

# Autism spectrum as a communication disorder: A case study

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## ABSTRACT

Communication is a vital social phenomenon; therefore, its study must be related to theories of social structure, social behavior, and human interaction. Successful communication is substantially crucial for better social life in all contexts. Unfortunately, the process of communication in medical settings and healthcare is challenging, especially when communicating with patients who are affected by cognitive communicative disorders including people with Autism Spectrum Disorders. This paper aims to address the difficulties and the different encumbrances related to autism and communication in the Algerian context. It attempts to evaluate the effectiveness of communication interventions in children with ASD, and look for reliable methods to help families promote their children's communication abilities. The current research is a case study of a six-year-old child with ASD, in addition to the participants involved; his caregivers, parents, escorts, and the speech therapist. The study shows that the child suffers from language impairments that are typical of autistic children's verbal repertoire: lexical, grammatical, morphological, and syntactic impairments that lead to a failure in the communicative task. The analysis of the data indicates that patients with ASD suffer also from different extra-linguistic problems which can be diminished through successful social interaction and effective therapeutic interventions.

**Keywords:** Autism, communication, language, caregiver, interventions.

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## INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopment condition characterized by marked deficits in social interaction and communication, repetitive and rigid patterns of behavior and interests (DSM-5, 2013). It is the fastest-growing developmental neurobiological condition in the world.

Communicative barriers and language loss are among the early noticeable symptoms of ASD. They constitute a real intercultural challenge for the patients and their caregivers. According to American Psychiatric Association (2013), speech difficulties, different codes of communication, stereotyping, and the lack of cultural awareness are the main factors that allude to poor health service delivery and poor outcomes. Additionally, and

according to the American Psychiatric Society (1994), individuals with ASD exhibit developmental deficits in communication, in expressive and receptive language, social interaction, and also in behavioral skills. Furthermore, the American Psychological Association, states that atypical communication and social behaviors are typically the first warning signs of autism. These disturbances can be severe, with between 30 to 50% of people with ASD failing to develop speech and language skills that are adequate for normal communication. Research consistently indicates that children with autism express significant identifiable delays in language and communication development compared to other neurotypical children (Weismer et al., 2010).

In other words, the communicative disabilities associated with the disease present a serious puzzling issue that may moan and groan on the part of the patients and their caregivers (family members, nursing staff, doctors and physicians). Moreover, the communication challenges with individuals affected by ASD could be increasingly more complicated when there is a lack of effective and satisfactory intervention strategies.

Accordingly, this research paper aims to address the difficulties associated with ASD and communication, specifically, the communicative issues the Algerian child S.M from Saida City faces while communicating with others.

## Communication

The word communication is derived from the Latin word "*communicare*", which means "to make common" (Your Dictionary, 2003). Communication between humans is a complex phenomenon. Communication is used to convey meanings, messages in an attempt to create shared understanding. Therefore, communication is considered to be social interaction. It is defined as "The imparting or interchange of thoughts, opinions, or information by speech, writing, or signs" (Wikipedia, 2018). According to Prelock and Nelson (2012:129):

*"communication involves co-construction of meaning by interacting partners who use gaze, non-symbolic gestures, facial expressions, physical proximity, tone of voice, and other forms of paralinguistic modulations to enrich linguistic meanings and convey the emotional tone of the message, or to communicate without verbal symbols."*

Autistic children have differing degrees of difficulty in the acquisition of language in general and speech in particular, however, the difficulties in social communication are key factors in the diagnosis of autism (Garfin and Lord, 1986; Andrews and Andrews, 2000; Woods and Brown, 2011; Prelock and Nelson, 2012).

Good clarification of communication is related to the study of its behavioral basis composed of many communicative skills. The concept of communicative competence is not easy to be defined in a general way, the reason behind this lies in the complexity of communication itself, and because it is primarily cognitive. However, a good clarification of skills seems to be that proposed by Spitzberg 2003, as cited (Rickheit and Strohner, 2008:25) who maintains that:

*"Skills; therefore, are generally thought to be*

*manifestations of some underlying ability which is a capacity for action. This capacity is typically conceptual as a function of numerous motivations (e.g., confidence, goals, reinforcement, potential, etc) and knowledge (e.g., content, procedural knowledge; and familiarity components".*

Troike (2003:18) states: "*The concept of communicative competence must be embedded in the notion of cultural competence, or the total set of knowledge and skills which speakers bring into the situation*".

It is clear from what precedes that culture is closely tied to communication, and interpreting the meaning of linguistic behavior lies in this relationship. Culture is relevant to communication contains different aspects. According to Troike (2003:19), the most important among them are: the values and attitudes held about languages and ways of speaking, the network of conceptual categories which results from experiences, and the way knowledge and skills are transmitted from one generation to the next one.

Findlay (1998:13) refers to the same context by mentioning the term "social-cultural roués" as basic in an individual's communicative competence that he must learn in order to use language. He admits also, that the knowledge of what is appropriate or inappropriate in a given social or cultural context, is to a large extent, a function of learning and acting on shared cultural rules for what he calls "proper behavior".

When talking about communicative competence, Troike (2003:20) indicates that:

*it is useful to distinguish between receptive and productive dimensions. She considers that only shared receptive competence is necessary for successful communication, because an appropriate communicative behavior entails understanding a wide range of language forms, but not necessarily the ability to produce them. What supports this view is that members of the same community may understand varieties of a language, which differ according to the social class, region, gender, age and occupation of the speaker. In doing so, they are sharing receptive competence, and not necessarily these members are able to speak (produce communicative competence) them all.*

Nevertheless, a good command of communicative proficiency is required to facilitate and create a better social life. Revealingly, a low range of this competence can hinder the good process of communication leading to its failure, and that what happens to individuals with

communicative and social disorders as it can be manifested in the case of children with ASD.

### Understanding ASD

The word "autism" has its origin in the Greek word "autos," which means "self." Children with ASD often are self-absorbed and seem to exist in a private world where they are unable to successfully communicate and interact with others.

Colman (2012) describes autism in the Dictionary of Psychology as a pervasive developmental disorder characterized by gross and sustained impairments of social interaction and communication; restricted and stereotyped patterns of behavior, interests, and activities; and abnormalities manifested before age 3 in social development, language acquisition, or play.

### Symptoms of ASD

Autism is a lifelong developmental disorder that affects communication and behaviour. Autism disorder is characterized by persistent deficits in social communication and social interaction across multiple contexts, including deficits in social reciprocity, nonverbal communicative behaviors used for social interaction, and skills in developing, maintaining, and understanding relationships. In addition to the social communication deficits (DMS),

Furthermore, Robinson (2011:9) points out that ASD is characterized significantly by these features: Significant communicative and linguistic delays, resistance to change and repetitive behavior, and delay in the development of social interaction with others (Figure 1).

### Causes and factors of ASD

There is an ongoing debate in the literature over the main source of autism; strictly speaking, the real causes of ASD remain to a large extent unknown. Research studies find it difficult to associate a specific gene with ASD. However, the link between genetic variants with ASD was based on studies conducted on twins, where it was revealed that 80% of monozygotic twins have ASD when one of them shows symptoms of ASD. In the case of dizygotic twins, the percentage decreases to 10% (Ritvo et al., 1985, Bailey et al., 1995). Research suggests that genes can act together with influences from the environment to affect development in ways that lead to ASD. It is commonly established that the disorder is caused by an abnormality in brain structure and/or function. (National Research Council, 2001).

Additionally, a vast amount of previous evidence has

pointed towards the presence of a strong genetic component. Behavioral genetics research has shown that siblings of children with ASD are at significantly higher risk of being diagnosed with ASD, with concordance rates as high as 70% being found in monozygotic twins (Folstein and Rosen-Sheidley, 2001).

Studies on families with ASD member(s) show that ASD is likely to recur with new members if they share the same genome (Constantino et al., 2010; Sandin et al., 2014). Also, ASD tends to occur more often in people who have certain other medical conditions. About 10% of children with an ASD have an identifiable genetic disorder, such as Fragile X syndrome, tuberous sclerosis, Down syndrome and other chromosomal disorders (CDC: Autism Society of America, 2014).

Recent studies have indicated that ASD is heritable, and there is a strong genetic contribution to ASD. According to Huguet et al. (2016:2): Molecule genetics studies have identified more than 100 ASD risk genes carrying rare and penetrant deleterious mutations in approximately 10 to 25% of patients....In addition, quantitative genetics studies have shown that common genetic variants could capture almost all the heritabilities of ASD.

Furthermore, some other possible causes include the following genetic problems or syndromes:

- Severe infections that can cause brain damage. Examples are meningitis and encephalitis.
- Problems during pregnancy.
- The child may have been exposed to an illness like rubella or harmful chemicals.

### Types of ASD

The term "autism" is rather vague; it may refer to the whole disorder, technically called Autism Spectrum Disorder (ASD), or any type of it. ASD, according to the American Psychiatric Association (APA) (2000) is defined as " a complex developmental condition that involves persistent challenges in social interaction, speech and nonverbal communication, and restricted/repetitive behaviors. The effects of ASD and the severity of symptoms are different in each person." APA further explains that ASD is three to four times more common in boys; girls usually exhibit fewer symptoms than boys. Many children diagnosed with ASD also lead independent and productive life.

Needleman (2000) argues that this confusion occurs because the term has changed over history, and probably since it is used by different professionals to mean different things. In this study, the term autism will be used to refer to the mother category ASD, of which there are three types: Autistic Disorder, Asperger Syndrome (AS), and Pervasive Developmental Disorder (PDD) which is

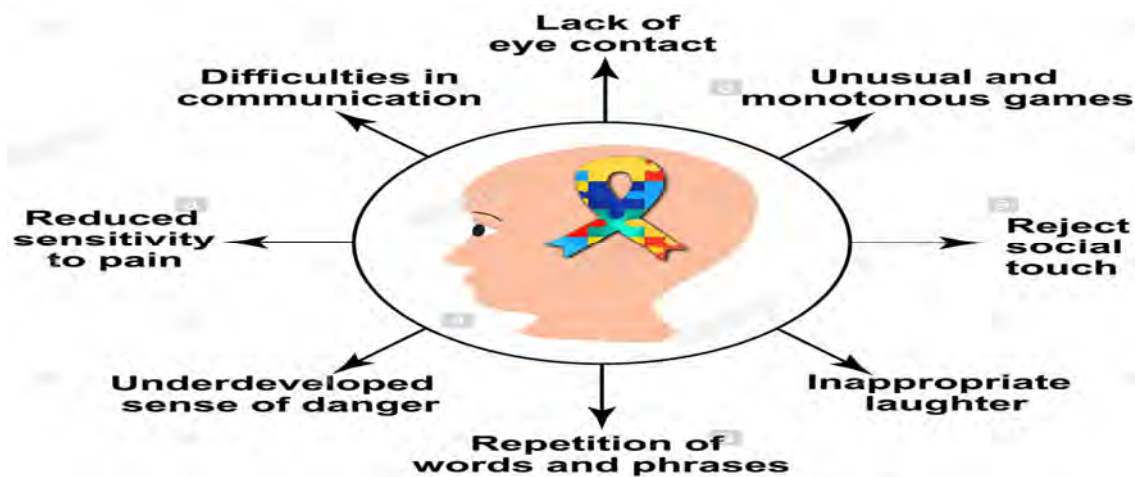


Figure 1. Symptoms of autism.

also called Atypical Autism.

Firstly, Autistic Disorder or Classic Autism, is what most people think of when hearing the word "autism." People with autistic disorder usually have significant language delays, social and communication challenges, and unusual behaviors and interests. Many people with autistic disorder also have an intellectual disability (46%) are classified with Classic Autism according to Volkmar et al. (2012). Then, the second common type is Asperger Syndrome. People with Asperger Syndrome usually have some milder symptoms of autistic disorder. They might have social challenges and unusual behaviors and interests. However, they typically do not have problems with language or any intellectual disability. Additionally, Pervasive Developmental Disorder (PDD) is another significant type of autism. People, who meet some of the criteria for autistic disorder or Asperger Syndrome, but not all, may be diagnosed with PDD.

People with PDD usually have fewer and milder symptoms than those with autistic disorder. The symptoms might cause only social and communication challenges (National Institute of Mental Health, 2008:3) (Figure 2).

### ASD as a communicative deficit

As it has been discussed earlier, communication is a complex notion that plays a vital role in all individuals' social and interpersonal relationships. In medical settings and health care services, communication is crucial for evaluating and validating the patient's needs. According to Jones and Watson communicative barriers (2012), differing cultural codes of communication, stereotyping, and the lack of cultural awareness are all main factors in poorer health service delivery and poor outcomes. In the

same respect, Staab and Hodges (1996) claim that ineffective communication in nursing can lead to patients' incompliance, disturbance in socialization and some patients' needs may be left unmet thereby creating and increasing stress on caregivers. Furthermore, Levy-Storms and Chen (2020) conduct an important study titled "Communication Strategies of Nursing Aids and Resident Nursing" in which they stress that patient care can be strongly affected by interpersonal communication from different perspectives: nursing aids and residents. Thus, for many researchers, successful communication is profoundly a central concept in the domain of health care, especially for patients with ASD in which the process of communication is more challenging and it affects heavily the interpersonal relationship and influences the quality of care provided.

Furthermore, children with ASD may have difficulty developing language skills and understanding what others say to them. They also often have difficulties communicating nonverbally, such as through hand gestures, eye contact, and facial expressions.

The ability of children with ASD to communicate and use language depends on their intellectual and social development. Children with ASD may not be able to communicate using speech or language, and some may have very limited speaking skills. Others may have rich vocabularies and be able to talk about specific subjects in great detail. Many have problems with the meaning and rhythm of words and sentences. They may also be unable to understand body language and the meanings of different vocal tones. Taken together, these difficulties affect the ability of children with ASD to interact with others, especially with people of their own age (Kasari et al., 2013).

Some of the characteristics of ASD are abnormal speech patterns. Several abnormal speech patterns



Figure 2. Types of autism.

in autism have been identified, including echolalia, pronoun reversal, metaphorical language, poor grammatical structure, atonality and arrhythmia. The followings are the main characteristics of language use and behaviors that are often found in children with ASD.

Generally, children with ASD who can speak will say things that have no meaning or that do not relate to the conversations they are having with others.

Children with ASD tend to repeat certain words and phrases over and over. These phrases are often quite basic. For example, a child may continuously repeat words he or she has heard; a condition called echolalia. Echolalia describes the precise repetition, or echoing, of words and sounds. Echolalia can be a symptom of various disorders including aphasia, dementia, traumatic brain injury, and schizophrenia, but it is most often associated with autism.

Immediate echolalia occurs when the child repeats words someone has just said. For example, the child may respond to a question by asking the same question. In delayed echolalia, the child repeats words heard at an earlier time. The child may say "Do you want something to drink?" whenever he or she asks for a drink. Some children with ASD speak in a high-pitched or sing-song voice or use robot-like speech. Other children may use stock phrases to start a conversation. For example, a child may say, "My name is Sam," even when he talks with friends or family. Still, others may repeat what they hear on television programs. Furthermore, Some children may be able to deliver an in-depth monologue about a topic that holds their interest, even though they may not be able to carry on a two-way conversation about the same topic. Moreover, many children with ASD develop some speech and language skills, but not to enough level of ability, and their progress is usually rough. For example, they may develop a strong vocabulary in a particular area of interest very quickly.

Also, poor pragmatics or changing speech and communication to fit the circumstances is one of the hallmark characteristics of ASD. People with ASD have

trouble modifying their communication including tone of voice, pitch, and volume based on the specific situation.

Many children have good memories of information just heard or seen. Some may be able to read words before age five, but may not comprehend what they have read. They often do not respond to the speech of others and may not respond to their names.

Last but not least, children with ASD are often unable to use gestures such as pointing to an object to give meaning to their speech. They often avoid eye contact, which can make them seem rude, uninterested, or inattentive (Kasseri et al., 2013; Tager-Flushberg et al., 2005).

## METHODOLOGY

### Case study

This study is an investigation of the case of a six-year-old child with ASD, in addition to the involved caregiver participants; his parents, staff members, escorts and speech therapists (at El-Irada Litawaħud Association, Saida City, Algeria).

Firstly, the researchers present the case of a child with ASD, its history, and the present living conditions of the child; giving insight into living with ASD as an intellectual cognitive disability. Then, we highlight the linguistic difficulties and the communicative obstacles the patient faces while living in the alien environment (home and care center). (Tables 1 and 2)

The patient is also undertaking psychological treatment because of some temporary tantrums. ASD is clinically characterized by higher rates of mood problems. As an example, mood liability, restlessness, irritability/aggression, stress and psychotic symptoms appear to be frequently present in those individuals with ASD.

Stress has been strongly associated with ASD disorder. Children experience multiple stressors such as

**Table 1.** General information of the patient.

Name	S.M
Age	06
Place of birth	Saida City, Algeria
Gender	Male
Parents	Young, alive and married with no diseases
Educational level	Did not go to school

**Table 2.** Medical information of the patient.

Disease	ASD
Type	AD
Stage	Mild
Date of diagnosis with ASD	03/2017
Date of entry to the association	25/09/2018

separation anxiety, fear of the unknown, physical and/or emotional trauma, bullying, as well as environmental exposures. Accordingly, stress is well known to affect the learning process and social life of the child

Further, depression and stress are among the most common co-occurring psychiatric diagnoses in ASD (Moss et al., 2015). Prevalence estimates range from 10-50% for depression (Hollocks et al., 2014)

### Participants

The researchers in this study worked with a six-year-old child with ASD, the child's parents, and three female caregiver participants; the psychologist, the social therapist and the speech therapist.

### Settings

The study took place at El-Irada Litawaħud Association: Saida, Algeria. In addition to the child house; thus, the research was conducted in these two settings where sufficient exposure to the participants was needed.

### AL-Irada Litawaħud Association

AL-Irada Litawaħud Association is a senior residential care facility and housing, located in the center of Saida city, Algeria (Figure 3). This association was established in 2001 by donations.

### Data collection

The main data collection of the current study is done by

observation, field note-taking and staff interviewing. Observations took place through 12 visits during a five-month period in the residential unit, and numerous visits took place at the patient's home.

In the casual visits, structured observations were conducted between 10:00 and 12:00. Whereas, in some social events or occasions, the observation usually started before the event, during, and after it for comparison purposes.

Thus, to conduct this study, the researchers were primarily observers and listeners in the research process. When researching patient Wards, Leininger (1988) emphasized the importance of the researcher during the different stages of the research as far as maintaining the objective perspective of the study (cited in Gotell, 2003:22).

Therefore, the data collection in this research is, mainly, dependent on the patient's observation during interactive sessions at the association, and also at home with his parents and sisters.

The researchers studied the participant case based on the observed experiences. Additionally, field notes were documented trying to understand the patient world. "The documented field notes provided a thick description of what I saw and heard at the time, and my own thoughts, feelings, and interactions" (Mulhall, 2002 cited in Karen Watchman, 2013:137)

Additionally, data collection was performed using taped interviews through which the researcher interviewed the patient's caregivers to examine and highlight the challenges they face while communicating with the patient. After that, the researchers take their views and opinions about the role of frequent interaction with ASD individuals and listen to their suggestions and propositions.

Accordingly, it is important to note that the permission of all the participants was taken into account and the interviews took place in their offices; thus, a qualitative design with an in-depth interview approach was adopted to conduct this research.

### Data analyses

In this study the researchers used a qualitative research



Figure 3. The Association of El Irada Litawaħud.

method to collect data because this method permits evaluators to study selected issues, cases, or events in-depth and detail; the fact that data collection is not constrained by pre-determined categories of analysis contributes to the depth and detail analysis of qualitative data. Additionally, a qualitative research method is widely used in healthcare research studies because it mainly targets the human experience they get, thus giving a better and deeper understanding of human morals which are complicated (Patton, 1987).

To analyze the collected data, the researchers adopted a qualitative content analysis. According to Patton (1987), content analysis is the analysis of the text (interview, scripts, diaries, articles, journals, or documents). More generally, content analysis is used to refer to any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings.

## RESULTS AND DISCUSSION

Interviews with the staff have starkly highlighted and conveyed the different experiences they have lived in ASD caring; contextually, from different care states.

Primarily, the findings from interviewing show that the caregivers were, likely, sharing the same idea about the nature of ASD as a lifelong neurodevelopmental disease, severe enough to interfere and change the daily life of the individual and his/her family.

According to the staff, most ASD children develop

neuropsychiatric, social, linguistic, behavioral symptoms and signs at some points during the course of the disease. The most displayed one by our patient S, M is the unusual language use, mainly the pattern of echolalia. Here are some common examples the participant usually performs:

Mother: give me a glass of water الام: اعطيني كاس ما  
 The child: give me a glass of water الطفل: اعطيني كاس ما  
 Mother: go to your place الام: روح لبلاصتك  
 The child: go to your place الطفل: روح لبلاصتك

Also, the child may repeat previously mentioned topics for hours and hours using the same utterances and expressions, and he produces various nouns frequently and randomly like: باب/ baab/ (door) – برا/ barra/ (outside) -ماما- /maama/(car)لوطو/luutu/. However, M, S uses verbs and pronouns less frequently. Sometimes he makes statements that are factually true but socially inappropriate because of the lack of awareness of the impact of his statement on others.

Moreover, the analysis of the grammar use of the participant shows that he produces only a few grammatically correct utterances. The analysis of some examples he produces during a spontaneous speech suggests that verb retrieval is much more complex and difficult because generally speaking, verbs are syntactically more difficult than nouns. Thus, verb deletion in autistic speech is due to the impaired ability of syntax processing. Furthermore, M, S appears to have difficulty with question forms such Who, What, Where,

When, Why, and How (Table 3).

Additionally, the observer and the listener to our participant's speech would easily discover the lack of cohesion and coherence in his discourse, and many difficulties of figurative language such as idioms, metaphors, similes, humor, and irony. M, S generally fails in grasping the main idea, drawing conclusions, or making other inferences from conversations, texts, TV programs, and cartoons.

Further, the analysis of the staff views has evidenced profoundly the linguistic barriers and the communicative obstacles that encounter an ASD child while interacting

with others, and this can be due to the lack of strategies to initiate, terminate, or facilitate a conversation.

Accordingly, the received data highlight another crucial factor which is social interaction. During the social events and occasions, the participant was more active and motivated to speak. Hence, the lack of social attachment in ASD care decreases the child's communicative skills. Therefore, the caregivers need more effective communicative strategies to boost ASD children's abilities of communication. These results suggest that language delays among children with ASD may be also driven in part by abnormal social attention.

**Table 3.** Examples of some utterances produced by the participant.

Utterances correct sentence	No. of nouns	No. of verbs
( <i>mama...kissan</i> ) my mother is washing the glasses ماما....كيسان	02	0
( <i>baba ..ah..loto</i> ) crying my father went in his car without taking me بابا..اه...لوطو	02	0
( <i>naw ...tssob</i> ) it's raining نو...تصب	01	01
( <i>balotii..aah</i> ) (screaming) where is my ball? بالوتيني..اه	01	0

## CONCLUSION

Language and communication are best understood as complementary parts of an integrated social interaction system. However, children with ASD encounter serious difficulties when using language for communication.

ASD is a heterogeneous range of neurodevelopmental disorders that are characterized by deficits in language and communicative abilities and by restricted, repetitive behaviors.

The results of the current study highlight a range of various language impairments that appear in autistic children's verbal repertoire; lexical, grammatical, morphological, and syntactic that lead to a failure in the communicative task. Further, the analysis of the data indicates that patients with ASD suffer also from different extra-linguistic problems which can be diminished through successful social interaction and effective therapeutic interventions. Moreover, through the result of staff interviewing, the researcher points out that engaging families in the assessment process may lead to a very positive result for the child's language enhancement. Accordingly, several studies report positive results for using contemporary behavioral approaches as well as developmental and more naturalistic approaches through the engagement of families as interventionists in facilitating language, communication, and social responsiveness. So, it is all about a suitable comfortable

environment that can boost up the ASD child's capacities to use language in a more normal, less difficult way as Lana David puts it: "Behavior is communication. Change the environment and behaviors will change".

## REFERENCES

- American Psychiatric Association (2000).** Diagnostic and Statistical Manual of Mental Disorders (Revised 4th ed.). Washington, DC.
- American Psychiatric Association (2013).** Diagnostic and Statistical Manual of Mental Disorders (5), 5-25. Arlington, VA: American Psychiatric Publishing.
- Andrews, J. R., and Andrews, M. A. (2000).** Family-based treatment in communicative disorders: A systemic approach. Janelle Publications, Incorporated.
- Bailey, A., Le Couteur, A., Gottesman, I., Bolton, P., Simonoff, E., Yuzda, E., and Rutter, M. (1995).** Autism as a strongly genetic disorder: evidence from a British twin study. *Psychological Medicine*, 25(1): 63-77.
- Colman, A. (2012).** Dictionary of psychology. *Applied Cognitive Psychology*, 15(3): 349-351.
- Constantino, J. N., Zhang, Y. I., Frazier, T., Abbacchi, A. M., and Law, P. (2010).** Sibling recurrence and the genetic epidemiology of autism. *American Journal of Psychiatry*, 167(11): 1349-1356.
- Findlay, M. S. (1998).** Language and communication: A cross-cultural encyclopedia. Abc-Clio Incorporated.
- Folstein, S. E., and Rosen-Sheidley, B. (2001).** Genetics of autism: Complex aetiology for a heterogeneous disorder. *Nature Reviews Genetics*, 2(12): 943-955.
- Garfin, D. G., and Lord, C. (1986).** Communication as a social problem in autism. In *Social behavior in autism* (pp. 133-151). Springer, Boston, MA.



- Hollocks, M. J., Howlin, P., Papadopoulos, A. S., Khondoker, M., and Simonoff, E. (2014).** Differences in HPA-axis and heart rate responsiveness to psychosocial stress in children with autism spectrum disorders with and without co-morbid anxiety. *Psychoneuroendocrinology*, 46: 32-45.
- Huguet, G., Benabou, M., and Bourgeron, T. (2016).** The genetics of autism spectrum disorders. A time for metabolism and hormones, 101-129.
- Jones, L., and Watson, B. M. (2012).** Developments in health communication in the 21st century. *Journal of Language and Social Psychology*, 31(4): 415-436.
- Kasari, C., Brady, N., Lord, C., and Tager-Flusberg, H. (2013).** Assessing the minimally verbal school-aged child with autism spectrum disorder. *Autism Research*, 6(6): 479-493.
- Leininger, M. M. (1988).** Leininger's theory of nursing: Cultural care diversity and universality. *Nursing science quarterly*, 1(4): 152-160.
- Levy-Storms, L., and Chen, L. (2020).** Communicating emotional support: family caregivers' visits with residents living with dementia in nursing homes. *Journal of Women and Aging*, 32(4): 389-401.
- Moss, P., Howlin, P., Savage, S., Bolton, P., and Rutter, M. (2015).** Self and informant reports of mental health difficulties among adults with autism findings from a long-term follow-up study. *Autism*, 19(7): 832-841.
- National Institute of Mental Health (2008).** Autism Spectrum Disorder: Overview. U.S. Department of Health and Human Services.
- National Research Council (2001).** Educating children with Autism.
- Needleman, R. (2000).** The Types and Terminology of Autism.
- Patton, M. (1987).** Qualitative Research and Evaluation Method. Sage, London.
- Prelock, P. J., and Nelson, N. W. (2012).** Language and communication in autism: An integrated view. *Pediatric Clinics*, 59(1): 129-145.
- Rickheit, G., and Strohner, H. (Eds.). (2008).** Handbook of communication competence (Vol. 1). Walter de Gruyter.
- Ritvo, E. R., Freeman, B. J., Mason-Brothers, A., Mo, A., and Ritvo, A. M. (1985).** Concordance for the syndrome of autism in 40 pairs of afflicted twins. *The American Journal of Psychiatry*, 142(1): 74-77.
- Robinson, R. (2011).** Autism Solutions: How to Create a Healthy and Meaningful Life for Your Child. Ontario, Canada: Harlequin Enterprises Limited.
- Sandin, S., Lichtenstein, P., Kuja-Halkola, R., Larsson, H., Hultman, C. M., and Reichenberg, A. (2014).** The familial risk of autism. *Jama*, 311(17): 1770-1777.
- Staab, A. S., and Hodges, L. C. (1996).** Essentials of Gerontological Nursing: Adaptation to the Aging Process. J.B. Lippincott Company, Philadelphia.
- Tager-Flusberg, H., Paul, R., and Lord, C. (2005).** Language and Communication in Autism.
- Troike, M. (2003).** The Ethnography of Communication: An Introduction. Blackwell Publishing Ltd.
- Volkmar, F. R., Reichow, B., and McPartland, J. (2012).** Classification of autism and related conditions: progress, challenges, and opportunities. *Dialogues in Clinical Neuroscience*, 14(3): 229.
- Watchman, K. (2013).** At a crossroads in care: The experience of individuals with Down syndrome and dementia. Thesis submitted for the degree of Doctor of Philosophy. The University of Edinburgh.
- Weismer, E., Lord, S., Lord, C., and Esler, A. (2010).** Early language patterns of toddlers on the autism spectrum compared to toddlers with developmental delay, 40(10): 1259-1273.
- Woods, J. J., and Brown, J. A. (2011).** Integrating family capacity-building and child outcomes to support social communication development in young children with autism spectrum disorder. *Topics in Language Disorders*, 31(3): 235-246.

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