Receptive Language Disorders in an Iraqi Child with Autism: A Case Study

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Abstract:

Among the basic communication deficits associated with autistic children, receptive language disorders, broadly defined as the difficulty of understanding and tracking what others are saying, are distinctive features of autism. This study aims at examining a case of receptive language abilities in a three-year-old autistic child using three assessment measures of language development (a parent report, a self-designed assessment, and frequent direct observations by the researchers on the child himself in different communicative situations). Scarce research tackles the communicative deficit part of autistic children in Arabic contexts, especially in Iraq, although such communication deficits in autism become more observable and increasing in society. More specifically, comprehension skills in autistic children have scarcely been tackled despite the fact that the early response to language comprehension tasks is one of the basic and primary signs of autism in children at a very early age (Dahlgren & Gillberg, 1989; Lord, 1995). This study mainly contributes to the limited data about autism research in Iraq. Studying language receptive skills, in particular, and examining the related causes for poor speech/language comprehension helps parents and practitioners understand the problem more accurately and adjust the appropriate intervention programs that fit the level of perception and understanding in autistic children. Findings indicate that the observed autistic child exhibits severe receptive language impairments in comparison with the typically developing children of the same age due to the lack of basic sensory processing skills and other social factors.

Key words: Autism, receptive language, child language development, language disorders, sensory processing

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اضطرابات اللغة الاستيعابية لدى طفل عراقي مصاب بالتوحد: دراسة حالة

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الملخص:

تُعَدُّ اضطرابات اللغة الاستيعابية من بين أوجه القصور الأساسية في التواصل المرتبطة بالأطفال المصابين بالتوحد، حيث تُعرَّف إجمالا على أنها صعوبة في فهم وتتبع ما يقوله الآخرون، وهي من السمات المميزة للتوحد. تهدف هذه الدراسة إلى فحص القدرات اللغوية الاستيعابية لدى طفل مصاب بالتوحد يبلغ من العمر ثلاث سنوات، وذلك باستخدام ثلاثة مقاييس تقييم لتطور اللغة (تقرير الوالدين، والتقييم المصمم ذاتيًا، والملاحظات المباشرة والمتكررة من قبل الباحِثَين على الطفل نفسه في مواقف التواصل المختلفة). وتندر الأبحاث التي عالجت قضية العجز في التواصل لدى الأطفال المصابين بالتوحد في السياقات العربية، وبخاصة في العراق، على الرغم من أن أوجه القصور هذه في التواصل لدى أطفال التوحد أصبحت أكثر وضوحًا وتزايدًا في المجتمع العراقي. ونادرًا ما يتم التعامل مع مهارات الاستيعاب لدى الأطفال المصابين بالتوحد بشكل خاص، على الرغم من حقيقة أن الاستجابة المبكرة لمهام فهم اللغة هي إحدى العلامات الأساسية والأولية التي تشير الى اضطراب التوحد لدى الأطفال في سن مبكرة جدًا. فجاءت هذه الدراسة لتسد ثغرة في ميدان البحث العلمي حول طيف التوحد في العراق. حيث أن دراسة مهارات اللغة الاستيعابية، على وجه الخصوص، ودراسة الأسباب ذات الصلة بالفهم الضئيل للكلام وللغة، تساعد الآباء والمعالجين على فهم المشكلة بدقة أكبر، كما تساعد على ضبط برامج التدخل المناسبة وفق ما يقتضيه مستوى الإدراك والفهم لدى المصابين بهذا الاضطراب. وتشير النتائج إلى أن الطفل المصاب بالتوحد والذي تمت ملاحظته في هذه الدراسة يُظهر إعاقات شديدة بخصوص اللغة الاستيعابية، مقارنة بأقرانه من الأطفال الذين لم يصابوا بالتوحد، وذلك بسبب النقص في مهارات المعالجة الحسية الأساسية، بالإضافة الى عوامل اجتماعية أخرى.

الكلمات المفتاحية: التوحد، اللغة الاستيعابية، اضطرابات اللغة،الاضطرابات الاستيعابية،المعالجة الحسية.

Research Questions: Does autism affect the perception skills of children? And what are the factors, if any, that cause poor perceptual skills in autistic children?

1. Introduction

1.1.Autism: Background

Language impairments are a focal aspect of many pervasive developmental disorders in children including autism spectrum disorders. An autism spectrum disorder was first recognized in 1943 by Dr. Leo Kanner, a pioneer child psychiatrist when he first used the word "autism" to refer to a developmental disorder present at birth; it is characterized by impaired language and communication. The American Psychiatric Association (2000) differentiates five different disorders under the category of "pervasive developmental disorders" (PDDs). These include autism, Asperger's disorder, pervasive development disorder not otherwise specified (PDDNOS), Rett syndrome, and childhood disintegrative disorder (CDD). However, because of the diversity in the severity of these disorders in affected persons, the term "autism spectrum disorders" (ASD) has been initiated as an umbrella term to include autism, atypical autism, and Asperger's syndrome (Volkmar et al., 2005). According to the American Psychological Association (APA, 2021), autism spectrum disorders (ASD) refer to neurodevelopmental disorders that are characterized by patterns of abnormalities in communication, social reciprocity, and repetitive behaviors and interests. Autism is usually diagnosed around the age of two (24 months) and it mostly appears in the form of abnormal (or no) eye contact, and poor visual tracking, in addition to a lack of awareness of social communication nuances, such as gestures, tone of voice, and body language. Poor eye contact, in particular, is mostly the first sign to be noted by parents at the early stages. The ability to make mutual gazes, as Mundy (2016) finds out, is also significant for both feelings' perception and attention focus as well as the ability to engage in different social communication activities.

A number of hypotheses have been proposed to explain the reason(s) behind the problem of autism. Although the real and direct cause of autism is still unknown, the main emphasis, since 1970, has been on the cognitive nature of autistic children, and thus different theories of a cognitive type have been proposed about such impairments, such as the 'theory of mind' (Baron-Cohen, Leslie, and Frith, 1985); the 'central coherence theory' (Frith, 1989); and the 'theory of executive functioning deficit' (Ozonoff, 1995) among others. However, Prelock and Contompasis (2006) agree with Kanner's biological description of autism as being a "brain disorder with a genetic basis" (p. 4). Other theories, on the other hand, suggest that autism may be attributed to certain psychological circumstances during the child's early years of life, particularly

when their mothers are emotionally distant and non-active, or as the so-called "refrigerator mom theory" (Reed, 2018, p.236). Still, more recent studies claim that this disorder could be originated from pathologic abnormalities in brain function and structure. For example, Stanfield et al. (2008) have observed hyperplasias in the cerebellar vermis in children with autism. Classically, the cerebellum is deemed to be important in sensori-motor processing, controlling emotion, attention, and cognition; thus, any deficits in cerebellum function would result in language, behavior, and social function impairments (Hodge et al., 2010).

Importantly, the number of individuals who are diagnosed with autism has been highly increased over the last few years, as reported by the Centers for Disease Control and Prevention (CDC, 2021); 1 in 45 children is diagnosed with ASD, with males being 4 times more than females. This urges for more studies that assess the current prevailing problem, single out the best strategies to evaluate the intervention process to enhance the social behavior of children diagnosed with ASD, and reverse the disorder before it becomes a long-life problem. Unfortunately, in Iraq, there are no up-to-date reports on the number of people diagnosed with autism despite the fact that it is highly prevalent during the last ten years as commonly known by Iraqi families who are desperately looking for explanations and real treatments for this scientific puzzle among a complete lack of clinical, social, psychological and educational assessment and intervention programs.

1.2. Typical child language development

Human language is a unique system of symbols used by people for communication. Bochner & Jones (2003) specify four main components that every language system has: form (speech sound production), rules (word and sentence formation), meaning (what we want to communicate about), and use (purpose and function of our communication). These components of language make big use of 'cognitive processes' as resources to achieve language-related tasks such as listening, auditory comprehension, processing information, reading, writing, etc. (Caplan, 1992). The child's earliest interaction process starts with the very first innate unlearned ability to recognize his mother's face, among others, where s/he shows and communicates special preference through face recognition (Fantz, ١٩٦١). Smiling, laughing, crying, facial expressions, and sharing mutual gazing also comprise early interaction behaviors that indicate the maturation of early natural neurological and cognitive abilities (Volkmar et al., 2005). During the first few months of a child's life, articulation, and perception skills of speech sounds start to appear. Fletcher-Flinn & McCormack (2000, p. 122) highlight that "infants are capable of discriminating, classifying and

recognizing visual and verbal stimuli only a few months after birth." At 6-8 months, the child starts making canonical babbling which involves the production of a repeated sequence of a consonant-vowel combination, such as ba ba, ma ma, da da, etc., that constitutes the child's early production milestones (Bernthal & Bankson, 2004). Pre-linguistic skills also develop in the first year of the child's life and constitute a vital part of the communication process development. Moreover, Bavin et al. (2008) point out that the use of gestures at 12 months predicts better vocabulary production at 24 months. In addition, the use of gestures at 14 months is positively connected to later receptive language skills (Rowe et al., 2008). Pointing is another non-verbal developmental skill, usually developed around 10 months, that is highly correlated with the child's acquiring of new objects' names (Harris et al., 1995). Impairments in non-verbal abilities, then, can affect normal communication in different ways.

By the end of the first year of the child's life, the transition period of speech production starts when the child moves from a babbler to a talker. The task here is to link sounds to meaning in terms of perception first, and production next. But what does the word "perception" mean here? Hulit and Howard (1997, p. 89) define perception as "the process by which a person selects, organizes, integrates and interprets sensory stimuli he is receiving." In this sense, perception is a cognitive skill that starts from the recognition of speech sounds and words to the comprehension of language. This ability to perceive and understand speech is one of the amazing accomplishments of the human brain.

1.3. Theories of child language development

The first step in the perception of spoken language is the ability to link sounds to meaning. One of the most renowned researchers in the field of developmental psychology and child development, Jean Piaget, thinks that infants are equipped with cognitive "schemas" that allow them to naturally organize and process incoming stimuli. In his well-known 'stage theory', Piaget suggests that every child goes through four stages (levels) of cognitive development to acquire language: the 'Sensorimotor Stage' (birth-2 years), 'Pre-operational Stage' (2-7 years), 'Concrete Operational Stage' (7-11 years), and 'Formal Operations Stage' (11 years through adulthood) (Sigelman & Rider, 2009). In the very first stage, infants develop their cognitive abilities by recognizing people and events in the direct environment surrounding them using their senses and motor skills. In the Pre-operational stage, they start developing language more maturely and expanding vocabularies generally from 200 to around 2,000 or more (including symbolic and no-symbolic representations of actions, events, and relationships). Memory and imagination develop as well. Then, children become more aware of external events, and their thinking

becomes more reasonable and concrete, making correct classifications and conclusions; that is called the 'Concrete Operational stage'. Reaching the Formal Operational stage, adults show a mature ability to relate symbols to abstract concepts, make generalizations about similar situations, think more systematically, and make decisions and reasonable reactions (Johnson, 2014). Piaget emphasizes that a child's language develops biologically more than environmentally, i.e., through sensory processes and skills that almost every child engages in. Still, he does not explain why some children fit into these 4 stages of cognitive development, while others with non-organic language disorders fail to.

By contrast, some researchers believe that a child's language develops from the outside in, not vice versa. In other words, children internalize different patterns through hearing others' words, interacting with them, and recognizing their actions. Vygotsky (1978), in his sociocultural theory of language development, states that thinking is a social process that begins on a social level and is then internalized. He (ibid, p.57) argues that "every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological).''

In the same vein, according to the Social Cognitive Theory of Albert Bandura, human language development and learning process is highly shaped and affected by the environment (Bandura, 1989). He initiated the term'Observational Learning' which refers to the ability to observe environmental events, save information, and retrieve it back again when needed for the intended behavior (Sigelman & Rider, 2009). The lack or missing of paying attention feature in the child's language plays a vital role in children's everyday language development, meaning that it is one of the biggest problems that hinder the normal development of speech and language perception in autistic children.

Bruner (1993, cited in Oates & Grayson, 2004) also claims that in order to recognize words, typically developing young children tend to cognitively relate the appearance of the 'word' to a particular object or event that occurs at the same time. He believes that what helps young children acquire language and recognize meaning is the fact that they engage in very familiar social contexts where they hear people talking with them about certain familiar objects and events that are likely to be present with speech. For example, we observed a 7-months boy (a relative) recognizing his mom shouting 'daddy comes!' at the time the doorbell rang, then all his siblings rushed to the door. The next day, upon hearing the doorbell ringing, the baby's mind was able to make a connection (a

pattern) out of this scene; he opened his eyes, looked at his siblings, expecting them to do the same previous action, and said "ba ba!" meaning that he relates the word "ba ba" with the event it connects to.

It is worth mentioning that children acquire speech comprehension skills much earlier than speech production. Harris et al. (1995) stress that while infants produce their first words around their first birthday, comprehension of words emerges sooner, as early as 7-8 months. In fact, to utter a word, the child must first retrieve it from memory and then formulate a typical motor-articulatory device to utter it. Thus, any problem in the cognitive system would definitely affect both the perception and production of speech and language.

1.4. The neurobiological basis of communication

Human communication is a complex process that occurs in the nervous system. Speech and language behaviors are mainly controlled by processes done inside the brain. Thus, learning about the essential functions and structure of the nervous system is a basic prerequisite for researchers to understand different aspects of human communication disorders.

The neurobiology of language is "the biological implementation and linking relations for representations and processes necessary and sufficient for production and understanding of speech and language in context" (Small & Hickok, 2016, p. 5). The basic disciplines that are studied in the field of the neurobiology of language are: the anatomy and physiology of the brain, the brain network connectivity, and the functions of the basic brain areas. Human communication is among the brain's most complicated functions that require a series of interactions between cognitive processes, language, imagination, emotion, and sensory/motor systems for speech production and comprehension (Love & Webb, 1992).

The nervous system is divided into two major parts, both of which are directly involved in the control of speech: 'the central nervous system' and 'the peripheral nervous system' (Murdock, 1990). The central nervous system is made up of billions of nerve cells called 'neurons' which are responsible for receiving, transmitting, and synthesizing information (Bhatnagar,1995). Any disorder in neuron number or position results in brain malformations that are typically connected with cognitive defects (Bishop, 2014). A study by Galaburda et al. (1985) examining the brains of dyslexic adults reported that the brain cells are misplaced in the left frontal region and this abnormal neural migration might be associated with such developmental disorders.

The knowledge about the mechanisms and functions of the brain in relation to language production and perception owes a great deal to neurological studies of patients with brain lesions (Webb, 2017). Strokes, for instance, have been a good source of information for neuroscience as they cause damage to one area of the brain, leaving the other area unaffected. Moreover, Clinical advances in brain imaging, for example, computed tomography, positron emission tomography (PET), and magnetic resonance imaging (MRI) have contributed more to the study of human communication and communication impairments (ibid).

During the production of speech sounds, there are two basic areas in the human brain responsible for generating and understanding speech; these are Broca's and Wernicke's areas which are named after their founders. The Broca's area was found by a French surgeon, Broca, in 1861, when he was able to localize the speech center to the left hemisphere of the human brain by studying the brains of two patients with language loss and motor speech impairments (Aitchison, 2008, p. 58). This area is located in "an area toward the front of the brain in the frontal lobe" (Cowles, 2011, p. 95). The Wernicke's area, on the other hand, is located in "an area more or less beneath and behind the ear toward the back of the temporal lobe" (ibid). This area was found by a neurologist, Wernicke, in 1874 (Aitchison, 2008, p. 60). Both areas, however, are suggested to be in the left hemisphere of the brain and they play different parts in speech production and perception. While Broca's area is held for the production of speech, Wernicke's area is associated with the ability to comprehend words meaning (Murdock, 1990). The left cerebral hemisphere in general is considered the basic controller of speech and language. As speech is produced by the muscle contractions of the speech organs (lips, tongue, larynx, etc.), this contraction, in turn, is controlled by the nerves that send signals from the brain to the muscles of the speech mechanisms. Similarly, language is also controlled by the processes which occur in the brain, especially in the cerebral cortex (ibid). Deficits in these systems, however, may cause various disabilities and impairments which, in turn, may produce different speech and language disorders.

1.5. Language disorders in autistic children

The term 'language disorders' refers to language deficits in a heterogeneous group of children whose language behaviors are abnormal in comparison to the language behaviors of their peers (Lahey, 1988). The American Speech-Language-Hearing Association (ASLHA) defines language disorder as "the impairment or deviant development of comprehension and/or use of a spoken, written, and/or other symbol systems." This impairment may include: the form of language, the content, and/or the function of language in communication (1982, p.949). So, children can be diagnosed as having language disorders if they fail to

talk, understand or use language properly. In clinical practice, the term "impairment" can be used as a synonym for "disorder" as both refer to "qualitative disruption of normal development" (Norbury et al., 2008, p. xiii). Language delay, however, implies that language skills are developing but at a slower rate than normal in comparison to other peers. Although the autistic child's language is referred to as both delayed and impaired, impairment is the most prevalent feature of autistic children (Bogdashina, 2004).

Language disorders can be classified according to the area of impairment into expressive and receptive. It can also be classified according to the underlying causes of the impairment. According to Nelson (2010), the factors that may cause language disorders are classified into peripheral factors, central processing factors, and environmental and emotional factors. Peripheral factors are responsible for impairment in the motor/sensory systems. They influence the way individuals perceive and process language. These include hearing impairment, deaf-blindness, visual impairment, and other physical impairments (ibid). Central processing factors are thought to influence the brain portion that is responsible for language processing and cognitive development. Specific language impairment, mental retardation, central auditory processing disorder, autism, and acquired brain injury are examples of language disorders in this category. Although environmental and emotional factors have no physical causes, they still can affect language development. These may include parents' neglect, absence of interaction, verbal and physical abuse, emotional problems, etc. Still, some language disorders may be a result of more than one single factor and this often results in more severe impairments in the cognitive, sensory, and/or motor systems (ibid).

Language and communication disorders are core symptoms in autistic children. Mostly, half of the people with autism never develop speech, have highly limited nonverbal communication, and have restricted types of communicative intentions used for protesting and requesting (Kent, 2004). Wetherby (1986, cited in Paul, 1995) also argues that autistic children use fewer gestures than typically developing ones and are less involved in joint attention for social interaction. Thereby, autistic children have a variety of impairments in communication, be it verbal or non-verbal, productive or receptive.

1.6. Receptive language impairments

Perception impairment is one of the primary features of communication problems in Autism. Perception means the process of collecting, interpreting, and comprehending information from the outside by the use of the senses. It starts with the perception (see, hear, feel, etc.) of something that passes through special

areas in the brain to be interpreted, i.e., creating a mental image in the brain, to be then joined with appropriate cognitive associations to form concepts and ideas (Bogdashina, ibid). The typically developing infants' comprehension of language usually grows dramatically during the second year of life (12-24 months) as they begin to engage more in the environment that surrounds them to acquire and understand language-based communication. From 12 to 24 months, many acts of communication, vocabulary, and speech behaviors develop, and by the beginning of the preschool period, usually at year 3, speech pathologists can examine a full range of language perspectives (phonology, morphology, semantics, syntax, and pragmatics) (Gillam et al., 2011). Autistic children, however, show delayed and deviant receptive skills in speech and language. Therefore, examining receptive language skills in autistic children is of theoretical and practical significance, and since no two autistic people have the exact patterns of sensory-perceptual-productive experiences, we chose to have only one participant for our case study.

2. Method

2.1. Participant

A three-and-a-half-year-old male child under the pseudonym of Hassan is participating in this study after gaining his parents' permission. This particular participant has been chosen as the case for the study for several reasons. First, we had a number of close observations about Hassan, because we could have access to him occasionally. Second, the researchers were welcomed by the child's parents and were allowed to observe and communicate with Hassan. Third, Hassan was a clear case for us for autism research as he showed early signs of autism in comparison with other autistic children who exhibited other correlating and overlapping disorders.

Hassan was born through a Caesarean section delivery with no other birth complications. His physical developmental milestones were reached within normal limits. However, at the age of 2, his mother reported him as being unresponsive to her commands and requests like other normal children of his age, and therefore, she thought that he might be deaf. He didn't talk or respond to others when they spoke with him. Physical examinations confirmed no evidence of hearing problems or any other neurological diseases. His vocalizations were mainly grunts, screams, and meaningless sound clusters; he seemed atypical when compared with other normal children of his age, and he rarely uttered 'baba', and 'mama' combinations. By the age of 2.5, his parents and people in contact, mainly relatives and close friends, noticed that Hassan was different from other children. He made very little eye contact with his parents and rarely did he with others. He hardly engaged in social interactions, and always liked to play alone. In addition, to attract the attention of the people around him, he used

to scream, cry, and even rock himself on the floor. By the age of 3, he was diagnosed by a pediatrician as autism-suspected.

2.2. Data collection for receptive language assessment

The process of assessing the participant's receptive language was built upon a variety of data collection types of a qualitative nature. Briefly, the following procedures were advocated for data collection:

1. Parents' interviewing
2. Observing the child in different situations at different periods of time, for example, while playing alone or near others, engaging in communicating with his mother, and responding to others in different situations, and
3. conducting two types of tests. First, we adapted the standardized receptive skills test from the receptive one-word picture vocabulary test (ROWPVT) by Martin and Brownell (1987, cited in Paul, 1995). For example, we designed a set of one-word picture cards, relevant to the child's age, that correlates with the standard categorization of items proposed by the original (ROWPV) test. We also used toys and real objects as pictures "may contain too few central aspects of the referent" (Paul, 1995, p. 86). The test consists of ten tasks; all revolving around assessing the child's ability to identify words by pointing at the picture or picking out the object that represented the word spoken. For example, we made the following commands/requests:

Hassan, can you pick me the apple, please?
Where is the duck, Hassan?
Give me the ball, please.
Can you show me the horse?

Second, the participant's comprehension of simple sentences was also tested by asking several evoking questions, using stimulating calls (trying to attract the child's attention through making a stimulating speech with motherly tones), and making various age-equivalent requests and commands. The given test included eight different tasks that examine the participant's ability to receive commands and requests properly. Examples of these tasks are: asking to come for play, offering favorable sweats and toys, asking where is "mom" or "dad", or asking who is at the door, etc. These two types of tests were intended specifically to identify if there was any problem in speech and language perception.

3.2. Data analysis and discussion

Data gathered in this study, parents' interviewing, direct observations, and speech/language comprehension tests showed that Hassan performed poorly in terms of words and sentence comprehension tasks. Responses to comprehension tasks are coded as correct, incorrect, and no response. Correct responses are those

in which the child is successfully pointing at, picking out, or even looking at the object asked about. Incorrect responses, however, are those responses that reflect incomprehension of the attention-directing speech used by the examiners. For example, in response to a question like 'Where is the apple?', the child picks the wrong objects and tries to orient his own space of interaction with it. No response, on the other hand, means that the child shows no reaction relevant to the task. Hassan showed zero correct responses in all comprehension tasks.

Using a qualitative method of analysis, particularly a thematic analysis method (see Braun & Clarke, 2006; Clarke & Braun, 2017), the dataset is organized into two major themes (patterns) that comprise the most common problems related to the disordered language perception in autism; they include (a) Auditory–perceptual processing problems, and (b) The refrigerator mom theory, as shown in (table 1) below.

Table 1. Codes and themes for data analysis

Codes	Themes
1. Mono-processing **2. Limited word production** **3. Lack of pointing** **4. Poor eye contact/gazing** **1. Limited parent-child interaction** **2. Electronic devices**	• **Auditory-perceptual processing problems (sensory processing problems)** • **The refrigerator mom theory**

3.2.1: Auditory-perceptual processing problems

When speech is uttered, it is usually converted into neural signals in the ear to be perceived and interpreted by the brain as meaningful messages to the listener. However, it has been reported that some children with autism have severe receptive problems similar to the adult cases of what is known as “auditory agnosia,” “where sounds are heard but not interpreted” due to severe disruption of the auditory-perceptual processing system (Bishop, 2014, p. 51).

The data collected in this study reveal some of the difficulties in the auditory-perceptual processing of speech by the participant. The researchers detected four main factors involved in this category: mono-processing, attention deficiency, lack of self-pointing, and poor eye contact/gazing.

3.2.1.1 Mono-processing

Autistic children are reported to be "sensory overloaded" (Bogdashina, 2004, p. 55). In other words, they are unable to deal with multiple senses at one time. As a result, they try to focus on one sense, for example, sight, while at the same time, they lose track of other senses like hearing and understanding what others are saying. This compensatory phenomenon is called "mono-processing of speech" (ibid, p.92). When Hassan plays with certain toys, he focuses only on the sight sense while losing connection with any other outside stimuli. In addition, when the participant was asked by his mom or the researchers about the toy in an attempt to make a connection with him, he seems to lose track of the auditory stimulus that comes from outside. In one task, for example, we hid the ball he was touching and playing with and put it among other objects, and asked him to pick it out again; once the sight stimulus faded out, he seemed to be receiving the sounds only, disconnected from the picture/sight of the ball. Thus, he showed no perception and all that he did was echoing back the last word of his mother's or our speech in an unclear way. This indicates that sensory stimuli are processed as fragments of unrelated sound signals with their connected meanings; in other words, Hassan was unable to connect 'signifiers' to their 'signified,' using Ferdinand de Saussure's terms (1913). This abnormality in sensory processing clearly exists in Hassan's case when compared to his same-age typical peers who can process information from several channels of stimulation at one time.

3.2.1.2 Attention deficiency

Attention, simply speaking, is "directing one's gaze toward the target stimuli" (Patten & Watson, 2011, p. 60). Problems of attention represent the most recognized perceptual problems in autism. Hassan demonstrated atypical attention patterns. Sometimes, he showed focused attention on unnecessary details but mostly missed their meanings, or as Happe and Frith (1996) called 'impaired central coherence'. Children with autism tend to lack the ability to follow different stimuli at the same time; this ability is considered a crucial characteristic of a child's conscious capacity to process information (Schmidt, 1988). What the autistic child also misses the most is the ability to "select," i.e., the ability to direct his/her attention toward the most important and relevant stimuli among other ones. For example, while the researcher trying to attract Hassan's attention toward a certain object by making special sounds, he was mostly busy with another object that was outside the game setting. Therefore, we can describe Hassan's attention as being 'scattered', where there is no direct, fast, and focused selectivity of information processing and control to initiate the intended response.

3.2.1.3 Lack of self-pointing

The ability to use gestures, such as pointing, is usually noticed between 9–14 months in normally developing children (Bates, et al. 1975). During this age period, children begin to point to objects, events, or people, either for imperative or informative purposes, for instance, to gain a desired thing or to share attention on an event with other people. Self-pointing in normal children is usually accompanied by looking at the interlocutor's face while communicating, in addition to looking at the intended event/object. This ability is considered a precursor of normally developing language and communication skills (Desrochers, et al., 1995). Through several observations, it was noticed that Hassan usually made requests for objects and needs mainly by taking a person's hand toward the desired object or place. He rarely made gestures by himself. Moreover, most gestures he made were for imperative purposes, for example: give me this, read this to me, turn the tv on, change the tv channel, open the door for me…etc. Less frequently did he use gestures for declarative or interest-sharing purposes. Thus, during language perception tasks, Hassan was unable to follow or comprehend the experience-sharing gestures by the researchers or other interlocutors such as his parents and/or other children, nor was he able to make the proper social choices either through self-pointing or even using others' hand to point to the intended target. The lack of the ability to point to objects and/or to follow the pointing behaviors by others describes the disability to find the correct referent for a given label by children with autism. Several studies have shown that autistic children rarely attempt for sharing attention with adults for anything other than imperative needs (Loveland &Landry, 1986; Dawson et al., 2002).

3.2.1.4 Poor eye contact/gazing

It is well-known that eye contact is a basic non-verbal component of communication that emerges early in normally developing children. Newborn infants have a special ability to make eye-gaze directions toward human faces and show selective attention to preferential stimuli (Farroni, et al., 2002). Such a non-verbal cue is important for the child to comprehend speech and make functional connections. Normally developing children usually use eye contact for listening, speaking, eye-tracking, and engaging in social communication. In autistic children, however, eye contact is often documented as absent; a characteristic that comprises the first sign of autism reported by parents (Turkington & Anan, 2001). Hassan rarely looked toward the eyes of others even when they spoke to him or engaged in different activities with him directly. He avoided direct eye-contacts and failed to establish a mutual gaze even in times of demand. Losing mutual gazing between the speaker and the listener establishes the first failure to acquire speech and language adequately. These deviations

seem to be specifically related to autism and are not recognized among children with any other neuro-developmental disorders (Volkmar & Mayes, 1990).

3.2.2 The refrigerator-mom theory

During the 1950s, the term "refrigerator mothers" was used as a description for mothers of autistic children who show little connection and bond with their children (Kumar, 2016). Kanner was the first who used the term 'refrigerator mother' as a parental causation theory in different childhood disorders when cold, unaffectionate, and emotionless mothers mostly cause psychological disturbances to their children (Jack, 2014). This theory of autism does not necessarily posit that "refrigerator mothers" cause their child's disorder, as we can obviously see that many cases of autistic children with so-called mothers did very normal social communication, and the contrary is also true, where we find that many autistic children have their own mothers and/or parents sociable and communicative. Based on our observations, Hassan's mother had a scarcity of communication and scant social interaction, neither with her kids nor with relatives and friends; she hardly initiates conversations, and when involved in communication, she uses very short answers to questions. Recent studies are highly focusing on early interaction with the infant as a prelude to avoiding communication lagging (Patten and Watson, 2011; Gratier et al., 2015). It is worth mentioning that this theory has been rejected by most families and researchers and is considered offensive. Still, it should be discussed and disseminated to help parents understand the positive and negative sides of communicating with their infants to raise normal communicating children.

3.2.2.1 Limited parent-child interaction

Normally, the child's early social experience is built mostly on the interaction with parents. The National Research Council (2001) emphasizes that early parent-child interaction plays a pivotal role in shaping the normal progress of language and social understanding in autistic children. Thus, reduced or weak interactions from the parents ultimately affect the child's communication skills. Hassan, unfortunately, lacks the required interactive acts and communication with his parents, as his father used to be away for a long time due to the nature of his job, in addition to other two main factors, relevant to the concept of the 'refrigerator-mom' explained above and the overuse of electronic devices explained next. These two factors strongly contribute to Hassan's failure in both receptive and expressive skills.

3.2.2.2 Electronic devices: Impact on comprehension

There has been a strong consensus that early exposure to electronic devices, especially smartphones, and tablets can have a negative influence on the child's speech and language development. The American Academy of Pediatrics (AAP, 2014) advises that children should have minimal screen-media exposure as it highly affects early brain development and comprehension abilities. Comprehension here refers to the child's understanding of the world. Brain imaging research in autistic children demonstrates that during language comprehension, the coordination and use of the key brain regions of language differ noticeably from that of normally-developing children (Tager-Flusberg, 1981). Tager-Flusberg (ibid) confirms that one of the early precursors of language development problems in autism is poor comprehension of speech. Hassan, like many other children, spends most of his time gazing at the phone screen watching videos of animation cartoons and other child genres on YouTube. This silent one-sided interaction hampers normal language production and comprehension that happens through face-to-face human interaction.

1- Conclusions and recommendations

This study examines the receptive skills of a 3-and-a-half-year-old male with autism. Results showed that the autistic child of this study, under the pseudonym of Hassan, had severe receptive language disorders that highly affected his communicative interaction as well as learning abilities. Our observations and tests revealed that the participant had defective auditory-perceptual processing skills where the lack of attention, poor eye contact, limited self-pointing, as well as mono-processing of stimuli were prominent indicators of the disruption of the child's perception. In addition, the child's expressive and non-verbal skills were also impaired due to the lack of connection between sounds, words, and meanings as well as the lack of parents-child early interaction. Further studies are highly recommended in the field of communication disorders related to autism in young children as it contributes tremendously to early diagnosis and intervention. In addition, further research and practice in the science of applied behavior analysis are of profound importance in the treatment of communication deficits related to autistic children in both production and perception.

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