 2002). In cases of slowly progressive brain damage and long disease duration the RH can be integrated into the language network and compensate for the loss of LH language function. Therefore, Thiel et al. (2006) concluded that the shift of language function from the LH to the right one is correlated with disease duration and language performance in right-handed patients.

(e) **The Advantage of the Age Factor**, known as the *critical period* (Lenneberg, 1967) or the *sensitive period* (Elman et al., 1996) is remarkable for successful L1 acquisition and recovery from lesions. According to Bishop (1988), the majority of children suffering left hemidecortication or brain damage within the first years of life do not develop aphasia. The ability to recover rapidly decreases with age and chances are best before the age of ten. Furthermore, there is a strong correlation between early damage to the language areas and RH language specialisation due to the fact that the child brain is very plastic, and functional reorganisation is possible in the very early stages of life. Bates (1999) also confirmed that children are never aphasic and recovery was at as normal a rate as typical children when she studied patterns of unilateral lesions and their impact on language outcomes.

To conclude, children are prone to develop coping strategies to overcome difficulties in attention, learning, memorising, and social adaptation although effective progresses depend on integrated efforts of personal intelligence, parental reinforcement, familial scaffolding, social understanding, pedagogical atmosphere, and literacy knowledge. Therefore, it is significant to the idea of early assessment and identification of speech and language impairments to plan suitable intervention that will help a child catch up with absent skills and his/her first language acquisition.

2.5 Communicative Competence

In the applied linguistic literature, the term “Competence” has been differently interpreted by many writers (Taylor, 1988). Therefore, in order to make a distinction between *Competence* and *Performance*, Weigl and Bierwisch (1970) led to the suggestion that “aphasia syndromes in general are to be understood as disturbances of

complexes of components or subcomponents of the system of performance, while the underlying competence remains intact” (as cited in Fromkin, 1997, p.15). They did however, suggest a possible exception to this - agrammatism - when it effects both speech production and comprehension and concluded that “competence and performance must be psychologically different aspects of the general phenomenon of speech behaviour” (Fromkin, 1997, p.15).

From another point of view, Fay and Schuler (1980); McLean and Snyder-McLean (1978) stated that *Communicative Competence* is built upon the acquisition of several prerequisite skills, such as attending to and interacting with the physical environment; actively participating in social interactions with other individuals; and understanding and using expression forms. Speech and language problems are more serious when emerging in middle childhood having long-lasting effects, especially when both expressive and receptive skills are affected (see Beitchman et al., 1994).

The term “Competence” is very heavily marked by Chomsky’s application to a monolingual non-variational theory of language; the other “Proficiency” can be an alternative which applied linguists and second language teachers are trying to promote, that is the ability to use a language whether the first or second while Stern (1983) implicitly advocated the use of *Proficiency* as a substitution for *Competence* especially when referring to non-native competence in second language learning and teaching. Accordingly, the term “Proficiency” as a middle term between “Competence” and “Performance” can be adopted including the notion of ability (as cited in Llurda, 2000).

According to *The National Capital Language Resource Centre (NCLRC)*, **Communicative Competence** is made up of four competence areas: *linguistic*, *sociolinguistic*, *discourse*, and *strategic*. Linguistic Competence is to know how to use the grammar, syntax, and vocabulary of a language. Sociolinguistic Competence is to use and respond to language appropriately, and the relationships among the people communicating. Discourse Competence is how to interpret the larger context and construct longer stretches of language to make up a coherent whole. Finally, Strategic Competence is to recognise and repair communication breakdowns, how to work around gaps in one's knowledge of the language, and to learn more about the language in context.

NCLRC also confirmed that in the early stages of language learning instructors and students might want to keep in mind the goal of communicative efficiency. Learners should be able to make themselves understood using their current proficiency to the fullest, try to avoid confusion in the message or offense to communication partners, and to use strategies for recognising and managing communication breakdowns.

Fern-Pollak (2008) stated several factors that have to be taken into account to be considered proficient in a language. Among these are the linguistic properties of the languages that may influence the occurrence of impairments, and the function of cortical structures associated with language processing in cases of language impairments associated with brain damage.

Based on the above, the development of *Metalinguistic awareness* is a crucial component that allows a child to be able to competently select and use communication

compensatory strategies appropriate to his needs, which the literature confirms can co-occur in some *developmental expressive disorders* (Schwartz & Solot, 1980) and in *dyspraxia* (Purcell, 2006). The term “Metalinguistics” is the ability to think about language, talk about it, and use it in appropriate ways. For example in social situations, listeners use vocabulary, variable intonation, tone, volume, and pace. In addition, they consider when to ask questions and when not to, and have the awareness of who talks first and who has the final say during a conversation, debate or perhaps an argument. Metalinguistic awareness also uses language behaviour that is opportune to the situation, as body language, facial expressions, eye contact, gesture, or touching. Therefore, *speaking* (e.g. self-talk, predicting, paraphrasing, and summarising) and *listening* skills need to be reinforced at home and school in order to interact confidently in a variety of environments, such as family, school, friends, and community.

2.6 Summary

In this chapter, the literature reviewed shows a gap in developmental psycholinguistic and neurolinguistic studies when adapting parental observation methodology. This methodology assisted in capturing deficiencies and incompetence in this challenging case of comorbidity. Very few reviewed studies focusing on topics related to this study are conducted on Arab school-aged children. Thus, this study assisted in understanding aspects in child language acquisition and learning when neurological and psychological comorbidity is occurring in an Arab child speaking in Aleppine Arabic dialect. Therefore, this case is exceptional in terms of its circumstances and settings.

The chapter is divided into themes covering psychiatric and neurological communication disorders relevant to this single case under study, and approaches and methodologies found in previous studies. In addition to some linguistic aspects of Standard Arabic and features of Syrian Aleppine dialect specifically; child-specific communication strategies and difficulties backed by theories on the typical and atypical language acquisition and learning processes are presented. Finally, fundamental linguistic concepts on communicative competence, performance, proficiency and metalinguistic awareness, and their implementations on the model under study are covered as well.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This study uses primarily the observation method for gathering evidence-based qualitative data. The detailed observation provides in-depth insight into the communicative competence of the subject in different areas of language and speech. The analysis will focus on the subject's communication abilities and strategies, and will also take into consideration Arabic cultural aspects. Field notes of the subject's verbal and non-verbal communication will be recorded by the researcher (the mother) in various home-contexts. For this purpose semi-structured tasks and activities will be prepared by the researcher in advance to elicit daily communication, which will be audio taped, transcribed and analysed according to the research objectives set.

3.1 Research Design

The research design is that of a case study which employs a qualitative approach using the observation technique to gather data representing the child's communication output in daily activities at home. Audio-taped recordings of the child's linguistic and communicative abilities will also be documented. Since no one methodology is considered the best when dealing with developmental disorders in general and autistic children specifically, experts in developmental language studies, e.g. Brown (1973); Kelly and Rice (1986); Tager-Flusburg (2008) recommend the use of a combination of methods, protocols, and a variety of tasks as the most effective way to obtain data for describing the communicative ability of such children.

As such, for the purpose of ensuring that the analysis is valid, reliable and objective, the observation data will be triangulated with information gathered from:

- (1) The child's responses in spontaneous, elicited and task-oriented activities at home.
- (2) His medical and psychological prognoses, obtained from his doctors.
- (3) His teachers' assessment of his academic performance.
- (4) A formal assessment procedure implementing Bishop's Children Communication Checklist (1998), which will be administered to the child as a qualitative tool to discriminate the type and the degree of difficulties the child faces in communicating with others. These methods and types of data gathered in this study can be illustrated in Figure 3.1.

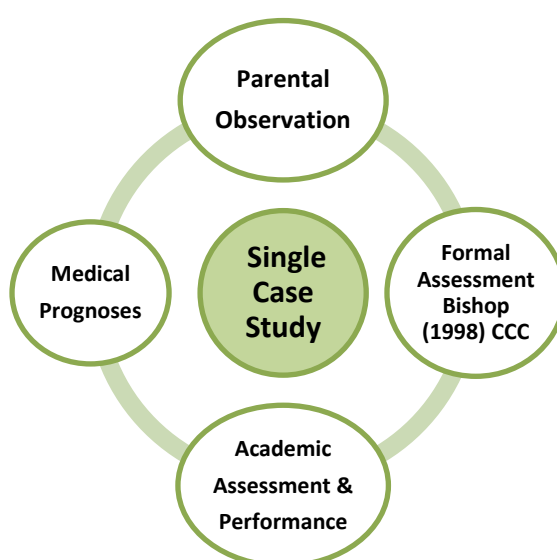


Figure 3.1. The four main methods and types of data used in this study.

3.2 The Subject

The subject (AE) is a seven-year-old Syrian Arab male child, a monolingual native speaker of North-Syrian Aleppine Arabic dialect.

AE presents with complex comorbidity affecting his social, emotional, academic, and communicative competence with various difficulties characterised with strengths and weaknesses. The medical and psychological diagnoses and prognoses of the subject confirmed by several paediatric professionals are presented in Figure 3.2.

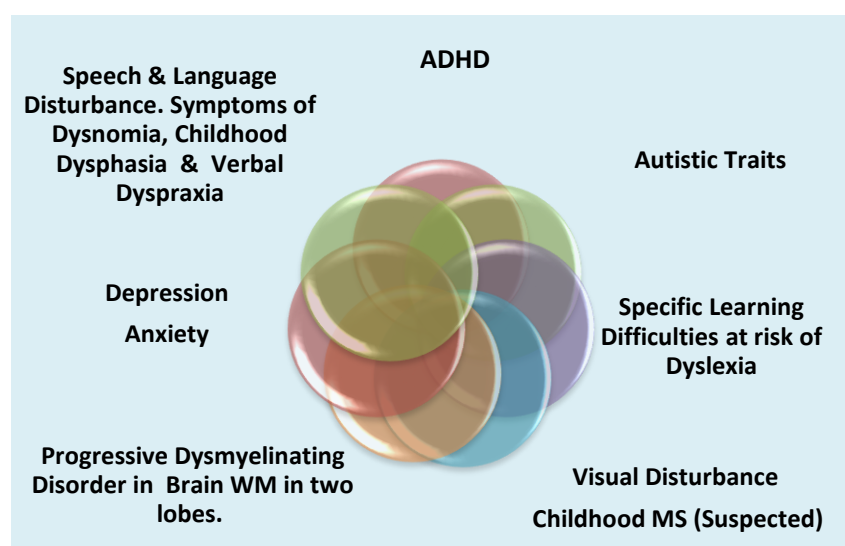


Figure 3.2: An illustration of the subject's comorbidity, psycho-diagnoses and medical prognoses between ages 6;10-7;4 years.

Over the last two years, AE improved by gradually acquiring literacy skills (reading and spelling), but still shows difficulties learning and retrieving new verbal knowledge, memorising texts, songs and conceptualising. He also exhibits poor planning and self-organising skills.

3.3 The Instruments

As already stated in Section 3.2 (Research Design), the main data is obtained through a systematic observation over a six month period and the use of formal (i.e. CCC-1998) and informal assessment (pre-determined checklists, rating scales and written analysis) to describe the child's verbal and non-verbal communication style and

strategies. Each of these instruments is designed to gather data that will answer the research questions presented in Chapter 1.

Different types of observation are carried out by the researcher over a period of six months. The first involves the use of a commercial checklist, the Bishop's (1998) Children Communication Checklist (CCC). The second observation involves getting the child to participate in a range of pre-set activities and tasks to obtain the following communication data from the child, *elicited* and *task-oriented*. The subject's *spontaneous* participations in conversations and the researcher's comments on changes in the subject's communication ability are documented using paper and pencil after they occur.

3.3.1 Bishop (1998) Children's Communication Checklist (CCC).

The CCC (1998) is a formal commercial tool that assesses language and communicative competencies in children between ages (7-9) years. The CCC comprises 70 items that are divided into 9 sub-scales as presented in Table 3.1.

Two sub-scales assess aspects of language structure (*syntax and speech*); two assess aspects of autistic behaviour (*social relationships and interests*); and five assess aspects of pragmatic communication (*inappropriate initiation, coherence, stereotyped conversation, use of context, and rapport*) which can be combined into a **pragmatic composite** (subscales C-G). The 70-item rating scales can be scored automatically for investigating language and communication impairments, each item is scored 0 (does not apply), 1 (applies somewhat), 2 (definitely applies) or missing value (unable to

judge). Bishop's original criterion for interpreting the results is obtained directly from the tool's author for providing the standard scores and percentiles for interpretation.

Table 3.1. Children's Communication Checklist (CCC) Subscales, Bishop (1998).				
Subscales		No of Items	Domain	Theme of Behaviour Making up Subscale Item
A	Speech	11	Structural	Phonological & speech abilities. Articulation & intelligibility.
B	Syntax	4	Structural	Word order, grammatical markings.
C	Inappropriate Initiation	6	Structural	Aspects of turn-taking. Making sense in conversation through proper referencing & sequencing of people & events.
D	Coherence	8	Pragmatics	Indiscriminate, talks too much, does not initiate topics about reciprocal interests, repetitive initiating.
E	Stereotyped Conversation	8	Pragmatics	Versatility of conversational topics & use of different words.
F	Use of Context	8	Pragmatics	Use & understanding of social rules governing communication, e.g. politeness, sarcasm & humour; ability to correctly interpret others, including abstract language concepts.
G	Conversation Rapport	8	Pragmatics	Use of gestures and facial expressions.
H	Social Relationships	10	Autism/ Social	Interest in & relation with peers. Social behaviour related to an autistic disorder.
I	Interests	7	Autism/ Social	Restricted and/or repetitive interests, flexibility. Specific interests related to an autistic disorder.
Total		70		

Bishop suggests that the Pragmatic Composite can be used as an objective criterion for subdividing groups of language-impaired children in studies contrasting subgroups with Pragmatic Language Impairment from those with more typical SLI. She included the studies that contrast these groups on potential etiological factors (*e.g. family history and birth trauma*), or in terms of associated non-language characteristics (*e.g. "right hemisphere" deficits, or executive function impairment*). The CCC (1998) subscales can be used to explore behavioural phenotypes in a range of disorders where

pragmatic deficits have been described, such as William's syndrome, Turner's syndrome, or Fragile X syndrome.

Bishop's *Children's Communication Checklist* CCC (1998) will be used for evaluating spontaneous and elicited abilities and to investigate language and communication impairments in the subject. The checklist will be marked independently by three observers who are close to the child, both parents and an older cousin (an undergraduate student residing in Kuala Lumpur at the time of answering the checklist). In order to obtain high inter-rater reliability, the three raters have high English proficiency to maintain accuracy and full understanding of the checklist.

A copy of Bishop's CCC (1998) is attached with this study (see Appendix A.1). In addition to this, a reproduction of the CCC (1998) enlarged by the researcher to facilitate ease of marking was provided to three raters. Their responses are plotted on the accompanying Excel file and results are calculated automatically and appear as numerical values, which will then be analysed according to the author's criteria for interpretation obtained from Bishop, the author of the tool.

3.3.2 Spontaneous, Elicited, and Task-Oriented Protocols.

To address Research Questions 1 and 2, AE is observed over a period of six months (April - October 2009) when he is between ages 6;10 and 7;4 years. The observations are carried out mainly at home (*i.e. during meal times, homework, and playtime*) and during outdoor activities on weekends as well to document the subject's spontaneous speech and linguistic behaviour. Spontaneous speech is difficult to capture on audio or video recordings because AE experiences hyperactive and impulsive behaviour at the

time of the data collection period. Communication events are mainly obtained from the child through different activities and tasks, which produce spontaneous, elicited, expressive and receptive data.

Several tasks were selected in advance to obtain the required communication prototypes. Each of these tasks is designed to examine a certain linguistic ability or communication genre that can reveal the child's linguistic strengths and weaknesses.

Additional domains affecting communicative competence are revealed by other screening procedures, such as *A Summary of Language Development in Typical Arabic Children: Fourth Stage (5-7) years* by Abu Nab'a (n.d.) -translated from Arabic into English- a checklist that takes into consideration other domains of development essential for child's interpersonal development i.e. cognitive and social skills (see Table 2.4).

The data gathered is documented, transcribed phonologically or orthographically and translated to English. The outcomes are classified according to *form, content* and *use (function)* for interpretation. Subsequently, the third research question is answered after identifying areas of strength and weakness in the subject's communicative behaviour and comparing results against typical peers of the same chronological age and Aleppine dialect.

3.4 Data Gathering Procedures

The complete vocabulary inventory of the child is gathered at age 6;10 years to document his vocabulary span at a certain point. On the other hand, a list of AE's

immature and distorted words (mostly syllabic substitutions and reversals) are documented on daily basis as they occurred indicating the age range between (5-8 years) at which each appeared in his speech, and his ability to/not to repair. Over the period of six months (from age 6;10 till 7;4) assigned for this study, these words are collected, transcribed, translated into English then classified and grouped according to the phonological processes seen in preschoolers and the chronological age of occurrence.

Meanwhile, spontaneous communicative events are recorded using paper and pen, while elicited communicative events are video or audio-recorded over a period of six months. In order to capture these recordings, the researcher (the mother) acts as the interlocutor and the child's sister as the recorder. Pre-task explanations and post-task feedback are delivered to the child immediately. Incorrect responses are prompted, while correct ones, prompted and unprompted, are reinforced with praises. These tasks are selected in advance from different Arabic and Western sources for stimulating speech and facilitating data gathering in order to draw a holistic picture of the child's communicative abilities. The task-based activities are categorised into two, ***Expressive*** (Figure 3.3) and ***Receptive*** (Figure 3.4). Consequently, the documented answers then assist in answering the first and second research questions. The data is triangulated by collecting three representative samples from each task, adopted from literature on speech and language disorders (i.e. *profiles of ASD, ADHD & Aphasiology*) to present data that best describes AE's communicative abilities in the Syrian Aleppine dialect. The data analysis describes the following communicative behaviours:

- Spontaneous speech during expressive activities and tasks (e.g. role-play activity and narrations) and spontaneous participation in conversations.
- Phonologically distorted words articulated with substitution or metathesis.
- The range of vocabulary, and accuracy of his syntax and grammatical patterns.
- Retrieval abilities showing his confidence, dysfluency markers, use of pauses, fillers, hesitation and self-repair strategies.
- Odd utterances, jargon words and types of Echolalia (immediate or delayed).
- Comprehension in different social contexts.
- Maintenance of topic and relevant responses in conversations.
- Paralinguistic and non-verbal behaviour, e.g. turn-taking.
- Sociolinguistic awareness, the amount of background information he gives, how he addresses his interlocutor in conversations and narrations.
- Overall social appropriateness and in the Syrian Arab culture, e.g. the values of respect and hierarchy, politeness markers, apology strategies and the retrieval of Islamic rituals and social sayings.

(a) Expressive Language Activities and Tasks

Five types of Expressive language are selected to investigate coherence, retrieving words and organising sentences of age -matching thoughts and ideas, as well as cognitive abilities and emotional difficulties encountered (e.g. frustration, readiness and mood state). These types of Expressive data are presented in Figure 3.3.

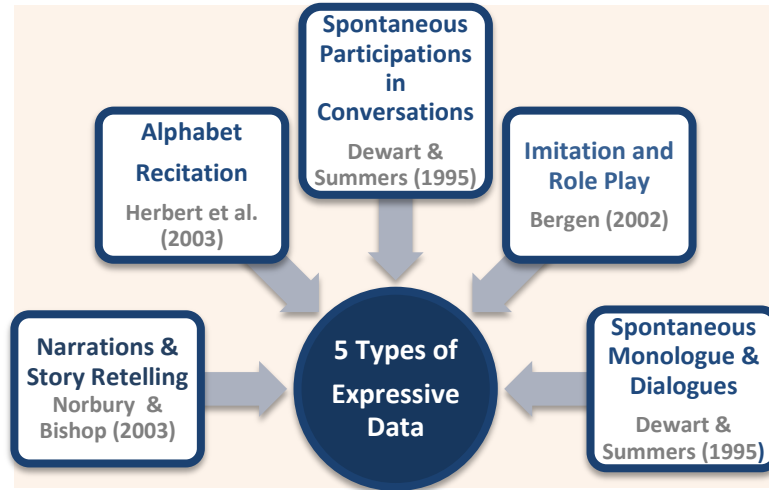


Figure 3.3. The five different types of Expressive data.

1. Narrations and Story Re-telling. Three tasks were assigned:

(i) Recalling a real incident from the past. The aim of this task is to document the child's ability to present events coherently from long term memory and to investigate his pronunciation quality, verb tenses, maintenance of topics, overall expressiveness, overgeneralised lexical items, special interests, word finding difficulties, repair strategies (e.g. hesitations, filled pauses and incomplete sentences), and non-verbal language, e.g. A friend's injury at school time.

(ii) Numbering Pictorial Stories. To create a coherent sequence of events, for visual discrimination, reasoning and comprehension skills. Two pictorial numbering stories are chosen from the Saudi primary curriculum (grade 2) reading textbook.

1- The Fox and the Crow.

2- The Rabbit and the Turtle.

(iii) **Re-telling a Story.** A well-known story taken from *Ladybird's Favourite Bedtime Tales*, "Goldilocks and the Three Bears" is narrated to the child by his mother. The child re-tells the story after a few minutes. This task aims at investigating the child's comprehension and ability to communicate his understanding considering his partner's needs, in addition to retrieval abilities to store events and retrieve names of characters and places from short term memory. Furthermore, his auditory and visual memory span and non-verbal language performance to check if weaknesses are in retrieving events or names or both. Slight adjustments are applied to the narration to fit the Arabic culture, e.g. types of food.

2. Spontaneous Participations in Conversations. Three different recorded contexts at home during mealtime are selected to investigate topic maintenance, selective attention problems, and non-verbal elements used, e.g. aspects of turn taking suggested by Dewart and Summer (1995).

3. Imitation and Role Play Tasks. AE is instructed to imitate the role of a 'Pizza Chef', and that his family members are going to come to his restaurant for pizza when it is ready. AE is involved in the preparation process and in serving the pizza. The aim of this task is to investigate the child's ability to use speech acts and to display imagination and creativity. The task also provides evidence of the child's ability to consider his audience using verbal expressiveness, in addition to the use of non-verbal and paralinguistic cues (e.g. *movement and positioning, posture, gesture, facial expression, eye contact, touch, and smell*). Pretend play in children's give insight about their cognitive, social, and academic development (Bergen, 2002), and deductive reasoning and social competence (Whitebread & Jameson 2010).

4. Spontaneous Intrapersonal Monologues and Dialogues. Investigating linguistic behaviour during AE's homework time when writing and copying, spontaneous interpersonal monologues took place, and then an unexpected shift to spontaneous dialogues is recorded by the researcher using paper and pencil in an attempt to describe a type of everyday interaction listed in Dewart and Summers (1995) pragmatics profile to investigate children communication skills.

5. Alphabet Recitation. Singing a familiar song is an indication of the child's expressive abilities, letter name knowledge, memory, re-calling, accuracy, fluency and prosody. AE is required to recite the Arabic Alphabet by heart, a well-known child song for assessing expressive dysphasia and looking at rhyming and retrieval ability for familiar songs, and differences between speaking and singing (Herbert, Racette, Gagnon & Peretz, 2003).

(b) Receptive Language

The following five receptive tasks are selected to investigate AE's comprehension, cognitive abilities, and coordination of motor outputs, see Figure 3.4.

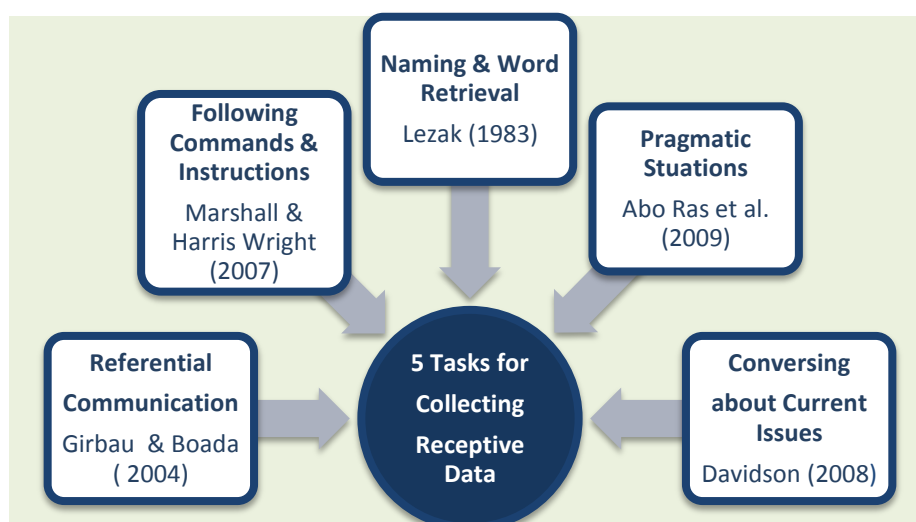


Figure 3.4. Tasks for Eliciting Receptive Data

1. Referential Communication. Referential communication is tested through an experimental task, an idea adopted from Girbau and Boada (2004), to give insight about cognitive and linguistic competence. AE listens attentively by minimising distractions to descriptions of three familiar objects chosen by the researcher, then he is required to name them orally by guessing the word from context (Table 3.2). The purpose is to detect comprehension, imaginative abilities and semantic memory. The task is also meant to investigate the time it takes to scan for alternatives and his method of response, impulsively or reflectively.

Table 3.2. Referential Communication Task.	
Description	Answer
Its shape is rectangular, placed on the wall, and it exhales either hot or cold air.	<i>The air conditioner</i>
It is solid, it has four legs, and we put things on it.	<i>The table.</i>
It has a round face, we hang it on the wall, it has two hands, and 12 numbers.	<i>The clock.</i>

2. Following Commands and Instructions. In order to investigate the child's comprehension, auditory memory, working and spatial memory, and how fast he can differentiate between his left and right body parts. AE is given three commands, presenting spatial directions to distinguish left/right (Autotopagnosia), and sequential distinctions between before/after that necessitate attention, comprehension, fast response or reaction. Receptive items chosen for this task are suggested in Kentucky Aphasia Test (KAT) reviewed by Marshall and Harris Wright (2007), e.g. Make a punch in your right hand/ Clap your hands then hold your left knee.

3. Naming and Word Retrieval. Because AE's early linguistic history suggested the presence of delayed lexical development and around age seven signs of dysnomia appeared in his speech associated with initial MS onset, it is crucial to investigate naming skills as a verbal linguistic function when screening for communication difficulties as suggested by Lezak (1983);(1995). Moreover, the investigation of naming behaviours reveals the use of strategies to conceal lack of knowledge or retrieval difficulties (e.g. non- verbal cues, delayed echolalia), and the repetition of linguistic prototypes and restricted grammatical patterns favoured by ASD children (Gupta & Singhal, 2009; Tager-Flusberg, 2008).

(a) Naming Skills Observed in Spontaneous Speech. AE regularly and consistently mispronounces names of familiar people, his preferred food items, objects, names of landmarks, and familiar countries he mentions frequently, but ironically, names of certain objects of his special interests are unaffected by this disturbance. Such deficiencies are apparent in his spontaneous speech, monologues and dialogues that will be revealed in the next chapter.

(b) Elicited Naming Ability. AE is required to name clothes, colours, body parts, means of transportation, animal objects versus pictorial animals, and action verbs. Props are used by the mother to aid retrieval and conceptualising when he shows confusion. These tasks look at recurrence of confusion, inaccuracy and ambiguity in naming and retrieving semantic lexicons in addition to “Overgeneralisation” (Gershkoff-Stowe, 2002) that should suppress at early stages of lexical development.

(i) Naming Clothes: AE is required to name 15 kinds of casual clothing and footwear.

(ii) Naming Colours: Adopted from a study by Jefferies and Lambon Ralph (2006).

(iii) Naming Body Parts: Naming the child’s own body parts verbally adopted from a study by Shinobu et al. (2000); Hurley et al. (2009) to reveal how the child recognises his own identity.

(iv) Naming Means of Transportation: Since AE has a special interest in inanimate objects, the researcher investigated AE’s ability to identify other categories of objects, such as subtypes or brands of cars, aeroplanes or ships, rather than the items he mentions frequently as lights, flags, weapons and electronic devices.

(v) Naming Animal Objects versus Pictorial Animals: AE is required to name 13 species of animal objects and animals presented in a pictorial encyclopaedia, adopted from Temple (1986).

(vi) Naming Action Verbs: Adopted from a study by Zingeser and Berndt (1990), on 5 aphasics who had been tested for their proficiency in naming actions along with other nominal categories. AE is asked to name 18 present tense verbs, these are crying, dancing, swimming, drawing, fishing, flying, hugging, jumping, opening the door, playing soccer, pointing and shouting, riding a motorbike, running, singing, skating, surfing, playing skipping rope, and diving.

4. Responding to Different Textual Pragmatic Situations. Ten textual pragmatic situations are selected from the Comprehensive Arabic Language Test (CALT), a tool

for assessing delayed language impaired Egyptian children by Abo Ras, Aref, El-Raghy, Gaber, and El-Maghraby (2009), and modified to the Syrian Aleppine dialect instead of the Egyptian dialect. Each situation is dictated orally by the researcher requesting AE to give a suitable response or reaction. The purpose is to show AE's comprehension, variety of speech acts, use of politeness markers, proper choice of genre, and level of formality, and his consideration of his partner's needs, in order to have insight about his pragmatic competence through appropriate responses.

5. Conversation Skills. Conversing with the child about past and current issues is considered crucial for investigating impairments in turn taking, attention and topic maintenance. For this purpose, twenty-two open-ended questions on eight different topics are videotaped in two sessions on two different days. Questions (1-7) on one day, and questions (7-22) on another, selected and translated from: *Top 50 Open-Ended Questions for Sparking Conversation with Kids* by Davidson (2008). The aim of this task is to elicit receptive data by encouraging speech and building a relationship with a child sharing information about his/her early childhood and school experiences, personal feelings and opinions.

3.5 Data Collected from Formal and Professional Sources

Since this study is of risk of biasness and high subjectivity, formal assessment and diagnoses performed by the child's psychiatrists, neurologists and other medical and educational professionals are obtained to triangulate the data and support findings reached by Bishop (1998) CCC and other sources.

3.5.1 Medical Reports and Formal Assessment Results

Over a period of 18 months in Malaysia, between ages (6;0 -7;6) years, the subject attended several paediatric clinics at University Malaya Medical Centre (UMMC). Five formal assessment tests and checklists were implemented, i.e. Dyslexia Screening Test / Comprehensive test of Non-Verbal Intelligence / DAP:IQ / Connor's Rating Scale (Short Version)/ Gilliam Autism Rating Scale (GARS) in order to decide on a diagnosis and obtain the medical report (Appendix A.17). Other results (e.g. EEG, blood tests) are kept confidential in AE's file at UMMC. Figure 3.5 shows the formal assessment procedures AE went through, his etiology and prognoses collected after age 8 years from different doctors in different countries during the writing stages of this research.

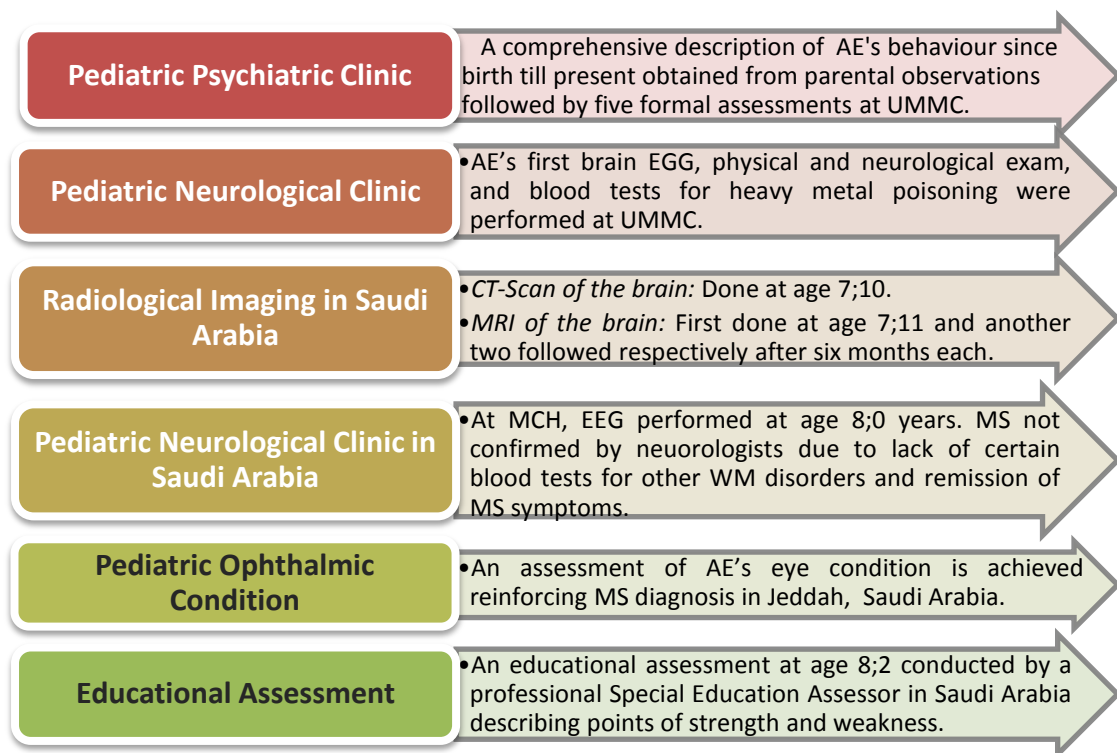


Figure 3.5. Formal Assessment Procedures.

3.6 Data Analysis Procedure

The combination of results obtained from checklists, rating scales, answers of tasks, and the researcher's written analysis formats are collected for qualitative observation technique. All observation outcomes from the different types of data collected yield accurate insights into the child's communication difficulties and strategies in different environments. Data will be analysed to show different communicative behaviours at a cross-sectional point (6 months) of the child's life between ages 6;10 and 7;4 years. Some of the same variables may appear in similar social contexts, but each environment has its specific communication purpose, demands and design that the others do not.

Responses from the task-based activities will be compared to signs seen in clinical manifestations for establishing reliable written appraisals describing the child's strengths and weaknesses. The researcher's interpretation uses tables and charts to define concepts, study a linguistic phenomenon and its degrees, and find associations between themes and the research objectives and the themes that have emerged from the data themselves as well. Descriptive correlative conclusions will be reached from observations, descriptions and documentations by establishing relations between several variables that have impact on the child and his communication outcomes. Finally, AE's areas of strength (compensation strategies) and weakness in speech and language are identified along with his overall communicative competence.

3.6.1 Analysing the Child's General Communicative Competence.

Results reached from answering Bishop's Children's Communication Checklist CCC (1998) are interpreted according to Bishop's criteria of interpretation. These results are

supported by findings gathered from expressive and receptive task answers (e.g. conversations, narrations and story re-telling), other sources of data (e.g. teacher assessment, doctors diagnosis, medical prognoses), and the subject's phonological profile and drawings; all of which will enable understanding of the subject's communicative competences.

3.6.2 Analysing Phonological Disordered Processes.

The child exhibits a speech problem, confirmed by analysing Bishop's CCC (1998) and doctors' observations, but his speech was not professionally assessed due to reasons mentioned in chapter one (1.5). It is therefore essential to look at the different phonological processes produced by the child beyond expected age. For this purpose, several tools designed for preschool children will be used, such as *the Phonological Assessment of Child Speech (PACS)* by Grunwell (1985a); *the Phonological Analysis of Children's Language (PPACL)* by Ingram (1981) and *Assessment of Phonological Processes (APP)* by Hodson (1980), and Smit (2004). The child's specific phonological profile along with his different phases of development will be presented and discussed in chapter four.

3.6.3 Analysing Verbal Communication Productions.

This section will focus on the verbal communication productions of the subject between ages 6;10 and 7;4 years, and will comprise different components and areas of linguistic development. Lahey and Bloom (1978) and Lahey (1988) in their framework for disordered language categorised impairments under: *Form*, *Content*, and *Use*. Specific impairments found in AE's communicative behaviours are selected from Lahey's (1988) original framework and presented under the following subdivisions.

Table 3.3 Selected areas of linguistic impairments relevant to this case, adopted from Lahey's (1988) Framework on disordered language in children.		
I. Form	Phonology	Phonological Processes.
		Perceptual abilities (acuity / discrimination).
		Voice and Prosody.
		Fluency.
	Morphosyntactic	Grammatical Errors.
		Use of Restricted Grammatical Patterns.
		Sentence Length.
II. Content	Lexico-Semantic	Vocabulary Range.
		Word finding & naming difficulties.
		Production of Echolalia.
		Neologisms and Jargon.
		Semantic Interest and Vocabulary Building.
III. Use	Pragmatics	The use of functional language.
		Strategies used in conversations.
		Strategies used in narrations.
		Production of Speech Acts.
		Development of Socio-linguistic skills.
		Use of politeness markers (Arabic)
		Social Interaction.

Interpreting Speech Acts

When Lahey (1988) studied disordered language, she classified speech acts that are produced by children under the *Use* subdivision. Table 3.4 below lists eight subdivisions of speech acts which are: *comment, regulate, protest or rejection, emote, routine, report or inform, pretend* and *discourse*.

Table 3.4 Speech Acts classified under the (Use) subdivision in Lahey's (1988) Framework on disordered language in children.		
No	Speech Acts	Subdivisions and Descriptions
(1)	Comment	<i>Describe</i> person/object. <i>Comment</i> on (other) or (self).
(2)	Regulate	<i>Focus Attention</i> (call for attention of another to self or object or event), <i>Direct Actions</i> (seek help with something or want adult to continue tickling), <i>Obtain an</i>

		<i>Object</i> (may or may not be in context), <i>Obtain Response</i> (question for confirmation), <i>Obtain Information</i> (not only respond but also info child does not have), <i>Obtain Participation or Invite</i> (request: wanna play house?), <i>Other</i> (not fit above).
(3)	Protest or Rejection	Express rejection.
(4)	Emote	<i>Express emotion</i> : joy, sadness, surprise.
(5)	Routine	<i>Exchange greetings, social stereotyped utterances</i> , sound of animal, vehicles, songs, recitations, repeat 3/4 times.
(6)	Report or Inform	Talk about the past or refer to non-present object or person.
(7)	Pretend	<i>Imaginary</i> : This is a zoo (corner of room) - I am going to eat you.
(8)	Discourse	<i>Respond</i> (Wh/Yes/No Ques.), <i>Imitate</i> (all or part), <i>Affirm or Acknowledge</i> (show agreement even if repeated), <i>Negate</i> (show disagreement, use: no), <i>Feedback</i> (Back Channel: use: um-hum to show attending), <i>Repair</i> (repeat more clearly phonetics, paraphrase), <i>Initiate topic or turn</i> (Use: You know what? To change topic or take turn).

3.7 Summary

This chapter is aimed at describing the research design and methodology used to accomplish this qualitative observation on a single Arab subject aged 7 years over a period of six months. The different types of data gathered from different sources are to reduce the subjectivity, to describe the communicative behaviour and compensation strategies the subject used to overcome his difficulties, and to increase the validity and reliability of the results. The communicative data include: triangulated representative samples of the Expressive and Receptive, verbal and non-verbal, spontaneous and elicited communicative behaviours, in addition to the teachers' assessment of his academic performance, and the subject's medical and psychological diagnoses and prognoses obtained from his doctors. The analyses will determine areas of strength and weaknesses and the overall communicative competence of the subject in the next chapter.

CHAPTER 4

FINDINGS AND DISCUSSION

4.0 Introduction

This chapter reports the researcher's findings of the formal and informal tools and assessment tests conducted on a single child. The approaches and tools employed in this study aim to explore the subject's speech processing strengths and difficulties, which will act as a basis for planning intervention, and contribute to atypical language development theories. The findings reveal: the subject's strengths and compensation strategies, his difficulties that tend to improve gradually, his other residual problems, and those that remain unaddressed.

4.1 Results from Formal Assessment Tools: Bishop's CCC (1998)

Based on Bishop's *Children's Communication Checklist* CCC (1998), Table 4.1 presents the scale totals of CCC and the ranges obtained by the three raters. The following responses appeared as numerals on the accompanying CCC Excel file.

Table 4.1. The scale totals of CCC (1998) and ranges obtained by 3 raters from AE at age 7; 2 years.				
The CCC (1998) Items:	Raters			Average score
	A) Researcher	B) Parent	C) Relative	
a. Speech Output: Intelligibility & Fluency	26	24	30	26.66
b. Syntax	28	28	30	28.66
c. Inappropriate Initiation	24	24	24	24
d. Coherence	26	29	27	27.33
e. Stereotyped Conversation	20	22	24	22
f. Conversational Context	23	0	0	23

g. Conversational Rapport	28	27	31	28.66
h. Social Relationships	22	21	0	21.50
i. Interests	27	28	0	27.50
j. Pragmatic Composite (c-g)	121	128	132	127

Regarding the third rater (the child's cousin), he left three answers out due to his lack of knowledge about child's social behaviour and special interests, and because he stayed with the family infrequently - usually during weekends - so insufficient observation was carried out to make a decision. According to Bishop's CCC (1998) instructions, unanswered items should be marked (0). Moreover, the cousin rated AE's speech intelligibility and fluency as 30, which was far different than his parents' ratings. This was perhaps because the subject was overstimulated and overexcited when his cousin visited, having influence on his communication skills and his willingness to talk at a faster rate. Otherwise, answers obtained by the three raters were almost compatible, as illustrated in Table 4.1. Among these, agreement was on the existence of a pragmatic problem and difficulty in social competency while the syntactic ability was seen as the least affected.

4.1.1 Calculating the Pragmatic Composite in CCC (1998). In Bishop (1998), a pragmatic composite score (sum of scales c to g) of less than 132 characterised language-impaired children who were judged as having a pragmatic language impairment previously referred to as "Semantic-Pragmatic Disorder" (Rapin & Allen, 1983). However, when interpreting the pragmatic composite score, particularly for those close to the cut off of 132- as in this child's case- extra caution was needed for the results to be valid and reliable. Therefore, a pragmatic task was implemented for

assessing AE's social ability (Section 4.5.4) to confirm results of the pragmatic composite; and an evaluation of his use of speech acts and politeness markers in Arabic (Section 4.7C), especially since two of the raters (AE's cousin and parent) left four scores related to assessing social skills blank as well.

4.1.2 Implication of ASD or Pervasive Developmental Disorder in CCC (1998).

The child scored 132, 121 and 128 on the pragmatic composite in Table 4.1. His scores also indicated a range of impairments in behaviour and attention, in addition to pragmatics. The child's average scores of less than 24 in *(h) social relationship*, and less than 28 in *(i) interests* suggested the need for further assessment that considers the possibility of effects of other pervasive developmental disorder (PDD) or autistic disorder (ASD).

4.1.3 Speech Intelligibility, Fluency and Syntactic Abilities in CCC (1998). The CCC (1998) also revealed other difficulties, such as poor intelligibility or weak syntactic development on subscales (a) and (b) in Table 4.1. According to Bishop's criteria, a score below 27 on subscale (a) speech or below 29 on subscale (b) syntax suggests the child might merit a fuller speech and language assessment. For this child, the scores on (a) speech were 26, 24, and 30; while on (b) syntax they were 28, 28 and 30. These scores pointed to a problem in speech rather than in sentence structure if the ratings of both parents were compared.

4.1.4 Determining the Degree of Severity in CCC (1998). As a guide for interpreting scores on subscales (c) to (i), any score more than a 1.5 standard deviation below the mean for the SLI group suggested an area of impairment that could not be explained

away as a simple consequence of poor structural language skills (Bishop,1998). Scores that were more than 2 S.D. below the SLI mean suggested a more serious problem. It should be noted that Bishop (1998) used the typical SLI group as a reference group in making these judgements, and it could not be assumed that a child who scores above these cut offs had no deficit, or that the deficit was no worse than in typical cases of SLI. In Table 4.2, the standard values for calculating the pragmatic composite to indicate the degrees of severity, either 1.5 or 2 S.D. were presented according to Bishop's (1998) criteria.

Table 4.2		
Key Scores Criteria for CCC (1998).		
CCC Subscale	1.5 S.D. below mean (Moderate deficit)	2 S.D. below mean (Severe deficit)
c. inappropriate initiation	24 or less	23 or less
d. coherence	22 or less	20
e. stereotyped conversation	24 or less	23 or less
f. use of context	24 or less	22 or less
g. rapport	26 or less	25 or less
h. social	24 or less	22 or less
i. interests	28 or less	27 or less

4.1.5 Criterion validity of the CCC (1998)

In order to assess criterion validity of the CCC (1998), concordance rates have to be compatible on the CCC (1998) outcomes, doctors' results, and teachers' assessment. AE was observed experiencing communication and behavioural problems as results of comorbidity recorded in his medical profile. His teachers in Grade One (at the Arab International School in KL) were asked during a regular parent meeting if the child showed specific problems in the areas of language or behaviour. They stated attention-related problems, social difficulties, and trouble with spelling and reading in both L1 and L2. On the other hand, the doctors' preliminary medical reports approved the

existence of behavioural problems (i.e. few autistic traits, attention deficit and hyperactivity), some social delay, and a speech and visual problem. Measures of sensitivity and specificity in CCC (1998) were computed and results revealed a constellation of language problems and socio-emotional problems, matching both the doctors' and teachers' assessment results on several behavioural, psychological, and neurological deficiencies.

4.1.6 Calculating General Communicative Competence

Consensus among raters leaned towards a **moderate deficit** seen in the subject in the following areas: *(c) inappropriate initiation* and *(f) use of conversational context*; while *(e) stereotyped conversation* and *(i) interests* could fall between **moderate to severe deficits** due to differences among the three raters. On the other hand, a **severe deficit** was in *(h) social relationships*. Conversely, areas such as *(d) coherence* and *(g) conversational rapport* were **intact** and the least affected. Regarding subscales (a) and (b), a score below 27 in (a) *speech* and below 29 in (b) *syntax* suggested a speech and language problem. In this case, the score also indicated evidence that AE's speech was more affected than his grammatical abilities. To sum up, with reference to the nine subscales on CCC (1998), 2 out of the 9 areas showed intact ability, two areas revealed moderate deficit and one showed a severe deficit, while two ranged from moderate to severe deficits. However, on subscales (a) and (b), there was evidence of a moderate to severe speech problem and a slight problem in syntax. This suggests that AE has real problems and requires further comprehensive assessment of his speech and linguistic abilities.

Because four values were omitted by AE's cousin and parent, this has affected the total scores, causing the results to be inaccurate in evaluating spontaneous and elicited expressive and receptive language abilities. As a result, AE's communication skills needed further assessment. Hence, evidence presented later in this chapter from conversations, phonological analysis, and narrative tasks obtained from AE would assist in giving comprehensive insights into his speech and linguistic abilities.

4.2 Analysing Phonological Disordered Processes

The subject exhibited a speech problem revealed in the analysis of Bishop's CCC (1998) and in other communicative behaviours investigated in this study. Therefore, it is essential to look at both the common and idiosyncratic phonological processes produced by this child.

Due to limited assessment tools available in different Arabic dialects, several western frameworks on disordered phonology in children were adopted. These were (*PACS*) *The Phonological Assessment of Child Speech* (Grunwell, 1985b); (*PPACL*) *The Phonological Analysis of Children's Language* (Ingram, 1981) and (*APP*) *Assessment of Phonological Processes* (Hodson, 1980; Smit, 2004). In order to give a valid and reliable analysis of this child's typical and disordered phonological productions, a comprehensive study of the phonological processes and the phonological features of the Aleppine dialect were conducted to collect a wide range of processes from these tools that will explain each phonological phenomenon uttered by the child.

Moreover, phonological data were classified in terms of manner and place of articulation according to the phonological chart of Arabic sounds (Table 4.3) for the

analysis and findings to be consistent when determining *Backing* and *Fronting* processes in particular.

Table 4.3. Standard Arabic Phonemes.																				
M A N N E R O F A R T I C U L A T I O N	PLACE OF ARTICULATION																			
	ITEMS		Bilabial		Labio-Dental		Dental		Alveo-Dental		Palatal		Velar		Uvular		Pharyn-geal		Glottal	
			V	VL	V	VL	V	VL	V	VL	V	VL	V	VL	V	VL	V	VL		
	Stop		b						d	t				k		q				ʔ
	Fricative					f	Δ	T	z	s		Σ			P	x	θ	□		h
	Affricate										d	Z								
	Nasal		m						n											
	Liquid	Lateral							l											
		Tap/Trill							r											
	Glide		w								j									

For the phonological assessment, Grunwell (1993) cited studies of experts that provided different sets of processes implemented by children, e.g. Hodson's APP (1980); Ingram's PPACL (1981); and Grunwell's PACS (1985a). Close examination of the processes presented in each of these studies revealed basic similarities between the descriptive frameworks. The researcher adopted processes from these studies that account for the wide range of processes seen in AE's phonological manifestation in the Aleppine Dialect, see (Table 4.4).

Table 4.4. Categories of Phonological Processes from Grunwell (1993) and others.			
No	Basic Categories by Grunwell	Subdivisions by Grunwell	Subdivisions by Others
1	<u>Syllable Structure Processes</u> Analyse omission & transposition type relationships between natural classes of sounds.	<ul style="list-style-type: none"> Final Consonant Deletion. Cluster reduction. 	<ul style="list-style-type: none"> Metathesis Reduplication
2	<u>Substitution Processes</u> Analyse replacement relationships between natural classes of sounds.	<ul style="list-style-type: none"> Fronting Stopping Gliding 	<ul style="list-style-type: none"> Lateralisation Delateralisation

3	Assimilation Processes Analyse interactive relationships between sounds.	<ul style="list-style-type: none"> • Consonant Harmony • Context-sensitive Voicing • Prevocalic Voicing • Devoicing. 	<ul style="list-style-type: none"> • Backing • Nasaling
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4.2.1 Phonological Findings and Results

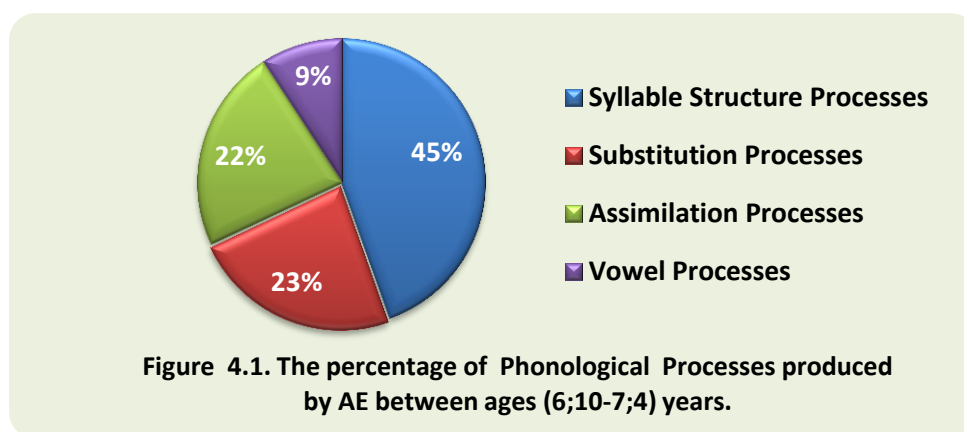
Because AE was observed experiencing a gradual decline in his production of some words in his L1, a list of the immature and distorted words was collected by the mother on daily bases over a period of six months (from age 6;10 till 7;4) to keep track of AE's disturbance in his speech although his articulation was of good quality and there was clarity of the phonemes in isolation. The complete list was presented in a table form (Tables A, B, C, and D in Appendix A.24). These were organised according to the three major groups of processes identified in Table 4.4 by Grunwell (1993); Hodson (1980); Ingram (1981). The analysis also considered the vowel processes, which appeared less frequently in the subject's phonological production. Utterances were classified, written with broad transcriptions, translated into English, and then counted separately to determine the number of occurrences in order to compare their frequency.

Table 4.5. The frequency of the four major phonological processes implemented by the subject between (6;10-7;4) years.						
No	Major Processes	Recorded at 6;10 & Repaired at 7	Permanent Old Patterns Unrepaired	Emerged after 7 & Repaired at 7;4	Persistent Inconsistent & Unrepaired Errors at 7;4	Total
1	Syllable Structure	11	30	28	9	78
2	Substitution	14	16	7	4	41
3	Assimilation	3	21	13	3	40
4	Vowel Processes	0	13	0	3	16
Total		28	80	48	19	175

As illustrated in Table 4.5, the analysis revealed a remarkable increase in the number of occurrences in the three major processes with new emergences at age 7 years. For example, **28** errors appeared within the Syllable Structure Processes category, *i.e. Metathesis, Cluster Reduction and others* (Appendix 24A), **13** errors in Assimilation Processes, *i.e. Backing, Nasaling and Voicing* (Appx. 24C), **7** errors in Substitution Processes, *i.e. Fronting, and others* (Appx. 24B), while the Vowel Processes (Appx. 24D) indicated consistent old patterns remaining unrepaired from early years, showing maturation later than typical Arab children (Amayreh & Dyson, 1998).

Table 4.5 also provided comprehensible explanations of AE's atypical phases of phonological development between (6;10-7;4) years. In the first category, an episode of phonological disturbance occurred in (28) words (mainly Metathesis, Cluster Reduction and Fronting) at age 6,10 years, and he was able to repair them at age 7,4 years (full recovery). This disturbance at the syllabic level appeared in some sound clusters in AE's L1 when speaking and reading (Appendix A.24 [T.24A]) as well. The second category indicated a delay shown in (80) old immature distorted words that remained unrepaired until age 7,4 years. The third category displayed another episode of disturbance that became apparent at age 7 years in (48) new words and these were repaired at age 7,4 years (partial recovery). The forth category is for (19) distorted words that AE could not repair at age 7,4 years. According to Dodd, Leahy and Hambly (1989), AE is *delayed* (inappropriate for his chronological age) and *deviant inconsistent* (exhibiting many apparently non-rule governed errors); similarly in Grunwell (1981;1991), this analysis gave evidence for both *a delay* "chronological mismatch" and *a disorder* that will be discussed later.

Figure 4.1 showed the percentage of phonological processes produced by AE. As presented in the pie chart, the Syllable Structure Processes represented (45%), the Substitution Processes formed (23%), the Assimilation Processes occupied (22%) and finally, the Vowel Processes employed (9%) and were the least frequent among all processes.



4.3 Findings from Expressive Activities and Tasks

In this section, the communication ability of the subject was described and a comprehensive analysis of his speech and language was revealed after collecting different types of Expressive data. The child's ability to convey his message using functional language was the focal point in this analysis of linguistic and non-linguistic behaviours. The Expressive activities and tasks implemented aimed at drawing a clearer picture of the child's communication competency taking into consideration the development of the following skills/abilities: *interactive skills, reciprocity, acquisition of social rules, appropriateness and politeness, synchronising of verbal and non-verbal elements of communication, self-control, flexibility and adaptability, and coping strategies* (Dewart and Summers, 1995).

The following Expressive tasks were selected to determine the areas of difficulty in AE's communication. They were assigned for eliciting data that preserve validity and reliability through the triangulation of results, and the adoption of approaches and assessment procedures from relevant studies of similar autistic, dysphasic, and dyspraxic cases in the psycholinguistic and neurolinguistic literature. The tasks selected for Expressive data were age-appropriate to reveal AE's strengths and difficulties, and to meet his background and culture, as explained in each section respectively.

4.3.1. Narration and Story Re-telling Tasks. Several narrations and story re-telling tasks were designed to determine AE's narrative skills implied below in Table 4.6.

Table 4.6. Story re-telling tasks for eliciting Expressive data

(a) Recalling a real incident from the past. (Appendix A.3)

Task: Narrate an Incident of a Friend's Injury at School Time

Results: AE can clearly retrieve events from both short and long term memory. His pronunciation quality, verb tenses, maintenance of topic, overall expressiveness are intact. AE shows ability to recall most striking events, which occurred, feelings of sadness and joy, new experiences he gained, good and bad memories that took place and reporting exact words said by others. He uses simple grammatical sentences and is able to interact maintaining eye contact with his partner. Further details are prompted by his mother.

Limitations in narrative ability led to these communicative behaviours, i.e *hesitations* due to difficulty finding words [line 7: what's her name? Teacher (.) T. Nada], *repetitions* [line 5: he said he said / line:6 crying a lot crying / line 9: she she], *incomplete sentences* [line5: she... my brother/ line 6: then sitting.. afraid..crying a lot crying], *topic-shifting* [and now I want to tell you about T. Nada], and *non-verbal language* [used facial expression to indicate the pain Nour was feeling, described how his sister carried Nour using hand movements and gestures].

(b) Numbering two different pictorial stories that he was exposed to for the first time. (Appendix A.4).

Tasks: (b1) The Fox and the Crow.

(b2) The Rabbit and the Turtle.

Results:

AE is able to arrange the events coherently in the first set of pictures (b1) *The Fox and the Crow*. He shows intact ability as he paid very close attention to details, is able to use appropriate voice tone. He shows intact ability towards comprehension, and develops the plot elegantly in an age-appropriate and coherent way corresponding with Arab milestones for age 5-7 years in Appendix A.2.

The second set of pictures (b2) *The Rabbit and the Turtle* -recorded in another session on a different day- reveals AE's distraction and confusion in sequencing the events at many phases although no problems in visual discrimination, naming, or comprehension are detected when asked about items in each picture.

This difference in performance between the two occasions probably confirms the inconsistency and instability in AE's cognitive abilities, his mood change, mental fatigue and readiness to communicate.

(c) Re-telling a Story narrated by his mother from first exposure. (Appendix A.5)

Tools Used: Goldilocks and the Three Bears (Modified).

Results:

AE is able to re-tell a story showing good comprehension, uses different paralanguage and non-verbal expressions, e.g. change in voice tones among characters (3 bears/little girl), use of hand gestures, facial expressions and body movements, but his ability to communicate his understanding considering his interlocutor's needs is uncertain. He skips crucial events, gives insufficient details, and communicates using incomplete sentences. AE sometimes confidently relies on his own interpretation of pictures and misses relevant details. On some occasions, he uses dysfluency markers, e.g. hesitations, repetitions, false starts, empty and filled pauses, incomplete sentences, in addition to semantic and phonological paraphasias.

Hudson and Shapiro (1991) found that re-telling abilities require integration of more advanced cognitive facilities than narrating. AE showed variation in his narrative skills and better outcomes in narrating than in re-telling ability. Pictorial numbering stories showed good expressive abilities, comprehension and understanding, but inconsistent outcomes. Recalling past events in general was intact and superior to re-calling verbal knowledge and exact words.

4.3.2. Spontaneous Participations in Conversations. Another type of expressive communication reported was AE's spontaneous comments and participation in conversations with his family members. The aim of documenting such communication behaviour was to describe the difficulties he faced and his ability to use communication strategies to overcome these difficulties.

Table 4.7. Extracts of Utterances in Different Context (Appendix A.7).
1) Context: AE's elder sister drank two glasses of water then conversed with her mother in front of AE.
Sister: It is the first time in history that I drank two large cups of water at once. AE: What? Did you have a History class yesterday?
2) Context: (AE 6; 10 yrs) During Suppertime.
Brother: (eating a boiled egg) I like the - [safa:r]-egg yolk. AE: Yeh, me also, I like it, it is rich in vitamins and strengthens our body. Brother addressing mother: Mama, do you prefer scrambled eggs to boiled eggs? Mother: I prefer scrambled, but that doesn't mean I don't eat boiled ones. Sister: I don't like boiled eggs, but I eat them, I especially hate the [safa:r]/ yolk. AE: Yeh, I love [safa:r] /travelling by plane, going from one country to another to get rid of school. Brother: What are you talking about? What's the relation between [safa:r]/ yolk and [safa:r]/travelling. That's irrelevant. AE: No response.
3) Context: Mother sent AE upstairs to bring the pink doormat/ [d{əð{:sE}] placed in front of his sister's room.
AE came down after a while asking: Where is the [ə{dis]/ lentil? I couldn't find it in [his sister]'s room.

Although AE had good comprehension and sufficient background information, his spontaneous off-topic participation in conversations might indicate problems in attention, recalling and orientation. AE might have selective attention or a short attention span that restrained him from following conversations as an attribute seen in autistic children (Dawson et al., 2004), and ADHD children (Tannock, 2007).

In addition to these behaviours, AE seemed to confuse utterances enclosing similar phonemes in his L1, e.g. [safa:r] / egg yolk and [safar]/ travelling; [d{ðð{sE] /doormat and [ð{dis]/ lentil, pointing to a phonological hyposensitivity for some words; and a deficit in semantic development might be detected in confusing *History*/ school subject, and *the first time in history* (idiom), showing confusion and ambiguity among some familiar Arabic words, and/or a short attention span.

These findings were compatible with Arnett et al. (1997) observations on MS patients where verbal fluency deficits were common, and Henry and Beatty's (2006) report on the existence of semantic memory deficits in MS cases. Moreover, in AE's participation in conversations, he focused on one word selected from context (i.e. *History; travelling*) to show recollection of previous experiences, known as "Episodic Memory", found in MS patients studied by Wishart, Benedict, and Rao (2008).

Regarding AE's non-verbal behaviour associated with his turn-taking, AE was noticed interrupting a conversation in a spontaneous and impolite way, (i.e. raising his voice, touching on the cheek, saying 'mama' repeatedly, and tapping on the shoulder of his interlocutor). Then he interfered in conversations with unrelated issues interesting him.

Unfortunately, for turn-taking skills specifically, data collected from the three different contexts were insufficient to reveal the deficiency because AE's participation was to focus only on one word pulled out from context. At meal times, for instance, AE frequently interrupted using body language and paralinguistic elements (mentioned above) to attract attention and to dominate the speech with off-topic issues, and was reminded every time to wait for his turn. Such behaviour was unpredictable, so it was

very difficult to capture on video as it occurred naturally. Further descriptions on turn taking were presented in Section 4.5.2.

4.3.3 Imitation and Role-Play. The aim of this task was to investigate the child's ability to use speech acts and to display imagination and creativity. The task also provided evidence for the child's ability to consider his audience and his verbal expressiveness, in addition to the use of non-verbal and paralanguage cues (e.g. *movement and positioning, posture, gesture, facial expression, eye contact, touch, and smell*). In terms of behaviour, it was to investigate the peer play patterns AE exhibited, similar or not to ASD children who usually show inflexibility, concreteness, constrictedness, impulsivity, irrationality, unreliability, and inability to engage in or sustain imaginative play (Mastrangelo, 2009).

Table 4.8. The Role Play Task.

Context: Role-play (The Pizza Chef), AE (6; 11) years. Appendix A.8.

AE is encouraged to participate in preparing pizza at home. He is required to arrange sliced mushrooms and olives, pieces of green pepper, and then the bits of cheese on top of the dough. While the pizza was in the oven, he pretended he was a cook running his restaurant and offering pizza to his customers.

He put a paper bag on his head and started to design the menu on a small piece of paper. On one side of the paper, he sketched himself as the master of the restaurant and wrote a list of dishes, i.e. soup, French fries, pizza, then he drew some decorations; while on the back of the paper, he drew a square-shaped pizza, wrote his name and a fabricated phone number. Then he drew another square pizza indicating a delicious aroma rising from it. Afterwards, he occupied himself by setting the dining table as seen in restaurants.

When the pizza was ready, he showed over-stimulation. He started jumping and saying gibberish, e.g. [ah, uh, lahu, huwa], as if he was giving orders to assistants and waiters around him embedded in his intonation and body language. He raised his voice saying: Cook pizza! Quickly cook pizza! When he was asked why his pizza was square-shaped he gave no response.

AE showed the ability to imitate what he saw in real world, as when wearing the chef's hat, preparing the table, and constructing his own menu paying attention to

details (e.g. drawing decorations and smoke rising from the pizza). On the other hand, AE's pretend play showed no functional language, limited speech acts, and no real interacting with his customers, e.g. welcoming, greeting, offering the menu, and taking orders. He occupied himself actively with the preparation of the menu and setting the dining table rather than his real interacting with people. When the pizza was ready, he was unable to use suitable language to offer it, encourage people (close family members) to taste it or buy it from him. Instead, he sat quietly at the table, and then he withdrew himself. Such behaviour showed a deficiency in social interaction and impaired pretend play usually found in autistic children (Bergen, 2002).

4.3.4 Spontaneous Intrapersonal Monologues and Dialogues.

A spontaneous intrapersonal monologue was recorded during AE's homework time and environmental distraction in the living room where he studies was minimised. Then, an unexpected shift from monologues to dialogue with his mother was observed when he asked his mother about meanings of words in Classical Arabic and their equivalents in the Aleppine dialect. He received immediate feedback and corrections.

AE showed excessive distraction and restlessness during his homework copying tasks, the following behaviours were apparent: his preoccupation with odd thoughts and unrelated ideas, delayed echolalia and jargon words, repetitions accompanied with frequent non-verbal body movements and paralanguage. For examples, see Table 4.9 for the analysis of the monologue and dialogue, in addition to interpretations of non-verbal communicative aspects.

Table 4.9 Analysis of spontaneous monologue and dialogue at homework time (Appendix A.9).			
No	Categories	Child's Utterances (Translated from Arabic)	Comments
1	Mispronounced words	(Phonological Paraphasis) [tikas / mikas / scissors] [{ bi: dZ / { :r pe: dZe:]/ RPG	Substitution Vowel Disturbance and Omission
2	Wrong preposition:	[He cut paper in it], Instead of 'He cut paper with it'.	
3	Delayed Echolalia: (Repeating Verbatim)	[Put forward the brave men. Don't bother uncle, we are ready to sacrifice. Alright, alright. May Allah fail your plans, May Allah destroy your houses, you Jewish, the terrorists, the terrorists] repeated by AE.	Adopted from a historical TV series and has no relation with the homework content.
4	Wrong word order and incomplete sentences:	[Correctly, I wrote the word 'Mansour' without looking at it/ s{h {na k{tabit kilmit mansur min kair m{ {tallif}, instead of 'I wrote the word 'Mansour' correctly without looking at it'. [The break..., I ...to comfort myself and to kiss you].	Addresses his mother. Request for a break.
5	Irrelevant Thought and Preoccupation with odd ideas of special interests:	[Hashim went to his uncle]. Talking about World War weaponry, e.g. bombs, rifles, bazookas, rocket launchers (RPG); and current political issues, e.g. Arab- Israeli conflict, Iran, Lebanon, UK, USA.	AE's classmate whose name is mentioned frequently.
6	Jargon:	[I love you my dirt].	Repeated 3 times
7	Phonological Filled Pauses	In Arabic [ah- eh-im-mm]	Dysfluency markers
8	Inappropriate Paralanguage and Body language.	Meaningless vocal sounds (mono-syllabic sound clusters and phonemic segments (i.e. CV, CVC), e.g. / j{, du, t{, du, t{, du, t{, t{fik, t{fik/ sound strings as / hu{ { :h hu{/. AE changed his voice tone when producing delayed echolalic utterances. Addressing his mother: There is a game in which you dig like this. (acting) AE held a tube over his shoulder imitating fighters holding bazookas or RPGs and produced launching sounds.	

In Table 4.9, items 1-7 were deficit oriented showing clearly signs of excessive distractions, topic-shifting and non-functional speech; while in item 8, inappropriate body language was used in the homework context.

4.3.5 Alphabet Recitation. Singing a familiar song was an indication of the child's expressive abilities, memory, recalling, accuracy, fluency and prosody. AE was required to recite the Arabic Alphabet by heart.

Table 4.10. Results of the Alphabet Recitation Task.

Results: AE recites from memory the first three letters of the Arabic alphabet intelligibly and fluently, and then inaccuracy, hesitation, and wrong order of letters is heard. (Appendix A.6).

The child's performance revealed difficulties in his memory, recalling and repetition abilities. Alphabetical recitation, as a familiar song at early school years, was intermittent and not memorised as accurately as his age-matching peers. AE exhibited hesitations, inaccuracy and slowness. Unlike his spontaneous utterances, he showed reduction in his speaking rate when recalling from memory. Also memorising and recalling verbal texts and unfamiliar songs assigned from school after one week of frequent repetition done in class and at home required significant effort. As AE's performance was depicted with inaccuracy and inconsistency and lacked the ability to correct phonemic and semantic errors, it was possible that his deficit was in the input process of alphabet acquisition because it was performed in the first part of Grade One when the child had the first MS symptoms affecting his vision, speech and memory. It is important to note here that AE showed very poor verbal memory for songs, rhythms or lyrics, and was never heard singing, recalling any TV ads, or nursery songs as typically-developing children.

Herbert, Racette, Gagnon, and Peretz (2003) suggested Alphabet Recitation, a well-known child song for assessing expressive aphasia and looking at rhyming and retrieval ability for familiar and unfamiliar songs, and differences between speaking

and singing. Therefore, this task showed evidence of the comorbidity effect on AE's ability to memorise simple songs probably a sign of *Expressive Dysphasia*.

4.4 Findings from Receptive Tasks

Receptive Language Assessment looked at a wide range of behaviours associated with communication not just comprehension in the form of request and the content of language; in addition, attention and distraction were considered as well as communication strategies used to sustain communication. The Receptive Tasks assigned are as follows:

4.4.1 Referential Communication. Referential communication, as suggested by Girbau and Boada (2004), was tested through the following experimental task on three familiar objects selected by the researcher for recognising things described orally, see Table 4.11.

Table 4.11. Referential communication task (Appendix 10).	
Descriptions	Answers
1. Its shape is rectangular, placed on the wall, and it gives us either hot or cold air.	The air conditioner.
2. It is solid, it has four legs, and we put things on it.	The table.
3. It has a round face, we hang it on the wall, it has two hands, and 12 numbers.	The clock.

This task was designed to experiment AE's semantic lexicon perception, but not the processing time or rate due to lack of measuring standards and tools in home observation settings. Answers indicated higher Receptive than Expressive abilities in both verbal and non-verbal, cognitive and linguistic skills essential for communicative competence. Regarding the time it took AE to encode, decode and scan for

alternatives, his response was by guessing the meaning from context impulsively or reflectively. The first two questions were answered correctly with good articulation, while in the third, AE was slow, and he took some time before he could give the correct answer as shown in his facial expressions. The answer was then prompted by his mother.

4.4.2 Following Three-Sequence Commands and Instructions. AE showed intact ability to comprehend instructions of three commands in a sequence selected from KAT (Marshall & Harris Wright, 2007) to differentiate aphasic from non-aphasic patients. AE revealed no deficiency in retrieval and has good motor coordination when instructed to bring a certain object. He showed no signs of Autotopagnosia (inability to recognise or to orient parts of one's own body, caused by a parietal lobe lesion) when required to identify some left/right body parts and he showed good spatial and temporal working memory, attention, comprehension, fast response and reaction, see Appendix A.11.

4.4.3 Naming and Word Retrieval. Signs of dysnomia and noun-retrieval difficulties appeared as AE speaks. Therefore, it was relevant to investigate verbal linguistic functions and naming skills when screening for communication problems as suggested by Lezak (1983);(1995).

(a) Naming Skills Observed in Spontaneous Speech. AE exhibited a progressive regression in his speech quality between ages 6;10 and 7;4 years, in addition to several phonological and semantic paraphasias and dysfluency markers apparent particularly when required to recall proper and common names in daily life. He regularly and

consistently mispronounced names of familiar people, close relatives, the school driver, some schoolmates, his preferred food items, objects, names of landmarks, countries mentioned habitually where his favourite relatives resided (i.e. cousins) and so on, see Appendix A.12 for a complete list of AE's dysnomic nouns, transcribed and translated to English. Ironically, names of certain objects of AE's special interests were unaffected by this disturbance. Important and frequently used names he should have mastered were uttered inaccurately and confused, while names of technical objects were fully intelligible at a young age. AE's preoccupation with objects was noticable as he showed early mastery of a wide range of electrical equipment, machines and objects that he might have never seen physically in his life. For example, *flags* and *street signs*, vehicles (i.e. *cars*, *trains*, *boats*, *tanks*, *helicopters*, and *trucks*), a range of lights: *traffic lights*, *street lights*, and *lighthouses*, weaponry (i.e. swords, shields, bazookas, rifles, guns, cannons, and the RPG) and electronic devices, such as wireless devices, antennas, and radars, which appeared frequently in his spontaneous drawings as well, see (Appendix A.30). Meanwhile, he showed less interest in humans and animals.

Not only did he experience a problem in naming and recalling names, he also exhibited a **phonological disorder** as dysfluency occurred in more than 110 of familiar names used on daily bases presented in Appendix A.12, and discussed in Section 4.3. The distorted words were mostly from the nominal class and less error was heard in adjectives and verbs. For example, he would utter a fully grammatical sentence made up of six words fluently and with clear articulation, but one or two nouns in the sentence are immature, unintelligible or distorted produced with phonological processes, *e.g. Substitution, Assimilation, Syllable Structure and Vowel*

Processes (see section 4.3). Table 4.12 presented a translation of a variety of fully grammatical sentences (with correct pronouns and tenses) that AE produced spontaneously, while the utterances between square brackets represented the distorted lexical items he found difficult to produce accurately as follows:

Table 4.12. Examples of AE's Naming Difficulty in Fully Grammatical Sentences Translated into English between 6;10-7;4 years. See Appendix A.25 for original text.

- **Mom, Can I take the** [Pu:ze /xu:ze -helmet] **when we go to** [tn kæki / kɪn tæki KFC].
- **Is it true that we are going to** [taim kwE:n/ Times Square] **today?**
- **Mom, May you prepare** [hambErbr- hambɛrPɛl/ hamburger] **for supper?**
- **Let daddy buy us** [vura ðura/ corn cup] **when we go to** [midbEli / Mid Valley].
- **My friend,** [ðdOlɹ{□m{n/Abdul Rahman] **at school travelled to** [kɪn kæ wi/Linkawi Langkawi] **and he rode a** [skEtin bod/skating board] **there.**
- **Mom, please cook** [Σamçrwa/Shawirma: a kind of roasted meat]. **No, I like to eat** [keΣΣçb/ ketΣçb- ketchup] **with** [sɑ:si:dZo/ sadZi:dZo-sausage].
- **Aunt** [Suad/Duaa] **came over last summer and I loved to play with her son** [□ufEjfa/ □uðEjfa -Huthayfa] **in the** [besbah/ mesbah-swimming pool] **but I hated** [□a:rifa /□a:riTa- Haritha] **because he was very tough and he hit me.**
- **Mom, Look! My knee is bleeding. It has a** [dZurha / dZuruh- a cut]. **Shall I bring** [□ɛku:l / kɛ□u:l- alchohol swab] **or** [bi: to:l / di: to:l- dettol] **to clean it?**
- **In the morning, when** [abu muhanned/Muhanned (the bus driver)] **came, I was getting on the school bus,** [mu: tafæ / Mustafa] **pushed me then I slipped over a bag in the way and fell on my arm. Look my arm is still bruised and hurting.**
- **Mom, Do you remember Aunt** [warda- warṭa /Rawḍa] **in Medina when she used to come to our house with her son** [Moʔden (an unreal name)/ Muaḏ] **who had a funny face?**
- **In school, we reached verse 11 of Surat** [alɪΣniqaq/ Al-Inshiqaq (A chapter in the Holy Quran)] **and the teacher told us to read it at home again.**

(b) Results of Elicited Naming Tasks

1. Naming Clothes. When required to name 15 kinds of casual clothing and footwear, AE repeated the words [m{1{bis] - [libis] /‘clothes’ for *jacket*, *suit* and *shirt*; then for the word *dress*, he said ‘girl clothes’, and for *raincoat* he said ‘rain clothes’. Similarly, [iz{:}] /footwear for *sandals*, *athlete shoes* and *men’s laced shoes* showing the recurrence of a categorical type of “Overgeneralisation” (Gershkoff-Stowe, 2002) that should have been suppressed from the early stages of lexical development. Moreover, the repetition of ‘*there is*’ a linguistic prototype and a restricted grammatical pattern favoured by children on the Autistic continuum, noted by Gupta and Singhal (2009); Tager-Flusberg (2008). For pictures assigned for this task, see Appendix A.13.

2. Naming Colours. AE used overgeneralisations for sub-colours of brown and blue as *light blue* and *beige*. He had a problem in distinguishing light/dark colour degrees. This deficiency was possibly due to the semantic deficit reported in cases of MS or the visual disturbances he was facing (see the medical report in Appendix A.20). He also continued to pronounce the colour *purple* in Arabic with metathesis: [b{n{fs{dZ≡ / b{nEsf{dZ≡] beyond the age of 8 years in Appendix A.27.

3. Naming Body Parts. AE lacked the knowledge of the following body parts at age seven years: *forehead*, *eyelashes*, *palms*, *feet*, *chest*, and *names of fingers*; while he was accurate in naming *thigh*, *knee*, *heel*, and *elbow*. Wrong choice of words was heard three times: [ri?{tajEn] meaning *lungs* instead of “chest”; [he:f] meaning *blanket* instead of “palm”; and [Σ{f{r}]/ a non-word in Arabic instead of

[dZifin(singular)/ dZfu:n (plural)] “eyelid/eyelids”. In Aleppine Arabic, [Σ{fr{}}] means (razor blade) which is very much similar to [Σ{f{r{}}] (see Appendix A.26 for more examples). This was to reveal AE’s confusion, inaccuracy and ambiguity in naming and retrieving a few semantic lexicons. The task of naming one’s own body parts verbally was adopted from (Shinobu et al., 2000; Hurley et al., 2009) to see how the child identified his own body parts. Results of this task probably indicated a slight delay in acquiring the names of his body parts.

4. Naming Means of Transportation. AE showed confusion, ambiguity, or lack of knowledge in the ability to name pictorial different means of transportation although he has showed strong desire and interest to spontaneously talk about such inanimate objects. He could not identify subtypes of aeroplanes, ships or brand names of cars. This indicates that he might be unable to recall the names or has not acquired such words yet, while he was able to name types of trains, and to explain how each type was operated (i.e. steam, electric and electro-magnetic). Pictures of trains in the encyclopaedia provoked recall of past experiences as well. For example, he experienced old train engines at a museum and the Rapid Transit (LRT) in Malaysia, and he visited the Hijaz Old Rail Station in Medina/ Saudi Arabia at age 4 years, see Appendix A.27.

5. Naming Animal Objects vs. Pictorial Animals. AE was able to name correctly 9 out of 13 species of animal items collected by the researcher (i.e. giraffe, camel, bear, goat, sheep, wolf, gorilla, lion, dog), but he confused the *horse*, *donkey* and *zebra*, and mixed between the *dinosaur* and *hippopotamus*. Props delivered to aid thinking

helped AE name ‘donkey’ correctly, after asking him *which animal has longer ears*, but he still confused the zebra and the horse.

AE was slow in naming animals presented in a pictorial encyclopaedia compared to naming animal items. He was able to name some unfamiliar birds as *parrot*, *eagle* and *owl*, but other species of birds were overgeneralised using the indefinite word [ʃasfu:r/ a bird] for *bat*, *seagull*, *pigeon*, *peacock*, *penguin* and *ostrich* although he had known them already, as had been heard on other occasions. All kinds of reptiles (*i.e. lizards, crocodiles, tortoises*) were named *dinosaurs* in this task and even the *bat* was named ‘*a flying dinosaur*’.

An interesting observation was AE’s use of non-verbal cues as a strategy to compensate his retrieval difficulties or lack of knowledge when he had the tendency to imitate the sound of the animal, motion or even give a description of its appearance (use of circumlocutions), *i.e. kangaroo* and *hedgehog* instead of naming the animal. On other occasions, he confused real and unreal pictorial species of familiar animals. He gave wrong names, used delayed echolalia (*e.g.* he named the animal a human historical name [OqbE] or a human nickname [ʔulqarnejən] adopted from a TV movie he watched) while names of some unfamiliar animals were produced accurately, see Appendix A.28.

6. Naming Action Verbs. AE was faster and more confident when asked to name action verbs unlike his ability in naming some items from the nominal class. The following 18 present tense verbs (*e.g. crying, dancing, swimming, drawing, fishing, flying, hugging, jumping, opening the door, playing soccer, pointing and shouting*,

riding a motorbike, running, singing, skating, surfing, playing with skipping rope, and diving) were delivered at a faster rate than his ability to name nouns, see Appendix A.14 for pictures and Arabic original text.

The previously implemented naming tasks showed discrepancy and uncertainty in AE's naming abilities at age 7 years. AE exhibited signs of Dysnomia in naming some common items and proper names compared to action naming where he was able to name at a faster rate, probably confirming the existence of a deficit in semantic memory detected in MS cases by Henry and Beatty (2006).

Moreover, two different patterns of deficits in naming were detected in this child's lexical development when spontaneous and elicited naming capacities were compared. In spontaneous samples only selected familiar proper nouns and some common names were frequently dysnomic if not impaired in fully grammatical sentences, see Table 4.12. While in elicited data samples, AE showed particular apparent focus on certain inanimate objects of his 'special interests', a characteristic commonly reported in the literature when analysing the linguistic behaviour of autistic children (Volkmar et al., 2000).

Noun retrieval difficulties were detected on several occasions and were more obvious in elicited speech than spontaneous data samples when AE had the desire to initiate and was willing to communicate. Table 4.13 presents some examples extracted from tasks showing verbal inaccuracy, semantic and phonological paraphasias. AE gave two or three alternatives or asked for assistance and prompts, and his non-verbal behaviours indicated difficulty in recalling (i.e. hesitations, facial expressions and

hand movements). He sometimes could not perform self-repair and seemed unaware of his difficulty in naming inaccurately.

Table 4.13. Semantic and phonological paraphasias documented between 6;10-7;4 years.			
No	Wrong Utterances	Type of Paraphasia	Target Utterance
1	[e:mt{ lse:ni biddo jinxelð] ? When will [lse:ni] <i>my tongue</i> be extracted?	semantic	[e:mt{ sinni biddo jinxelð] ? When will [sinni] <i>my tooth</i> be extracted?
2	[Pa:be] forest	semantic	[qarje] village
3	[qarje] village- [□{di:ʔa] park/garden	semantic	[□{di:ʔet e□{jwa:n{t} zoo
4	[miðzeje] goat	semantic	[Pan{me] sheep
5	[karaz] cherry	semantic	[ðinib] grape
6	[di:k] rooster	semantic	[hidhod] hoopoe
7	[baPb{Pa:ʔ] parrot – [ð{sfu:r] bird	semantic	[Pura:b] crow
8	[no:ð fawa:ki] A kind of fruit	semantic	[nekhit fawa:ki] A fragrance of fruit
9	[mekteb tebað elmçtbax] desk of the kitchen	semantic	[xiz{net elmçtbax] kitchen cabinet
10	[≡l-d{ð{se] doormat	phonological	[≡l-ð{ d{s] lentil
11	[dua:ʔ] name of AE's maternal aunt	phonological	[suða:d] name of AE's parental grandmother
12	[gEllabi:e] Men's thobe	phonological	[mhellebi:e] milk pudding
13	[ð{dZmE]- non-word [ðadme]- bone [buklE] -hair barrette	phonological	[ð{dZwE] mango core
14	[mçPs{le] Bathroom basin	Semantic & phonological	[mEdZI{] kitchen sink
15	[silk] wire	Semantic & phonological	[sikke] rail
16	[l{:silki] wireless- secretary [sikirte:r]	Semantic & phonological	[sikju:riti] security guard

Table 4.13 presents some paraphasias found in AE's speech productions in different social contexts. When grouping these together, the number of semantic paraphasias was higher than the phonological ones and the group combining both semantic and

phonological paraphasias likely indicated a disturbance in word storage devices, memory and some confusion causing inaccuracy and uncertainty.

4.4.4 Conversation Skills. At age 7;1 years, AE's mother (the researcher) conversed with him by asking 21 questions selected in advance to be age-appropriate, culturally unbiased and covering a wide range of topics that would interest him about family, activities, money, friends, school, animals, emotions and past experiences, see Table 4.14. His answers were then recorded in two separate sessions reflecting his feelings, interests and attitudes.

Table 4.14 Questions asked for investigating AE's conversation ability. (Appendix A.16).
<p>Session 1:</p> <ol style="list-style-type: none"> 1. What is the most amazing thing about you? 2. What is the most enjoyable thing our family did this year? 3. What would be the best gift you wish to have, and the ideal allowance you ever had? 4. Name two things we should do as a family on the weekend. 5. Have you ever had a dream that really scared you? 6. Do you ever have a dream that happens over and over? If so, what is it like? 7. Describe the most beautiful place you have ever visited.
<p>Session 2:</p> <ol style="list-style-type: none"> 1. Describe the most beautiful place you have ever visited.[repeated from S1] 2. Have you ever got really lost? If so, tell me about it. How did you feel? 3. Tell me about something - I never knew- you did when you were little? An early memory as a very little kid? 4. If you are going to have a weird, unusual pet, what would it be? 5. Why do you think some people don't like animals? 6. When you feel sad, what cheers you up? 7. Is there anybody in history that you have heard about that you would like to be? 8. What have you done in school, sports, or anywhere that you are especially proud of? 9. Tell me about the best teacher you ever had? 10. Which of your friends do you think I do like most? and Why? 11. Can you remember three striking things about kindergarten days? 12. Who is the best child in your class, and why do teachers admire him? 13. What are the qualities that make a good friend? 14. If you realise that a classmate is stealing something, what would you do?

In the first session (S1) of conversing with the child, AE answered many questions impulsively giving short alternatives showing uncertainty as in No. (1,2,3,7). Then he showed tiredness causing the researcher to end the session after question seven. The next session (S2) took place on another day and AE answered the rest of the questions. In both sessions AE showed preoccupation with inanimate objects, e.g. “weapons” at this time of conversing (i.e. the sword, shield, helmet, arrow, and axe). For example, the word “sword” was an irrelevant answer to several personal questions (i.e. No.1, 3, 5, 8, and 13) showing restriction of lexical items and reinforcement of his special interests.

In the next session (S2), AE showed limited speech and lack of ideas towards the end. Non-verbal body language indicating signs of tiredness were apparent, i.e. he lay down, touched his toes, looked away, took a long time to respond, which forced the interlocutor to switch to yes/no questions in order to prompt talking and extract answers.

AE uttered three mispronounced words using phonemic substitutions (e.g. [naʃni-jaʃni] meaning / [mEdEnijeh- bEdEnijeh] PE / [marri-barri] wild), few phonological and semantic paraphasias (e.g. [l{silki] wireless / [sikirtEr] secretary) showing lexical difficulty and dysfluency as indicated by several repetitions, circumlocutions, mumbling, lack of and poverty of ideas, and insertion of irrelevant words and ideas (e.g. There is school tomorrow in No.17). His linguistic behaviour revealed word finding difficulties in No.3 and 14; semantic paraphasias in No. 9 and 18 (i.e. horse stick/whip; girl/lady; spear/arrow); short ungrammatical and incomplete sentences in

No. 3,8,10 and 12. On few occasions, he was unable to provide enough information essential for the listener, e.g. in No. 9; or he was unwilling to talk in No. 8 and 10.

AE was observed using almost all *discourse speech acts* stated in Lahey's (1988) framework for assessing disordered language in children listing *Discourse* within the "Use" category, which are *Respond, Imitate, Affirm or Acknowledge, Negate, Feedback, Repair, Initiate topic or turn* (see Table 3.4). On the other hand, AE was observed answering some questions impulsively giving below-age irrelevant answers and few illogical responses (No.1, 3, 5). In addition to this, AE sometimes expressed ideas depicting violent behaviour and odd ideas in his conversations as well, e.g the desire to light fires (No.5).

It is also relevant to look at the turn taking behaviour in conversations where AE has shown minor deficiency. There were some indications in the body language of mental fatigue, boredom or unwillingness to interact. In section (4.5.2) later, AE's non-verbal communication will be discussed in detail and compared to turn taking behaviour in other communication contexts.

4.4.5 Responding to Different Textual Pragmatic Situations. Ten textual pragmatic situations presented in Table 4.15 were chosen and dictated orally to capture AE's responses, comprehension, and use of a variety of speech acts, e.g. the use of politeness markers, proper choice of level of formality, and his consideration of his partner's needs of background knowledge, in order to obtain insights about his pragmatic competence.

Table 4.15. Speech acts found in AE's responses to ten textual pragmatic situations using Lahey's Framework (1988), (Appendix A.15).

Social Situation / AE's Verbal Responses & Non-verbal Behaviour	Speech Acts Found & Analysis
(1) Once a girl saw a boy drawing a picture with his crayons. She approached him with a paper in her hand willing to ask him to share his crayons. What should she say?	
At first seemed inattentive and asked for repetition, AE: What? M.: Repeated the situation. AE: [If you don't mind, I want crayons].	Regulate: to obtain a repetition. Routine: Polite Request Politeness marker: [law samahti] Regulate to obtain an object.
(2) A boy watched a group of boys playing soccer. He stood apart then he wanted to join them. How should he ask the boys to allow him in?	
AE replied with an appropriate voice tone: [Can I please play soccer with you?]	Regulate to obtain a response by asking politely for permission. Politeness marker: [law samaht] addressing one boy and not the group of boys.
(3) Two siblings, (a girl and a boy) were walking in the street. The girl saw a big hole and wanted to warn her little brother to avoid falling in it. What would she tell him?	
AE first interrupted asking where to fix his eye gaze. He used direct impulsive actions & non-verbal body movements. AE: Immediately directly he tells her to hold tight. Immediately directly he goes to the house and brings a rope. [facial expressions, eyes widen]. M.: He can't bring a rope. What should he say? AE: Hold my hand if you don't mind. M.: You say 'please if you don't mind'? AE: No. M.: Ok, if your sister is going to fall in a hole, what do you tell her in words? You hold her hand but what do you say? AE: Don't don't don't go? M.: Be careful, right? You tell her to watch out.	Initiate a turn/ interrupts. Emote: express surprise. Pretend: imaginary Inform about a non-present object. when AE gives alternatives and solutions as offering a rope/ holding the hand. Respond: repetition.
(4) A boy took a toy you are also interested in. What would you tell him?	
AE: If you don't mind, we divide the time. Half an hour you, and half an hour me. M.: If he says no, I don't want (.) I want it all. AE: I say I say (.) I leave him I leave him (.) I just go.	Regulate: obtain participation (at first). Respond: repetition. Social withdrawal (at the end).
(5) Some boys in the school playground are bullying and chasing you. What do you tell them?	
AE: Go away (.) do you want me to tell the teacher? M.: If a lot of boys gathered and they started all bullying you. AE: I complain to the teacher. M.: What else do you tell them? AE: Go away from me.	Emote: express distress, discomfort, and sadness. Regulate: Direct Actions / seek help. Discourse: Affirm
(6) If a little boy (aged 3years) drew a picture especially for you, but you didn't like it. What would you tell him?	
AE: very nice ((praise to Allah)) thank you. M.: It is not nice, but you say it's nice, why do you say it's nice? AE: For not saying, upsetting, for not upsetting him. M.: Ok.	Comment/ Routine/ and Emote: express happiness. Pretend: courtesy & social conduct/sensitive to other people's feelings.

Table 4.15. continued

(7) If you saw two boys playing together with a kite and you want to join them. You will approach them, then you will say...

AE: What what?	Regulate: to obtain a repetition.
M.: Repeats the situation	
AE: I say you two hours and me two hours.	Regulate: obtain participation (at first).
M.: It is not yours; they will not give it to you.	
AE: If you don't mind.	Regulate to obtain an object.
M.: They are playing together and you came to interfere, what do you say?	
AE: If you don't mind. We divide the time or I go to the shop and buy.	Routine: Polite Request
M.: You don't say please let me play with you, you don't say that?	Politeness marker: [law samaht] singular
AE: I'm shy	
M.: You are shy to say that, ok.	Regulate: call for attention in a polite way.

(8) Once you forgot to do your school homework. What are you going to tell the teacher?

AE: I didn't do my homework.	Regulate: Focus Attention.
M.: Why? You tell him, you tell him or you just remain quiet?	Inform: straight forward confession and honesty.
AE: I tell him.	
M.: Ok.	No words to indicate apology.

(9) Once your teacher gave you a piece of paper and sent you to the staff room to pass it to Teacher Ali., What are going to tell T. Ali? You will go to T. Ali and tell him...

AE: Yes (.) We have a teacher in our school named Ali.	Seemed inattentive & confused.
M.: What are you going to tell Teacher Ali?	First attempt:
AE: If you don't mind, I want a piece of paper.	Regulate: Focus Attention in a polite way.
M.: imm, try to understand! what I said and what I asked you to do. Once, your teacher gave you a piece of paper and told you to go and pass it to T. Ali.	Politeness marker: [law samaht] singular
AE: yes (.) I tell him ((interrupting)).	Initiate a turn/ interrupts.
M.: You go to the staff room and you find T. Ali, what are you going to tell him?	Second attempt:
AE: If you don't mind take this.	Regulate (Focus Attention),
M.: just this, what is he going to say? What is this paper?	Repair, Inform and Report
AE: From my teacher (.) he told me to give it to you.	(produce Reported Speech).

(10) You saw some of your favourite toys and you ran fast to take them, suddenly another boy appeared before you and took them. What are you going to tell him?

AE: If you don't mind (.) can I play?	
M.: Ok, if he disagreed?	Regulate: Focus Attention in a polite way to obtain participation.
AE: I hit him.	
M.: You hit him?	
AE: No (.) I buy a toy (.) no (.) when the time finishes (.) I play.	
M.: Ok, but there is no time, he ran faster and held the toy, What are you going to do?	Politeness marker: [law samaht] / sg.
AE: If you don't mind (.) can I play with you?	
M.: You don't push him and grasp it from his hand?	
AE: ((nodding for no)).	
M.: Why? Yes, as you did before.	Discourse: Respond
AE: What is it?	
M.: When you pushed the child and took the toy from him?	
AE: Me? When?	Discourse: Negate

M.: I'm asking you ((laughing)).	
AE: No.	Rejection.
M.: you never hit the boys; you never hit them, never?	
AE: ((nodding no)), just when they hit me first.	Emote: express
M.: If they hit you, you hit back. But you don't hit them to take the toys.	anger and violence.
AE: I hit them and tell the teacher.	
M.: Ok, you don't take the boy's pencil case? Never?	
AE: ((nodding for no)).	
M.: Ok.	
AE: ((conclusion)).	

Several speech acts appeared in AE's responses correspond with Lahey's (1988) framework, where the "Use" category comprises: *comment*, *regulate*, *rejection*, *emote*, *routine*, *inform*, *pretend*, and *discourse*. He also showed an ability to use politeness markers as in (No. 1/2/7/10); suitable intonation for request (No. 7/10); social compliment to please his partner (No. 6); personal truthfulness (No. 8); asking for permission (No. 2/7); proper addressing of his teacher (No. 9); and non-verbal body language (No. 3) offering help to someone who is in trouble.

On the other hand, in two situations (No.1 and No.7), AE asked for repetition of the entire event due to distraction or inattentiveness. In a third situation (No. 9), he showed confusion, when he had to imagine if he was sent to the staff room and to give a piece of paper to a certain teacher (*T. Ali*). AE was unable to imagine the situation at the beginning and he showed confusion, but was able to repair when prompted by his mother.

In (No.8), AE was unable to express apology. The only politeness marker repeated in all situations was [law samaht/i]. Moreover, two pairs of situations, No.(2/7) and (4/10) appeared to be similar but the responses and behavioural attitudes obtained

from AE were different. In (No.2) a soccer team was playing violently, while in (No. 7), two boys were playing gently with a kite. This was to investigate AE's attitude towards playing in a team or in a one to one situation, and gauge his reaction and his choice of words in different social contexts. In (No.4), it was a toy in the hands of another child but in (No.10) there were some favourite toys to investigate his emotional reaction towards items related to his "special interest" where he was ready to hit the boy/s. Comparisons of these situations give insight about AE's social behaviour, his playing techniques, tolerance, and use of language to communicate with peers.

AE showed good acoustic comprehension. As the mother briefly described the social situations in the Aleppine dialect, AE showed good ability to grasp then to adjust himself to different social contexts, give age-appropriate responses, choose proper levels of formality, politeness markers with few occurrences of social withdrawal. Finally, AE showed an ability to use almost all the speech acts listed in Lahey's framework, see (Table.3.4). Analysis of his responses showed that AE had age-appropriate pragmatic skills pointing to good social competence when compared to peers of the similar age group and background, refer to *Language Development in Typical Arabic Children (4th Stage)*, Abu Nab'a (n.d.) in Appendix A.2.

4.5 Non-Verbal Behaviour Findings

AE was observed using several non-verbal behaviours to sustain communication as a strategy to hide his limitations in verbal retrieval due to prolonged processing times. AE showed an ability to develop interpersonal devices for conveying his messages using non-verbal behaviours comprising facial expressions, body movements, and

gestures, dissimilar to autistic populations observed by (Johnson, 2004), who lacked the ability to use rapport appropriately and were unable to understand non-verbal cues.

Additionally, he used gestures to accompany his speech and sometimes to convey information not expressed in speech. This latter behaviour was more frequently practised by AE with his mother, than with other familiar people and peers but not practised with unfamiliar adult strangers. This non-verbal behaviour noticed in AE was similar to what was noticed in children with Speech and Language Impairment (SLI) (Evans, Alibali, & McNeil, 2001) more than in normally developing or in autistic children (Johnson, 2004).

In elicited data gathered from *conversations* and *narrations*, AE employed several paralinguistic and body language cues assumed to play these roles. For example:

- To sustain communication.
- To keep track of his partner during prolonged verbal processing times.
- To compensate for difficulties that may disappoint his partner during conversations.

Whilst in non-interactive play alone situations, AE's non-verbal interpersonal monologues had different manifestations that might imply the following functions:

- To exercise producing phonological strings of certain sound clusters in L1 (e.g. mutter and murmur), as seen in early infancy babbling stage.
- To sustain imagination and mono-playing through making real sound effects.
- To amuse himself when experiencing boredom and having mental fatigue.
- To express feelings of relaxation and pleasure.

The types of non-verbal behaviours exhibited in AE's communication events and the strategies he used were displayed in the video recordings. These non-verbal behaviours comprised: paralinguistic and body language (i.e. *hand posture*, *gesture*

and body movement; gaze behaviour and eye- contact; and facial expressions) as follows:

4.5.1 Paralanguage

Paralanguage elements uttered in Arabic were preferred by AE when faced some difficulties in communication. AE had difficulty controlling and adjusting his voice to an appropriate volume level. He was found to prefer using a loud and high-pitched voice although it is culturally unacceptable for a young child to raise his voice, especially in front of the elderly or when addressing parents or grandparents. Impairment in **Prosody** is reported in verbal autistic populations by Paul et al. (2005), and in other psychiatric and neurological conditions, *i.e. early right hemispheric dysfunction (RHD)*, Shields (1991); *Schizophrenia*, Koeda et al. (2006); and in *Dysarthria allied with MS*, Miller (2008).

Moreover, AE produced different types of voice that occurred naturally to express emotional reactions as laughter, *crying, shouting, sighing, gasping, panting, and yawning*. AE was observed using *coughing* and *throat clearing* frequently at school, a sign for interaction regulation (Poyatos, 2002, p. 121), probably reflecting social anxiety and uncertainty, and at home when recalling verbal knowledge as a way to compensate for prolonged retrieval times.

Other idiosyncratic paralinguistic utterances observed occurred with words and gestures in which their meanings were suggested by the context. They were consistently encoded and decoded in Arabic as in other languages and cultures, *i.e. tongue clicks, nasal frictions, language free sighs, hisses, moans, groans, sniffs, snort,*

blows, slurps, gasps, hesitation sounds in Arabic (/a:h/, /imm/, /mm/, /E:h/, /u:h/), and momentary silences.

Examples of *Paralinguistic Echoics* found in AE's productions were frequently in the form of imitation of *animal sounds* (the monkey's 'chattering', the cat's 'meowing' and so on), *mechanical equipment sounds* (the engine's 'whirring'), and *military sounds* (gunshots, machinegun and artillery sounds) and movements accompanied by a vocal sound, e.g. how someone is running, two boxers hitting each other and a bomb explosion sound.

4.5.2 Body Language

Several body language elements observed in AE 's behaviour correspond with Ekman and Friesen (1969, in Beebe Beebe & Masterson, 2000) who stated conscious and unconscious gestures, manners, postures and body language elements. The following body language elements were observed:

(a) Hand Posture, Gesture and Body Movement. AE used several non-verbal acts frequently utilising his whole body and hands. Showing good gross motor abilities (*i.e. running, climbing, or riding a two-wheel bicycle*) and high levels of alertness, activity, and impulsivity, AE relied on this type of body language to compensate for the difficulties he faced in expressing and retrieving words. He would, for instance, act out a tri-syllabic word -he found laborious- such as /jɪstʃədZil / jɪstʃədZil/ 'to rush' by rapidly moving his hands repeatedly. Additionally, he would raise his thumb up instead of saying a phrase such as: *it is excellent* or *it is delicious*. And as other

typically developing children, AE raised his hand or finger to signal turn-taking at school.

Turn-Taking Skills in Conversations

As discussed earlier, regulations that systematise turn taking in conversations were the least employed devices by AE. AE behaved similarly to MS patients as Renom et al. (2007; p.11) reported in terms of deficiencies in social structures, and in organisations of everyday talk-in-interaction skills. Similar to AE's turn taking behaviour, Rustin and Kuhr (1999) described speech and language impaired patients who often have difficulty maintaining turns in conversations by breaking into a conversation as well as relinquishing their turn, since non-verbal signals are given by eye-contact and inflection of voice to indicate when someone is ready to complete their turn (p.113).

In *Conversations* documented under receptive data, AE's turn taking behaviour showed some indications in the body language for mental fatigue, boredom or unwillingness to interact. On the other hand, two types of negative non-verbal behaviours implemented by AE and documented in some *Spontaneous Conversations* pointing to incompetence in turn taking were considered a pragmatic communication deficit. These behaviours became apparent around age six noticed by his family members, especially when the child was willing to initiate, express an idea or spontaneously narrate a previous experience. *Firstly*, when he had an idea (whether relevant or not) that he was very eager to share, he used hand gestures and tapped on his partner's shoulder or cheek raising his voice, forcing his conversation partner to stop talking in order to attract his/her full attention, e.g. Mama, I don't break my toys, do I?/ [mama, {na m{ ba k{ssir al{ :bi, mu: s{ :h?}; Mama, I don't contaminate my

clothes, is that true?/[mama, {na m{ ba wassix m{l{bsi, mu: s{:h?}. *Secondly*, when he wanted to dominate a conversation, if his partner said something he had already known, AE was intolerant and impatient to listen to it being narrated, and he obliged his partner to stop talking so that he could say it. In order to accomplish this, he raised his voice repeatedly and hastily saying (no), (I): [l{?/ l{?/ l{?], [{na/ {na], stood up and placed his hand on his partner's cheek or even mouth. Both forms of touching are considered rude and impolite in Arabic culture as in many other cultures (Thirumalai, 1987). AE behaved spontaneously and impulsively and could hardly self-repair, respond to feedback or develop appropriate turn-taking skills. These behaviours gradually faded away after one year when (fully or partially) recovery and improvements in expressive language occurred (see section 4.2.1).

These spontaneous behaviours and arbitrary initiations are described by the researcher since videotaping them was very difficult and they were not revealed through either receptive and expressive assigned tasks or activities or pre-set conversations. Appropriate turn taking behaviour in conversations required the integration and cooperation of expressive capabilities involving thinking, attention, memory, semantic storage, and speech production organs, which seemed to be affected in AE due to his neurological morbidity.

(b) Gaze Behaviour and Eye Contact. Several functions of eye contact that AE exhibited were as stated in Sadri and Flammia (2011), i.e. a *cognitive* function (thought process); a *monitoring* function (allows feedback); and an *expressive* function (feelings emotions and attitudes). Another function was a *regulatory* function, which provided signals if the communication channel was open or closed for one to interact.

Avoiding direct eye contact might indicated shyness, preoccupation, or disinterest in a person, a conversation or a visual stimulus (De Vito, 2002, p. 141).

This regulatory function of eye contact could be directly related to turn taking skills in conversations, as discussed earlier. A possible explanation for AE's short eye gaze span and frequent turning of his head away in conversations was probably due to ADHD symptoms or the white matter dysmyelination in the occipital and parietal lobes (see MRI reports in Appendix A.18).

On the other hand, the *Special Education Assessor* observed AE when assessing his learning difficulties and reported that even if he seemed inattentive to his partner and his eye-contact was not maintained, he was carefully attentive, and he showed good comprehension of the assessment rubrics, see AE's performance on the dyslexia and dysgraphia screening test (Appendix A.21). This kind of deficiency is listed in the literature under deficiencies in processing or lack of coordination among several areas in the brain essential for performing an efficient communication model (Renom et al., 2007). This might facilitate understanding of the learning style and strategies that AE utilised when he was exposed to new knowledge.

(c) Facial Expressions. AE was observed employing facial expressions efficiently, as he showed preference using them to display emotions more than uttered words. Six primary cross-cultural emotions were observed, similar to Ekman, Friesen, and Ellsworth's (1972, p. 233), those were happiness, anger, surprise, sadness, disgust, and fear. AE's face showed expressiveness using supplementary devices for communicating, i.e. eyebrows and eye gaze.

Referring to results found previously in **Bishop's CCC (1998)**, AE gained high scores among the three raters on '*Conversational Rapport*' showing intact ability. While for '*Appropriate initiation*' (i.e. turn-taking skills), he showed reduced ability and could be appraised as having a 'moderate deficit' in Bishop's criteria, as consensus was reached among three raters on a score of 24 indicating 1.5 Standard Deviation below the mean.

AE was seen utilising several appropriate age-matched non-verbal (body language and paralanguage) behaviours to assist in his social communication that could be considered an advantage, and an indicator of his non-verbal intelligence. Conversely, he used non-verbal behaviours (paralanguage and body language) in conversations to dominate the dialogue and catch his interlocutors' attention. His impulsivity in turn-taking was an attribute that was regarded as impolite in many cultures including Arabic culture.

AE's persistent turn taking deficiency caused him to show limited ability in considering his partner's needs and in attracting his partner's attention in an appropriate way. This was most likely due to delay in his social skills, and his neurological comorbidity, which correspond with the brain dysconnectivity hypothesis (McAlonan et al., 2005) that deficits in conversational skills were probably due to a decrease in integration and coordination among language production, retrieval, language comprehension and vision.

To sum up, AE's non-verbal performance observed confirmed the development of his own coping strategies to assist his speech, as an advantage, reported in the Assessment

Report (Appendix A.21) and his ability to understand non-verbal cues unlike ASD children (Johnson, 2004) as well. On the other hand, weaknesses in his poor eye contact, inappropriate touch behaviour and lack of turn taking in conversations might be caused by a few autistic traits and the onset of the MS symptoms affecting several domains (e.g., his speech, language, vision, and cognitive abilities) essential for efficient social performance and overall communicative competence.

4.6 General Findings and Discussion

This study is initiated to explore communication difficulties in children at risk of learning disabilities. AE experienced atypical phases of language development that puzzled his parents and then his teachers and doctors although no apparent developmental, physiological, or neurological delay was visible. The child deviated from his siblings by having individual differences in behaviour and special interests thought to be autistic traits, hyperactivity, and attention deficits affecting his ability to gain new knowledge and communicate properly with others.

The findings were examined in light of the general research questions; namely, the changes in AE's communication with his family members causing the emergence of non-verbal strategies to sustain communication. The discussion will aid in understanding neurological morbidity in children and constraints on communication, and the invaluable contribution of multi-team professionals, how formal and informal assessments assist in identifying strengths and weaknesses, and finally how levels of subjectivity tangled with this research can be reduced by the provision of triangulation in methods to generate valid and reliable results.

The findings supported the importance of early identification of communication deficiencies in children at risk of learning difficulties and spread awareness among parents about communication deficiencies in children. For instance, parents were advised to bring to the attention of doctors and professionals their child's problems without delay after they occur and to keep track of communication difficulties in the child's profile.

The principle tool utilised in this research to identify difficulties in communication was *Bishop's Children's Communication Checklist CCC (1998)*, a valid tool for assessing communication competence in children comprising these domains: Phonology, Grammar, Semantics, and Pragmatics. Results from the CCC (1998) provide evidence of difficulties in many domains: *Phonology* affecting speech production, fluency and conversation quality, *Semantics* affecting conversation ability and causing lexical limitations; and *Pragmatics* considering inappropriate initiation (turn-taking), coherence, conversation (versatility of conversational topics and use of different words), use of context (understanding social rules pertaining to different situations and use of language in context), rapport (use of non-verbal cues), social behaviour, and specific interests. In AE's case, Grammar is the least deficit domain where he is able to use age-appropriate syntax.

In order to minimise bias and draw a holistic picture of AE's communication difficulties, several psychological and cognitive features are carefully considered when designing, selecting and recording the different expressive and receptive tasks and sources of data. For instance, the consideration of AE's readiness, fatigue, mood, lack of motivation, depression, and tantrums that caused delay in recording; minimising the

environmental distraction in the room where the recording took place; splitting a task into two sessions on two different days; selecting clear, colourful pictures from encyclopaedias and materials that attract the child; choosing topics from a familiar cultural background and age-appropriate textbooks and deciding on topics that show the child's special interests and playing techniques. The researcher also omitted some recorded tasks that are insignificant in determining AE's communication strategies or difficulties.

Spontaneous as well as elicited data revealed different aspects of communication and gave evidence for distinct difficulties that might not appear in other tasks. In some cases, neither task was able to expose AE's communication strategy nor difficulty. Therefore, the researcher's observation relied on description of situations in natural settings and what was written in diary notes to demonstrate a strength or weakness in AE's communication.

The analysis of AE's communicative patterns revealed no wide gap or qualitative difference between Expressive and Receptive language tasks outcomes, where similar difficulties were realised in both. These were word retrieval difficulties, selective attention, off-topic ideas, repetitions, restrictions in grammatical patterns, the subject's special interest limiting his vocabulary growth and lexical development, the few non-functional utterances and restrictions in social interaction in both types of data. Inconsistency was found in the occurrence of verbal (phonological and semantic) paraphasias resulting from retrieval difficulties, which were also influenced by his physical and mental fatigue, psychological mood and readiness to communicate.

In AE's Expressive skills, findings showed variations with better outcomes in narrating than in re-telling abilities as the latter required integration of more advanced cognitive facilities (language production, retrieval, memory, and comprehension). Narrations with the aid of pictures - Appendix A.4 - and narrations relying on retrieval from memory were both not cohesive and fluent. Elicited data from Expressive activities and tasks revealed better linguistic quality, eloquence, and mental readiness than spontaneous monologues and ad hoc participations in conversations where false semantic relations, echolalia, jargon, and unrelated ideas were more frequent.

Finally, the integrated coordination of the different linguistic aspects according to Bloom and Lahey's (1978) framework of *form*, *content* and *use* has facilitated looking at AE's communication deficiencies from different angles, determining the type and level of difficulty, and addressing his needs, as follows:

4.6.1 Deficits in Form.

Investigating the phonological domain, findings in this case study suggest a phonological impediment described as both disordered and delayed, as common and idiosyncratic phonological processes were still used by the subject beyond the expected age of suppression in cross-linguistic studies and in Arab children (Amayreh & Dyson, 1998). According to Grunwell (1981; 1991) the data analysed give evidence for both *a delay* "chronological mismatch" and *a disorder*. Similarly, Dodd, Leahy & Hambly's (1989) classification, AE is considered *delayed* (inappropriate for his chronological age) and *deviant inconsistent* (exhibits many apparently non-rule governed errors) in his conversations, naming and spontaneous speech. Several phonological paraphasias which deviated from the target word are unique to this child

and unidentified in cross-language studies. This is to confirm the existence of several “unknowns” in MS cases, and the phonatory instability in Childhood MS (Yorkston, Klasner, and Swanson, 2001).

Analysis of the data shows that AE is free from articulation deficits but is prone to develop ‘Dysarthria’ at any age as a prevalent symptom in progressive MS and WM disorders despite having good clear articulation for L1 phonemes at present. Phonological based subsegmental and syllabic investigations give evidence of disorder at the syllabic level and prosodic disturbance in lexical representations confirming episodes of ‘Verbal Dyspraxia’ ascribed to the onset of Childhood MS in the form of “Remissions and Relapses” remaining for few months then followed by full or partial recovery (Gorman et al., 2009; Jaffe et al., 2003; Boiko, et al., 2002). In addition to Dyspraxia, a kind of Expressive Dysphasia, probably “Conduction Aphasia” might be behind the decline in AE’s verbal production capacity and fluency.

The findings also confirm the existence of ‘dysfluency’ symptoms when frequent phonological and semantic paraphasias, a certain hyposensitivity to some sounds, and inaccuracy suggest a deficit in the subject’s acoustic acuity. Furthermore, the subject manifests patterns of *substitutions* having some difficulty in recognising the target word due to difficulty in discriminating consonants in the same vocalic phoneme although his brain MR images did not reveal spread of the disease to the Wernicke’s area in the temporal lobe, nor dysfunction in the Wernicke’s area. These results might lead to the possibility of a cognitive change affecting AE’s speech fluency, word retrieval and language processing skills.

Morphosyntactic Ability

In this case, AE's morphosyntactic ability seems to be the least affected. The subject is able to produce fully grammatical sentences, shows intact understanding of passives, pronouns, prepositions and even reported speech with very few mistakes recorded as any typical child acquiring L1. Although children with ASD are considered slower than normal to develop syntax (Hoff, 2008, p. 395), yet they follow the similar course (Tager-Flusberg, 1981a; 1989).

4.6.2 Deficits in Content.

In AE's case, abnormal EEG in the frontal lobe accompanying a progressive dysmyelinating disorder in two different lobes are confirmed by the brain MRI. This gives evidence for different kinds of speech and language deficiencies, e.g. (Dysnomia). Neuro-pathologic and anatomical findings might aid in understanding reasons behind sudden change in spontaneous expressive abilities, regression in fluency, and the emergence of a non-verbal alternative system in AE's linguistic behaviour.

Deficiencies in lexical development affecting naming and verbal retrieval abilities are apparent in this case. Figure 4.2 illustrates the linguistic function of the different brain areas presented in different colours, then two posterior indications of the brain lobes affected by the dysmyelinating disorder in this case (the Parietal and the Occipital), while abnormal waves detected on EEG take place in the frontal lobe. The occipital lobe, mainly responsible for vision, appears in Fig. 4.2 to have little effect on language except for reading skills (dark blue bar), whereas the parietal lobe appears to host more

linguistic features (writing, verbal comprehension, naming, fluency, reading, articulation, but less repetition abilities).

Although many experts have believed that damage to Broca's area or Wernicke's area are the main causes of anomia, current studies have shown that damage in the left Parietal lobe is the epicenter of anomic aphasia (Fridriksson, 2010). Therefore, this illustration (Figure 4.2) does not indicate precisely the location of the Broca's area or Wernicke's area, instead it relies on the distribution of language features and domains in the cerebral cortex.

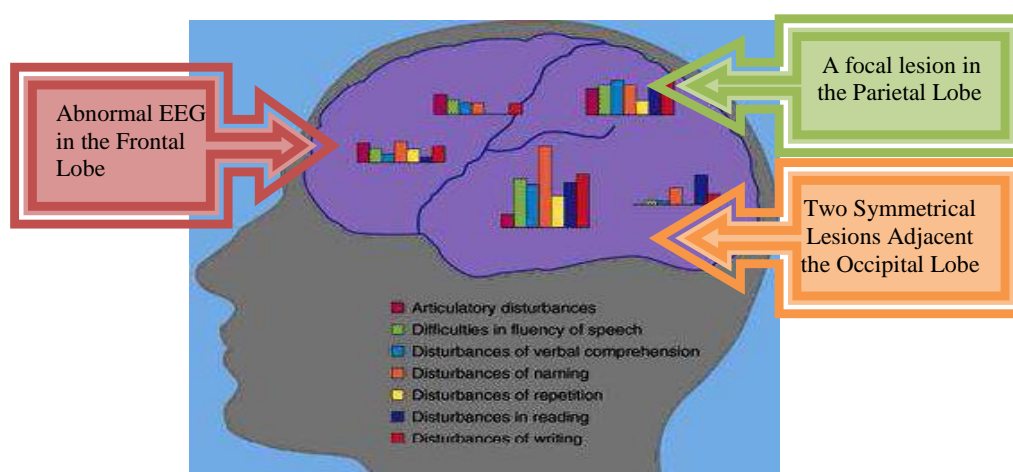


Figure 4.2. How cortical lesions affected AE's language abilities between ages (6;10-7;4) yrs.

Source: Adopted from Hécaen and Angelergues, in de Reuck and O'Connor, CIBA Foundation Symposium on the Disorders of Language (1964), Churchill Press, 222-256.

The findings indicate the existence of a 'semantic deficit' and support findings by Yamada (1982, as cited in Fromkin, 1997) who found that some children display well-developed phonological, morphological and syntactic linguistic abilities, but their lexical, semantic or referential aspects of language were less developed, and they presented deficits in their non-linguistic cognitive development. Moreover, AE's impulsive behaviour has affected his conversations. He not only interrupted

conversations and was unable to wait for his turn; he also often interjected with off-topic participations as a deficit in content as well. AE's lexico-semantic difficulties in the language content dimension comprise the following:

(a) Naming Abilities: Findings on naming abilities are explained as follows:

1. Action Naming vs. Noun Naming Abilities. AE was slow in naming and exhibited signs of 'Dysnomia' in naming familiar common and proper names used frequently, especially when compared with his ability to name actions (naming 18 present tense verbs) where he showed intact abilities and was able to name rapidly unlike his ability on noun naming tasks comprising different pictures and objects (i.e. colours, body parts, clothes, means of transportation and animals). However, these findings are dissimilar to results seen in the SLI group studied by Sheng and McGregor (2010) where action naming was more affected than object naming. To conclude, AE's naming ability is similar to the SLI group in having immaturities in semantic representations, but this ability has deviated in his naming manifestations in object and action naming.

2. Spontaneous vs. Elicited Naming Abilities. AE's lexical representation showed two different patterns of naming deficits when spontaneous and elicited naming capacities are compared. In spontaneous samples, only certain familiar proper nouns were frequently dysnomic in fully grammatical sentences. While in elicited data samples and conversations, AE's focus was on certain inanimate objects of his special interests, a common characteristic in ASD children (Morris, Kirschbaum & Picard, 2010).

3. Naming Ability vs. Spatial Recognition. What is discovered in AE's case is a deficiency in the ability to see multiple objects when seeking out a certain object among others of the same or a related category of visuolinguistic behaviour. For example, to extract a certain toy car from a group of cars or from his toy box, or to pick a particular colour of socks among different colours in his drawer and so on. This phenomenon, known as "Simultanagnosia," was studied by Laeng, Kosslyn, Caviness, and Bates (1999) as a type of visual agnosia common in some ASD cases related to a secondary occipital lobe deficiency with involvement of the parietal lobe in the literature of neuropathology. In contrast to this, when searching for an object in a pictorial scene, this problem was not detected, as AE enjoyed playing object-searching games on the computer and spotting the differences between two pictures, paying close attention to small details. More investigation is needed to make a decision on the type of deficiency to be either in word perception, semantic conceptions, visuo/auditory processing or in visual acuity and spatial skills, which is not in the scope of this study.

Additionally, AE's response to the stimulus differed whether it was a picture or a model in naming animal species, showing better ability in model naming than in pictorial naming. For instance, in the *naming clothes* task, the researcher relied on naming pictures alone which can be considered a limitation in the estimation of AE's naming ability. Further investigation is required to assess his object naming ability with variable stimulus, i.e. line drawing, photograph, and model (Damasio et al., 1996) in order to arrive at more precise findings. This leads to five conclusions regarding AE's naming ability:

- First, his ability to name is selective and inequitable. Results showing selective naming deficits in AE's production are compatible with anomic cases in the literature, e.g. Semenza and Zettin, (1989) studied a patient unable to name any famous faces or places, while being able to name without error sets of body parts, fruits, vegetables, vehicles, types of pasta, furniture, and colours. Damasio and Tranel (1993 cited in Fromkin, 1997) found that distinct neural systems were required for the retrieval of words denoting actions versus those denoting objects. Also a double dissociation was found where some patients with lesions in one area of the brain could not access action words, but had no problem with objects; and other patients with lesions in non-overlapping areas showed the reverse problem.
- Second, the subject's shift of interest changed over time without his parents' scaffolding or reinforcement, e.g. between years (5-7), his interest was in radars, fans, windmills, traffic lights (present also in his drawings in Appendix 30), then his interest shifted to military hardware between years (7-8) influenced by computer games played with his elder brother.
- Third, AE shows discrepancy and inconsistency in his naming abilities confirming the existence of a deficit in semantic memory as detected in MS patients by Henry and Beatty (2006).
- Forth, AE uses overgeneralisations and overextensions on several occasions which are believed to stem from limitations in vocabulary resulting from lack of knowledge and/or immature retrieval ability (Gershkoff-Stowe, 2002).
- Fifth, among the impairments caused by AE's neurological illness, the cognitive delay might worsen overtime developing into *Selective Amnesia* and the naming difficulty could be a sign of the onset stages.
- Sixth, since some dysnomic words appeared dysfluent, produced with frequent semantic and phonological paraphasias (substitutions and syllabic reversals 'metathesis'), it is relevant to consider other types of Expressive Dysphasia to coexist with dysnomia, e.g. "Conduction Aphasia".

(b) Word Retrieval Difficulties. AE had a difficulty in recalling certain nouns when necessary, unlike his ability to retrieve past events from memory which seemed intact. He was observed implementing search behaviour and indicators reported as *Scanning Speech* (Yorkston et al., 2003) in both his spontaneous and elicited discourse very

much similar to what Oelschlaeger and Damico (2000) had described. Finally, findings are also compatible with conclusions reported on MS patients having frequent deficits in verbal fluency (Arnett et al., 1997); semantic memory (Henry & Beatty, 2006); and working memory reflecting an impaired executive system (D' Esposito et al., 1996).

The frequent phonological and semantic paraphasias extracted from AE's conversations and initiations beyond the expected age of language acquisition reveal a problem of *inaccuracy*. Many of these analysed paraphasias are found comprising [s] phonemes in different word positions, (i.e. lse:ni / sinni; \cong l-d{ ∂ {se / \cong l- ∂ {d{s; silk/ sikke; l{:silki- sikirte:r / sikju:riti). This indicates that this phoneme [s], even though acquired and articulated properly in isolation as well as in different word positions, is difficult for AE to recall accurately because he is faced with deficit either in discrimination acuity or in the lexical storing devices.

Verbal and Non-Verbal Strategies Observed during Word Finding

AE showed 'Dysfluency' in his speech which became visible to all his family members, such as repetitions, some stuttering, empty and filled pauses in Arabic (i.e. /a:h/, /imm/, /mm/, /E:h/, /u:h/), prolongations, insertion of jargon and irrelevant echolalic words and hesitations due to the forgetfulness of a familiar noun (proper or common) and his uncertainty in the middle of conversations. He was able to describe the function of an object and explain its meaning when he cannot recall its name (circumlocutions), or ask for assistance from his mother. The present research makes an attempt to understand how the existing dysfluency markers, which emerged to

sustain communication, appear in the Arabic speaking population as a non language-specific feature.

AE also integrates communication elements (*verbal and nonverbal components of speech*) as strategies to compensate for his retrieval difficulties and slowness in processing times in order to preserve the authenticity of communication. He uses non-verbal paralanguage, *i.e. coughing, throat-clearing and breathing sounds*; and non-verbal body language to convey a certain meaning through *acting or imitating*, in addition to facial expressions, *i.e. opening eyes widely, raising eyebrows, protruding and pressing on his lips or other involuntary movements*.

4.6.3 Deficits in Use.

Findings showed evidence of AE's ability to use socially appropriate stereotyped phrases and politeness markers in his discourse with close relatives around him, *i.e. Sorry, Thanks and May I, [ʃif / ʃokran / momkin]*. Furthermore, greetings, religious Islamic rituals (*after sneezing, before and after eating, going to the toilet, and sleeping*) and social commentary statements (*polite social comments delivered after bathing and dining in the Syrian culture*) were produced intelligibly. He seemed alert and able to recall the suitable utterance in correct social contexts. AE had no problem in the first two areas of using different speech acts, using appropriate formal and informal levels of language, and code - switching among different Arabic dialects, yet his difficulties appeared more in following rules in conversations, *i.e. turn taking and topic maintenance*.

There are several reasons why pragmatic profiling has been avoided in this study. *Firstly*, it is not a simple task when there are symptoms of aphasia (e.g. word finding difficulties) associated with/without the use of verbal, paralinguistic, and non-verbal elements. *Secondly*, pragmatic profiles and assessment tools designed for adults are inapplicable to children and within the pediatric population pragmatic presentations differ from age to age. *Thirdly*, it is difficult to decide on either of the two main categories: appropriate or inappropriate, or reach consensus on what is appropriate and acceptable in pragmatic analysis, e.g. ‘somewhat appropriate’ or ‘mostly inappropriate’ in pragmatic checklists as the one designed for aphasics by Penn (1988, in Ball, 2000, p. 90) when assessing schoolchildren in different cultures due to cultural, socio-economic, urban-rural considerations. *Finally*, the adoption of pragmatic checklists is inadequate and far from being straightforward because of difficulties in translating social context, appropriateness, and politeness preserving high reliability and validity in cross-cultural studies. According to this, the researcher commented on aspects of AE’s communicative behaviour describing his functional ability as revealed from the results obtained from different sources looking at AE’s discourse, variety of speech acts, role-play skills, his results on the pragmatic task (Table 4.15) and his spontaneous drawings (Appendix 30) to enhance results obtained from Bishop’s CCC (1998) on the pragmatic composite.

(a) Pragmatic Skills in Bishop’s CCC (1998).

In Bishop’s 70-item checklist for assessing communicative competence in children, the pragmatic composite comprised 38/70 subscales classified as follows: *inappropriate initiation, coherence, stereotyped conversation, use of context, and rapport*. Social behaviour and specific interests are grouped in separate categories

including 17/70, while the rest of the items for assessing *speech* and *syntax* formed 15/70 items (see Table 3.1). The checklist gives a comprehensive estimation of AE's pragmatic skills and clearly assisted in identifying areas of strength and weakness in linguistic and social domains to evaluate his communicative competence.

Regarding AE's social relationships, findings reached from actual behaviour correspond more with results attained by answering Bishop's CCC (1998) and the overall pragmatic composite discussed earlier in this chapter than data elicited from tasks depending on contextual pragmatic situations, in which perspective understanding and imagination of a certain social context is implemented. Therefore, findings from these pragmatic tasks alone can be regarded as insufficient in estimating the social competence level of AE if compared to his real performance in different social contexts.

(b) Conversation Skills.

Because it is considered a crucial area to consider in a child's linguistic development and a predictor of his/her pragmatic skills and social competence, investigating dyadic interaction with the researcher (the mother) has revealed inconsistencies and limitations in AE's conversation capacities more obvious than his deficiencies on narrative or pragmatic tasks (i.e. *The Textual Pragmatic Situations*) when he produced a variety of speech acts, politeness markers and appropriate stereotyped social phrases in Arabic. Findings also show several verbal behaviours, e.g. lack of appropriate attention calling devices (i.e. touching, raised voice), few non-functional language occasions, and several intrapersonal strategies to compensate for deficiencies in conversations due to retrieval difficulties. While non-verbal behaviours detected show

deficits in turn taking skills; gaze-shift behaviour (*i.e. poor eye contact, poor eye-gaze reading and lip reading, poor attending*); attention deficits (*i.e. short attention span and selective attention*); boredom; involuntary body movements; and facial expressions.

Although AE is considered an atypical autistic child having some speech and language problems dissimilar to pure autistic profiles, when conversing with the child, his patterns of participation correspond with what Yee (2005) found in a study on patterns of communication, and speech acts implemented in the conversations of Chinese school children with autistic traits. Similarly, AE was likely to take the passive role dissimilar to the partner who took the active role; sometimes the child gave no response to questions and produced less questions and comments than affirmatives. Furthermore, several non-functional language occasions were reported, such as irrelevant thought, the production of delayed echolalia and jargon, and a preoccupation with certain ideas of his special interests causing a topic-shifting tendency to occur. Conversely, his manifestations are dissimilar to what Sherman and Shulman (1995) found in their study on normal children, taking into account gender differences in topic initiation, topic change and topic maintenance.

From another point of view, the findings match the conclusions reached by Foley et al. (1994) on cognitive problems encountered in MS in terms of their impact on fundamental elements of communication, e.g. accurate listening, capacity for empathy, making requests of others, making compromises, and giving others feedback about the impact of their behaviour.

(c) Use of Speech Acts Found in Lahey's (1988) Framework.

Despite having few ASD manifestations, AE was able to use a variety of age-appropriate speech acts in his expressive language capacities (*Story Retelling and Picture Description*) and in his receptive language as well. During dyadic interaction, compatible with Lahey's (1988; p. 435) framework of language function where *Communicative Interactions* comprised illocutionary force, communicative acts, and speech acts, AE was rarely observed giving (Feedback) in *Discourse*. AE was also never heard saying *Routine* (songs) in any task or activity, and he produced some speech acts accompanying negative behaviours as in *Regulate* (to obtain participation or invite), *Rejection* (e.g. to shift activity from watching TV to meal time), and in *Discourse* (to initiate topic or turn).

The implementation of speech acts is not enough to assess conversation skills in children, but other issues of appropriateness of using them in context, the ability to interact sustaining attention, and employing suitable non-verbal communication have to be considered as well, see section (4.5) for AE's non-verbal communicative behaviours. These aspects have to be considered for each question in isolation. Furthermore, the child's ability to integrate expressive capabilities involving thinking, attention, memory, semantic storage, and speech production organs is required when assessing conversational competence.

(d) Pretend Role-Play Skills.

The aim of this task is to show social interaction, adaptation and flexibility supported by Vygotsky's (1978) insights. Studies have reported the impact of pretence play on deductive reasoning and social competence in ages 5-7 years old children, and of

socio-dramatic play on improved 'self-regulation' among young children who are prone to be highly impulsive (Whitebread & Jameson, 2010). AE showed lack of social flexibility and limited speech in pretend role-play skills, where his focus has been on imitating actions rather than imitating utterances (see The Pizza Chef Task).

Because verbal learning is deficient, a role-play task assigned by the researcher (i.e. Doctor-Patient Act) was omitted after AE's refusal to participate when he showed a high level of resentment towards his partners who could memorise their parts without difficulty. In this task, the child was asked to take the role of a doctor, his elder brother (as the wolf), and a 7-year old female cousin as 'the sick hen'. The dialogue was taken from an Arabic school textbook at the Grade Two level. It was about a fox pretending to be a doctor and playing a trick to treat the sick hen. The children were guided to use the Syrian Aleppine dialect instead of formal classical Arabic provided in the text. Materials, costumes, doctor equipment and setting were prepared in advance to facilitate the role play session. Unfortunately, this task was not accomplished because AE is observed refusing to be put in a situation permitting comparison with peers to occur. Such behaviour shows evidence of impairment in both peer play and pretend-play and in social interaction found in autistic children according to the diagnostic criteria in Appendix A.23, and confirms for the existence of autistic traits; and the cognitive change AE experiences affecting his verbal learning abilities and verbal memory allied with the neurological disease.

AE's behaviour in role play correspond with findings in studies assessing communication in social contexts (i.e. conversation abilities and role-play) in ASD children by Volkmar, Cook, Pomeroy, Realmuto, and Tanguay (2000) as an important

indicator of impairment to reveal restricted interests, unusual behaviour and unusual features of language.

4.6.4 Cognitive Deficits.

Because MS is known to affect a variety of cognitive skills (Burks & Johnson, 2000), e.g. *memory, concentration, abstract reasoning, problem solving, and attention*, therefore, predicting the existence of several inconsistent intellectual dysfunctions and challenges is relevant. However, based on AE's performance, he is considered a high functional autistic for his ability to acquire developed language (Hoff, 2008), and to cope with different mainstream school environments. Some cognitive difficulties encountered in AE's case were:

(a) Verbal Learning Difficulties.

AE's linguistic performance on expressive tasks and activities pointed to difficulties in repetition capacities, verbal learning and verbal memory apparent when reciting familiar songs (The Arabic Alphabet Song, Appendix A.6) and memorising role-play tasks, and detected also at school when asked to memorise songs and short texts. In contrast, he did not face difficulties in performing arithmetic operations, comprehending and recalling scientific facts requiring less verbal skills.

Verbal Dyspraxia, a disturbance at the syllabic level causing context-based phonological errors, i.e. frequent assimilation, metathesis and vowel errors (Smit, 2004), as a specific learning difficulty affecting some sound clusters in AE's L1 when speaking and reading (Appendix A.24 [T.24A]) as well. The occurrences took the form of remission and relapses (Gorman et al., 2009; Jaffe et al., 2003; Boiko et al.,

2002) affecting his speech rate and accuracy before reaching full phonological maturation.

As MS is an unpredictable disease, it is reported that difficulties might partly or fully improve after days, weeks or even months (Kidd, 2001), AE achieved slow and gradual improvements in his intelligibility to produce and repair many of the disorted words at a later age than norms similar to what is suggested by Amayreh and Dyson (1998); while some errors seemed residual lacking the ability to be repaired.

On the contrast, AE showed an ability to decode and adjust to different varieties of Arabic in different social contexts. He was born in Medina, Saudi Arabia and speaks Syrian Aleppine Arabic at home, ungrammatical fractured Arabic with the Indonesian maid, Egyptian Arabic with the neighbour, Saudi Hijazi Arabic at his first Quranic School and in the street, Iraqi Arabic at the Iraqi School in Kuala Lumpur; AE was able to easily distinguish these dialects without any verbal difficulty.

(b) Literacy Learning Capacities.

Though having a profile of comorbidity affecting speech and language skills, AE was observed having the ability to gradually overcome a '*Reading Difficulty*' in Grade One, as reported by his teachers. When he complained of headaches, fatigue, eye strain while reading; he faced a decrease in his reading rate (i.e. reading letter-by-letter/word-by-word, skipping, guessing words, giving synonyms, and re-reading and so on); and he was at risk of hyposensitivity to sounds due to a problem in auditory processing (see Appendix 29 for a reading sample). In *Writing* and *Copying*, he confused similar looking letters in Arabic and English and took longer to differentiate

among them than his peers did. In *Spelling Abilities*, his achievement depended on mental fatigue, recalling ability and hyposensitivity to similar sounds. Inconsistent results are regarded in the form of good and bad days.

An advantage for AE is his age, falling within what is considered the ‘Critical Period’ (Lenneberg, 1967) or the ‘Sensitive Period’ (Elman et al. 1996) which is noted for successful L1 acquisition and recovery from lesions. According to Bishop (1988), the majority of brain damaged children do not develop aphasia within the first couple of years of life. The ability to recover rapidly decreases with age and chances are best for recovery before the age of ten.

Moreover, the emergence of an alternative system (paralanguage and non-verbal communication strategies) to assist in AE’s communication observed in the middle of conversations and in his expressive language utterances are age appropriate and reported in the literature to co-occur in some developmental expressive disorders (Schwartz & Solot, 1980); and in dyspraxia (Purcell, 2006) suggesting that AE has developed some metalinguistic awareness (the ability to think about language, talk about it and use it in appropriate ways). AE has overcome a hyposensitivity to his L1 phonemes and is able to recognise all the sounds of his L1. In addition to this, he shows linguistic competence in the ability to recognise different Arabic dialects (e.g. *Egyptian Arabic, Saudi Hijazi Arabic, and Iraqi Arabic*).

AE also deviated from pure autistics, who lack the existence of other communication pathways and lack comprehension of non-verbal cues. This might prove a language shift to the right-hemisphere in right-handed dominants compatible with the right-shift

theory (RS) suggested by Alexander and Annett (1996); Thiel et al. (2006) who concluded that the language shift function is correlated with disease duration and language performance in right-handed patients in slowly progressive brain damage and long disease duration.

On the other hand, *Connectionists*, as Christiansen (1999); Elman (1998); Jagota (1998) in a new approach for explaining language learning, processing and production focus on integration among different areas in the brain rather than the Localisationists' paradigm by showing evidence for positive recovery from different cases of brain injury (see Al-Sibai, 2004). This supports AE's progress and improvements in many domains, i.e. *phonology, fluency, vocabulary span, reading, spelling and social adaptation*, slower progress is reported in *word retrieval and conversation skills*, while inconsistent residual problems still appear in *executive functions, attention, behaviour and social interaction*.

4.6.5 General Communicative Competence.

As a final point, AE's linguistic behaviour analysed in this study points probably to a more serious problem than neurodevelopmental immaturities seen in ADHD, and SLI groups of children with no neurological deficit. Symptoms of verbal Dyspraxia and even more seriously episodes of acquired Dysphasia (Dysnomia) associated with MS and appraised with discrepancy (remission/relapses) are reported in few adults as well as young patients in the clinical literature of white matter disorders. No clear qualitative signs of Dyslexia or Dysarthria (common in adult phenotypes of MS) are detected. Analyses of phonological processes reveal a phonological disorder comprising mainly *Metathesis* and *Substitution* and other unusual processes, and

shows evidence for a “chronological mismatch” (Grunwell, 1991). There is also evidence for phonemic hyposensitivity and a semantic disturbance evident in object naming, and a word retrieval difficulty (Dysnomia) allied with positive appearance of a non-verbal (paralanguage and body language) system that became obvious to AE’s family members in order to sustain communication. Comorbidity is also evident as AE meets the diagnostic criteria for being on the Autistic spectrum, having ADHD and a Dysmyelinating Disorder (probably childhood MS). The overlapping communication deficits emerging from such psychiatric and neurological comorbidity can be illustrated in Figure 4.3.

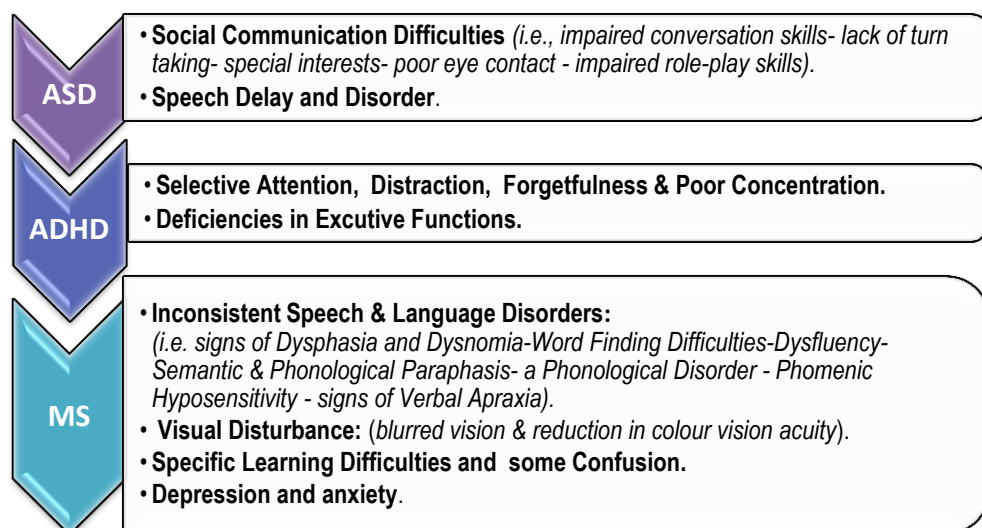


Figure 4.3. A summary of AE’s linguistic difficulties affecting his communicative competence caused by psychiatric and neurological comorbidity between ages 6;10 - 7;4 years.

It is also difficult to draw a firm line in deciding which language disorders in AE’s case are acquired or developmental, especially that the brain MRI results arrived belatedly and his disease remains a challenge for his doctors. Also consensus on definition in the literature for the developmental and acquired language disorders, and the clinical etiology in paediatrics are overlapped and still controversial in many areas as well.

Moreover, findings and results from this study are compatible with conclusions attained by Gupta, MacWhinney, Feldman, and Sacco (2003); Baddeley (1993); Baddeley, Papagno, and Vallar, (1988) on neuropsychologically impaired children with early brain injury in whom language function is largely preserved, but who exhibit selective deficits in immediate serial recall in non-word repetition and word learning ability.

AE's case also reveals a faster recovery rate than adults' brain, compatible with Dapretto, Woods and Bookheimer (2000); Mills, Coffey-Corina and Neville (1993); Papanicolaou, DiScenna, Gillespie and Aram (1990) where more diffuse brain organisation of the immature brain is suggested both by recent brain imaging studies and language acquisition research in clinical and normal populations. In AE's case, the self-development of communication strategies utilised to sustain communication and compensate for difficulties emerging from verbal dysfluency and retrieval difficulties. AE is able to use paralinguistics and body language to overcome a reading and spelling difficulty, acquire L2, repair and recover from several speech and language difficulties that are prone to gradual improvements. These are *dysfluency*, *verbal dyspraxia*, and *selective dysnomia*.

AE also shows good use of language and several speech acts (e.g. greeting, informing, demanding, promising and requesting); ability of changing his language style, e.g. speaking differently to a baby in comparison to adult, and in class and in the playground, and providing background information to an unfamiliar listener; but only few aspect of the ability to follow rules. On the other hand, he shows different levels of difficulties in taking turns, introducing topics, topic maintenance, rephrasing when

misunderstood, and keeping distance, according to the ASHA's (1997-2012) criteria on pragmatic and social language. To conclude, AE's constraints in communication require special understanding from family, environment and teachers to assist and address his verbal learning difficulties in mainstream schools.

Finally, this research describes in some detail the **General Communicative Competence** of AE revealing more accurate results when relying on descriptions and qualitative analysis of spontaneous and elicited expressive and receptive language abilities collected from conversations and story-retelling tasks than the reliance merely on results obtained from **Bishop's CCC** (1998) or parental observation alone.

4.7 Summary

This chapter combines the findings derived from observation, formal, informal assessment checklists, educational performance, and results obtained from expressive and receptive tasks and activities. The approaches and tools employed aim at exploring the subject's speech and language strengths and difficulties classified according to Form, Content, and Use. Moreover, the verbal and non-verbal data analysed from expressive and receptive sources show some coping strategies to compensate for difficulties and sustain communication. Results also reveal speech and language deficiencies, emerging from the subject's comorbidity, that are prone to gradual improvements. These are *dysfluency*, *verbal dyspraxia*, *selective dysnomia*, *spelling and reading skills*, and *second language acquisition*.

Conversely, other residual difficulties have been found that might require behavioural and speech therapy, and are essential to identify when planning for intervention (*i.e.*

turn-taking, attention deficits, topic-shifting, some WFD, verbal learning and memorising, and singing and rythming) as well as other difficulties that require medical follow up. Results of this study are then compared against typical and atypical language theories for explaining developmental and acquired communication disorders and the language acquisition process in this case.

CHAPTER 5

CONCLUSION

5.0 Introduction

The neuro-pathological disorders AE is suffering from challenged him in his L1 and L2 acquisition and affected the quality of his communication. Although considered mild inconsistent deficiencies, they were evident in his speech (fluency and prosody) and language (phonology, semantics, and pragmatics) apparent in his responses to both the expressive and receptive language tasks and daunting him in many other linguistic aspects. The child's linguistic profile showed evidence for autistic features in his communication patterns, a phonological delay and disorder, a lexical delay and more seriously episodes of verbal dyspraxia, dysfluency and dysnomia were observed. Meanwhile, neurologists confirmed the presence of a neurological disease (onset of a progressive dysmyelinating disorder causing cortical and focal lesions in brain WM) which were likely diagnosed later as relapsing/remitting childhood MS.

Furthermore, the abnormal electrocortical differences in the frontal lobe -despite considered seizure free and controlled with medication- were unlikely to interfere with his brain activity and might spread broadly across both hemispheres as a confounding factor. Therefore, a self-developed non-verbal and paralanguage system was apparent to enhance communication and support expressiveness by using the whole body. These communication strategies were observed to be appropriate for his age group and in Syrian-Arab culture in most aspects but inappropriate in terms of his turn-taking behaviour in conversations.

Secondary behavioural problems affecting AE's communication were his selective attention, short attention span, his distraction, and hyperactivity, which match the diagnostic criteria for both ASD and ADHD. Willinger et al. (2003) also suggested that children with speech and language disorders are at a special risk for developing behavioural problems. However, it was important to highlight that AE's speech and lexical performance diverged from ASD's manifestations as described in the literature since impaired naming and retrieval difficulties had the tendency to be a demonstration identified in MS pathological and neuroanatomical studies rather than speech delay or disorder allied with ASD. Considered a cognitive deficit in MS, the naming ability was prone to be inconsistently affected by the remission and relapses of the progressive MS and not by the abnormal electrocortical sharp waves in the frontal lobe, detected on EEG because AE's disturbance in naming was apparent at age 6;7 years prior to the onset of abnormal EEG at age 8;1 years. Furthermore, the subject's linguistic behaviour deviated from ASD features in having the ability to understand non-verbal social cues and to utilise non-verbal (*hand gestures, facial expressions, and body actions*) and vocal paralinguistic devices (*prosody, sounds, tongue clicks*) to assist in communication and in overcoming limitations in naming and word retrieval, which ASD children usually fail to develop.

The complexity of AE's unique case indicated a diversity of difficulties for therapists to pursue and weaknesses for his family to understand. For instance, AE's cognitive performance in his comprehension of oral instructions and test rubrics, grasping of mathematical concepts from first exposure, and advanced background knowledge about certain scientific topics are different from his language presentations (e.g.

Dysfluency, poor phonemic discrimination, immature phonological processes, verbal learning difficulties and his performance in conversations).

Although this study was conducted on one subject and conclusions cannot be generalised to draw comparisons, the research design was able to bring forth certain aspects of AE's communicative behaviour seen in his ability to reach full and partial recovery from speech and language disorders (e.g. *verbal dyspraxia, expressive and conduction aphasia and selective dysnomia*), and in his use of learning and coping strategies (*seen in WFD, reading and spelling, and in L2 learning*), and compensation behaviours (*utilising paralinguistic and body language*). The research design also helped in understanding reasons behind the emergence of a non-verbal and paralanguage system after AE had his first MS attack at age (6;7 years) to overcome difficulties accompanying relapses of MS, and to compare these with linguistic, neurological, and psychological theories.

The research design and techniques used also had revealed the potential value of observation and enabled the research to arrive at conclusions that will change the way parents relate to children with special educational and communication needs and to empower them to face their difficulties.

5.1 Remarks and Limitations of CCC (1998)

Considered a commercially valid and reliable tool for identifying communication difficulties in children with no apparent handicap or visible disability, the CCC (1998) assisted in determining the challenging areas this child was facing and in estimating the severity level in speech production, social domain, coherence, and rapport.

However, a limitation of the CCC (1998) is that it could not accurately identify different kinds of developmental disorders except Autism and ADHD that AE was suffering from or determine their degree of severity. More specifically, the CCC (1998) was not sensitive enough in accounting for deficiencies in lexical development, (e.g. dysnomia WFD), and cognitive disorders (e.g. confusion caused by WM disorders), where no apparent handicap caused the breakdown in communication. In this case, the CCC (1998) also lacked the sensitivity to identify attention deficits or memory deficiencies. Personal communication with the CCC's author revealed that twenty-one items were omitted from the CCC (1998) version because of their poor reliability or internal consistency (see Appendix A.1) although they encompassed essential questions on additional deficiencies in communication relevant to this case.

For instance, four items on Dysnomia (2,6,7,8); four on prosody (3,4,5,12); on attention and overall coordination. This might suggest that the inclusion of the 21 items in CCC (1998) would make it possible for CCC (1998) to account for a wider range of disorders found in school-aged children with communication difficulties (e.g. *dyspraxia, dysnomia, dysprosody*). These are likely to result from unapparent neurological morbidity and might be more serious than ASD, ADHD and SLI to understand or diagnose (i.e. *brain WM disorders*). Thus, the re-consideration of the construction of the omitted items in the CCC (1998) preserving high reliability, internal consistency, and validity might be established in later upgraded versions.

In addition, because the CCC (1998) was marked by non-expert raters (both parents and a cousin), and four values were left blank, it reflected inaccurate results in AE's conversation rapport and coherency. Pre-arranged tasks revealed real deficiencies in

content (i.e. topic-shifting and special interests), in turn-taking and attention deficits. Therefore, the CCC (1998) could be considered an imprecise tool for measuring AE's communication skills.

Although *Coherence* was identified as a less problematic area for AE according to the CCC (1998), his irrelevant utterances, jargon and echolalia recorded in spontaneous tasks and conversations were not realised on the CCC (1998) because AE's assessment depended on parental judgement and not on information derived from data describing his communicative behaviour or real evaluation of his expressive and receptive abilities. Therefore, real estimation of coherence was biased and also the gap between expressive and receptive language could not be recognised. AE was found able to convey his messages using speech to re-tell stories and was able to recall past incidents from memory and to coordinate gesture and eye-gaze despite using communication strategies (circumlocutions) frequently when faced with retrieval difficulties and being very much hyperactive and easily distracted. Hence, assessing coherence using CCC (1998) was made vague when relying on observation alone.

In order to support findings reached by the CCC (1998), other methods, protocols, and checklists (e.g. conversations, descriptions, and story re-telling tasks) were combined to reinforce the accuracy, validity, and reliability of the conclusions.

The CCC (1998) was constructed for English-speaking children specifically but also found applicable to this case of an Arab speaking child. This suggests that the CCC (1998) might be translated to other languages whilst preserving its validity and reliable

standards. However, pre-cautions have to be taken to ensure accurate translations and to be culturally appropriate for measuring children pragmatic abilities in particular.

Another limitation of this study is that a systematic assessment of AE's speech and language by Arabic-speaking professionals was not performed due to lack of screening and assessment tools in the Syrian dialect. Also, the length of time, six months, was not enough for collecting sufficient data of different types (*i.e. expressive, receptive, elicited, spontaneous and phonological deficit words*) in this child's case of comorbidity. MS remission and relapses caused his linguistic performance and communication ability to be very much inconsistent. His communication was influenced by his mental fatigue, a depressive mood and unwillingness to interact in home settings.

Advanced medical imaging procedures for the brain such as fMRI, PET, SPECT, and ¹H-MRS to provide structural anatomical evidence of brain activity and blood flow between periods of remission and relapses of MS were also not performed suggesting preliminary evidence for *Neuroplasticity* (the capacity of the human brain to recover from damage) which occur having impact on the localisation status of language functions in this case. Because studies on MS also showed that the brain loses a substantial amount of neurons and still does brain reorganisation (plasticity) thought to partially compensate for motor and cognitive changes (Kraft, 2005). However, the linguistic verbal and non-verbal behaviour could predict this right-handed child's ability to overcome weaknesses after periods of relapse as MS disease progresses.

Therefore, precise diagnosis is not yet been reached by neurologists (although consensus is on a WM Disorder probably MS) due to the rarity of MS in children as well as the remission of symptoms when MR images were performed. Also more investigations need to be done to identify the type of WM disorder, e.g. Schilder's disease, as a variant of MS that appears in male school children specifically or a type of Leukodystrophy. Furthermore, the diagnosing procedures were interrupted and postponed during this study due to AE's family travels to a number of countries (e.g. Malaysia, Saudi Arabia and Brunei Darussalam).

5.2 Implementations

As described in chapter three, this research was centred around an Arab child suffering from a rare neurodegenerative dysmyelinating disorder in the brain white matter with onset in middle childhood, age 6;7 years (juvenile form), in close cooperation with paediatric doctors, neurologists and psychiatrists at UMMC in Kuala Lumpur, Malaysia, and continued at MCH in Medina, Saudi Arabia.

Consequently, this study was conducted to investigate reasons behind such disturbance and to describe AE's communication patterns and strategies by analysing data collected during six months of close observation. The collection of authentic data from AE in several home settings by his mother (the researcher) was considered the best method suitable for young children. Findings stated in chapter four revealed several communicative difficulties, various verbal and non-verbal behaviours suggesting strengths and weaknesses and atypical phases of linguistic development in form, content and use. AE's linguistic competence also depended on the development of

other cognitive, social and emotional abilities realised in his compensation strategies and recovery after remission of MS symptoms.

Assessing speech and language disorders in MS specifically should rely heavily on parents' observation and full awareness and knowledge unlike any other disease. The nature of MS remission/ relapses in children makes it very hard for assessment to take place in clinics because of the unpredictable nature of the disease and no one can tell how long the symptoms will remain.

The research methodology (in Chapter 3) was designed taking into consideration several factors to accomplish validity and control subjectivity. This was established in several ways:

Firstly, the combination of tools and techniques, such as Bishop's CCC (1998), Grunwell's PACS (1985a; 1985b) and others to fit this case study.

Secondly, the collection of a variety of different types of data: Expressive (*Elicited* and *Spontaneous*), Receptive (*Elicited* and *Spontaneous*) to identify areas of strength and weakness because each type reveals a certain difficulty that might not be detected in the other. Each type of data is assessed through three representative examples to ensure that assessment results accurately reflect AE's strengths and difficulties.

Thirdly, the adoption of several tasks, collected from cross-linguistic assessments, teaching materials and qualitative case studies on screening for communication difficulties in children and in adults. These are selected to be age-appropriate and to fit this child's background and type of difficulties.

Fourthly, in order to focus on this study, the researcher ignored assessments that had to be conducted by professionals in clinical settings (*e.g. oral motor speech and voice examinations, verbal and non-verbal IQ tests*), tasks that were assigned to measure statistical significance or require certain measuring techniques (*i.e. repetition span, speech rate, and voice disorders*), tasks also testing skills that seemed unproblematic for AE as he appeared keen on at school and in homework, such as (*word-picture matching, syntactic complexity and grammatical skills, consonant clusters in Aleppine dialect, reading and listening comprehension, and his handwriting*), and finally, data from early years of childhood to trace history of linguistic development.

In Chapter four, the classification of the subject's speech disorders (*articulation, voice and fluency disorders*), and language difficulties (*form, content and function*) according to Lahey's (1988) framework facilitated organising and identifying areas of strength and weakness in this case of comorbidity and complexity. Moreover, observation outcomes gathered from spontaneous expressive and receptive abilities and from the pre-arranged tasks showed both *episodic* inconsistent speech and language problems (*i.e. selective dysnomia, dysfluency and verbal dyspraxia*) and other *residual* deficiencies AE is unable to repair, in addition to difficulties in both elicited re-telling and conversation abilities.

Investigation of AE's communication difficulties for each disorder was distinct. Because **Autism** manifests as abnormal social development, abnormal communicative development, and the presence of narrow, restricted interests, and repetitive activity, along with limited imaginative ability (Baron-Cohen, 1999; Tager-Flusberg, 2008). Therefore, it was necessary to assess communication in social contexts (*i.e. conversation abilities and role-play*).

Regarding **ADHD**, AE showed impulsive behaviour, distraction, short attention span, and deficits in working memory, concentration and executive functions; hence vital areas investigated were expressive narratives and more receptive abilities, such as *conversation skills, referential communication for auditory comprehension, numbering pictorial stories, and following a three-order command* (Tannock, 2007).

On the other hand, **MS** caused more serious speech and language disorders ranging from mild to moderate difficulties, e.g. verbal dyspraxia, dysfluency, and dysnomia (King, 2009; Banwell et al., 2003; Yorkston, Klasner, and Swanson, 2001; Arnett et al., 1997) depending on the brain lesions and phenotype of disease (Filley, 2005). AE's linguistic difficulties revealed compatible results in empirical and clinical literature of Aphasiology detected in MS. These difficulties were fully or partially recovered after few months to probably confirming the diagnosis of MS in this case.

Therefore, investigations for communication difficulties in MS comprised *the ability to produce syllables and speech sound clusters, coordination among speech organs, naming, narrating and repetition abilities*; in addition to changes in *cognition, verbal fluency, rate and prosody* that could appear in adults as well as in children (Banwell et al., 2003) with a greater chance for full or incomplete recovery in childhood MS (Tuohy et al., 1997; Pelletier et al., 2001).

Finally, results obtained from **non-verbal behaviour** showed an ability to utilise body movements, hand gestures, facial expressions and paralanguage to sustain communication, as a self-developed strategy without parental scaffolding or reinforcement probably to compensate for prolonged retrieval processing time. These

communication compensatory strategies AE experienced were age appropriate and reported in the literature to co-occur in some developmental expressive disorders (Schwartz & Solot, 1980), and in dyspraxia (Purcell, 2006). AE's advantage of falling within the "*sensitive period*" of language acquisition (Elman et al. 1996), and recovery from brain lesions (Gorman et al., 2009) with results best before the age of ten (Bishop, 1988), suggesting a probable shift of some linguistic skills from the left to right hemisphere (Thiel et al., 2006) in this right-handed boy to compensate for his difficulties, as the RH is responsible for non-verbal communication (Locke, 1997).

5.3 Future studies

Neurolinguistics as a prosperous discipline within applied linguistics requires more research where correlations could be made with advances in functional imaging technology. A large body of literature has investigated and several studies have been conducted in the last two decades on communication difficulties in ASD and ADHD groups, but not a lot of research has been conducted on Aphasia phenotypes in children, neuronal plasticity and on rare neurological disorders from the neurolinguistic perspectives. In clinical settings, neurologists and psychiatrists usually focus on morbidity and behaviour, but show less interest in speech and language deficiencies. Therefore, research activity in this aspect may assist in reviewing theories and reaching consensus on definitions of dysphasia, SLI and other related disorders.

In addition, more neurolinguistic research is still required on brain mechanisms, lateralisation and neural plasticity for recovery in young brains and in school children with speech and language disorders whether of genetic, developmental or acquired

origins. The role of neurolinguists is essential in order to draw a relation between behaviour, brain structure and function in neurogenic disorders (Murdoch, 2009), and to provide speech therapists and linguists with the different comprehensive phenotypic profiles for developing interventions and planning rehabilitation.

Furthermore, longitudinal research is necessary to distinguish between different phenotypic profiles of *Childhood MS* (with focal and cortical lesions), *Seizure Disorder* (abnormal EEG) when clinical seizures are not always apparent, and other phenotypes of *Aphasia* in children with and without family history.

Moreover, the unique disordered phonological processes collected in Arabic call for more cross-language investigations and comparative research. This study carries a number of important implications for assessment and treatment of phonological disorders in future research. From this view, more research on the specific language genes in familial cases in different linguistic context is needed to study the neurobiology of developmental language.

Because non-verbal communication can be unintentional, spontaneous and idiosyncratic that makes it a particularly difficult topic to study. The scientific study of non-verbal communication only became possible with the development of sophisticated recording apparatus (Bull, 2001). Therefore, this research also highlights the importance of parental observations of communication aspects in home settings in cases like ASD, ADHD and MS when children have abnormal reactions to stimuli, either from unwillingness to communicate or from over stimulation in different settings. Therefore, utilising nano-technological and micro-electronical video and

audio devices in linguistic research may assist in collecting reliable data (if employed by parents without informing the child) to reveal different types of deficiencies in communication and different linguistic profiles. Also rising awareness among parents on speech and language difficulties in children and what types of data are of special importance for their child's assessment. As parental cooperation with the speech therapists may provide a data-base for creating atypical speech and language corpus on different languages in the future and contribute to better informed and more effective intervention plans.

Finally, more integrative research is needed through inter-disciplinary teamwork (neurologists, psychiatrists, neurolinguists, speech therapists, psychologists, educators, and parents) for setting remedy plans, intervention, educational goals and addressing specific difficulties in communication when dealing with increasing prevalence of distinctive neurological difficulties (e.g. ASD, ADHD, Dyslexia, and Childhood MS).

5.4 Summary

This investigation represents pioneering work in this area, because it analysed data collected from a child speaking the Aleppine Syrian Arabic dialect and because it provides a unique example of breakdown in communication in a progressive remitting/relapsing type of Childhood MS co-existing with other neuro-behavioural disorders i.e. ASD and ADHD. In addition to this comorbidity, episodes of dysnomia and dysfluency and a rare case of verbal dyspraxia co-existed with Childhood MS similar to Jaffe's study (2003) have been studied. On the contrary, no signs of dysarthria were observed in this case although widely reported in MS (Yorkston et al.,

2003) and (Schapiro, 2003), and the subject's academic assessment report revealed no apparent signs of dyslexia or dysgraphia as well.

This research was able to present a comprehensive analysis of the speech and language in children with WM disorders (e.g. Childhood MS) despite of constraints and limitations in paediatric neurolinguistic literature on occurrence before age ten (Jan M., 2004), and the considerable variation of symptoms among individuals (Schapiro, 2003).

By the end of this study, it was also possible to determine the communicative competence of the subject and to identify strengths and weaknesses in the communicative models of this case in several linguistic domains. These goals were achieved after analysing the subject's linguistic and communicative behaviour as a result of parental observation for six months to collect different types of data (Expressive/Receptive and Elicited/Spontaneous), then classifying these outcomes into form, content and use of language in different contexts that would facilitate studying them and planning future effective intervention. This study also aimed at assisting the subject to cope with his academic and social life challenges that necessitate cooperation from family, school and community.

In conclusion, the main contribution of this study is the documentation for the first time of communication difficulties and coping strategies of an Arab child with neurobiological and neurobehavioural complexity.

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APPENDICES

Appendix A.1 Original copy of Bishop's CCC (1998).

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Appendix 2

Items from the Children's Communication Checklist (CCC)

Note: For girls, an alternative form was used with appropriate pronoun gender. Response options, and corresponding scores were: does not apply (0), applies somewhat (1), definitely applies (2), and unable to judge. A + sign preceding the item number denotes that scores were positive; all other items were negative. *denotes items that were originally assigned to a different subscale, but were reassigned on the basis of internal consistency analyses.

I. Items Retained in the Final Version of the Checklist

A. Speech output: Intelligibility and fluency.
 α (A) = .863, α (B) = .838, IRR = .749.

- +1. people can understand virtually everything he says
- 2. people have trouble in understanding much of what he says
- +3. seldom makes any errors in producing speech sounds
- 4. mispronounces one or two speech sounds but is not difficult to understand; e.g. may say "th" for "s" or "w" for "r"
- 5. production of speech sounds seems immature, like that of a younger child, e.g. he says things like: "tat" for "cat", or "chimbley" for "chimney", or "bokkle" for "bottle"
- 6. he seems unable to produce several sounds; e.g. might have difficulty in saying "k" or "s", so that "cat" and "sat" are both pronounced as "tat"
- 7. leaves off beginnings or ends of words, or omits entire syllables (e.g. "bella" for "umbrella")
- 8. it is much harder to understand him when he is talking in sentences, rather than just producing single words
- +9. speech is extremely rapid
- 10. seems to have difficulty in constructing the whole of what he wants to say: makes false starts, and repeats whole words and phrases; e.g., might say "can I-can I-can-can I have an-have an icecream"
- +11. speech is clearly articulated and fluent

B. Syntax.
 α (A) = .739, α (B) = .779, IRR = .663.

- 12. speech is mostly two to three word phrases such as "me got ball" or "give dolly"
- +13. can produce long and complicated sentences such as: "When we went to the park I had a go on the swings"; "I saw this man standing on the corner"
- 14. tends to leave out words and grammatical endings, producing sentences such as: "I find two dog"; "John go there yesterday" "She got a bag"
- 15. sometimes makes errors on pronouns, e.g. saying "she" rather than "he" or vice versa

C. Inappropriate initiation.
 α (A) = .790, α (B) = .801, IRR = .684.

- 16. talks to anyone and everyone
- 17. talks too much
- 18. keeps telling people things that they know already
- 19. talks to himself
- 20. talks repetitively about things that no-one is interested in
- 21. asks questions although he knows the answers

D. Coherence.
 α (A) = .860, α (B) = .835, IRR = .619.

- 22. it is sometimes hard to make sense of what he is saying because it seems illogical or disconnected
- +23. conversation with him can be enjoyable and interesting
- +24. can give an easy-to-follow account of a past event such as a birthday party or holiday
- +25. can talk clearly about what he plans to do in the future (e.g. tomorrow or next week)
- 26. would have difficulty in explaining to a younger child how to play a simple game such as "snap"
- 27. has difficulty in telling a story, or describing what he has done, in an orderly sequence of events
- 28. uses terms like "he" or "it" without making it clear what he is talking about
- 29. doesn't seem to realise the need to explain what he is talking about to someone who doesn't share his experiences; for instance, might talk about "Johnny" without explaining who he is

E. Stereotyped conversation.
 α (A) = .867, α (B) = .865, IRR = .681.

- 30*. pronounces words in an over-precise manner: accent may sound rather affected or "put-on", as if child is mimicking a TV personality rather than talking like those around him
- 31*. makes frequent use of expressions such as "by the way", "actually", "you know what?", "as a matter of fact", "well, you know" or "of course"
- 32. will suddenly change the topic of conversation
- 33. often turns the conversation to a favourite theme, rather than following what the other person wants to talk about
- 34. conversation with him tends to go off in unexpected directions
- 35. includes over-precise information in his talk, e.g. will give the exact time or date of an event. For instance, when asked "when did you go on holiday" may say "13th July 1995" rather than "in the summer"
- 36. has favourite phrases, sentences or longer sequences which he will use a great deal, sometimes in inappropriate situations
- 37*. sometimes seems to say things that he does not fully understand

F. Use of conversational context.
 α (A) = .844, α (B) = .737, IRR = .747.

- 38*. tends to repeat back what others have just said
- 39. his ability to communicate clearly seems to vary a great deal from one situation to another
- 40. takes in just one or two words in a sentence, and so often misinterprets what has been said
- +41. can understand sarcasm (e.g. will be amused rather than confused when someone says "isn't it a lovely day!" when it is pouring with rain)
- 42. tends to be over-literal, sometimes with (unintentionally) humorous results. For instance, a child who was asked "Do you find it hard to get up in the morning" replied "No. You just put one leg out of the bed and then the other and stand up". Another child who was told "watch your hands" when using scissors, proceeded to stare at his fingers
- 43. gets into trouble because he doesn't always understand the rules for polite behaviour, and is regarded by others as rude or strange
- 44. may say things which are tactless or socially inappropriate

- 45*. treats everyone the same way, regardless of social status:
e.g. might talk to the head teacher the same way as to
another child

G. Conversational rapport.

$\alpha(A) = .868, \alpha(B) = .871, IRR = .828.$

- 46*. ignores conversational overtures from others (e.g. if
asked "what are you making?" the child just continues
working as if nothing had happened)
- 47*. seldom or never starts up a conversation; does not
volunteer information about what has happened
48. doesn't seem to read facial expressions or tone of voice
adequately and may not realise when other people are
upset or angry
49. poor at using facial expression or gestures to convey his
feelings; he may look blank when angry, or smile when
anxious
- +50. makes good use of gestures to get his meaning across
51. seldom or never looks at the person he is talking to:
seems to actively avoid eye contact
52. tends to look away from the person he is talking to:
seems inattentive or preoccupied
- +53. smiles appropriately when talking to people

H. Social relationships.

$\alpha(A) = .799, \alpha(B) = .882, IRR = .691.$

- +54. is popular with other children
- +55. has one or two good friends
56. tends to be babied, teased or bullied by other children
57. is deliberately aggressive to other children
58. may hurt or upset other children unintentionally
59. a loner: neglected by other children, but not disliked
60. perceived as odd by other children and actively avoided
61. has difficulty making relations with others because of
anxiety
62. with familiar adults, he seems inattentive, distant or
preoccupied
63. overly keen to interact with adults, lacking the inhibition
that most children show with strangers

I. Interests.

$\alpha(A) = .840, \alpha(B) = .725, IRR = .653.$

- 64*. uses sophisticated or unusual words; e.g. if asked for
animal names might say "aardvark" or "tapir"
- 65*. has a large store of factual information: e.g. may know
the names of all the capitals of the world, or the names
of many varieties of dinosaurs
66. has one or more over-riding specific interests (e.g.
computers, dinosaurs), and will prefer doing activities
involving this to anything else
- +67. enjoys watching TV programmes intended for children
of his age
68. seems to have no interests: prefers to do nothing

- +69. prefers to do things with other children rather than on
his own

70. prefers to be with adults rather than other children

*II. Items Dropped from CCC Because of Poor
Reliability or Internal Consistency (N = 23)*

- speech is slow and laboured
- the beginning of words are repeated or prolonged (a kind of
stammer)
- speech is monotonous or unmelodious, rather like a robot
speaking
- speech melody is over-expressive and exaggerated; as if he is
an actor speaking a script
- has difficulty adjusting loudness of speech to a specific
context: may talk too loudly or too softly (e.g. whispering
when far away from someone, or talking very loudly when
close up)
- often pauses to grope for a word, although he knows it
- uses over-general terms such as "thing", rather than a more
specific word
- confuses words of similar meaning: e.g., might say "dog"
for "fox", or "screwdriver" for "hammer"
- confuses words of similar sound: e.g. might say "telephone"
for "television" or "magician" for "musician"
- seems unsure of the exact pronunciation of some long words,
so might, for instance say "vegebable" rather than
"vegetable" or "trellistope" rather than "telescope"
- tends to use actions rather than words in response to a
question, e.g. if asked: "what are you making?" would show
what he was doing rather than saying "a boat"
- answers readily when asked a question (even though the
answer may be wrong)
- no problems in starting conversation with very familiar
people, but reluctant to talk to children or adults if he does
not know them well
- produces meaningless words or phrases that sound rather
like a foreign language, and which cannot be accounted for
in terms of poor articulation
- understands more than he can say
- tends to stare at the person he is talking to
- inhibited with strangers, but will warm up as he gets to know
someone
- highly distractible; difficult to keep him engaged on one task
because his attention is grabbed by any noise or movement
that occurs
- can concentrate very well on something that interests him
- unco-ordinated in activities such as sports, riding a bike,
dancing
- movements are graceful and well co-ordinated
- messy when eating or drinking
- handwriting is neat

App.1 (continued)
Children's Communication Checklist (CCC): A Method for Assessing Qualitative Aspects of Communicative Impairment in Children
D.V.M. Bishop 1998 (Re-typed Version)

I. Items Retained in the Final Version of the Checklist

Respond options: Does not apply (0), applies somewhat (1), definitely applies (2), Unable to judge (-).

A. Speech output: Intelligibility and fluency:

Items	(0)	(1)	(2)	(-)	Sum
1. + People can understand virtually everything he says.					
2. People have trouble in understanding much of what he says.					
3. + Seldom makes any errors in producing speech sounds					
4. Mispronounces one or two speech sounds but is not difficult to understand; e.g. may say "th" for "s" or "w" for "r".					
5. Production of speech sounds seems immature, like that of a younger child, e.g. he says things like: "tat" for "cat" or "chimbley" for "chimney", or "bokkle" for "bottle".					
6. He seems unable to produce several sounds; e.g. might have difficulty in saying "k" or "s", so that "cat" and "sat" are both pronounced as "tat".					
7. Leaves off beginning or ends of words, or omits entire syllables (e.g. "bella" for "umbrella").					
8. It is much harder to understand him when he is talking in sentences, rather than just producing single words.					
9. + Speech is extremely rapid.					
10. Seems to have difficulty in constructing the whole of what he wants to say: makes false starts, and repeats whole words and phrases; e.g., might say "can I-can I- can I have an – have an ice cream".					
11. + Speech is clearly articulated and fluent.					

Comments: _____

Total

B. Syntax.

Items	(0)	(1)	(2)	(-)	Sum
12. Speech is mostly two to three word phrases such as "me got ball" or "give dolly".					
13. + Can produce long and complicated sentences such as: "When we went to the park I had a go on the swings"; "I saw this man standing on the corner".					
14. Tends to leave out words and grammatical endings, producing sentences such as: "I find two dog"; "John go there yesterday" "She got a bag".					
15. Sometimes makes errors on pronouns, e.g. saying "she" rather than "he" or vice versa.					

Comments: _____

Total

C. Inappropriate initiation.

Items	(0)	(1)	(2)	(-)	Sum
16. Talks to anyone and everyone.					
17. Talks to himself.					
18. Talks too much.					
19. Talks repetitively about things no-one is interested in.					
20. Asks questions although he knows the answers.					
21. Keeps telling people things that they know already.					

Comments: _____

Total

D. Coherence.

Items	(0)	(1)	(2)	(-)	Sum
22. + It is sometimes hard to make sense of what he is saying because it seems illogical or disconnected.					
23. + Conversation with him can be enjoyable and interesting					
24. + Can give an easy- to –follow account of a past event such as a birthday party or holiday.					
25. Can talk clearly about what he plans to do in the future (e.g. tomorrow or next week).					
26. Would have difficulty in explaining to a younger child how to play a simple game such as "snap".					
27. Has difficulty in telling a story, or describing what he has done, in an orderly sequence of events.					
28. Uses terms like "he" or "it" without making it clear what he is talking about.					
29. Doesn't seem to realise the need to explain what he is talking about to someone who doesn't share his experience; for instance, might talk about "Johnny" without explaining who is.					

Comments: _____

Total

--

E. Stereotyped conversation.

Items	(0)	(1)	(2)	(-)	Sum
30. * Pronounces words in an over-precise manner; accent may sound rather affected or "put-on", as if child is mimicking a TV personality rather than talking like those around him.					
31. * Makes frequent use of expressions such as " by the way", "actually", "you know what?", " as a matter of fact", " well, you know" or "of course".					
32. Often turns the conversation to a favourite theme, rather than following what the other person wants to talk about.					
33. Conversation with him tends to go off in unexpected directions.					
34. Includes over-precise information in his talk. E.g. will give the exact time or date of an event. For instance, when asked "when did you go on holiday" may say" 13 th July 1995" rather than "in the summer".					
35. Has favourite phrases, sentences or longer sequences which he will use a great deal, sometimes in inappropriate situations.					
36. Sometimes seems to say things that he does not fully understand.					
37. Will suddenly change the topic of conversation.					

Comments: _____

Total

F. Use of conversational context.

Items	(0)	(1)	(2)	(-)	Sum
38. * Tends to repeat back what others have just said.					
39. His ability to communicate clearly seems to vary a great deal from one situation to another.					
40. Takes in just one or two words in a sentence, and so often misinterprets what has been said.					
41. Tends to be over-literal, sometimes with (unintentionally) humorous results. For instance, a child who was asked "Do you find it hard to get up in the morning" replied "No, You just put one leg out of the bed and then the other and stand up. Another child who was told "watch your hands" when using scissors proceeded to stare at his figures.					
42. * Treats everyone the same way, regardless of social status: e.g. might talk to the head teacher the same way as to another child.					
43. May say things which are tactless or socially inappropriate.					
44. Gets into trouble because he doesn't always understand the rules for polite behaviour, and is regarded by others as rude or strange.					
45. + Can understand sarcasm (e.g. will be amused rather than confused when someone says "isn't it a lovely day!" when it is pouring with rain).					

Comments: _____

Total

G. Conversational rapport.

Items	(0)	(1)	(2)	(-)	Sum
46. * Ignores conversational overtures from others (e.g. if asked "what are you making?" The child just continues working as if nothing had happened).					
47. * Seldom or never starts up a conversation; does not volunteer information about what had happened.					
48. Doesn't seem to read facial expressions or tone of voice					

adequately and may not realise when other people are upset or angry.					
49. Poor at using facial expressions or gestures to convey his feelings; he may look blank when angry, or smile when anxious.					
50. + Makes good use of gestures to get his meaning across.					
51. Seldom or never looks at the person he is talking to: seems to actively avoid eye contact.					
52. Tends to look away from the person he is talking to: seems inattentive or preoccupied.					
53. + Smiles appropriately when talking to people.					

Comments: _____

Total

H. Social relationships.

Items	(0)	(1)	(2)	(-)	Sum
54. + Is popular with other children.					
55. + Has one or two good friends.					
56. Trends to be babied, teased or bullied by other children.					
57. Is deliberately aggressive to other children.					
58. May hurt or upset other children unintentionally.					
59. A loner: neglected by other children, but not disliked.					
60. Perceived as odd by other children and actively avoided.					
61. Has difficulty making relations with others because of anxiety.					
62. With familiar adults, he seems inattentive, distant or preoccupied.					
63. Overly keen to interact with adults, lacking the inhibition that most children show with strangers.					

Comments: _____

Total

I. Interests:

Items	(0)	(1)	(2)	(-)	Sum
64. * Uses sophisticated or unusual words; e.g. if asked for animal names might say " aardvark" or "tapir".					
65. * Has a large store of factual information: e.g. may know the names of all the capitals of the world, or names of many varieties of dinosaurs.					
66. Has one or more over-riding specific interests (e.g. computers, dinosaurs), and will prefer doing activities involving this to anything else.					
67. + Enjoys watching TV programmes intended for children of his age.					
68. Seems to have no interests: prefers to do nothing.					
69. + Prefers to do things with other children rather than on his own.					
70. Prefers to be with adults rather than other children.					

Comments: _____

Total

Appendix A.2. A Summary of The Typical 4th Stage (5-7) yrs of Language Development in Arabic Children by Abu Naba'(n.d.), [translated from Arabic].	
No	Linguistic and Developmental Skills
1	Recognises 3 dimensional shapes & 6 colours.
2	Can play with a team.
3	Able to follow a three- sequence order.
4	Asks how things happen.
5	Uses and responds to salutations properly.
6	More accuracy using verb tenses.
7	Able to combine sentences together.
8	Understands more than 13,000 words.
9	Able to give antonyms.
10	Able to say the days of the week in order.
11	Can count till 30.
12	Vast increase in vocabulary.
13	Sentences length 4-6 words.
14	Able to share knowledge.
15	Able to give details in sentences.
16	Able to narrate stories properly.
17	Can sing and repeat a full song.
18	Communicates easily with adults & children.
19	Good grammatical sentences most of the time.
20	Understands directions.
21	Increased ability in description complexity.

App.2 (continued)	
22	Can participate in a discussion.
23	Understands more than 20 000 words.
24	Sentences of 6 words length.
25	Understands almost all time concepts.
26	Can recite the alphabet by heart.
27	Can count till 100.
28	Accuracy in grammar and morphology is almost like adults.
29	Able to compare.
30	Able to act and describe actions.
31	Begins reading and writing.
32	Able to recognise things if described orally.
33	Between 4-6 years, the child should have acquired:: Z , O , J , R , H , X , S .
<p style="text-align: center;">STAGE FOUR مراحل النمو اللغوي الطبيعي ملخص من المرحلة الرابعة سناء جميل أبو نبعة / أخصائية نطق و لغة. العلاج الصوتي في هذه المرحلة يركز على الحد من الأخطاء التي تؤثر على الأصوات كمجموعات. • من سن 5-7 سنوات:</p>	
- يتعرف على 3 أحجام و 6 ألوان.	- يتواصل بسهولة مع الكبار و الصغار.
- يستطيع العمل من خلال مجموعة.	- نحو جيد غالبا.
- يستطيع تطبيق أوامر من 3 أجزاء.	- يفهم الاتجاهات.
- يسأل عن كيفية حدوث الأشياء.	- قدرته على الوصف تزداد تعقيدا.
- يستخدم و يرد على التحية بشكل مناسب.	- يستطيع الدخول في مناقشة.
- استخدامه لأزمنة الأفعال يزداد دقة.	- يفهم ما يزيد على 20000 كلمة.
- يربط الجمل .	- جمل من 6 كلمات.
- يتجاوز ما يفهمه 13000 كلمة.	- يفهم معظم مفاهيم الوقت.
- يستطيع تسمية الأضداد.	- يستطيع تسميع الأبجدية غيبا.
- يعرف أسماء الأسبوع بتسلسل.	- يعد حتى 100.
- يعد حتى 30.	- دقة النحو و الصرف لديه تقارب الكبار.
- زيادة مفردة في مفرداته	- يستطيع المقارنة.
- جمل من 4-6 كلمات.	- يمثل و يصف الأفعال.
- يستطيع تبادل المعلومات.	- يبدأ مرحلة القراءة و الكتابة.
- يستخدم التفاصيل في جملة.	- يحدد الأشياء بوصفها لفظيا.
- يستخدم أسلوب السرد لرواية القصة بدقة.	- من 5-6 سنوات يفترض أن يكون قد اكتسب: Z , O , J , R , H , X , S
- يستطيع الإنشاد و إعادة الأغاني كاملة.	
المراجع العربية: الخليلة ، محمد الحريم . 1990 ، تطور لغة الطفل ، دار الفكر ، عمان. الشلح ، صالح . 1962 ، ارتقاء اللغة عند الطفل من الميلاد الى السادسة، دار المعارف ، مصر	
English References: 1- Bleh, K. 1996, Articulation & Phonological Disorders, 2 nd Edition. 2- Bleck, E. & Naget, D. 1981, (Chart) Physically Handicapped Children: A Medical Atlas, New York: Grune & Stratton.	

Appendix A.3. Recalling an incident from the past (Video- Recorded).

Context: A Friend's Injury at School Time.

Today is Monday, AE came home from school and he is sitting at the dining table having his dinner. Now, he is going to tell us about an incident that occurred in school today. Go ahead AE:

There was a girl named Nour (.) a big stone fell on her leg (.) then the skin was peeled and the cut was bleeding (.) then my sister Sarah carried her in her arms like a baby and placed her on her seat and the blood from her leg stained the bus (.) Fahd, her brother came to his sister and said she plays with dangerous things and she (.) My brother Saad came and he said he will bring water to wash her legs and he will bring Alcohol (.) She was panicky crying crying a lot while sitting. Now I will tell you a story about (.) what's her name? Teacher (.) teacher Nada (.) For example (.) I was sitting and concentrating in the same book but she didn't give me 100 out of 100 marks (.) she she gave me 7 out of 10 instead.

The mother: Why?

AE: Just, I don't know.

The mother: Now, let's return to Nour's story. What was she wearing? Where did she put her schoolbag?

AE: She was wearing the school uniform and her bag was pink.

The mother: then? What else?

AE: so (.) I told you the rest and the story finished.

The mother: and what happened? Did they take her to the office or give her an injection?

AE: No, they didn't. It was the last lesson and we were the last bus to leave.

The mother: When did she fall?

AE: the last lesson.

The mother: OK.

الأم: اليوم الاثنين ، عبد الله اجا من المدرسة عبتغدى على السفرة طيب و هلق حيكيلنا اش صار معه اليوم قصة بالمدرسة.
ياالله يا عبد الله:

الولد: كان في وحدة اسمها نور ، في حجرة كبيرة وعت على اجرا ، قام انقشر الجلد ، قام نزلا دم ، ، قام اختي سارة شالتنا هيك مثل البوبو وقعدنا على مكانا و اجرا عبتنقط دم بالباص ، وفهد رأسا اجا لعند اخته ، وقال هي كتير بتعلب بأشياء خطيرة ، هي .. وأجا اخوي اسمه سعد، قال قال بده يجيب مي يكبا على اجريها وبده يجيب كحول ، وقام قيعده عبتخاف تبكي كتير تبكي. وهلق بدي احكيلكم على قصة اش اسمها الست الست ندى ابلتي مفلا انا بكون صح مركز بنفس الكتاب بس هي ما بتحطلي 100 من 100 ، هي هي بتحطلي 7 من 10

الأم: ليش؟

الولد: هيك ما بعرف.

الأم: هلق حلينا بنور ، اش كانت لبيسه؟ اش كانت لبيسه؟ وين شنتنا حطيتا؟

الولد: كانت لبيسه لبس المدرسة ولون شنتنا زهري .

الأم: وبعدين ؟

الولد: اي ، حكيتلك الباقي وخلصت القصة.

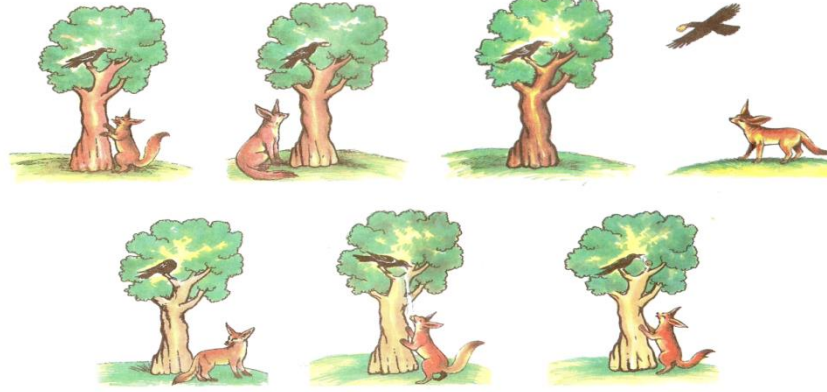
الأم: اي ، وبعدين اش صار؟ أخذوها على الادارة شكوها ابرة شي؟

الولد: لاء ما شكوها ، هذا ايخر درس ونحن ايخر باص.

الأم: ايمت هي وقعت؟

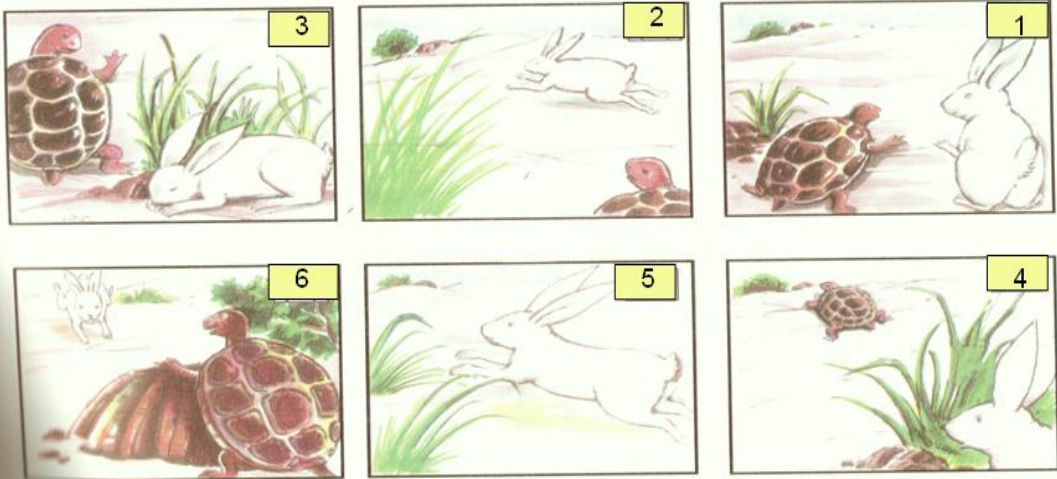
الولد: أيخر درس.

الأم: أي.

1-The Fox and the Crow.**غَرَابٌ وَتَعَلَّبٌ**

Once there was a crow (.) there was a crow and a fox (.) the fox is thinking (.) how can I take the food from the fox's mouth? (.) Then he thought (.) then he said ok (.) I (.) then (.) then he stood on the tree ((wrong pronunciation)) (.) then the fox (.) the crow asked him (.) he is talking with him like this (.) an answer (.) then when the food fell (.) he took the food and what? Then the food fell (.) then the crow was angry with the fox (.) but the fox took the food (.) ((conclusion)).

كان في غراب ، كان في غراب وتعلب ، التعلب عيفكر ، شلون بدي أخذ الأكل في تم الغراب؟ قام فكر ، قام قال خلص ، أنا ، قام ، قام وقف على السجرة ، قام التعلب ، قيعد يسأله الغراب ، قال عبيحكي معه هيك جواب ، قام لما وقع عليه الأكل ، أخذ الأكل ، وشو؟ ، قام وقعت الأكل ، قام ، قام زعل منه الغراب ، وأخذ التعلب الأكل ، مع السلامة.

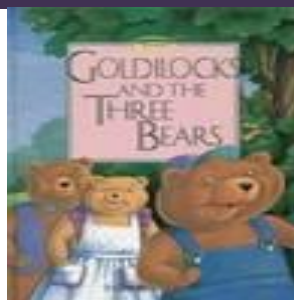
2-The Rabbit and the Turtle.

App.4 (continued).

In the Name of Allah (.) once there was one rabbit (.) he said heh heh heh I am faster than the turtle ((wrong pronunciation)) (.) then (.) he sat (.) then (..) he (..) the number now one (.) now becomes number two (.) then he was running (.) then said I want to sleep ((snore)) (.) then he doesn't want to sleep (.) he wanted to walk to the end point (.) he arrived (.) he arrived (.) he wants to run (.) then suddenly she (.) won (.) number 5 (.) 3 and 4 (.) ((conclusion)).

بسم الله الرحمن الرحيم ، كان في واحد أرنب ، قال هي هي أنا أسرع من الزلحفاء ، قام ، قعد ، قام ، هو ... رقم هلق واحد ، هلق صار اثنين ، قام كان عبيركض ، قام قال أنا بدي أنام ، قام هو ما بده يروح ينام ، بده يروح لحتي يوصل ، عبيوصل عبيوصل ، بده يركض ، قام هي فجأة ، فازت ، رقم خمسه وتلاته وأربعه ، مع السلامة .

Appendix A.5. Retelling a Story. (Audio-Recorded) "Goldilocks and the Three Bears"(Modified)



Once upon a time (.) the three bears (.) the father (.) said (.) I want to go to a place then this place is the village then (.) a (.) a they (.) came a woman (.) came (.) no not a woman (.) I mean a girl aged six (0.2) then came (.) then very hungry (.) then wants to eat her food and after she wants to eat her food (0.4) and after she eats her food (.) th- no she ate her food then this the (.) father's dish she said very hot and the woman's very hot (.) she said let me eat the child's ((change voice tone)) then (.) she sat on the living-room then the chair was broken then sleepy then (.) then slept (.) then she came on the bed (.) and then (.) after she came on the bed she slept then (.) the (.) came then she got up (.) the father's (.) his bed annoying and the mother's let me (.) the best thing to sleep on the (.) the (0.2) child's ((change voice tone)) then slept then the bears came and drove her out ((conclusion)).

الزمن (90 ثانية) إعادة قص حكاية : ذات الطفائر الذهبية و الدبة الثلاث.

كان يا مكان في قديم الزمان / الدبب الثلاثة / الأب ... قال بدي أروح على مكان / قام هاد المكان هي القرية قام أأ أجو .. أجت مرة / لاء مو مرة / قصدي بنت أأ عمرها سته قام أجت قام كثير جوعانه قام بدّا تاكل أكلها و بعدما بدا تاكل أكلها ... أي ... و بعدما تاكل أكلها .. قا.. لا أكلت أكلها قام هادا أأ ... صحن الأب قالت كثير سخن و تبع المرة كثير سخن قال خليني أكل تبع الصغير قام.. أي.. قعدت على غرفة القعدة قام انكسر الكرسي قام نعسانة قام .. قام نامت... قام اجت ع التخت... و بعد.. بعد ما اجت ع التخت نامت قام .. قام أجى..ال.. قام قامت... تبع الأب تخته دابق و تبع الأم خليني أحسن شي أنام على تبع ..ال... الصغير قام نامت قام اجو الدبة الثلاثة قام اجو قام فلعوها و توتة توتة خلصت الحدوتة .

Appendix A.6. Arabic Alphabet Recitation Task. (Video- Recorded).

Greetings (.) my name is Abdullah(.) [lɪf - bʔ - tʃ - fʃ - dʒi:m - hʃ - xʃ - Δʃ - raji - Δʃ - si:n - ʃi:n - ʃad - ʃa - da - ʃʃjn - ʃʃjn - qaf - lʃm - kʃf - mi:m - hʃ - wa:w - jʃʔ (ʔ) - nu:n (ʔ) - jʃʔʔ] correct? correct?

السلام عليكم ورحمة الله وبركاته ، أنا اسمي / عبد الله، ألف - باء - تا - فا - جيم -حاء - خاء - ذا - را ي - ذال - سين - شين - صاد - صا - ضا - عين - غين - قاف - لام - كاف - ميم - ها - واو - ياء؟ - نون ؟ - ياء؟ - صح؟ صح؟

Appendix A.7. Spontaneous Participation in Conversations

Extracts of Utterances in Different Contexts.

1) Context: AE's elder sister drank two glasses of water then conversed with her mother in front of AE.

Sister: It is the first time in History that I drank two large cups of water at once.

AE: What? Did you have a History class yesterday?

الأخت الكبرى شربت كأسين من الماء ثم دار هذا الحوار بينها وبين الوالدة أمام الطفل:
الأخت: يمكن هاي أول مرة في التاريخ أنا بشرب كأسيتين كبار مي فرد مرة .
الولد: إيش ؟ كان عندك درس تاريخ امبيرحه ؟

2) Context: (AE 6; 10 yrs) During Supptime.

Brother: ((eating a boiled egg)) I like the [safa:r]egg yolk.

AE: Yeh (.) me also (.) I like it (.) it is rich in vitamins and strengthens our body.

Brother addressing mother: Mama (.) do you prefer scrambled eggs to boiled eggs?

Mother: I prefer scrambled eggs, but that doesn't mean I don't eat boiled ones.

Sister: I don't like boiled eggs, but I eat them, I especially hate the [safa:r]/ yolk.

AE: Yeh, I love [safa:r] ((travelling by plane)), going from one country to another to get rid of school.

Brother: What are you talking about? What's the relation between [safa:r]/ yolk and [safa:r]/travelling. That's irrelevant.

AE: ((No response)).

وقت العشاء الأخ الأكبر يأكل بيضة مسلوقة و يقول: أنا بحب الصفار.
الولد: أي ، أنا كمان ، فيوه كثير فيتامينات وبقوي جسمنا .
الأخ يحدث والدته: ماما ، إنت بتحبي البيض مقلي والا مسلوق؟
الأم: أنا بحب المقلي ، بس هذا مو يعني أنا ما بأكل المسلوق .
الأخت: أنا ما بحب المسلوق بس بأكله ، أنا ما بطبق الصفار .
الولد: اي ، أنا بحب السفر بالطيارة ، بروح من بلد لبلد و بخلص من المدرسة .
الأخ: على إيش إنت عبتحكي؟ إيش دخل صفار البيض بالسفر، مالو علاقة .
الولد: لا جواب .

3) Context: Mother sent AE upstairs to bring the pink doormat/ [d{ðð{sE] placed in front of his sister's room.

AE came down after a while asking: Where is the [ð{dis]/ lentil? I couldn't find it in ((his sister))'s room.

أرسلت الأم الولد للدور العلوي ليحضر الدعاسة الزهرية من أمام غرفة أخته لغسلها ، صعد الولد ثم عاد قائلاً: وبين العدس ؟ ما لقيته بغرفة أختي.

Appendix A.8. Imitation Abilities and Role-Play Task.

Context. AE (6; 11) yrs. Role-play (A Pizza Chef).

يتم تشجيع الولد على المشاركة في عمل البيتزا بالبيت . بعد وضع العجينة في صينية الخبز تتأدي الأم الولد ليرتب شرائح الفطر والزيتون وقطع الفليفلة الخضراء ثم قطع الجبنة عليها . وبعد وضع البيتزا بالفرن ، قام الولد بتقمص دور الطباخ وأنه صاحب مطعم يقدم البيتزا لزيائنه .

وضع كيس ورقي طويل على رأسه و أحضر قطعة صغيرة من الورق وبدأ بإعداد قائمة الطعام . رسم نفسه على الوجه الأول كرئيس للمطعم ثم كتب الأطباق التي يقدمها: شوربة – بطاطا – بيتزا – ثم رسم ديكورو زخارف على اطراف الورقة و في الخلف رسم بيتزا مربعة الشكل وكتب اسمه ورقم هاتف غير حقيقي ثم رسم بيتزا أخرى مربعة يتصاعد منها اللهب ، ثم قام بإعداد السفرة وترتيبها كما في المطاعم . عندما نضجت البيتزا كان متحفزاً جداً ، بدأ بالقفز ونطق أصوات مبهمه مثل : أه - أوه - لاهو - هووا - وحركات الوجه و الجسم تشير إلى أنه يعطي أوامر لمساعديه و الجراسين حوله ورفع صوته قائلاً: اخبزوا البيتزا ، بسرعة اخبزوا البيتزا. عندما سئل لماذا البيتزا مرسومة مربعة ، لم يجب .

AE is encouraged to participate in preparing pizza at home. He is required to arrange sliced mushrooms and olives, pieces of green pepper, and then the bits of cheese on top of the dough. While the pizza was in the oven, he pretended he was a cook running his restaurant and offering pizza to his customers.

He put a paper bag on his head and started to design the menu on a small piece of paper. On one side of the paper, he sketched himself as the master of the restaurant and wrote a list of dishes, i.e. soup, French fries, pizza, then he drew some decorations; while on the back of the paper, he drew a square shaped pizza, wrote his name and a fabricated phone number. Then he drew another square pizza indicating a delicious aroma rising from it. Afterwards, he occupied himself by setting the dining table as seen in restaurants.

When the pizza was ready, he showed over-stimulation. He started jumping and saying gibberish, e.g. [ah, uh, lahu, huwa], as if he was giving orders to assistants and waiters around him embedded in his intonation and body language. He raised his voice saying: Cook pizza! Quickly cook pizza! When he was asked why his pizza was square-shaped he gave no response.

Appendix A.9. Spontaneous Intrapersonal Monologues and Dialogues.

Context: Mother sitting near the child (AE) reading a book and intending to let the child behave naturally in order to write authentic words uttered spontaneously without him noticing during homework time, AE is required to copy a text into his notebook four times.

Monologue: ((AE is talking to himself aloud repeating a verbal riddle learnt at school)). [dZara (.) wara?a (.) miqas] stone/ paper /scissors /stone/ paper /scissors /repeated 17 times while he was writing. ((Talking to himself)) no (.) no who gave behind? ((Jargon words)) wa (.) la (.) wadZ (.) yahi ((he asked his mother for scissors)). He cut paper in it (.) My plane (.) I like it from paper (.) it flies over my head and I am up (.) Maysun ((an Arabic female name)) asked (.) What is this? This is a paper from paper. (Delayed echolalic words) Give me the brave men ((Delayed echolalic words)) (.) hu wa, ya, du, ta, du, ta, dur, tah, chik, chik ((vocals)) Don't bother uncle (.) we are ready to sacrifice (.) allright (.) allright (.) ta ta ta ((Delayed echolalic words)) May Allah fail your plans (.) May Allah destroy your houses (.) you Jewish (.) the terrorist (.) the terrorist (.) no no (.) I love my dirt ((end of monologue)).

AE: Mama (.) what does load mean?

Mother: Where did you hear this word?

AE: My cousin Ahmad always says this word.

Mother: yeh, it means [t{mi:l}] for computer games to appear on your computer.

AE: yeb (.) yeb (.) yeb (.) yeb (.)

((Start Monologue again)) I love my dirt (.) Hashim went to his uncle (.) xa (.) xa (.) xa (.) Bazooka (.) bazooka (.) bazooka (.) tuka, tuka, l{, l{. I love you my mommy ((threw a kiss in the air)) yeb (.) yeb (.) yeb (.) mi:m (.) mi:m (.) kasra (.) mi:m (.) medial nu:n. We connect wa (.) t? (.) t?. ((Thinking aloud while writing Arabic graphemes)), ((end of monologue)).

AE: Mama (.) what does mother load mean? There is a game which you dig like this. The word load means [t{mi:l}] and mother means [im] together meaning loading the mother (0.2).

AE: Were there rifles in the 2nd World War when Britain brought the Jews into Palestine? Ya ya ya (.)from

AE: Mama. You dare I can write the word Mansur without looking at it. Correct wrote Mansour without looking at it (.) I wrote it (.) Can I have one short break (.) I wrote all this (.) alhamdulillah ((Praise to Allah)) (.) the break (.) I (.) to comfort my body and to kiss you. ((Child approaches mother to get a hug and a kiss then left talking to himself again)).

(Monologue) If I don't have one ringgit what shall I do (.) I shall go to a place and

explode it (.) My pocket, my pocket. ((AE stands nearby and counts his ringgits, then puts them again in his pocket)).

((AE came towards his mother asking while carrying a black cardboard tube over his shoulder)).

AE: What is the name of the weapon carried over the fighters' shoulders like this?

Mother: RPG.

AE: yes (.) they put it like this then they shoot (.) Lebanon hit Israel (.) Lebanon took the weapons from Iran (.) This means Iran is a good country (.) ((AE asking mother)) Lebanon has [bi:dZ{]?

Mother: Not [bi: dZ{], RPG [r pe: dZe:].

AE: I have to empty my pocket. They may discover something when they search me. ((AE took out some playing cards out of his pocket then entered the bathroom. He came back after a while and returned the cards and ringgits to his pocket. He sat down to complete writing his homework)).

Appendix 10. Referential Communication Task. (Video-Recorded)

Description

1	<p>The Mother: AE, there is something in this room, its shape is rectangle. AE: imm ((thinking)). The Mother: It has an opening, and sends hot or cold air. AE: The air conditioner. The Mother: The air conditioner, well done.</p>
2	<p>The Mother: There is something also in this room, it has four legs, and we put things on it, we use it. AE: The table. The mother: Yes, a table. Well done.</p>
3	<p>The Mother: Something round in the room, we hang it on the wall or wear it on our hand. AE: The sword. The Mother: No, it has two hands and twelve numbers. It has twelve numbers. AE: What is this? ((thinking)). The Mother: It has twelve numbers from one to twelve. We hang it on the wall or wear it on the hand. AE: The gloves. The Mother: No, it has twelve numbers. AE: The clock. The Mother: The clock, correct.</p>

النص الأصلي بالعربي:

1
الأم: عبودة ، في شغلة ، في الغرفة ، مستطيلة
الولد: امم .
الأم: وهي مفتوحة بالحيط ، بتطلع هوا ، بارد او سخن
الولد: مكيف.
الأم: مكيف ، شاطر.

App.10 (continued)	<p>الأم: شغلة في الغرفة كمان ، الها اربع رجلين ، وبنحط عليها أشياء ، بنستخدمها. الولد: طاولة. الأم: اي طاولة ، شاطر.</p>	2
	<p>الأم: شغلة مدورة ، بالغرفة ، دائما بنعلقها على الحيط أو بنلبسها بإيدنا ، الولد: سيف؟ الأم: إله ، لا الها تو هاندز ، الها إيدتين ، والها طنعش رقم . عندا طنعش رقم. الولد: اشي هاي؟ الأم: عندا هيك مكتوب فيها طنعش رقم ، من واحد لرقم طنعش ، يا بنعلقا على الحيط يا بنلبسها بإيدنا . الولد: كفوف. الأم: لا . إله طنعش رقم. الولد: ساعة. الأم: ساعة ، شاطر.</p>	3

Appendix A.11. Following Commands and Instructions (Video- Recorded).	
Description:	
<p>The Mother: Make a punch in your right hand. AE: ((Done)). The Mother: OK.</p>	
<p>The Mother: Clap your hands then hold your left knee. AE: ((Done)). The Mother: Well done.</p>	
<p>The Mother: AE, outside this room there is a plate in the middle of the table, next to it there is a box of facial tissues, bring it, please. AE: ((Done)). The Mother: Thank you, AE. AE: Welcome (.) conclusion.</p>	
النص الأصلي بالعربي:	
<p>الأم: عبد الله ، اعمل بكس بإيدك اليمين ، الأم: او كي .</p>	
<p>الأم: صفق ، بعدين امسك ركبتيك اليسار ، الأم: شاطر</p>	
<p>الأم: عبد الله ، بره على الطاولة ، خارج الغرفة ، في صحن بنص الطاولة ، جنبه في صندوق مناديل ، جبلي الصندوق. الأم: شكرا يا عبد الله. الولد: عفوا ، مع السلامة.</p>	

Appendix 12. 110 words produced by AE affected with Dysnomia & Dyspraxia.

No	Child's Production	Adult's Production	Meaning in English	Phonological Process
A Proper Names of People:				
1	æ: ðiΣa	ða:ʔiΣa	An Arabic name A friend at school	metathesis
2	ðdOl r{□m{n	ðbdOl ra□m{n	Arabic Name	Omission/ Cluster Reduction
3	ðdil{ziz	ðbdil{ziz	Arabic Name Teacher in SA	Omission/ Cluster Reduction
4	t{f{ / s{f{/ mO tt{f{	mOs t{f{	Arabic name Friend	Weak syll. deletion/ Cl. Reduction
5	awa - awra	arwa	Arabic Name cousin	Omission-metathesis
6	□a:rifa	□a:riTa	an Arabic name cousin	Substitution/ Fronting
7	□u fEj fa	□u ðEj fa	an Arabic name cousin	Substitution/Fronting Reduplication
8	tEslī:m	tEsnī:m	Arabic Name Aunt	Substitution/ Denasalization
9	fçw ra	fçr wa	A Malay friend's name	metathesis
10	warda- warða	rawða	Arabic Name cousin	Metathesis-consonant harmony
11	mislim	muslim	A Muslim	Substitution/ front vowel preference
12	Moʃden	-	Jargon/ invented name for a classmate	-
13	Abu mahmud	Abu hammam	Uncle in law	substitution
14	Abu Muhannad	Muhannad	The school driver	addition
B Proper Names of Places (Landmarks and Countries):				
1	ar mi: kæ	am ri: kæ	America	metathesis
2	sa wa rat	sa ra wat	A Shopping mall in SA	metathesis
3	mu: fæ ΣΣæ / mu: wEΣΣæ	mis tæΣ fæ	Hospital	Cluster Reduction Fricative gliding- Long vowel prefer
4	bin dæ hu:d	bin dæ wu:d	A Shopping Centre In SA	Substitution/Glottal insertion
5	taim kwE:n	taim skwEr	"Times Square" In KL	Omission/ Cluster reduction-substitution
6	tin kæki	kin tæki	KFC	metathesis
7	kin kæ wi	Lin ka wi	" Langkawi " In MY	Substitution/Backing Reduplication
8	mibbELi-midbELi	midvELi	Mid Valley in KL	Substitution/Fronting
9	diskOn	diksOn	P. Dickson In MY	metathesis

App.12 (continued)				
C	Names of Familiar Objects:			
1	mi: mot	ri: mot	Remote control	Substitution/Fronting Reduplication
2	bes ba□	mes ba□	Swimming pool	Substitution/Stopping
3	Σi dZin	si dZin	jail	Substitution-Backing/ Consonant Harmony
4	wi:zæn	mi:zæn	weighing scales	Substitution/ Nasal Gliding /Denasalization
5	sE: no	lE: no	His tongue	Cluster reduction
6	mç ra: ra mç ha: ra	mç na: ra	tower	Reduplication Denasalization-Glottal Insertion
7	sidZædZe ΣidZædZe	sidædZe	carpet	Substitution/ Backing Reduplication
8	s{ dZa ra	ΣE dZa ra	Tree	Substitution/Fronting Distorted in spelling test
9	su:wal	sirwal	underwear	Omission Long vowel prefer.
10	maddas	musaddas	handgun	omission
11	fin dZE	sfin dZE	Sponge	Cluster reduction
12	æ:ðil	ða:ʔil	mind	Substitution
13	Pu:ze	xu:ze	helmet	Substitution/ Voicing
14	naʔa:t	maʔa:t	Elastic band	Substitution/Backing
15	bi: to:l	di: to:l	dettol	Substitution/ Fronting: Stopping
16	□su:n	s□u:n	dishes - plates	metathesis
17	s□a:n	□sa:n	horse	metathesis
18	mæfæs	næfæs	breath	Substitution/Fronting
19	zPE: nE	xzE: nE	cupboard	metathesis
20	□≡ ku:l	k≡ □u:l	Alcohol swab	metathesis
21	wrE:j≡	mrE:j≡	mirror	Substitution/ Nasal Gliding Denasalization
22	mu fEIEfæt	mu TEIEtæt	triangles	Substitution/Fronting
23	af læn kçton	af læm kçton	Cartoons	Substitution/Backing
24	a ɔ̃Pa wwa	sa Paw wa	submarine	Substitution/Stopping
25	inΣæd kon	inΣæd kom	A website	Substitution/Backing
26	bEnnone	bEllone	A balloon	Substitution/ reduplication
27	tEs ki	tEk si	taxi	metathesis
28	kim le	kil me	a word	metathesis
29	dæ læ wi:b	dawa li:b	wheels	metathesis
30	skEtin bord	skEtinʔ bord	Skating board/ a loan word from English	Substitution/Fronting
31	mikr fon	mEgrifon	Microphone	Devoicing

App.12 (continued)				
32	ti: fiz jon	til fiz jon	Television	Cluster reduction Long vowel prefer.
33	mi: lo:n	mil jo:n	million	Substitution Long vowel prefer.
34	ba:j no	ba:n jo	bathtub	metathesis
35	tawa ri:□	tara wi:□	prayers of "Ramadan"	metathesis
36	mEn fæ Σe	mEn Σæ fe	a towel	metathesis
37	sæ□≡ilmEktEb	sç≡ç□≡lmEktEb	desktop	metathesis
38	Σæ ra: jb	Σæ wa: rib	moustache	Substitution: Gliding
39	im Σu: dE	un Σu: dE	A song	Substitution/Fronting
40	wikin se	mikin se	broom	Substitution: Gliding
41	æ: ðile	ða:ʔile	family	Substitution
42	ΣEm Σi: je	ΣEm si: je	umbrella	substitution/ Backing
43	mΣEdZ le	msEdZ le	A cassette recorder	Substitution/ Backing
44	hEn kEl	hEj kEl	Skeleton	Substitution/ Fronting
45	lada:l	rada:r	radar	Substitution
46	nEdZ{□	dZ E n {□	wing	metathesis
47	□{bEΣ	ΣEb{□	A military plane	metathesis
48	oΣ ki dZi:n	ok si dZi:n	oxygen	metathesis
49	sçn ≡randZ	Σç≡ randZ	chess	addition

D	Names of Food items:		App.12 (continued)	
1	□æ wa wa	□æ lE wa	Sweets - candy	Substitution: Reduplication
2	mu:xi:e	mlu:xi:e	Syrian local food	Omission: Cluster reduction
3	Σel Σæ lE	mΣel Σæ lE	Local twisted cheese	Omission: Cluster reduction
4	far dZali:e	safar dZali:e	Syrian local food	Weak syllable deletion
5	kaw kaw	ka:kaw	cocoa	Reduplication
6	kEΣΣçb	ket Σçb	ketchup A borrowed word from English	Omission: Cluster reduction
7	Σa:Σi:dZo- Σa: dZ i:dZo sədZi:dZo	sə si:dZo	sausage	Substitution/ Backing Reduplication
8	tçr me	tçm ra	a date	metathesis
9	wi:ki:	ki:wi:	Kiwi fruit	metathesis
10	kornflEts- kornflEs	kornflEks	corn flakes/ borrowed word from English	Fronting/ Cl. Reduction
11	vura	ðura	corn	Substitution/Fronting
12	ðdZ mE	ðdZ wE	seed	substitution
13	dZæ dZæ dZE	dæ dZæ dZE	Chicken - hen	substitution/Backing Reduplication
14	hçm bEr br	hçm bEr gr	Hamburger/ borrowed word from English	Substitution/ Velar Fronting /Reduplication

15	s _ɜ n wi:Σe	s _ɜ n dwi:Σe	sandwich	Omission
E	Miscellaneous:			App.12 (continued)
1	marb{□ _ɜ n	mar□{b _ɜ n	Hello	Metathesis Appeared in spelling
2	æssæləæmu æleikn	æssæləæmu æleikm	Greeting	Substitution/ Backing
3	æl mæ jæ ni	æl jæ mæ ni	The Yemeni adjective	metathesis
4	□{ns{wi	□{ms{wi	Belongs to Hamas adj.	Substitution/ Backing
5	mEm ku:Σ	mEn ku:Σ	in a mess adjective	Substitution/Fronting
6	dZif ΣE	d if ΣE	Boorish adjective	Substitution/ Backing
7	dZæddæ:l	dæ dZæ:l	a liar adjective	metathesis
8	mE: jt	majji:t	Dead adjective	substitution
9	bEI bEI	mbEI bEI	wet adjective	Cluster reduction
10	fæ nniΣ	mfænniΣ	Soaked adjective	Cluster reduction
11	bænæsfæ dZi	bænæfsa dZi	Purple adjective	metathesis
12	bitil	mitil	alike, like adjective	Substitution/Stopping: Denasalization
13	h{ti:k	h{di:k	That (demonstrative)	Substitution/Assimilation process: Devoicing
14	fumma	Tumma	then	Substitution/f
15	mEfElIn	mETElIn	for instance	Substitution/f
16	sEb kit	sEk bit	She poured verb	metathesis
17	æ luss _o	æ musso	I lick it verb	Substitution/Backing
18	mæ to? dir	mæ tid ?or	Don't touch! verb	metathesis
19	mO□rO?	nO□rO?	we burn verb	Substitution/ Fronting
20	□am ru:□	□an ru:□	We will go verb	Substitution/ Fronting
21	tiΣ tδdZI	tis tδdZI	to hurry up verb	Substitution/ Backing
22	j δ t̥ O s̥ni:	j s̥ t̥ δn i:	Irritate me verb	metathesis
23	næð ni	jæð ni	I mean verb	substitution

Appendix A.13. Pictures for Naming Clothes (Audio-Recorded)

Colour: purple, red, blue  Size: 23 - 25 - 28	Colour: All colour  Size: small - medium - large	Colour: white + black white + brown  Size: 36 - 38 - 42
Colour: blue, white, grey  Size: small - large	Colour: blue only  Size: medium - large	Colour: blue, red, green  Size: small - medium - large
Colour: brown only  Size: 35 - 36 - 38	Colour: white, brown, black  Size: small - medium - large	Colour: black, grey, pink  Size: small - medium - large
Colour: brown, grey, black white, blue  Size: 35 - 36 - 38	Colour: all colours  Size: small - medium - large	Colour: white, grey  Size: small - medium - large
Colour: white + blue, grey + black, purple + blue  Size: one size	Colour: brown, black, grey  Waist size: 32 - 36 - 38 - 42	Colour: pink, yellow, blue  Size: small - medium - large

There was this place (.) It has cl-clothes (.) A place for clothes (0.2) There is (0.3) a shoe (0.2) and there is (0.3) no (.) there is a shoe (.) and there is clothes (.) and there is (0.3) a sock (0.3) and there is clothes (0.4), and there is (0.3) girl's clothes (.) and there is (0.3) clothes (.) and there is rain clothes (.) and there is a wooden place ((wrong word)) (0.3) and there is (0.3) and there is (0.2) and there is a blouse and there is (0.2) a belt and there is a shoe and there is clothes and there is (Hx) ((breathing loudly)) a filp flop and there is (.) trousers (0.2) and there is a girls' belt and finished (.) conclusion.

كان هادا المكان ، فيوه م ملابس ، مكان ملابس ، وفي... حذاء وفي... لبس وفي... لا، في حذاء وفي ملابس وفي... جراب وفيه ملابس... وفيه... ملابس بنت ، وفيه... ملابس ، وفيه ملابس مطر ، وفيه م مكان خشب وفيه... وفيه... وفيه بلوزة ، وفي... حزام وفي حذاء وفي لبس ، وفي ((شهق)) شحاطة وفي... بنطلون وفي حزام تبع بنات وخلص مع السلامة .

Appendix A.14. List of 18 verbs for naming task (Video- Recorded).

AE is required to name these verbs orally in sequence: [crying, dancing, swimming, drawing, fishing, flying, hugging, jumping, opening the door, playing soccer, pointing & shouting, riding a motorbike, running, singing, skating, surfing, playing with skipping rope, and diving].



App.14 (continued)

النص الأصلي بالعربي: هذه المرأة ، تبكي وهذه المرأة ، تغنـ ترقص ، وهذا طرزان لا هادا عبيسبح ، وهذا يكتب واجبه لاء
 هاذا يرسم ، وهذا يصطاد و هذا يركب بالطلالة الحمرا ، وهادا عبلف الثاني وهادا فرحان ، مرة فرحان أنا لأنه فاز بالهدف ،
 وهادا فتح الباب ياويلكم يا أولادي ، يا ويلكم ، وهادول عبيلعوا كرة ، وهادا عبأشر ، وهادا عبيركب دباب ، ها هاي عبيتركض ،
 هاي هاي عبيتغني ، نضارتي أهلا وسهلا بالايامن ، هاد عيرقد عيركض وش الفاصوليا ، وهادا عبيتزلج ، وهادا عبطير عل
 بالمنطاد،
 الأم: ايش؟
 الولد: عبطير؟ هاي.
 الأم: عبيطير؟
 الولد: عبيحزم ، عبنط.
 الأم: اش في بليده؟
 الولد: حبله هيك.
 الأم: أصبح اش عبيعمل؟
 الولد : عبيلعب ، وهادا عبغوص منشان يشوف الذهب ، ذهب يا أبو جودت ذهب .

This woman is (0.2) crying (.) and this woman is sin- dancing (.) and this is Tarzan(.) no
 this is swimming(.) and this is writing his homework (.) no drawing (.) and this is fishing
 and this is riding the red plane ((wrong pronunciation)) (.) and this is hugging the other
 and this is happy (.) very happy I am because he score a goal (.) and this opened the door
 (.) you are dead my children, you are dead (.) and those are playing soccer and this is
 pointing and this is riding a motorbike and this is running and this is singing (.) my glasses
 welcome the eman/faith (jargon) (.) this is running green beans' face ((jargon)) (.) and this
 is surfing and this is flying on by the balloon.

The mother: What?

AE: flying (0.1) this.

The mother: Flying??

AE: packing(0.2) jumping.((Repair))

The mother: What is in her hand?

AE: a rope this this ((body language))

The mother: So what is she doing?

AE: playing (.) and this is diving to see the gold (.)

Gold (.) Abu Jawdet Gold ((Delayed echolalia from a movie)).

Appendix A.15. Ten Textual Pragmatic Situations (Video- Recorded).

No	Social Situation
1	<p>The Mother: Once a girl saw a boy drawing a picture with his crayons. She approached him with a paper in her hand willing to ask him to share his crayons. What should she say?</p> <p>AE: What?</p> <p>Mother repeats the previous situation.</p> <p>AE: If don't mind (.) I want crayons.</p> <p>The mother: Is this a polite way? Ok.</p>
2	<p>A boy watched a group of boys playing soccer. He stood apart then he wanted to join them.</p> <p>How should he ask the boys to allow him in?</p> <p>AE: Can I please play soccer with you?</p>
3	<p>Two siblings (a girl and a boy) were walking in the street.</p> <p>((AE interrupting)) m-mama (.) I look at your face or at the Camera?</p> <p>The mother: it doesn't matter; The girl saw a big hole and wanted to warn her little brother</p>

	<p>App.15 (continued)</p> <p>to avoid falling in it. What would she tell him?</p> <p>AE: immediately directly he tells her hold tight (.) immediately directly he goes to the house and brings a rope.</p> <p>The mother: he can't bring a rope. What should he say?</p> <p>AE: hold my hand if you don't mind.</p> <p>The mother: you tell your brother, please don't mind?</p> <p>AE: no.</p> <p>The mother: ok, if your sister is going to fall in a hole, what do you tell her in words? You hold her hand but what do you say?</p> <p>AE: don't don't don't go?</p> <p>The mother: be careful, right? You tell her watch out.</p>
4	<p>A boy took a toy you are also interested in. What would you tell him?</p> <p>AE: if you don't mind, we divide the time. Half an hour you, and half an hour me.</p> <p>The mother: if he says no I don't want (.) I want it all.</p> <p>AE: I say I say (.) I leave him I leave him (.) I just go.</p>
5	<p>Some boys in the school playground are bullying and chasing you. What do you tell them?</p> <p>AE: Go away (.) do you want me to tell the teacher?</p> <p>The mother: if a lot of boys gathered and they started all bullying you.</p> <p>AE: I complain to the teacher.</p> <p>The mother: what else do you tell them?</p> <p>AE: Go away from me.</p>
6	<p>If a little boy (aged 3) drew a picture especially for you, but you didn't like it. What would you tell him?</p> <p>AE: very nice ((praise to Allah)) thank you.</p> <p>The mother: it is not nice, but you say it's nice, why do you say its nice?</p> <p>AE: for not saying, upsetting, for not upsetting him.</p> <p>The mother: ok.</p>
7	<p>If you saw two boys playing together with a kite and you want to join them. You will approach them and you will say...</p> <p>AE: what what?</p> <p>The mother: repeats the situation</p> <p>AE: I say you two hours and me two hours.</p> <p>The mother: It is not yours; they will not give it to you.</p> <p>AE: if you don't mind.</p> <p>The mother: They are playing together and you came to interfere what do you say?</p> <p>AE: if you don't mind. We divide the time or I go to the shop and buy.</p> <p>The mother: You don't say please let me play with you, you don't say that?</p> <p>AE: I'm shy</p> <p>The mother: You are shy to say that, ok.</p>
8	<p>Once you forgot to do your school homework. What are you going to tell the teacher?</p> <p>AE: I didn't do my homework.</p> <p>The mother: Why? You tell him, you tell him or you just remain quiet?</p> <p>AE: I tell him.</p> <p>The mother: ok.</p>
9	<p>Once your teacher gave you a piece of paper and sent you to the staff room to pass it to Teacher Ali. What are going to tell Teacher Ali?</p> <p>AE: Yes (.) We have a teacher in our school named Ali.</p>

	<p>App.15 (continued)</p> <p>The mother: What are you going to tell Teacher Ali?</p> <p>AE: If you don't mind I want a piece of paper.</p> <p>The mother: imm, understand what I said and what I asked you to do. Once, your teacher gave you a piece of paper and told you to go and pass it to Teacher Ali.</p> <p>AE: yes (.) I tell him ((interrupting)).</p> <p>The mother: You go to the staff room and you find Teacher Ali, what are you going to tell him?</p> <p>AE: If you don't mind take this.</p> <p>The mother: just this, what is he going to say? What is this paper?</p> <p>AE: From Teacher Ali (.) he told me to give it to you.</p>
10	<p>You saw some of your favourite toys and you ran fast to take them, suddenly another boy appeared before you and took them. What are you going to tell him</p> <p>AE: If you don't mind (.) can I play?</p> <p>The mother: ok, if he disagreed?</p> <p>AE: I hit him.</p> <p>The mother: you hit him?</p> <p>AE: no (.) I buy a toy (.) no (.) when the time finishes (.) I play</p> <p>The mother: ok, but there is no time, he ran faster and held the toy, What are you going to do?</p> <p>AE: If you don't mind (.) can I play with you?</p> <p>The mother: You don't hit him and grasp it from his hand?</p> <p>AE: ((nodding for no)).</p> <p>The mother: Why? Yes, as you did before.</p> <p>AE: What is it?</p> <p>The mother: When you hit the child and took the toy from him?</p> <p>AE: Me? When?</p> <p>The mother: I'm asking you ((laughing)).</p> <p>AE: no</p> <p>The mother: you never hit the boys; you never hit them, never?</p> <p>AE: ((nodding no)), just when they hit me first.</p> <p>The mother: If they hit you, you hit back. But you don't hit them to take the toys.</p> <p>AE: I hit them and tell the teacher.</p> <p>The mother: ok, you don't take the boy's pencil box? Never?</p> <p>AE: ((nodding for no)).</p> <p>The mother: ok.</p> <p>AE: ((conclusion)).</p>
النص الأصلي بالعربي:	
السلام عليكم اسمي (...)	
1	<p>مرة في بنت شافت ولد عيرسم صورته بألوانه، الولد: إيش؟ الأم: مرة في بنت شافت ولد عيرسم بالألوان ، قام هي عندها بس ورقة ، قام أجت لعند الولد ، اش بتقله منشان يعطيها ألوان ، منشان هي كمان ترسم؟ الولد: لو سمحت بدي ألوان. الأم: هاي طريقة مهندبة؟ طيب</p>
2	<p>مرة ثانية ، كان في ولد عبيتفرج على الأولاد عيبلعوا بالكرة و هوي واقف هيك بالطرف وهنن عيبلعوا مع بعضن بالكرة ، وهوي بده يلعب ، اش لازم يقلهم منشان يدخل معهم باللعبة؟ الولد: لو سمحت معلش ألعب معاكم كرة؟</p>

3	<p>كان في ولد عيمشي مع اخته الولد: مماما ما أطلع على الكاميرا أطلع عليك الأم: ما بتفرق، ولد وأخته عيمشوا مع بعض ، فجأة لقوا حفرة ، قام الأخت رح توقع بالحفرة ، أخوها اش لازم يقلها؟ الولد: رأسا فورا يقلا خليك ميسكه ، راسا فورا يروح على البيت يأخذ حبل الأم: ما بيحسن يجيب حبل ، اش بقلأ؟ الولد: امسكي ايدي لو سمحت الأم: هيك انت بتقول لأخوك امسك ايدي لو سمحت الولد: لا الأم: طيب اش بتقول لأخك رح توقع بالحفرة؟ بالحكي اش بتقلأ؟ انت ميسك إيدا بس ايش بتقلأ؟ الولد: لا لا لا تروحي ، الأم: انتبي ، صح ؟ اش بقلأ ؟ انتبي.</p>
4	<p>إذا ولد أخذ لعبة وإنت كمان بدك هاي اللعبة ، اش بتساوي؟ الولد: لو سمحت بنقسم الوقت ، نص ساعة إنت و نص ساعة أنا. الأم: طيب إذا هو قال لاء ما بدي ، بدي ياهها كلا الي؟ الولد: بقول ، بقول ، بطنش ، بطنش ، بطنش وخلص بروح. الأم: طيب.</p>
5	<p>الأم: إذا الأولاد في حوش المدرسة عيبالحقوك وبدأوا يتغالطوا عليك ، اش بتقلهم؟ الولد: ولك بعد لو سمحت ، بدك أشكي للاستاذ؟ الأم: هجموا كتير ولاد و بدأوا يغالطوك كتير كتير ؟ الولد: بشكي للاستاذ الأم: اش كمان ، اش بتقلهم؟ الولد: بعدوا عني.</p>
6	<p>إذا في ولد صغير رسملك صورة ، وهوي كتير صغير عمره ثلاثه ، رسم صورة خصوصي إلك وعطالك ياهها، إنت ما عجبتك ، اش بتقله؟ الولد: كتير حلوة ، ما شاء الله ، شكرا الأم: بس هي مو حلوة ، بس إنت بتقله حلوة ، ليش إنت بتقله حلوة؟ الولد: منشان ما يقول ، يزعل ، منشان ما يزعل . الأم: طيب.</p>
7	<p>الأم: إذا شفت ولدين عيبالعوا مع بعض وانت بدك تشاركهم، رح تجي لعددهم و تقلهم أيش؟ الولد: شلون شلون. الأم: شفت ولدين عيبالعوا سوا عندهم طيارة ورقية و إنت ما عندك الولد: بقول إنت ساعتين وأنا ساعتين. الأم: ماي إلك ، مارح يعطوك ياهها. الولد: لو سمحت الأم: هنن عيبالعوا مع بعض و جيت إنت تدخل معاهم ، اش بتقلهم؟ الولد: لو سمحت ماشي بنقسم الوقت أو بروح على الدكان يشتري الأم: ما بتقول خلوني ، معلى أجي ألعب معاكم ؟ ما بتقلهم هيك الولد: بخجل الأم: بتخجل هيك تقلهم؟ طيب</p>
8	<p>إذا مرة إنت نسيت تحل الواجب ، ايش بتقله للاستاذ؟ الولد: أستاذ ، أنا ما حليت الواجب. الأم: ليش؟ بتقله بتقله وإلا بس بتسكت؟ الولد: بقله . الأم: طيب.</p>
9	<p>مرة الاستاذ أعطاك ورقة وقلك روح على غرفة المعلمين و أعطيلي هالورقة للاستاذ علي الولد: أي استاذ علي عنا ياه واحد. الأم: اش رح تقله للاستاذ علي؟ الولد: لو سمحت أبغى ورقة. الأم: أمم ، إفهام علي اش حكيت أنا! مرة استاذك عطاك ورقة ، وقلك يا عبد الله روح وديها للاستاذ علي، الولد: اي أقله (مقاطعا)</p>

App.15 (continued)	<p>بتروح انت لغرفة المعلمين بتلاقي الاستاذ علي ، اش بتقله؟ الولد: لو سمحت تفضل . الأم: بس هيك ، اش حيفلك إيش هالورقة؟ الولد: من الاستاذ قلي أديك ياها .</p>
10	<p>إذا انت شفت ألعاب مفضلة كتير حلوة ورحت بدك تأخذها ، لقيت ولد تاني أجا قبلك و أخذها ، إيش رح تقله؟ الولد: لو سمحت معلش ألعب؟ الأم: طيب ، إذا ما رضي . الولد: بضربه . الأم: بتضربه؟ الولد: لاء ، بشتري لعبة ، لاء ، بس خلص الوقت بروح بلعب ، الأم: طيب مافي وقت ، هلق هو ركض أول ومسك اللعبة ، إيش يتجي إنت بتعمل؟ الولد: لو سمحت معلش ألعب معاك؟ الأم: ما بتهجم عليه و بتأخذها من إيده ؟ الولد: هز رأسه بقوة نافيا . الأم: ليه؟ إلا ، مو إنت هيك أول ساويت ؟ الولد: اش هاي؟ الأم: ما هجمت على الولد هيك و أخذت منه اللعبة بالزور؟ الولد: أنا ؟ إيما؟ الأم: تضحك أنا عيسالك ، الولد: لاء ، الأم: إنت ما بتهجم على الأولاد؟ ما بتضربن؟ أبدا؟ الولد: هز رأسه ، بس وقت ضربوني، الأم: إذا ضربوك بتضربن ، بس ما بتضربن منشان تأخذ لعبات . الولد: بضربن ويشكي للاستاذ . الأم: طيب ، إنت ما بتأخذ مقلمية الولد؟ أبدا؟ الولد: هز رأسه . الأم: طيب . الولد: مع السلامة .</p>

Appendix A.16. Conversing with the Child about Current, Past Issues & His Feelings (Questions and Answers). (Video- Recorded).

الجلسة الأولى:	
1	اشو أحلى شي في عبودة؟ ليش الناس بحبوا عبودة؟ لانيه ما بسمع كلمة / لانيه حباب/ انت بأيش متميز؟ يعني بحب؟ / بالحرب أيام زمان/ الرموح والفؤوس / الرموح والفؤوس / والسيف والسداة والدفاع و الطاقية والبنطلون.
2	اشو أحلى شي ساوته عائلتنا هاي السنة؟ هاي؟ / حفلة (تغير الصوت) / شهر رمضان / كمان؟ / العيد / العيد / أحلى شي؟/ العيد.
3	اش احلى هدية بتتمنى أنو أجبلك ياها؟ السي ... لاء/ ال هادا / استنى أتذكر / الفأس / صوت / السداة / الطاقية/ هيك دفاع/ البنطلون.
4	كم بتحب يكون مصروفك؟ صفر / واحد/ ولاشي/ 300 / 300 ريال؟ / ايماء بالموافقة / طيب.
5	اذكر شغلتين بذك يانا نعملهم يوم الخميس و الجمعة الجايين؟ غير نشترتي؟ / ايه/ نحرق (صوت) / اش نحرق؟ / نحرق ملابس قديمة / أو جرايد / أو باخد رمح / في الاستراحة حرق / على البر / (صوت شغل الكبريت).
6	في مرة انت انت شفت منام خوفك كثير كثير ؟ منام مرعب؟ كابوس؟ / ايه / مو خفت بس استغربت / في وحدة بنت / خالتي هاي ، خالة آلاء / في وحدة أجت بتشبهها بالضبط / نفس الشكل / قلت: خالة آلاء شلونك ؟ / طلعت وحدة غريبة ، بتشبه خالة آلاء، استغربت.
7	في منام انت بتشوفه مرة ثانية بيجي مرة ثانية بيجي؟ في لعبة / في المنام؟ / ايه في لعبة / دائما 3مرات / بس ما تقولي للدكتور / أنا ما عيسالك منشان الدكتور/ حرب السيوف / دائما بتشوفه في المنام؟ / ثلاث أربع مرات شفته.
8	اوصفلي أحلى مكان شفته في حياتك؟ () بيت عمرو / و هاي اش اسمه / مدينة مدينة مائية/ وين؟ / بماليزيا / ومحل حرب، هيك أنا أنا معي فأس وسداة / سداة؟ / ايه / ايمتي؟ / وقت عطونا رمح/ لا وقت عطونا اسهم ، وقت عطونا اسهم وقنصنا/ أنا قنصت لبعيد/ (صوت مكرر مرتين) لازم نقنص .
الجلسة الثانية:	
8	اوصفلي أحلى مكان شفته في حياتك؟ مح () ل فيو سيوف / شفته؟ / وين ؟ / وين؟ / حقيقية في المتحف / علي صوتك/ حقيقية بالمتحف / متحف فيه سيوف؟ / وين كان ؟ في ماليزيا / طيب.
9	في مرة ضعت؟ طبعاً 100 مرة / مرة / ضعت / بمحل / ايه/ قام كنت عبيكي / قام للسيلكي/ السيكيورتي؟ / لا مو السيكيورتي / لا سلكي هيك / السركتير ؟ / السركتير / أجو قال وين أبوك / قام قاعدين يدوروا عليه / قام بالأخير لقوه / وانت شلون حسيت لما ضعت؟ / اني ضاعوا وراحوا سافروا/ خفت والا هيك بس شوي؟ خفت كثير والا بكيت كثير والا / بكيت (... خفت كثير ما بكيت.
10	احكي لي شغلة انت بتعرفها و نحنا ما بنعرفها؟ مصايب؟ ممكن مصيبة ممكن شغله حلوة/ شغلة / عيلعب / بس ما بدي أقول قدام الدكتور/ طيب ما نقول ، ماما/هاي الننا مو للدكتور/ مرة () / ما بدي/ مرة ساويت مصيبة / اش هيه ، ما في عقاب / () انو ، لا لا/ احكي لي شغلة بتتذكرها من أيام ما كنت صغير؟/ أنا بس مرة شفت وحدة تذكرتها ، أنا كنت صغير عبتحفضوني / بتتذكر الحفوضة؟ / ايه / كنت ألعب مع أصابعي / وكمان؟ في ألعاب حلوة بتتذكرها لما كنت صغير؟ ما عندك ألعاب مفضلة؟ / وقت كنت صغير؟ / ايه / لعبة السيارات ، فيها هيك تمشي / بتوقف ، تذكرة ، تمشي تكلمي / وقطار بمشي لحاله.
11	اذا قالو لك حتربي حيوان بالبيت أليف ، اش بتختار أي حيوان؟ أرنب / بتحب الأرنب؟ / والقطة / طيب / أالارنب أكثر والا القطة ؟ / القطة.
12	ليش في بعض الناس ما بحبوا يربوا الحيوانات؟ لأنو بطالعوا أحياناً ريحة بشعة / واش كمان؟ / متوحشين مرات/ وايش كمان؟ / مرات بوسخوا / ايوه واش كمان) بشخوا بيهيروا / وأحياناً بيهيروا من البيت / ايو / بخافوا ايش بخافوا / في ناس بخافوا من الحيوانات / وفي ناس بيتحسسوا .
13	لما انت بتكون زعلان ايش أكثر شي بفرحك ؟ بكون خبر حلو اجا/ طيب مو دائماً في اخبار حلوة بس احياناً بتكون انت كثير كثير زعلان اشو الشي يلي بفرحك قوم اجلس حيك حدا ببيحي ، يليه قوم / اشوالشغلات يلي بفرحك أكثر شي ، الحلاوة والا الألعاب / السيوف / اش دخلك بالسيوف؟ / يعني شي ثاني / السيوف.

14	مين أكثر انسان عاش من زمان وانت هلق بتحبه وبذك تصير مثله؟ نعني بطل / عقبة بن نافع ، بس انضرب بالمقلع (يؤشر بين عينيه) / محمد الفاتح / لا / اش اسمه بتحب محمد الفاتح ؟ / عقبة.
15	اش أكثر شي انت بتتميز فيه بالمدرسة؟ يعني بحبها / أي مواهب بتحب؟ / مدنية / ما بحب المدنية / لا بحب المدنية / فنية / بتحب الرسم والرياضة ؟ هدول أكثر شي/ هز رأسه بالايجاب / بتفرح انو الله اعطاك موهبة بالرياضة / هز رأسه بالنفي.
16	مين أفضل معلم أو معلمة مرت عليك بتحبه/ ممكن من سنة أولى ، ثانية ، الجفري /؟ بس مافي أساتذة بحبهم / بنت ما بحب / لاء هاي استاذة ماي بنت ما بحب الاساتذة / في واحد بالمدينة اسمه استاذ عبد العزيز / بس بدوي / وسلفي / اسمه عبد العزيز رويثي / بتحبه أكثر واحد ، أكثر من العراقية وأكثر من الجفري؟ / هز رأسه بالايجاب.
17	مين أكثر واحد من أصحابك حباب ، ماما لو شافته رح تحبه؟ عبد الله أيمن / لا ، ولا واحد / ما عندي أصحاب / طيب بالعراقية؟ / زكي / زكي ، ماما لو شافته بتحبه ؟ / ايه / ليش ؟ / لأنني حباب / حباب؟ واش كمان فيه صفات حلوة؟ / أخلاقه دينه / واش كمان/ في واحد مو صاحبي بس حباب ، عبد الله أيمن (يخبط بكفيه على حضنه) مصري / ممتاز / مؤدب / حباب. (ماما ، مدارس بكرة)
18	اتذكر ثلاث اشياء من أيام الروضة و الجفري. اساتذة؟ / الجفري / الاستاذ عبد النعم / و بعد عبد النعم مميمم؟ لا من أيام الجفري مين أصحابك ؟ مافي / شلون مافي؟ ما بصاحب / أخو خالة بيان / أخوها (...) فروس ؟/ مو ابنها ، أخوها يمان / مين هادا؟ يمان بتذكره ، كنت تأخذه حلويات / مين هاد؟ / ما بتتذكر ، خلص انت نسيانه معلش/ طيب اش كنت تلبس على المدرسة؟ / العراقية؟ / لا الجفري / عادي هيك / ويطعموك بالمدرسة والا ماما بتعطيك سندويشة؟ / ما بتعطيني انت كنت/ بس هنن بيعطونا تميز / نأكله / قال لازم نلم حبات التمس ونأكله/ وكانوا بيضربوا الا كانوا لطيفين / بيضربوا / استاذ عبد النعم بيضرب ؟ / ايه ، بيحب عصابة تبع الحسان / شفت تبع الحسان؟ / بعذب بحتوا الواحد هيك / (صوت آه) / كنت انت شاطر والا كسلان / شاطر ميه ميه.
19	مين أكثر اولاد مشهورين بفصلك بسنة ثانية هلق ، كل الاساتذة بقولوا اسمهم؟ حمزة مري / ليش مشهور؟ / حمزة أصلا خنزير مري ، اسمه خنزير مري ، اسمه خنزير مري / خنزير بري / ليش هيك / لا هو اسمه الحقيقي حمزة مبارك / مشهور؟ / مو مشهور شاطر / كل الاساتذة بقولوا اسمه حمزة حمزة / ايه ، و عبد الله أيمن / لانهم شطار يعني.
20	اذا واحد بده يختار صاحب اش لازم تكون صفاته؟ حباب ، دينه أخلاقه ، حباب ، دينه أخلاقه / كمان / حباب ، دينه أخلاقه / كمان ؟ / حباب / اذا بدك تصاحب واحد بتطلع على شكله والا لاء؟ من أي ناحية؟ / بتسلم عليه / لازم يكون نظيف والا مو لازم النظافة ؟ / لازم يكون نظيف / النظافة مهمة والا لاء / مهمة / طيب أصبح دين و أخلاقه كويسة و حباب و نظيف و كمان (...) بتحب تصاحب طفل كسول مهمل ؟ / تأشير لا / اش بتحب تصاحب ؟ / ممتاز ؟ شاطر / بتحب تصاحب انسان مهمل بضيع أغراضه ، مسطرته ، دفتره ، بينسي دفتره / بتحب ؟ أصبح اش صفات الصاحب الكويس؟ حباب نظيف ما بضيع أغراضه ما بيضرب (صوت غير واضح).
21	اذا عرفت في ولد بفصلك سرق شغلة (بنرفزة) يا كلب يا حيوان / أنا هيك بساويله ، (حركة جسم) بتعيدها ، بتعيدها / لك لك / بس هيك بتقله ، ما بتحكي للاستاذ؟ / لا ، مالي فتان / لا هو الولد هذا سرق شغلة وانت شفته عبيسرقها وبخبيها بجيبه أو بشنطته/ اي بهده و بضربه / راسه لتح (والا بتروح بتقله للاستاذ ؟ / بروح بقله للاستاذ هلق هيك حتسجل حبيبي بالطريقة / هلق عبتشوف شكلي / طبعاً ، مالك مؤدب تقعد هيك ، ماما عبتسالك أسئلة.

App.16 (continued) A Translation of the Two Sessions.		
Session One		
1	What is the most amazing thing about AE?	AE: He doesn't obey orders (.) because he is well disciplined. Mother: What makes you distinct? AE: You mean what I like? war in the old days (.) spears and axes (.) spears and axes ((wrong plural form)) (.) the sword (.) the shield (.) the defense (.) the helmet (.) the leg pads.
2	What is the most enjoyable thing our family	AE: This (.) a party ((change voice tone)) (.) the month of Ramadan. Mother: and what also?

	<i>did this year?</i>	The Eid (.) yeh (.) the Eid (.) the Eid. <i>Mother: The most interesting?</i> AE: The Eid.
3	<i>What would be the best gift you wish to have?</i>	AE: The swo- (.) the (0.3) wait (.) let me remember (.) the ax ((sound effect)) the shield (0.1) the helmet (0.2) like this the defense (.) the leg pads.
4	<i>What is the greatest allowance you ever had?</i>	AE: Zero (.) one (0.2) nothing (.) 300. <i>Mother: 300 Saudi riyals?</i> AE: ((nodding for yes)). <i>Mother: ok.</i>
5	<i>Name two things we should do as a family on the weekend.</i>	AE: Rather than buying? <i>Mother: yeh.</i> AE: Burning ((sound effects)). <i>Mother: Burning what?</i> AE: Burning old stuff (.) newspaper (.) lighting fire (.) or I may take a spear (.) in the Recreation building (.) burning (.) to the open land ((sound of lighting a match)).
6	<i>Have you ever had a dream that really scared you? A nightmare?</i>	AE: Yeh (.) I didn't get afraid but I was surprised (.) there was a girl (0.2) my aunt (.) aunt Alaa (.) one came who exactly looks like her (.) the same figure (.) I said (.) aunt Alaa (.) How are you? (.) She was a stranger that looks like aunt Alaa (.) I was surprised.
7	<i>Do you ever have a dream that happens over and over? If so, what is it like?</i>	AE: There is a game. <i>Mother: In your dreams?</i> AE: yeh (.) always always always (.) but don't tell the doctor. <i>Mother: This recording is not for the doctor, it's for us.</i> AE: The sword war. <i>Mother: You always see it in your dreams?</i> AE: yes (.) Three or four times I saw it.
8	<i>Describe the most beautiful place you have ever visited.</i>	AE: (0.3) Amr's house (0.3) and this (.) what's its name? water water land. <i>Mother: Where?</i> AE: In Malaysia (0.2) and the war shop (.) like this (.) I (.) I had an axe and a shield. <i>Mother: A shield?</i> AE: Yeh. <i>Mother: When?</i> AE: When they gave us a spear (.) no when they gave us arrows (.) when they gave us arrows and we shot (.) I shot far ahead ((sound effects repeated two times)) we had to shoot.


App.16 (continued) Session Two. Questions 8-21 (Translated into English)		
8	<i>Describe the most beautiful place you have ever visited. [repeated]</i>	AE: A place (0.2) for sword. Mother: Did you see it? Where? AE: (.) Mother: Where? AE: Real ones in the museum. Mother: Raise your voice. AE: Real ones in the museum (.) swords in the museum. Mother: Where was it?

		AE: In Malaysia. Mother: OK.
9	<i>Have you ever got really lost? me If so, tell about it. How did you feel?</i>	AE: Yes (.) of course (.)100 times (.) once (.) in a shop (0.2) then I started to cry (.) then th- th- (wireless) ((wrong pronunciation)). Mother: You mean the guard? AE: No (.) not the guard (.) something like the (wireless) Mother: The secretary? AE: The secretary came (.) they asked me where my father was (0.2) they searched for him (.) then at last ((repair)) they found him. Mother: and How did you feel when you got lost? AE: They got lost (.) went (.) travelled. Mother: Were you frightened or just a little worry? AE: No. Mother: Were you very afraid or did you cry a lot or? AE: I cried ((thinking and remembering)) I was very scared (.) I didn't cry.
10	<i>Tell me about something I never knew you did when you were little? An early memory when you were very little?</i>	AE: Trouble? Mother: May be a thing or an action you did. AE: I am playing (.) I don't want to tell in front of the doctor. Mother: Ok, don't tell, mommy. This is for us not for the doctor. AE: once (.) I don't want to (.) once I did trouble. Mother: What was it? There is no punishment. AE: That (.) no no. Mother: A thing you did when you were little? AE: I only once saw one I remember it (.) you put a diaper on me when I was a baby. Mother: You remember the diaper? AE: yeh (.) and I used to play with my fingers. Mother: and what more? Do you remember nice toys you used to play with? Do you remember your favourite toys? AE: () ((no respond)). Mother: When you were little. AE: Yeh (.) the toy cars (.) like this it runs(.) it stop(.) ticket please(.) ok(.) go ahead(.) and a train engine that runs on its own.
11	<i>If you are going to have a weird, unusual pet, what would you choose? Which animal?</i>	AE: A Rabbit. Mother: You like rabbits? What about cats? AE: (...) Mother: Ok, the rabbit is better or the cat? AE: The cat.
12	<i>Why do you think some people don't like animals?</i>	AE: Because they are stinking. Mother: and what else? AE: Sometimes fierce. Mother: What else? AE: Sometimes (.) they are dirty (.) Mother: Yes (.) and What else? AE: They pee and poo, then they escape and sometimes they run away from home. Mother: Yeh, right. AE: They are afraid (.) some people are afraid of animals. Mother: and some people are allergic to animals. AE: Yeh.
13	<i>When you feel sad, what cheers you up?</i>	AE: Good news. Mother: Not always there are good news, but sometimes you are so upset, What makes you happy? ((Child putting his head on the sofa and raising his body)) Rise up and sit down properly, did you ever see someone taking

		<p>like this. Sit well. What makes you happy? Sweets or toys?</p> <p>AE: The swords.</p> <p>Mother: Why are you too much concerned about swords?</p> <p>AE: You mean something else?</p> <p>Mother: What makes you so happy?</p> <p>AE: The swords.</p>
14	<i>Is there anyone in history that you have heard about and you would like to be?</i>	<p>AE: You mean ((wrong pronunciation)) a hero? Oqba bin Nafie (.) but he was hit with a slingshot ((pointing to his forehead)), Mohammed Al Fatih.</p> <p>Mother: You like Mohammed Al-Fatih?</p> <p>AE: No no (.) What is his name? ((facial expressions indicating thinking)) Oqba bin Nafie.</p>
15	<i>What have you done, in school, sports, or elsewhere that you are proud of? Last year?</i>	<p>AE: You mean I like it? hobbies?</p> <p>Mother: What hobbies do you like?</p> <p>AE: PC ((wrong pronunciation)), I don't like PC (.) no (.) I like PC (.) arts.</p> <p>Mother: So, you like sports and drawing the most?</p> <p>AE: ((Nodding for yes)).</p> <p>Mother: Are you happy because Allah gave you a gift in sports?</p> <p>AE: ((Nodding for no)).</p>
16	<i>Tell me about the best teacher you ever had?</i>	<p>AE: There are no teachers that I like (.) girls I don't like(.)</p> <p>Mother: No, this is a lady (.) not a girl! Try to remember from Grade One, Two, or preschool.</p> <p>AE: I don't like teachers. ((thinking)) There is one in Medinah called Mr. Abdul Aziz (.) but he is a Bedouin (.) and Salafi (.) His name is Abdul Aziz Al-Ruweithi.</p> <p>Mother: You like him the best (.) more than the Iraqis and the preschool teachers?</p> <p>AE: ((Nodding head for yes)).</p>
17	<i>Which of your friends do you think I do like most? and Why?</i>	<p>AE: Abdullah Ayman (.) no, none of them(.) I don't have friends.</p> <p>Mother: What about the Iraqi School?</p> <p>AE: Zeki (.) Zeki.</p> <p>Mother: If mom sees him she will like him?</p> <p>AE: Yeh. ((tapping on his lap)).</p> <p>Mother: Why?</p> <p>AE: Because he is a good boy.</p> <p>Mother: A good boy, and what other good manners does he have?</p> <p>AE: His manners are Islamic. There is one who is not my friend but he is also good, Abdullah Ayman (.) Egyptian (.) clever (.) well- disciplined and friendly. Mommy, Tomorrow there is school.</p>
18	<i>Can you remember three striking things about kindergarten days Al Jifri (preschool)?</i>	<p>AE: Teachers? Al Jifri ((his preschool)) Abdul (.) Teacher Abdul Munem (.) and after Abdul Munem (.) mmm ((wrong pronunciation)) in the Iraqi school.</p> <p>Mother: No, from the days of Al-Jifri ((preschool)), who were your friends?</p> <p>AE: There is no friend.</p> <p>Mother: How come?</p> <p>AE: No one (.) I don't make friends.</p> <p>Mother: What about Bayan's brother, he was with you.</p> <p>AE: Her brother? (...) Farrus? ((his cousin's nickname)).</p> <p>Mother: No, not her son, her brother "Yaman".</p> <p>AE: Who is this?</p> <p>Mother: Yaman don't you remember him? You used to give him sweets.</p> <p>AE: Who is this?</p> <p>Mother: You don't remember, it's ok. What did you wear at school?</p>

		<p>AE: The Iraqi school? Mother: No, at Al Jifri ((preschool)). AE: Ordinary clothes (.) like this ((pointing to his t-shirt)). Mother: They used to offer a meal or did mommy give you a sandwich? AE: You didn't give me any sandwiches, but they offered some tameez (local bread) to eat (.) we had to pick up the bread crumbs and eat them. Mother: Were they strict or friendly? AE: No (.) they hit children. Mother: And Teacher Abdul Munem hits? AE: Yeh (.) he has a horse stick ((a whip)) (.) did you see the horse stick? (.) they put the child like this(.) ah(.) ah and they hit him ((acting)). Mother: Were you a clever or lazy boy? AE: 100% clever.</p>
19	<i>Who is the best child in your class, and why do teachers admire him?</i>	<p>AE: Hamza Mirri. Mother: Why is he famous? AE: Hamza is a mirri ((jargon word)) a pig (.) his name is mirri pig (.) a wild pig (.) no (.) his real name is Hamza Mubarak. Mother: Is he famous? AE: No (.) not famous (.) but clever. Mother: All teachers repeat his name Hamza Hamza? AE: Yeh(.) and Abdullah Ayman because they are smart.</p>
20	<i>What are the qualities that make a good friend?</i>	<p>AE: Friendly (.) good manners (.) friendly (.) good manners. Mother: What else? AE: Friendly. Mother: If you want to choose a friend, do you consider his appearance? AE: ((Nodding for yes)). Mother: From which perspective? Ok, do you greet him? Is it important to be clean, or is being clean not important? AE: No (.) he should be clean. ((no eye contact and appeared inattentive)). Mother: Is cleanness important or not? AE: Important. Mother: Ok, now religious, good mannered, friendly, clean and what else? Do you like a careless lazy friend? AE: ((Nodding head for no)) (.) excellent. Mother: Good boy. Do you like accompany with a friend that always loses his belongings, his ruler, notebook, he forgets his notebook. So, what are the characteristics of a good friend? AE: Friendly (.) clean (.) careful not to lose his things and he never hits others ((low unintelligible voice)).</p>
21	<i>If you realised that a classmate is stealing something, what would you do?</i>	<p>AE: You dog (.) you animal ((harsh voice)) (.) I will act like this ((body language)) Will you repeat it? (.) Will you repeat it? (.) That's all. Mother: Won't you inform the teacher? AE: No (.) I am not a gossip (.) I just threaten him and hit him ((head down on the couch)). Mother: Or do you inform the teacher? AE: I will go and tell the teacher. Mother: Now like this you want me to record. AE: Is she looking at me? Mother: Yes, of course. You are not a good boy sitting like this. Mommy is asking you questions.</p> <p style="text-align: right;">End of App.16</p>

Appendix 17. Medical Report obtained from UMMC.

 UNIVERSITI MALAYA KUALA LUMPUR PUSAT PERUBATAN UM	يونيڤرسيتي مالايا
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BIL KAMI: RP 23179473(5257/09)
BIL TUAN: -

30 MAR 2010

To Whom It May Concern

MEDICAL REPORT

PATIENT'S NAME

UMMC RN	: 23179473
NO.I/C	: 5063334(3)

Summary of Assessment:

Presenting Complaints:

Abdullah is a 7 years old boy, of Iranian origin who was brought to ti
by his mother. Mother was worried as when the child entered school he
was struggling with his school-work and was unhappy to go to school.

History of presenting complaints:



Abdullah entered an international school here when the family mo
Kuala Lumpur due to father's employment. When he entered scho
mother noted:

- He was struggling with his reading. He often confuses his alp
and his scores for his reading tests were poor.
- He became upset going to school or to come back home as h
afraid his mother would be unhappy with him.

Mother decided to switch him to an Arabic school where he was placed
below his actual age. His mother noted he was doing, coping better
academics as well as emotionally. However, some difficulties still remai

- He has difficulties keeping still
- He does not want to interact with the other children

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<small>PUSAT PERUBATAN UNIVERSITI MALAYA (University Malaya Medical Centre) LEMBAH PANTAI, 59100 KUALA LUMPUR, MALAYSIA Telefon : 603-79494422 (Hunting Line) No. Faks : 603-79562253 Laman Web : www.umm.edu.my E-mail : ummc@umm.edu.my</small>	<div style="display: inline-block; text-align: center;"> <small>QUALITY SYSTEM SIRIM ISO 9001:2000</small></div> <div style="display: inline-block; text-align: center;"> <small>UKAS 074 REG. NO AR 2597</small></div>
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- Child is impulsive and as a result of his impulsivity, he has gotten into trouble on a number of occasions.
- Child is more of a loner at home and in school.
- He used to have poor eye contact and had restricted repertoire of activities and interest.
- He is hardly hungry
- When he speaks to his mother, he needs to touch her and talks to her in a loud, monotonous tone. His pronunciation is poor and he often reverses his words.

Comments and Management:

The clinician felt that Abdullah has symptoms suggestive of Childhood Autism with difficulties in the primary support group. Childhood Autism is a pervasive developmental disorder defined by the presence of abnormal

and/or impaired development that is manifest before the age of 3 years, and is characterized by abnormal functioning in all three areas of social interaction, communication, and restricted, repetitive behavior.

The impairments in reciprocal social interaction takes the form of an inadequate appreciation of socio-emotional cues, as shown by a lack of responses to other people's emotions and/or a lack of modulation of behavior according to social context; poor use of social signals and a weak integration of social, emotional, and communicative behaviors; and, especially, a lack of socio-emotional reciprocity.

While qualitative impairments in communications are noted in the form of a lack of social usage of whatever language skills are present; impairment in make-believe and social imitative play; poor synchrony and lack of reciprocity in conversational interchange; poor flexibility in language expression and a relative lack of creativity and fantasy in thought processes; lack of emotional response to other people's verbal and nonverbal overtures; impaired use of variations in cadence or emphasis to reflect communicative modulation; and a similar lack of accompanying gesture to provide emphasis or aid meaning in spoken communication.

The condition is also characterized by restricted, repetitive, and stereotyped patterns of behaviour, interests, and activities. These take the form of a tendency to impose rigidity and routine on a wide range of aspects of day-to-day functioning and play patterns. The children will often insist on the performance of particular routines in rituals of a non-functional character; there may be stereotyped preoccupations with interests such as dates, routes or timetables. There are often resistances to changes in routine or in details of the personal environment.

In addition to these specific diagnostic features, it is frequent for children with autism to show a range of other non-specific problems such as fear/phobias, sleeping and eating disturbances, temper tantrums, and aggression. Self-injury (e.g. by wrist-biting) is fairly common, and it has been noted in this child.

The specific manifestation of deficits characteristic of autism may change as the children grow older, but the deficits often continue into and through adult life with a broadly similar pattern of problems in socialization, communication, and interest patterns.

As Abdullah's temper tantrum was severe, the children placed him on a trial of Risperidal, however this aggravated his bleeding nose and the medication had to be changed to either another group of anti-psychotic, or an antidepressant. This will have to be monitored as the family has moved and left Malaysia. Father was only seen once, and the clinician noted that he was upset at having to come for the session and has no insight to his difficulties and its impact on the family. It would be helpful for both parents to work together as the issues of the family are complex and it needs for both parents to be together to help improve their children's future.

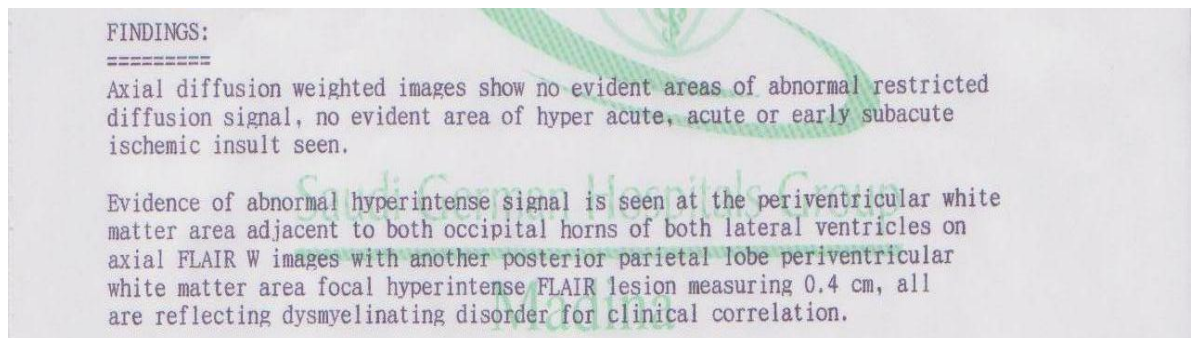


Dr. Aili Hashim,
MBBS (Mal) MPM (Mal), Certificate in Child & Adolescent Psychiatry
(Aust)
Consultant Psychiatrist
Psychological Medicine Unit
Universiti Malaya Medical Centre

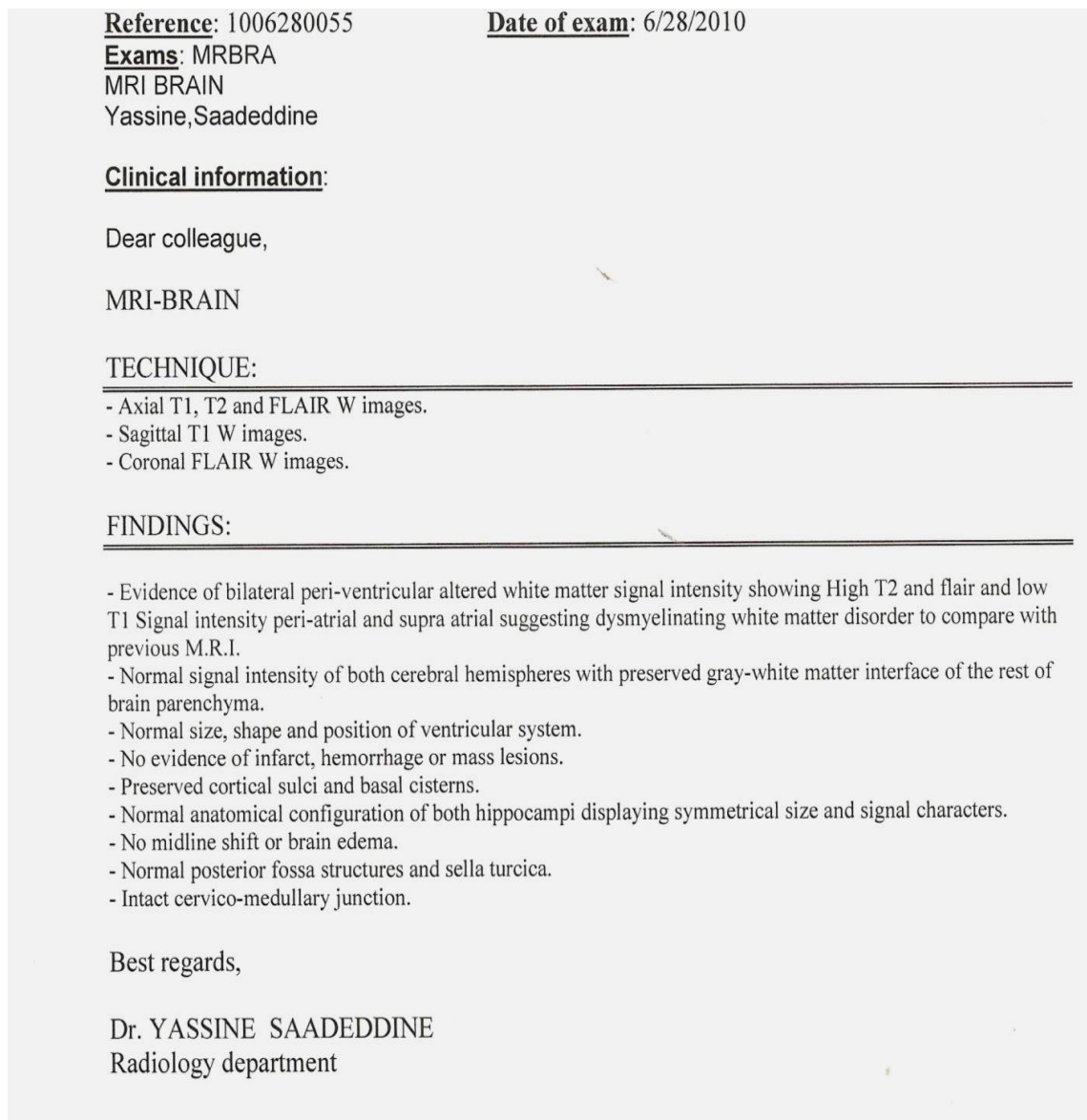
AH/nca: 240809

Appendix A.18. Three Brain MRI Reports Confirming WM disorder.


MRI 1: On 10th Jan, 2010 - AE age: 7;11 years.



MRI 2: AE age (8;4 years).



MRI 3: AE age (8;11 years).

 P.O. BOX 80215 JEDDAH 21589 K.S.A Tel: (02) 6401000 Fax: (02) 6952538	KING ABDULAZIZ UNIVERSITY HOSPITAL مستشفى جامعة الملك عبدالعزيز		MRI
	Radiology Report		
	<hr/>		
	<hr/>		

MR No. 713800			
Patient Name: Abdullah Ammar Elwan	Sex: M	Age: 9 Y	
Ordered By : Ali A. Al-fakeeh (3671)	Location:		
Exam			
Procedure: MRI - BRAIN C+/-			
Exam ID: 003897	Report ID: 1929905	Performed on: 15/03/2011 15:10	

Reason for Examination
K/c of M.S. diagnosed outside (in Al-Madinah) for follow up

MRI SCAN OF THE BRAIN

Technique:
Axial T1, FLAIR, coronal inversion recovery.
Axial T2, FLAIR, PD, DWI, ADC.
Two-plane post contrast images.

Findings:
There is subtle hyperintense signal shown in the bilateral trigonal regions around the occipital horns of the lateral ventricle in the long TR sequences.
There is no evidence of enhancement seen.
There is no multiplicity of T2 hyperintense lesion in the rest of the brain parenchyma.
No infratentorial lesions are shown in the present study.
The features do not confine to the Barkhof's criteria for disseminated multiple sclerosis.

The rest of the brain is grossly unremarkable with normal appropriate demyelination for age.
Cerebral and cerebellar hemispheres are grossly unremarkable.
Midline structures are central.
Posterior fossa structures are unremarkable.

Impression:
The described features do not confine to a strict radiological by Barkhof's criteria for disseminated multiple sclerosis.
However, the subtle T2 hyperintense trigonal foci are shown and needs clinical evaluation.
Followup MRI after one year could be helpful.

Reported By	: Dr. Naushad Ahmed		
Verified By	: Dr. Naushad Ahmed		16/03/2011 10:14
MT By	: BRQUADT		27/03/2011 09:34
			21/03/2011 11:53

Printed date: 27/03/2011
Printed by : HAUNXR

Appendix A.19. Brain EEG Report.

EEG 5-4-1431

KINGDOM OF SAUDI ARABIA
MINISTRY OF HEALTH

HOSPITAL: MCH

REASON FOR REQUESTING TEST: 89's old male, presented
sudden episodic behavioral distur-
bance. MET done: dysmyelination dis

CLINICAL SUMMARY: (Particularly specify last seizure, type, frequency and whether controlled or not.
Family history, head injury etc.)
as above

DRUG TREATMENT: (recent and past) To 2/6 seizure disorder
Cipsoalex 10mg 1/2 tab OD

RESULTS OF OTHER RELEVANT INVESTIGATIONS:

Requesting Physician: Dr. Sabri Al-Hiji
Signature: [Signature] Date: 17/2/31

REPORT

The back ground is dominated by alpha rhythm 8-9/12/SEC, symmetrical, there are repeated sharp waves activity from frontal area with tendency to be generalized.


Impression: Abnormal EEG tracing with Multiple sharp waves discharge & 2° generalization

Reported by: Dr. Sabri Al-Hiji
Consultant Neurologist
Bleep (1061)
Signature: [Signature] Date: 21/2/31

EEG REQUEST & REPORT FORM (40)

نموذج طلب وتقرير تخطيط مخ (٤٠)

Appendix A.20. Medical Report obtained from Pediatric Ophthalmic Surgeon.



مركز د. البطل
لعلاج وإمراض عيون الأطفال والبالغين
Dr. Batal children's eye center & adult strabismus

MEDICAL REPORT

Patient Name: Abdullah Amar Nash Alwan
MR# : 004122

25 April 2011

To Whom It May Concern:

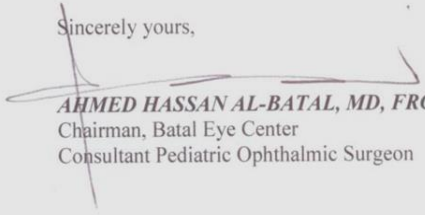
Abdullah who is 9 years old presented to my clinic accompanied with his parents on April 24, 2011. He was diagnosed to have demyelinating disease based on findings shown in three (3) MRI. He has unspecific visual complains where he reports to his parents that his visual acuity is blurred sometimes and his color vision was at one stage affected too. On eye examination, his visual acuity is 20/20 in both eyes, his color vision is full using Ishihara plates, anterior and posterior segment examination both unremarkable, optic disks are normal in both eyes.

I discussed with Abdullah's parents his condition that the diagnosis of multiple sclerosis could be possible, also I warned them that any sudden severe change in his visual acuity should be taken seriously, and immediate ophthalmological consultation should be sought if that takes place. I recommend that Abdullah should be seen periodically every six (6) months.


This report is given up Abdullah's parents request. I'll be more than happy for any further information regarding his eye condition.

Thank you.

Sincerely yours,



AHMED HASSAN AL-BATAL, MD, FRCS
Chairman, Batal Eye Center
Consultant Pediatric Ophthalmic Surgeon



Al Nakheel Center
Madina Rd. Jeddah-KSA

مركز النخيل . طريق المدينة
جدة . المملكة العربية السعودية

your child's vision...is our mission

قوة عيونكم ... نرعاهاهم بأعيننا

Appendix A.21:

Kingdom of Saudi Arabia
Ministry of Education
Department of Special Education



المملكة العربية السعودية
وزارة التربية والتعليم
الوكالة المساعدة للتعليم الموازي
الأمانة العامة للتربية الخاصة

Special Education Assessment Report: *Screening for Dyslexia and Dysgraphia in Arab Children*

Name of Student Being Tested: A.E.

Age and Grade of Student Being Tested: 8 years, 2 months – -Grade 2

Date of Test: 16/4/2010.

Name of Examiner: Special Education Teacher – Mrs. Shifa Akil.

A.E. was administered the official test for Learning Disabilities given by the Saudi Arabian ministry of Education in reading and writing. A.E. was given the test for the first grade level, since Abdullah is now in the second grade.

The results of the test show that A.E. does not have learning disabilities in reading or writing.

The total duration for testing was less than an hour, and he took frequent breaks during testing.

The test content includes mainly reading skills in Arabic that are supposed to be taught in the first grade level.

A.E. was relatively social and interactive with me before and during testing, he was also cooperative in general.

A.E. seemed somewhat excited about being tested; however, he did show some signs of nervousness, most probably from fear of making any mistake. He was very motivated at the beginning of the test, and he

was eager to complete the whole test in one go, however, after the third section of the test, he got tired and asked for a break. When he came back from his break, he was not very motivated and refused to be tested, so he was given more time as a break, and he was reinforced with stickers, and I had to tell him that reinforcement was waiting for him if he sits down properly and completes the test. During the second part of his testing, he was easily distracted and not as motivated as he was before.

My conclusion after this test is that A.E. has a very wide imagination, since he made up complete meaningful sentences using words he read, while he was only asked to fill in the missing letter in those words, he also managed to draw a small picture resembling those words or sentences. He also has the ability to speak formal Arabic in a somewhat correct way, and most of children his age cannot do that.

I also realized that A.E. needs continuous reinforcement in order for him to complete a task. He is also easily distracted, meaning that he has a relatively short attention span.

One thing about A.E. that really amused me was that he was fully aware of his weaknesses, and he tried to overcome most of them. For instance, I noticed that he has a slight deficit in the area of working memory, because in one section of the test, I read out a letter for him and he was supposed to write it in different positions in different words, and when he reached the second or third word, he would either get mixed up with the letters or he would ask again for the current letter.

Therefore, he developed a useful strategy that helped him remember; he asked for an additional piece of paper, where he would write the letter I say and whenever he forgot which letter we reached, he would simply look at the paper and remind himself. I was impressed by his comprehension of the vocabulary used in the test and the instructions. Moreover, his reading skills are considered excellent for his age (fluent, correct pronunciation of letters), in addition to his

writing skills (speed, readable handwriting, pencil grip). In addition, he seemed to have normal eye-hand coordination and the distance between his eyes and the paper was normal; in other words, as I observed him during testing, I did not notice any abnormal behaviours or positions while reading and writing.

According to the test, A.E.'s points of strength are:

1. Reading and pronunciation the letters of the alphabet correctly, including the long and the short vowels.
2. Writing the letters of the alphabet correctly, as they occur in different positions in the word.
3. Breaking down words into individual letters.
4. Differentiating between the different "double signs" in both reading and writing. (tanween- تنوين)
5. Differentiating between the different types of long vowels in both reading and writing. (modood- مدود).
6. Synthesizing words from individual letters.
7. Rearranging given words to make correct, meaningful sentences.
8. Accurately reading and writing sentences composed of different words.

His points of weakness according to the test are:

1. Differentiating between the sun letters and the moon letter in Arabic. (Lam shamsia wa qamaria - اللام الشمسية والقمرية)

In conclusion, it is wise to say after testing and observing, that A.E. does not have any symptoms of dyslexia or dysgraphia, and the results of the test show that he is in the average range in reading and writing, according to his grade level.

Name of Examiner: Ms. Shifa Akil -Special Education Teacher

Signature of Examiner:



Appendix A.22. Diagnostic Criteria for ADHD.

Table 1

Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder

A. Either (1) or (2):

- (1) six (or more) of the following symptoms of *inattention* have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Inattention

- a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- b) often has difficulty sustaining attention in tasks or play activities
- c) often does not seem to listen when spoken to directly
- d) often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
- e) often has difficulty organizing tasks and activities
- f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- h) is often easily distracted by extraneous stimuli
- i) is often forgetful in daily activities

- (2) six (or more) of the following symptoms of *hyperactivity-impulsivity* have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

- a) often fidgets with hands or feet or squirms in seat
- b) often leaves seat in classroom or in other situations in which remaining seated is expected
- c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- d) often has difficulty playing or engaging in leisure activities quietly
- e) is often "on the go" or often acts as if "driven by a motor"
- f) often talks excessively

Impulsivity

- g) often blurts out answers before questions have been completed
- h) often has difficulty awaiting turn
- i) often interrupts or intrudes on others (e.g., butts into conversations or games)

- B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
- C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).
- D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

Note. From *DSM-IV* (American Psychiatric Association, 1994, pp. 83-84).

Appendix A.23: Diagnostic Criteria for ASD.

DSM-III-R (1987) Diagnostic Criteria for Autistic Disorder

At least eight of the following sixteen items are present, these to include at least two items from A, one from B, and one from C.

Note: Consider a criterion to be met *only* if the behavior is abnormal for the person's developmental level.

- A. Qualitative impairment in reciprocal social interaction as manifested by the following:
(The examples within parentheses are arranged so that those first mentioned are more likely to apply to younger or more handicapped, and the later ones, to older or less handicapped, persons with this disorder.)
- (1) marked lack of awareness of the existence or feelings of others (e.g., treats a person as if he or she were a piece of furniture; does not notice another person's distress; apparently has no concept of the need of others for privacy)
 - (2) no or abnormal seeking of comfort at times of distress (e.g., does not come for comfort even when ill, hurt, or tired; seeks comfort in a stereotyped way, e.g., says "cheese, cheese, cheese" whenever hurt)
 - (3) no or impaired imitation (e.g., does not wave by-bye; does not copy mother's domestic activities; mechanical imitation of others' actions out of context)
 - (4) no or abnormal social play (e.g., does not actively participate in simple games; prefers solitary play activities; involves other children in play only as "mechanical aids")
 - (5) gross impairment in ability to make peer friendships (e.g., no interest in making peer friendships; despite interest in making friends, demonstrates lack of understanding of conventions of social interaction, for example, reads phone book to uninterested peer)
- B. Qualitative impairment in verbal and nonverbal communication, and in imaginative activity, as manifested by the following:
(The numbered items are arranged so that those first listed are more likely to apply to younger or more handicapped, and the later ones, to older or less handicapped, persons with this disorder.)
- (1) no mode of communication, such as communicative babbling, facial expression, gesture, mime, or spoken language
 - (2) markedly abnormal nonverbal communication, as in the use of eye-to-eye gaze, facial expression, body posture, or gestures to initiate or modulate social interaction (e.g., does not anticipate being held, stiffens when held, does not look at the person or smile when making a social approach, does not greet parents or visitors, has a fixed stare in social situations)
 - (3) absence of imaginative activity, such as playacting of adult roles, fantasy characters, or animals; lack of interest in stories about imaginary events
 - (4) marked abnormalities in the production of speech, including volume, pitch, stress, rate, rhythm, and intonation (e.g., monotonous tone, questionlike melody, or high pitch)
 - (5) marked abnormalities in the form or content of speech, including stereotyped and repetitive use of speech (e.g., immediate echolalia or mechanical repetition of television commercial); use of "you" when "I" is meant (e.g., using "You want cookie?" to mean "I want a cookie"); idiosyncratic use of words or phrases (e.g., Go on green riding" to mean "I want to go on the swing"); or frequent irrelevant remarks (e.g., starts talking about train schedules during a conversation about sports)
 - (6) marked impairment in the ability to initiate or sustain a conversation with others, despite adequate speech (e.g., indulging in lengthy monologues on one subject regardless of interjections from others)
- C. Markedly restricted repertoire of activities and interests, as manifested by the following:
- (1) stereotyped body movements, e.g., hand-flicking or -twisting, spinning, head-banging, complex whole-body movements
 - (2) persistent preoccupation with parts of objects (e.g., sniffing or smelling objects, repetitive feeling of texture of materials, spinning wheels of toy cars) or attachment to unusual objects (e.g., insists on carrying around a piece of string)
 - (3) marked distress over changes in trivial aspects of environment, e.g., when a vase is moved from usual position
 - (4) unreasonable insistence on following routines in precise detail, e.g., insisting that exactly the same route always be followed when shopping
 - (5) markedly restricted range of interests and a preoccupation with one narrow interest, e.g., interested only in lining up objects, in amassing facts about meteorology, or in pretending to be a fantasy character
- D. Onset during infancy or childhood.
Specify if childhood onset (after 36 months of age).

Note. Reprinted with permission from the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised. Copyright 1987 American Psychiatric Association.

Source: Adopted from Miranda-Linné, Fredrika M. (2001) *Individuals with Autism Spectrum Disorders. Teaching, Language, and Screening.* Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences 103.

**Appendix A.24. List of Phonological Distorted Words.
Tables (24A)-(24B)-(24C)-(24D)**

Key for Interpreting Data Chronologically			
		Recorded at 6;10 and Repaired at 7	
		Persist after age 7 (consistent old patterns)	
		Emerged & Recorded after age 7 (consistent)	
		Persist after age 7;0 (inconsistent and unrepaired)	
Table (24A). Syllable Structure Processes			
No	Sub-Categories	No of Occurrences	Examples
1	Metathesis	52	<p>raw<u>d</u>a/ ward<u>a</u>- wart<u>a</u>/Arabic Name {k{dimijeh/ {k{midijeh/ academy Σawirma /Σamçrwa/ Kind of meat arwa/ awra/ Arabic Name ba:n jo/ ba:j no /bathtub mEn Σæ fe/ mEn fæ Σe/ a towel</p> <p>pOrt diskOn/ pOrt diksOn /Port Dikson ra ma <u>d</u>an/ ma ra <u>d</u>an / a lunar month when Muslims fast tara wi:□/ tawa ri:□/ Special prayers of "Ramadan" dæ dZæ:l/ dZædæ:l/ a liar mil jo:n/ mi: lo:n/ million xasi:s/ saxi:x/ ill-mannered tikbi/ tikbi/ crying <u>şç</u>□<u>l</u> mEk<u>tEb</u>/ <u>şæ</u>□<u>il</u> mEk<u>tEb</u> /desktop sekb<u>i</u>t/ sebk<u>i</u>t /She poured Am ri: kæ/ ar mi: kæ/ America k<u>æ</u> □u:l/ □<u>æ</u> ku:l/ Alcohol swap Σæ wa: rib/ Σæ ra: wib/ moustache dawa:li:b/ dal{:wi:b /tyres tEk si/ tEs ki /taxi ok si dZi:n/ oΣ ki dZi:n/ oxygen ð{:?l/ {ðl /mind ða:~ilEh/ {:ðlE / family ða:iΣ{/ {:ðiΣ{/ An Arabic name be:rde/ bre:de / cold</p> <p>ki:wi:/ wi:ki: / Kiwi fruit æ l jæ mæ ni/ æ l mæ jæ ni/ The Yemeni ΣEb{□/ □{bEΣ / A military plane dZ E n {□ / nEdZ{□/ wing l{n{sf{ðçn/ l{n{fs{ðçn / Pull from Head [in Reading] alInΣiqaq/ alInΣniqaaq/ the split [in Reading] tudZz{/ tuzdZ{/ awarded [in Reading] {□w{/ {w□{/ Rotten crop [in Reading] mar□{bçn/ marb{□çn/ Hello [in Reading] ?uti:ðu awa:mirahu /?uti:ðu ama:wirahu /Obey His orders [in Reading] sindib{d/ sinbid{d/ Sindbad inðik{s/ inkið{s /Oppositeness [in Reading]</p>

				ikt{Σ{fu/ ist{k{fu/ discovered t{wqi:ð/ t{qwi:ð / signature idm{n/ ind{m/ addiction T{wa: ni/ T{:nawi / seconds sindZ{:b / s{ndZu:b /squirrel sa far dZali:e/ fa sar dZali:e / Local food film mdebledZ / film mbedZedZ /Dubbed film mesa□t elðub{ð/ mesa□t elbuð{ðl /removed the stains inkesrit/ insekrit / it was broken inkebbitt/inbekkit/ it was poured daððase- doormat / ð{d{s- lentil {n□isid/ {nsi□id/ be jealous of me s{k{btuli / s{b{ktuli/ you poured for me mis tæΣ fæ/ mu: fæΣΣæ/ hospital bænæ fsa dZi/ bænæsfæ dZi /purple
2	Cluster Reduction	Initial Position	8	sf/ f sfin dZE/ fin dZE / Sponge ml/ m mlu:xi:e / mu:xi:e /Local food mf/ f mfæ nniΣ / fænniΣ /soaked mb/ b mEblu:l or mbEIEI /bEI bEI / wet mx/ x mxçdde / xçdde / pillow mn/ m mni□fur/ mi□fur / we dig z/z ?ze:z/ ze:z / Broken glass mΣ/ ΣΣ mΣel ΣæIE/ ΣΣel ΣæIE/ twisted cheese
		Medial Position	7	tΣ/ΣΣ ketΣçb / keΣΣçb / ketchup sk/ k taim skwEr/taim skwEn/ TimeSquare Σh-ΣΣ abuΣh{b / abuΣ{b/Arabic Name bd/d ðbdul-r{□m{n/ðdul- ra□m{n / Arabic Name bd/d ðbdil-{ziz/ ðdil-{ziz/ Arabic Name st / Σf mis tæΣ fæ/ mu: fæ ΣΣæ /hospital s t / ss mOs t{f{/ muss{f{ or mutt{f{/ Arabic name
		Final Position	1	ks/ss kornfIEks/ kornfIEss / corn flakes
3	Pre-tonic Weak Syllable Deletion		2	safardZali:e /fardZali:e Local food mOs t{f{/ t{f{ / s{f{/ Arabic name
4	Syllable Reduction		2	sçn dæwi:Σe /sçn wi:Σe /sandwich ð{bits{wi / ð{ts{wi /doing
5	Omitting Liquid /r/-l/		2	Pærfæ / Pæffe / room til fiz jon/ ti: fiz jon/ Television
6	Omitting other consonant		2	midvEli/ mibbEli/ Mid Valley mis tæΣ fæ/ mu: fæ ΣΣæ - mis fæΣΣæ/hospital
7	Reduplication		2	mbEIEI or mEblu:l/ bEI bEI/ wet ka:kkaw/ kaw kaw /cocoa powder
TOTAL			78	

Table (24B). Substitution Processes				
No	Substitution Process	Sub-categories	No of Occurrences	Examples
1	Fronting	Labialisation	13	<p>hçm bEr gr/ hçmbErbr/ hamburger mEn ku:Σ/ mEm ku:Σ / in a mess di: to:l/ bi: to:l/ dettol næfæs/ mæfæs / breath</p> <p>mes ba□/ bes ba□/the swimming pool midvEli/ mibbEli/ Mid Valley nEfs ≅lΣEkil/ mEfs ≅lΣEkil/ the same shape un Σu: dE/{m Σu: dE/ a song □an ru:□/ □am ru:□/ we will go {nðamtæ/ æmðamtæ/ a word from Quran</p> <p>nO□rO?/ mO□rO?/ we burn j{si:n/ j{si:m/ An Arabic Name film mdebledZ /film mbedZedZ/ dubbed film</p>
		Dental fronting	6	<p>muTBIETæt/mufEIEfæt/triangles □a:riTa/□a:rifa/An Arabic Name □u ðEj fa/□u fEj fa/ An Arabic Name ðura/ vura/ corn Tumma/ fumma/then mETEIn/ mEfEIn/for instance</p>
		Alveo-dental assimilation	1	Σçt randZ/ sçt randZ/chess
		Palatal fronting	1	hEj kEl/ hEn kEl/skeleton
		Velar fronting	3	<p>hçm bErgær/ hçmbErbær /hamburger skEting bord/ skEtin bord/skating board kornflEks/ kornflEts/corn flakes</p>
		Uvular fronting	1	xzE: nE/ zPE: nE/cupboard
		Pharyngeal fronting	1	baqi:ð / baqi:q/ A famous graveyard in Medinah
2	Stopping	Stopping nasal	2	<p>mes ba□/ bes ba□/the swimming pool mitil/ bitil/same as</p>
		Stopping Fricative	2	<p>Pawwaşa/ Pa wwada/ submarine midvEli/ midbEli/Mid Valley</p>
		Stopping palatal	1	dZra:b/ dra:b/socks
3	Gliding	Gliding fricative	1	mis tæΣ fæ/ mu: fæΣΣæ/hospital

		Gliding nasal	3	mrE:ʒ/ wrE:ʒ/ mirror mikin se/ wikinse / broom mi:z{n/ wi:z{n/ scales
4	Lateralisation		4	tɛsni:m/ tɛsli:m/ An Arabic Name bɛrgɛr/ bɛrPɛl/ burger radar / ladar/ radar m{ʒjo: / l{ʒno-m{ʒloh-n{:ʒol majloh-swimming suit
5	Delateralisation		2	tilfiz jon /ti: fiz jon/ Television film mɛbledZ /film mɛbedZedZ / dubbed film
TOTAL			41	

Table (24C). Assimilation Processes				
No	Sub-Categories		No of Occurrences	Examples
1	Backing	Alveo-dental	11	im-□{m{d{/ in-□{m{d{/ Arabic Name matbɔx/ natbɔx/kitchen b{mijeh/ b{nijeh/okra mata:t/ nata:t/elastic band aflæm kɔton/ aflæn kɔton/ cartoons mumkin/ munkin/perhaps inΣæd kom/ inΣæd kon/ a web site æssælæmu æleikom/ æssælæmu æleikon/ Greeting □{ms{wi/□{ns{wi/ belong to Hamas mɛmsu:xi:n/ mɛnsu:xi:n / freaks mɔ na: ra /ma ra: ra/tower
		Uvular assimilation	2	hambɛrgɛr/ hambɛrPɛl/ burger ð{bbɛtmɔtmɔt /ð{bbɛtmɔPmɔP/ I am stretching
		Palatalisation	12	dædZæ dZE/ dZædZædZE /chicken-hen ΣidZin / sidZin / prison mesdZid/ meΣdZid/mosque mɛdZ le/ mΣEdZ le/cassette recorder ΣEm si: je/ΣEm Σi: je/ umbrella tis tɔdZl/ tiΣ tɔdZl/hurry up sidZædZe/ΣidZædZe/ sidZæde/ carpet Σæ wa: rib/Σæ ra: jb/moustache ok si dZi:n/ oΣ ki dZi:n/oxegen film mɛbledZ/ film mɛbedZedZ/ dubbed film dif ΣE/dZif ΣE/ mean sasi:dZo/ sadZi:dZo/sausage
		Depalatalization	1	ikt{Σ{fu/ ist{k{fu/they discovered

		Glottal Replacing Nasal n-h	1	m̥ na: ra / ma ha: ra/ tower
2	Nasaling	Nasaling stops	2	bEdEni:jeh/ mEdEni:jeh/Physical Exercise at school x̥ɛnzi:r b̥ɛrri/ x̥ɛnzi:r m̥ɛrri/ wild pig
		Nasal replacing liquid	1	taim skwEr/ taim kwEn/Time square
		Nasal replacing glides	3	ðdZ wE/ðdZ mE/seed jaðni/ naðni/ I mean hEj kEl/ hEn kEl/skeleton
		Denasalization	1	t̚Esni:m/ t̚Esli:m/ An Arabic Name
3	Voicing	Prevocalic Voicing	1	xu:ze/ Pu:ze /helmet
		Context-Sensitive Voicing	1	xzE: nE / zPE: nE /cupboard
		Devoicing	4	m̥Eg ri fon / mikr fon /microphone sk̥Eting bord/sk̥Etin bod/skating board h{di:k h{ti:k/ that ziliɒf{/ sulɒuf{?/turtle
TOTAL			40	

Table (24D). Vowel Processes		
Sub-Categories	No of Occurrences	Examples
Long vowel preference	7	mil jo:n/ mi: lo:n/million til fiz jon/ti: fiz jon/ television majji:t /mE: jt / dead kombiju:tɔr/ kombu:tɔr/ computer daije?/ d{:je?/ narrow mustæfa /mu: tafæ/ An Arabic Name mis tæΣ fæ/mu: fæΣΣæ / hospital
Diphthong Reduction	4	kombiju:tɔr/ kombu:tɔr/ computer majji:t / mE: jt / dead daije?/ d{:je?/ narrow m{jjɔ: / l{jnoh- m{jlo-n{jo:l-majloh /swimming suit
Vowel Disturbance	5	muslim / mislim/ Muslim sindj{:b/ s{ndju:b / squirrel mEg ri fon/ mikr fon/ microphone T{wa: ni/ T{:nawi/ seconds be:rde/ bre:de / cold
Total	16	

Appendix A.25. Examples of AE's Naming Difficulty in Fully Grammatical Sentences Translated into English between 6;10-7;4 years.

- Mom, Can I take the [Pu:ze /xu:ze helmet] when we go to [tɪn kæki / kɪn tæki KFC].
- Is it true that we are going to [taim kwE:n/ Times Square] today?
- Mom, May you prepare [hambErbr- hambɜrPɜl/ hamburger] for supper?
- Let daddy buy us [vura ðura/ corn cup] when we go to [midbEli / Mid Valley].
- My friend, [ðdOlr{m{n /Abdul Rahman] at school travelled to [kɪn kæ wi/Lmkawi Langkawi] and he rode a [skEtin bod/skating board] there.
- Mom, please cook [Σamɟrwa/Shawirma: a kind of roasted meat]. No, I like to eat [keΣΣɟb/ ketΣɟb ketchup] with [sa:si:dZo/ sadZi:dZo/sausage].
- Aunt [Suad/Duaa] came over last summer and I loved to play with her son [ufEjfa/ uðEjfa Huthayfa] in the [besbah/ mesbah swimming pool] but I hated [a:rifa/ a:riTa Haritha] because he was very tough and he hit me.
- Mom, Look! My knee is bleeding. It has a [dZurha / dZuruh a cut]. Shall I bring [ku:l / ku:l alcohol swab] or [bi: to:l / di: to:l dettol] to clean it?
- In the morning, when [abu muhanned/Muhanned (the bus driver)] came, I was getting on the school bus, [mu: tafæ / Mustafa] pushed me then I slipped over a bag in the way and fell on my arm. Look my arm is still bruised and hurting.
- Mom, Do you remember Aunt [warda- warta /Rawda] in Medina when she used to come to our house with her son [Mo?den (an unreal name)/ Muað] who had a funny face?
- In school, we reached verse 11 of Surat [alɪnɪqaaq/ Al-Inshiqaaq] (A chapter in the Holy Quran) and the teacher told us to read it at home again.

-
- ماما ، ممكن أخذ (الغوزة/ الخوذة) بس نروح على (تنكاكي/ كنتاكي: كي اف سي)؟
 - صحيح اليوم بنا نروح على (تايم سكوير/ تايم سكوير)؟
 - ماما ، ممكن تساوينا (همبرغر/ همبرجر) عل العشا ؟
 - خلي بابا يجبلنا (فرة/ ذرة) لما نروح عل (مدبلي/ مدفيلي).
 - صديقي (عدلرحمن/ عبد الرحمن) بالمدرسة سافر على (كنكاوي/ لنكاوي) وركب (سكيتن بود/ سكيتنغ بورد) هنك.
 - ماما ، الله يخليك اعلمي (شامروة / شاورما). لا أنا بحب أكل (كشب / كاتشب) مع (الصاجيجو/ الصاصيجو).
 - لما أجت خالة (سعاد/ دعاء) بالصيف ، كتير أنا انبسطت ألعب مع ابنا (حقيقة/ حذيفة) في (البسبح/ المسيح) بس أنا ما حبيته ل (حارفة/ حارثة) لأنني غليظ وبضربني.

- ماما شوفي! ركبت عبتزف فيها (جرحة/ جرح). أروح أجيب (حكول/ كحول او سبيرتو) والا (بيتول/ديتول) منشان أنضفا ؟
- في الصباح لما (ابو مهند/مهند) أجا ، أنا كنت عبركب على الباص قام (مطفى/ مصطفى) دفني قام أنا وقعت على ايدي. شوفي لهلق ايدي زرقة وعبتوجعني.
- ماما ، بتتذكرني خالة (ورطة/روضة) في المدينة لما كانت تجي على بيتنا ومعها ابنا (معدن/ معاذ) الوجه المضحك؟
- في المدرسة وصلنا آية 11 من سورة (الاشنقاق/ الانشقاق) ، الست قالتلنا نقرأ بالبيت كمان.

Appendix 26. Naming Body Parts

Session One: (Video- Recorded).

Greetings, My name is AE.

The Mother: I want you to give me the name of my body part.

AE: thigh (.) lungs (.) eye (.) eye (.) (non word) (.) ear (.) hair (.) finger (0.2) clothes (.) ankle (.) knee (.) teeth (.) tongue (...) chin (.) eyebrows (...) lip (.) face (.) head (.) back (.) leg (.) elbow (.) ((conclusion)).

السلام عليكم ورحمة الله وبركاته أنا اسمي عبد الله

بدي ياك تسميلي أجزاء من جسمي؟

فخذ - رتتين - عين - عين - شفرة - إذن - شعر - أصبع - (...) - ملابس - كعب - ركبة - سنين - لسان - (...) دقن - حواجب - (...) شفة - وجه - رأس - ضهر - رجل - عكس - مع السلامة.

Session Two:

The Mother: Ok, now point to your head, tell me what is this?

AE: Brain.

The Mother: No, this.

AE: Skull.

The Mother: This, this.

AE: Hair.

The Mother: And this?

AE: The place of the fever.

The Mother: Here, what is this called?

AE: Bedcover, pus.

The Mother: How come pus? Ok, this.

AE: Ear.

The Mother: Now point to each part of your body and tell me its name.

AE: Eye (.) nose (.) mouth (.) lip (.) (wrong word) (.) eyebrows (.) chin (.) teeth (.) tongue (.) cheek (.) bedcover (wrong word) larynx (.) neck (.) elbow (.) palms (.) (non word).

The Mother: Where are the palms show me?

AE: ((Pointing to his shoulders)).

The Mother: What is this? ((pointing to the shoulder)).

AE: (...).

The Mother: And this?

App.26 (continued)

AE: Hand (.) fingers (.) looks at his brother and says (.) I will tell you the name of a computer game ((smiling)).

The Mother: Talking to the brother: Please leave the room, ((turning towards AE)) We are here, what is this?

AE: Heart (.) heart (.) lungs (.) lungs.

The Mother: What is this?

AE: Breath.

The Mother: Here, here.

AE: Breast, stomach, leg.

The Mother: This, this.

AE: Knee, the skin's nerve (.) toes (.) roza ((his aunt's maid)) (.) the leg's elbow (.) believe me I don't know.

The Mother: The ankle.

AE: The back (.) the spinal cord (.) ((conclusion)).

الأم : طيب يالله ، امسكلي راسك ، قلي هادا ايش؟ قلي هادا ايش؟

الولد: مخ

الأم: لاء هاد

الولد: جمجمة

الأم: هاد هاد؟

الولد: شعر

الأم: وهاد

الولد: محل الحرارة ، المخ

الأم: هون هادا اش اسمه؟

الولد: حيف ، ايج

الأم: ايش ايج ، طيب هاي؟

الولد: ادين

الأم: يالله انت اشر على كل جزء من جسمك وقلي ايش اسمه.

الولد: عين – انف-تم-شفة-شفرات-حواجب-دقن-سنين-لسين-خد-حيف – حنجرة-رقبة عكس كفوف-كنيس

الأم: وينا اشر عليها هاي كفوف

الولد: (يؤشر على الكتف)

الأم: ايش اسمه؟

الولد: (؟)

الأم: هاي؟

و يقول (دأدلكم على لعبة اسما (يبتسم لأخيه) الولد ايد ، يد ، أصابع ، (ينظر لأخيه

الأم: سعد ليره (تلفت للولد): نحني هون وتوشر على الصدر

الولد: قلب قلب ريقتين ريقتين

الأم: ايش هاد؟

الولد: نفس

الأم: هون هون.

الولد: بز – بطن –اجر –

الأم: هاي هاي هاي؟

الولد: ركبة – عصب الجلد –أصابع الإجرين – روزا – عكس الإجر ، و الله ما بعرف ماما

الأم: كعب الإجر

الولد: ضهر – عامود الفقري مع السلامة .

Appendix 27. Naming Means of Transportation & Colours (Video- Recorded).

وسائل النقل

الأم : ياله عبوده إيش عبئتشوف هوني؟

الولد: السلام عليكم ورحمة الله وبركاته وهذا يسلم اليكم عبوده

الأم : بعدين بعدين

الولد: اللعبة تستأذنه: عبوده محصور، طيب روح عل حمام يلعب بساعته

الأم : هيك ، كلام بشع هادا ، عيب

الأخت: ياالله نحنا عبنصور عبود ، بعدين

الولد: السلام عليكم الآن موضوع مع التايتانك ، الآن موضوع مع التايتانك ، لا الآن موضوع مع القطارات القديمة والجديدة ، أول

شي القديمة ، بتعرفوا القطارات القديمة –

الأم : هادا اش نوعه ، وهادا اش نوعه ، وهادا اش نوعه ؟

الولد: أول شي أول شي من زمان هيك كان الب القطار

الأخت: أشوف أشوف أشوف ، لا حرك حرك ، إنت خلي هيك لا خليه ثابت

الولد: كان هيك القطار من زمان.

الأم : على إيش بيشتغل كان؟

الولد: كان يشتغل على البخار

و القطارات الجديدة؟ الأم : طيب.

الولد: وهلق بعدين أجا هادا بداله ، كان بيشتغل بالكهرباء هادا كان بيشتغل بالكهرباء ، هادا كان يشتغل هيك عادي ، واحديسوقه

هيك بتعب حاله هيك يساوي تشك – تشك أما هادا الجديد، هادا يشتغل بالمغناطيز ، مغناطيز ، استنوا بدي أورجيك شغلة ،

(حبابين) يغادر الغرفة

الأم : تعا تعا

الولد: بدي أورجيك شغلة ، بتشتغل بال ...بشتغل بال

الأم : بل إيش؟

الولد: ... استني (يحرك المقعد) مغناطيز

الأخت: أشوف المغناطيس ،

الأم : لاء إنت خليك بمكانك أنا أنا بفرجيون باه

الولد: شوفي بلزق

الأخت: وليش بلزق؟

الولد: لأنيه مغناطيس

وهادا على إيش يشتغل؟

الولد: مغناطيس

الأم : وين لقيت منه هاد ؟

الولد: بال جاينا.

الأم : إنت رحت على جاينا؟

الولد: لا ، بس بعرف

الأم : وين لقينا منه؟

الولد: ماليزيا ،

الأخت: فرجيني فرجيني اقلبو الكتاب فرجوني أنا

الولد: من اليابان، هادا شفتو من زمان .

الأم : وهادا؟ وين لقيت منه؟

الولد: أنا ما شفتو أنا ،

الأم : وهاد

الولد: أنا بس لقيتو ، لقيتو هيك ، واقف جمدان

الأم : وين شفتاه وين شفتاه نحنا؟

الولد: أنا مرة شفتو بماليزيا ، هيك واقف وخربان ، ما بيسمحوا يدخلوا عليه ، وشفت واحد بالسعودية هونه (ناشير بإصبه لأسفل)

، هون بهادا البلد شفت واحد قطار بني ، قطار هيك مغيش عليه غيرة غيرة صار طين من كتر ما قديم ولي والله لا يرويك

وكمان الهادا اش اسمه ، الـ الـ ، هادا السلك شفتو هادا السلك إل بمشي عليه القطار؟

الأم : السكة،

الولد: السكة يلي بمشي عليه القطار

الأم : اي

App.27 (continued)

الولد: مكسر (دج) ، وأنا وقعت بالحفرة ، نتذكر كي وقتا وأنا وقعت بالحفرة ، بعدين ساعدوني بالحبل (حركة يدين) وبعدين بكيت ، كنت أخاف لحالي ، قلت آها ، خلص موضوع القطار .
الأم : وطيب هون ، هدول ، هاي اشي؟
الولد: أه هادا قطار بنقل اس الـ (عن عن) ، بتعرفوه؟ لازم تعرفوه ، (عن عن)
الأم : اش بنقل؟
الولد: سيارة ،
الأم : وهون الناس ، اش عبيعملو جواته؟
الولد: قطار وهادا موزع الأكل ، موزع الأكل
الأم : وهول إشن ؟
الولد: الديناصورات
الأخت: فرجوني أنا اقلبوا الكتاب اقلبوا الكتاب
الولد: مغناطيز
الأم : بتحسن تقلي إشن ألوانن هدول؟
الولد: لا
الأم : هاد اش لونه
الولد: أخضر –
الأم : وهاد
الولد: بني
الأم : وهاد
الولد: بني –
الأم : وهاد
الولد: بني
الأم : لا ركز
الولد: بنسفجي
الولد: برتقالي
الولد: أخضر – أزرق – أزرق – أزرق أزرق
الأم : أزرق أزرق كلون أزرق لم
الولد: ياي ، هي عظمت هون ، بدي صفحة عقبة ، بتعرفوا عقبة؟ أحيكلكم قصة ذو القرنين؟ (كلام مبهم)
الأم : هادا النبات ، إشن اسمه؟
الولد: هادا اسمه جبلي فش. في أفلكم انواع الجبلي فيش؟
الأم : هادا اسمه فطر فطر مو جبلي فش
الولد: هادا اسمه فطريات ، الفطريات ياع وسخ وسخ
الأم : عيب عيب ،
الولد: مو كويس ، اي بدي هونه (أخذ الكتاب وفتح صفحة مناسبة له) شوفو شوفو شوفو
الأم : هدول ممن؟
الولد: هدولة ، و طلعو ، السلام عليكم ، السلام عليكم ، موضوع شوفو هاي أيام زمان الحرب (شيك شيك هاع حركات سيف)عقبة وهاد شوفي عبيطلق على القلعة وهول عبيعتو ناس ، رموح وجيش قوايا كان ، و قوايا كثير كثير كثير كثير
كثير كثير الزءكن(يقرب المغناطيس من الكاميرا)
الأم تغير الصفحة احكي لي عليهاالصفحة
الولد: ومرات السفينات
الأم : إشن أنواع هالسفن؟
الولد: هدول السفن لهلق موجودة لهلق...
الأم : إشن إسمها هاي
الولد: أم الشراع
الأم : سفينة شراعية ، طيب ، طيب إشن ألوانن؟ هادا إشن هاللون؟
الولد: أزرق أسودأخضر برتقالي أزرق أخضر أصفر
الأخت: علي صوتك
الأم : و هاي
الولد: أزرق
الأم : و هاي

App.27 (continued)

الولد: أيو بريطانيا ما بحبا
 الأم: إيش لونا هاي؟
 الولد: أصفر غامق
 الأم: وهاي
 الولد: ابيض
 الأم: وهادا إيش عيبعمل؟
 الولد: بيتزلق بالمويا ، أيوه
 الأم: وهذول الحيوانات بتعرفن شي؟
 الولد: هادا اسمو ذو القرنين وهادا اسمو عقبة
 الأخت: وبينه يلي اسمه عقبة أشوفه؟ وبينه الاسم عقبة؟
 الولد: هادا ذو القرنين وهادا عقبة
 الأخت: ليش اسمه عقبة؟
 الولد: لأنني واحد عصبي كان أيام زمان
 الأم: هادا اش اسمه؟
 الولد: دلفين بتعرفو إحسان
 الأم: وهاد ؟
 الولد: نمر
 الأم: أكيد إله نقط ، نمر وإلا أسد؟
 الولد: نمر
 الأم: وإلا فهد ؟ (الولد يشم)
 الولد: فهد
 الأم: الفهد إيش لونه؟
 الولد: هادا ، بتعرفوه هادا (حركات القرد)
 الأم: اش اسمه
 الولد: قرد شمبانزي
 الأم: وهاد
 الولد: حمار الوحش ، بتعرفوا هادا السيف.

The Mother: Ok (.) AE (.) What can you see here?

AE: Greetings and this ((a cartoon figure on his watch)) is greeting to you also.

The Mother: AE (.) later later. ((The cartoon figure on his watch is asking for permission to go to the toilet, AE talks to it saying)).

AE: ok (.) go to the toilet.

The Mother: This is improper; you shouldn't say such words, shame on you.

The sister: We are video recording AE, play later.

AE: Greeting (.) Now the topic is the Titanic (.) Now the topic is the Titanic (.) No (.) Now the topic is about old and modern trains (.) First (.) the old ones (.) Do you know the old trains?

The Mother: What type is this? and this? and this?

AE: First of all (.) first of all (.) long ago (.) like this was the b- train.

The sister: Let me see, let me see, no move move the book, stay like this, keep still.

AE: Like this was the train long ago.

The Mother: How did it work?

AE: It used to work on steam.

The Mother: OK, and what about the modern trains.

AE: and now this came instead(.) it works on electricity(.) and it is working on electricity(.) it is working normally like this(.) one drives it like this(.) he is tiring himself doing chik chik(.) but this new one works on magnet (.) magnet(.) wait(.) I want to show you something (.) please (.) ((AE leaves the room)).

App.27 (continued)

The Mother: Come here, come here.

AE: I want to show you something (.) it works on (.) works on(.

The Mother: on what?

AE: Wait (.) ((moving the sofa cushion)) magnet.

The Sister: Let me see the magnet.

The Mother: No, you keep like this, I will show them.

AE: Look (.) it attracts.

The Sister: Why does it attract?

AE: Because it is magnet.

The Sister: and this one, how does it work?

AE: by magnet.

The mother: Where did you find like this one?

AE: in China

The mother: Did you ever go to China?

AE: No (.) but I know.

The mother: Where did we find like this one?

AE: Malaysia.

The Sister: Where is it, show me, show me, turn the book.

AE: from Japan (.) I saw it long ago.

The mother: and this, where did you find it?

AE: I didn't see it.

The mother: and this?

AE: I just saw it (.) I saw it like this (.) freezing still.

The mother: Where did we see it?

AE: I once saw it in Malaysia (.) a broken one(.) they don't allow one to approach it(.) but I saw one here in Saudi Arabia ((pointing down)) in this country(.) I saw one brown (.) It was full of dust dust dust that became mud because it was so old and you can't imagine what happened and that (.) what is its name? The th- (.) this (.) the wire ((wrong word for rail)) did you see this wire which the train runs on?

The mother: the rail.

AE: the rail which the train runs on.

The mother: Yes,

AE: Broken ((didZ)) and I fell in the hole(.) do you remember that time when I fell in the hole(.) then they helped me with a rope ((moving hands in pulling position)) then I cried(.) I was afraid alone (.) I screamed (.) and the train topic is over.

The mother: What about those, look here, what is this?

AE: Oh (.) this is a train that transfers (.) ʃEn ʃEn ((engine sound)) do you know it? You should know it (.) ʃEn ʃEn.

The mother: what does it transfer?

AE: [s{jar}] a car.

The mother: and what are these people doing inside it?

AE: a train and this is the food distributor (.) the food distributor.

((New Page showing dinosaurs)).

The Mother: and what are these?

AE: the dinosaurs.

App.27 (continued)

The Sister: Show me, turn the page.

AE: magnet.

The mother: Can you tell me what colour are those?

AE: No

The mother: What colour is this?

AE: Green.

The Mother: And this?

AE: Brown

The Mother: And this?

AE: Brown

The Mother: And this?

AE: Brown

The Mother: No, look again

AE: Purple? ((wrong pronunciation)) Orange.

The Mother: (pointing at different items).

AE: Green (.) blue (.) blue (.) blue (.) blue (.)

The Mother: Blue blue (.) all are blue? Ah ((mother turning to another page)).

AE: Wow (.) this is its bone (.) Please I want the page about [Uqba] (.) Do you know Uqba? Do you want me to tell you the story of Thulqarnain? ((Echolalia))

The Mother: Name this plant?

AE: This is the Jelly fish (.) There is (.) I will tell you about kinds of Jelly fish.

The Mother: These are mushrooms mushrooms, not Jelly fish.

AE: These are Fungi Fungi (.) dirty dirty.

The Mother: Shame shame.

AE: Not nice (.) I want this page ((Took the book and opened another page)) Look (.) look (.) look!

The Mother: Who are these?

AE: Look (.) these (.) Greetings ((changing topic)) This talks about war a long time ago ((vocal sounds of weaponry)) Uqba (.) look this one is attacking the castle and these are sending people (.) spears and the strong army (.) very very very strong (.) very very very very. ((Holding a piece of magnet and approaching the camera saying)) You want me to attract you.

The Mother changes the page.

AE: and sometimes ships.

The Mother: What are the kinds of ships here?

AE: These still exist nowadays.

The Mother: What is the name of this?

AE: having a sail.

The Mother: a sailing ship. Ok, What about their colours, What is this colour?

AE: blue (.) black (.) green (.) orange (.) blue (.) green (.) yellow.

The sister: Raise your voice.

The Mother: and this?

AE: blue

The Mother: and this?

AE: Oh (.) Britain (.) I don't like it.

The Mother: and this, What is its colour?
 AE: Dark yellow.
 The Mother: and this?
 AE: White.
 The Mother: and this? What is he doing?
 AE: surfing on the water (.) yes ((switch to Saudi accent)).
 The Mother: and these animals, do you know any of them?
 AE: This is Thulqarnain and this is Uqba. ((Echolalia))
 The sister: Where is the one named Thulqarnain, Show me?
 AE: This is Thulqarnain and this is Uqba.
 The sister: Why is he named Uqba?
 AE: Because he was a nervous man who lived in the past.
 The Mother: What is the name of this?
 AE: Dolphin (.) Do you know Ihsan ((AE's cousin who loves Dolphins))?
 The Mother: and this?
 AE: a tiger.
 The Mother: Are you sure? It is dotted, a tiger or a lion?
 AE: a tiger.
 The Mother: or a Cheetah?
 AE: Cheetah.
 The Mother: What colour is a Cheehah?
 AE: this (.) you know it ((jumping and chattering like a monkey)).
 The Mother: What is its name?
 AE: a chimpanzee ape.
 The Mother: and this?
 AE: the Zebra (.) do you know this sword?

Appendix A.28. Naming Animals (Video- Recorded).

حيوانات(1):

الولد: يرفع رسغه للكاميرا و يقول هادا بسلم عليكم وانا بسلم
 الأم: عددلي أسماء الحيوانات الموجودة ، اش بتعرف اسماء حيوانات؟
 الولد: بومه ، موجود بومة ، موجود الديناصور الطائر ، هادا الديناصور الطائر ، موجود سن ، سن ، سنجوب ، سن ، سن
 ، سنجيب (ينظر لأمه ينتظر مساعدة) ، سنجوب ، سنجوب
 الأم: سن.
 الولد: سنجاب ، موجود نمرة ، موجود أرنب ، موجود هادا الحيوان يلي بنط و بحط هون ابنه ، بتعرفوه ، موجود أفاعا ،
 موجود الديناصور ، موجود أفاعي،
 الأم: الديناصور هلق عايش والا مات من زمان؟
 الولد: عايش عايش .
 الأم: عايش ! هادا يلي على الحيط اشو؟
 الولد: صرصور و الديناصور عبيسلق (الديناصور بيتسلق) ، هادا ذئب ،
 الأم: طيب كمل ،
 الولد: وكمان هادا ، وهادا زلحفاء ، وهادا عصفور وهادا عصفور وهادا بتعرفوه يلي هيك يلي اله ، هلق بورجيكم ،
 الأم: انت معلش قول اسمه.
 الولد: هادا وسخ ، بعرفه هيك بطرش ككا ، وهادا سنجو ، سنجاب ، وهادا عصفو ...ببغاء (صفحة جديدة)

موجود أفاعي ، موجود غزال ،
 الأم: أفاعي والا أفعى؟
 الولد: موجود بومة موجود غزال ، موجود اي ... ذ .. ذئب ، موجود هيك قاقاقاق... صقر ، موجود ببغاء موجود دب ،
 موجود الديناصور ، موجود واحد حيوان هيك هو بس يجي اي شي خطر ، رأسا بينضب وبصير كرة شوكية ،
 قن ، ... الأم: اش اسمه؟
 الولد: قنفذ ، قنفذ ،
 الأم: طيب وهاد؟
 الولد: هادا بتعرفوه يلي بنط وبحط ابنها (تأشير على البطن) ، وهادا عبيلحقا هادا الأب ، الأب تبعها ، وهادا غزالة ،
 الأم: أكيد غزالة ؟ طلع عليها ،
 الولد: زرافة ،
 الأم: زرافة ،
 الولد: هلق بدني هاي ،
 الأم: هدول ايش؟
 الولد: هدول أنواع الصراصير ،
 الأم: هدول كلهم صراصير؟
 الولد: صراصير وفراشات ، في فراشة لونها زهري في فراشه لونها أبيض وفي أزرق و في كل الألوان ، بتعرفوا هادا
 الحيوان يلي هيك طويل وبني عنده شعر كثير كثير وبني .

Session 1: Naming Animals (1)

AE: ((Raising his wrist to the camera to show his watch which has a cartoon figure on it saying)) this is greeting you and I also greet you.

The mother: Name the animals on this page, which animals do you know?

AE: owl (.) there is an owl (.) there is a flying dinosaur (.) this is the flying dinosaur (.)
 there is a sin- sin- sanjub ((wrong word for squirrel)) sin- sin- sanjib ((looking at his
 mother)) sanjub (.) sanjub.

The mother: sin- ((prompting)).

AE: sinjab ((correct pronunciation)) there is a tiger (.) there is a rabbit (.) there is this
 animal which jumps and puts its offspring here ((pointing to his abdomen)) do you know
 it? There is afa'a ((wrong pronunciation for singular snake)) there is the dinosaur (.) and
 there are snakes ((plural)).

The mother: Is the dinosaur living today or did it live long time ago?

App.28 (continued)

AE: living now (.) living now.

The mother: living now! What is this animal on the wall ((pointing to a part of the page)).

AE: A cockroach and a dinosaur climbing (.) this is a wolf.

The mother: ok, continue.

AE: and this (.) this is a turtle (.) this is a bird (.) this is another bird (.) do you know this
 animal (.) it has (.) let me show you.

The mother: it's ok, only say its name.

AE: this one is dirty (.) I know it (.) it discharges stool out like this ((hand gesture)) this is
 a san- sinjab ((squirrel)) (.) this is a bir- ((asfu-incomplete word for bird)) a parrot.

New Page

AE: There are snakes (.) there is a deer.

The mother: snakes or a snake?

AE: there is an owl (.) there is a deer (.) there is a (.) th – thi'b ((wolf)) (.) there is qak qak
 qak ((sound of a bird)) (.) a hawk (.) there is a parrot (.) there is a bear (.) there is the
 dinosaur (.) there is one animal (.) like this (.) when any danger comes (.) it immediately

shrinks and becomes a thorny ball.

The mother: What is its name? kun- (prompt).

AE: /kunu/ / kunfu/

The mother: ok, and this?

AE: this one you know (.) the one that jumps and puts its offspring here ((meaning pouch)) and this is the father following her (.) this is the father (.) its father (.) and this is a deer.

The mother: Are you sure it's a deer? Look at it.

AE: a giraffe.

The mother: a giraffe.

AE: Now I want this page.

The mother: (opens another page) What are these?

AE: These are types of cockroaches.

The mother: All these are cockroaches?

AE: cockroaches and butterflies (.) There is a pink butterfly (.) there is a blue one (.) a white one (.) and all colours (.) Do you know this animal which is long like this (.) and brown and it has a lot a lot a lot of brown hair.

حيوانات (2)

الأخت: في مسابقة للأطفال سبع وتمن سنين لازم يعرفوا الحيوانات
الولد: (متحمس ومبسوط يسمى مجسمات الحيوانات) الديناصور – الزرافة – وحيد القرن
الأم: هون هون.

الولد: أم اللون الأحمر – جمل – دب – هادا بقرة – هادا معزية.

الأم: طيب هاد؟

الولد: حمار الوحش؟

الأم: هاد؟

الولد: يفكر ، اش هاد ؟ ما يعرف.

الأم: طيب اشو الفرق بين هاد و هاد؟ إمم أدنيهن قصيرة والا طويلة؟

الولد: هادا حصان ؟ هادا حصان.

الأم: أدنيهن قصيرة والا طويلة؟

الولد: و هادا حمار ، هادا حمار.

الأم: و هاد ؟

الولد: إش اسمه؟

الأم: خلص اتركه.

الولد: حمار الوحش – هادا خاروف- ذئب – غوريلا – أسد – (صوت صوت) كلب.

الأخت: ما شاء الله عليه فاز فاز.

الأم: يلي اله خرطوم طويل اشو اسمه؟ يلي اله خرطوم ولونه فضي؟

الولد: يلي اله خرطوم ؟ نحلة ، قصدي ...إل

الأم: يلي اله خرطوم هيك طويل من تمه؟

الولد: إل.. إل...

الأخت: اله قرون.

الولد: وروني ياه؟

الأم: مالو موجود هون .

الولد : فيل (إطالة بالكلمة).

الأم: طيب حيوان بقول ميوميو؟

الولد: القططة.

الأم: اشو الحيوان يلي بحب الجبنة؟

App.28 (continued)

الولد: الفارة.
الأم: اشو الحيوان يللي بيعمل بق بق بق؟
الولد: اي اي ، هادا اش اسمه؟ بطة
الأم: حيوان بيعطينا حليب.
الولد: بقرة
الأم: حيوان بيعطينا بيض.
الولد: بق بق بيق بيق كي كي (يقلد صوت الدجاجة).
الأم: حيوان ، مرت الأسد ، إش اسما ؟
الولد: لبوة لبلبلا
الأم: حيوان موجود في البحر؟
الولد: اش هو؟
الأم: كتير ضخم
الولد: قرش ، قصدي الحوت الحوت الحوت.

Session 2: Naming Animals (2):

The Sister: There is a competition for children aged seven, eight years old to see how fast they can name these animal objects.

AE: ((excited)) Dinosaur (.) giraffe (.) rhinoceros (.)

The mother: Here, here!

AE: The red one (.) camel (.) bear (.) this is a cow and this is a goat.

The mother: Ok, this?

AE: Zebra.

The mother: No, this?

AE: ((thinking)) What is this? I don't know.

The mother: Ok, what's the difference between this and that? Are their ears long or short?

AE: This is a horse (.) this is a horse.

The mother: The ears are long or short?

AE: This is the donkey (.) this is the donkey.

The mother: And this, what is its name?

AE: What is this?

The mother: Just leave it.

AE: Zebra (.) this is a sheep (.) a wolf (.) a gorilla (.) a lion ((animals' sounds)) (.) a dog.

The mother: The one that has a long trunk, what is it called? It has a trunk and its colour is grey.

AE: The one with a trunk (.) a bee (.) I mean the

The mother: The one that has a long trunk from here (pointing to the nose and mouth).

AE: The th-

The sister: It has tusks.

AE: Show it to me.

The mother: It's not here.

AE: ele::pha::nt .

The mother: correct, an animal that says: meow, meow?

AE: The cat.

The mother: An animal that likes cheese?

AE: the Mouse.

The mother: an animal that says (.) bq (.) bq (.) baq?

App.28 (continued)

AE: Yes (.) yes that is called duck.

The mother: an animal that gives us milk?

AE: Cow.

The mother: an animal that gives us eggs?

AE: Baq baq biq biq ki kiki ((the sound of hen)) (.) Hen.

The mother: The female lion is named what?

AE: Leopard lablablab

The mother: An animal found in the sea?

AE: What is it?

The mother: It is very big (.)huge.

AE: The shark (.) I mean the whale (.) the whale (.) the whale.

Appendix A. 29. Spontaneous Reading (Video- Recorded).

Reading Passage: Majid in the Farm Grade 2 Term(2) Saudi School Textbook

الدَّرْسُ السَّادِسُ وَالْعِشْرُونَ : مَاجِدُ فِي الْمَزْرَعَةِ



غَدًا يَوْمَ عَظْلَةٍ
قَالَ وَالِدِي : سَنَزُورُ جَدَّكُمْ وَجَدَّتَكُمْ فِي الْقَرْيَةِ .
رَكَبْنَا السَّيَّارَةَ ، وَسَارَتْ فِي طَرِيقٍ مُتَعَرِّجٍ ،
يُطِلُّ عَلَى الْبَسَاتِينِ وَالْحُقُولِ الْجَمِيلَةِ .
رَحَّبَ جَدِّي بِنَا ، وَفَرَحَ بِزِيَارَتِنَا ،

حييس حالي بالكلمات ما بقدر أقرأ

الأم : لاء انت كويس اقرألي من العنوان من هون

الولد: ماجد في المزرعة غدا يوم عطلة

الأم : عطلة

الولد: عطلة قال الوالد

الأم : والدي

الولد: والدي سنزور جدكم وجدتكم

الأم: وجدتم

الولد: ووجدتكم ووش الطمطمة

الأم: وجدتم

الولد: وجدتم ، في القرية ، را ركبنا السيارة و سارتا في طريق متعرج

App.29 (continued)

الأُم: م م

الولد: متعاراج

الأم : متعرج

الولد: يطل على البستا

الأم : البسا

الولد: البساتين وحاحا قول

الأم : الحقول

الولد: الحقول الجميلة ورحب جدي بنا وفرح بـ بزيارتنا ووو قدم لنا الت الت التيما التامور

الأم : التمرور

الولد: التمر والعنب و التفاح والرمان فأكلنا وواو وحمدنا الله ، وفي المزرعة شاهدا شاهدا

الأم : شاهدت

الولد: شاهدت أشجاراً وحيوانات أ أن أنت

الأم : حيوانات

الولد: تدب وتر وترع وترعى وو وسمعت أصوات الحيوانات فى ف ف هناك

الأم : فهناك

الولد: فهناك نحبو كلبا

الأم : عيدا عيدا فهناك

الولد: نحيو

الأم : فهناك

الولد - فاحب

الأم : ن طلع عليها ن

الولد: نانا

الأم : فهناك

الولد: فهناك نبج كلبو وون نهق ها ما حمارا

الأم : حمار

الولد: حمار وو وصح

الأم : وصاح

الولد: وصاح ح ديك ونق ونقت

الأم : ونقت

الوالد: ونفت دجاجة كوكوكو ووصل حصان وخالها وخارت بقرة قال محمد هل أنت سعيد يا جدى؟ قال جدى نعم

والحمد لله قال محمد ولكن المزرعة

الأم : ولكن

الولد: ولكن الزراعة عدا عدو

الأم : لا

الولد: عدنا

الأم : عناء

الولد: عناء يا جدى قال جدى أنا أحب الزراعة وواسا سأعيش زارعا ، سأعيش بين الازهار

الأم : الزهر

الولد: الزهر و الأشجا

الأم : وال

الولد: و السجرة

الأُم :

الولد: و الأشجا

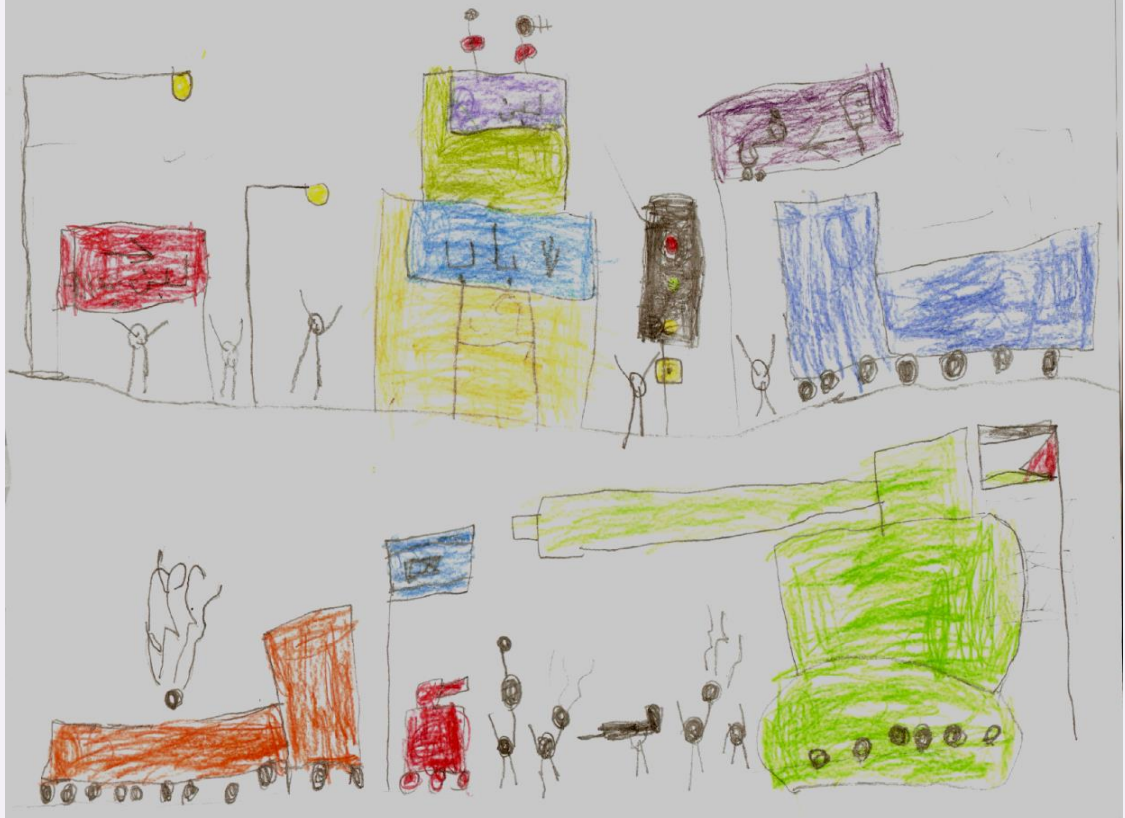
الأم : وال

App.29 (continued)

الولد: وال وأل والشجرة
الأم: والشجر
الولد: والثمار
الأم: والثمر
الولد: و الثمر
الأم: عيدا بين الزهر والشجر والثمر
الولد: بين الزهر والثمر و
الأم: و الشجر
الولد: و الشجر والثمر و الثمر
الولد: سأعيش بين إنها مزرعة لا
الأم: مزرعة
الولد: مزرعة مزرعة
الأم: الأجداد
الولد: الأجداب
الأم: الأجداد
الولد: الجدوبات
الأم: الأجداد
الولد: جدوبات إش الأجداد إن الزراعة
الأم: وس
الولد: وس وستطل
الأم: ستطل
الولد: وستطل
الأم: وستطل و
الولد: ستطل و ستطل لا بد لاء
الأم: للأب
الولد: للأبناء إن الزراعة أو
الأم: يا
الولد: يا أولادي ثروة الماضي وهي الثروات
الأم: الثروة
الولد: الثروة البقيات
الأم: الباقية
الولد: الباقية لنا وللبلد
الأم: و للبلد
الولد: بلاد
الأم: وللبلاد
الولد: وللبلاد
الأم: شاطر

Appendix A.30. Samples of AE's Drawing (Scanned).

AE's special interests appear in his drawings.



Special Interests presented in AE's drawings at age 7 years reflecting political issues (the Palestinian /Israeli conflict) showing flags, tanks, trains, antennas, radars, traffic lights and street lights.



Humans presented by AE as matchsticks carrying weapons.



**Drawing and colouring at age 6;10 years:
a house, a tree, a well, a windmill, and the sun.**



Two towers with a flag on top of each and a helicopter.

Drawing buildings, a police car, lights, flags, antennas and no humans.

