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MASTER'S DEGREE IN ADVANCED ENGLISH
STUDIES



**ACQUISITION OF ENGLISH AS A SECOND
LANGUAGE BY STUDENTS WITH
ASPERGER SYNDROME:
A THEORETICAL APPROACH**

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Student Statement of Original Authorship

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ABSTRACT

We depart from an exploration of the main differences between Asperger Syndrome (AS) and High-Functioning autism (HFA) within Autism Spectrum Disorders (ASD): AS individuals exhibit higher IQs, no delay in language acquisition (LA) and a likely special ability in second language acquisition (SLA). This topic will raise awareness of the potential factors and characteristics –favourable and unfavourable- that teachers and students with AS should take into account when dealing with AS students' ESL acquisition.

Our contribution aims at offering a broader perspective on contemporary SLA theories and providing a solid basis for a future field research, which will enable a review of the assumption that AS individuals experience special difficulties with L2 acquisition. Besides the presumption that the L1 production could be attained more easily by AS individuals due to their lexical competences and grammatical abilities, we assume the hypothesis that individuals affected by AS may have a remarkable facility with SLA.

We provide a theoretical framework to facilitate a precise contextualization of AS and its possible impact on LA. Then, we discuss those features from a neurolinguistic perspective and background, as a previous step to dealing with the specific characteristics, factors and variables affecting the process of AS student's ESL acquisition. To conclude, we present a research proposal containing an empirical study project for the verification of the hypotheses herein presented.

Keywords: Asperger Syndrome, High-functioning autism, Autism spectrum disorder, language acquisition, second language acquisition, IQ.

RESUMEN

Partimos de diferenciar entre el Síndrome de Asperger (SA) y el Autismo de alto funcionamiento (AAF) dentro de los Trastornos del Espectro Autista (TEA) considerando tres características principales: individuos con SA muestran un CI elevado, falta de retraso en la adquisición del lenguaje (AL) y una posible facilidad en la adquisición de segundas lenguas (ASL). Además, tratamos los factores y características –favorables y desfavorables- que los/as estudiantes con SA y su profesorado deben considerar al abordar la ASL del inglés.

El estudio contribuye a ofrecer una perspectiva más amplia de las teorías contemporáneas sobre ASL y a proporcionar una base sólida para un futuro estudio de campo que permita revisar la hipótesis de que los individuos con SA tienen dificultades en el ámbito de la ASL. Además de sostener que la producción de la L1 podría alcanzarse más fácilmente por individuos con SA, dadas sus competencias léxicas y habilidades gramaticales, asumimos la hipótesis de que los/as individuos/as con SA puedan tener una notable facilidad con la ASL.

Proporcionamos un marco teórico para facilitar una precisa contextualización del SA y los posibles determinantes que puedan afectar a la AL. Estos condicionantes se analizan desde una perspectiva y antecedentes neurolingüísticos, como paso previo a las características, factores y variables específicas que afectan al proceso de ASL (inglés) de los/as estudiantes con SA. Finalmente, presentamos una propuesta de investigación para un proyecto de estudio de campo que pueda verificar en un futuro las hipótesis presentadas.

Palabras clave: Síndrome de Asperger, Autismo de alto funcionamiento, Trastorno del Espectro Autista, adquisición del lenguaje, adquisición de segundas lenguas, CI.

RESUM

Partim de diferenciar entre la Síndrome d'Asperger (SA) i l'Autisme d'alt funcionament (AAF) dins dels Trastorns de l'Espectre Autista (TEA) considerant tres característiques principals: individus/es amb Asperger mostren un CI elevat, manca de retard en l'adquisició del llenguatge (ALL) i una possible facilitat en l'adquisició de segones llengües (ASLL). A més, tractem els factors i característiques –favorables i desfavorables- que els/les estudiants amb SA i el seu professorat han de considerar en abordar l'ASL de l'anglès.

L'estudi contribueix a oferir una perspectiva més àmplia en les teories contemporànies d'ASL i proporcionar una base sòlida per a un futur estudi de camp que permeti revisar la hipòtesi que els/les individus/es amb SA tenen dificultats a l'àmbit de l'ASL. A més de sostindre que la producció de la L1 podria aconseguir-se més fàcilment per individus/es amb SA, donades les seves competències lèxiques i habilitats gramaticals, assumim la hipòtesi que els/les individus/es amb SA puguen tenir una notable facilitat amb l'ASL.

Proporcionem un marc teòric per tal de facilitar una precisa contextualització del SA i els possibles determinants que puguen afectar l'AL. Aquests condicionants s'analitzen des d'una perspectiva i antecedents neurolingüístics com a pas previ a les característiques, factors i variables específiques que afecten al procés d'ASL (anglès) dels/les estudiants amb SA. Finalment, presentem una proposta d'investigació per a un projecte d'estudi de camp que pugui verificar en un futur les hipòtesis presentades.

Paraules clau: Síndrome d'Asperger, Autisme d'alt funcionament, Trastorn de l'Espectre Autista, adquisició del llenguatge, adquisició de segones llengües, CI.

Acquisition of English as a Second Language
By Students with Asperger Syndrome:
A Theoretical Approach

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To the measure of my dreams.

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1. INTRODUCTION

1.1. Problem's statement

Despite the fact that the evaluation of the prevalence in the Autism Spectrum Disorder (ASD) during these last decades is still a challenge, the recently collected epidemiological data suggest a noticeable increase in the prevalence of this disease. The Centers for Disease Control and Prevention (CDC) carried out a field research through 2005 in which it was estimated that 1% of the 8 year olds children in USA are currently diagnosed with ASD. In contrast to the data collected in 2002, the figures represented an increase of 57% in the ASD prevalence. This prevalence estimation of 1% in the ASD coincides with similar studies previously carried out by other research groups in Canada and United Kingdom. According to Lyman (2008), the most recent ASD prevalence indicates that the numbers of individuals being diagnosed with an Autism Spectrum Disorder (ASD) have dramatically risen during the last decade. It is estimated that there are over 1.5 million individuals diagnosed with ASD and that about 100,000 of these individuals are school children or youngsters with ages ranging from 6 to 21 years. This represents a 500% growth in the past 10 years. (United States Government Accountability Office, 2005 ref).

The latest prevalence studies of autism indicate that 1.1% of the population in the UK may have autism. This means that over 695,000 people in the UK may have autism, an estimate derived from the 1.1% prevalence rate applied to the 2011 UK census figures¹. (The National Autistic Society, 2015).

Within Autism Spectrum Disorder, Asperger Syndrome (AS) is a pathology included among those considered *rare* or of low prevalence, affecting approximately 2, 6 per 10.000 inhabitants (Fombone, 2003, 2005) and having an impact more frequently among men than women, in an approximate proportion of 1:10 (Ehlers & Gillberg, 1993).

¹ Estimated ASD population figures for the UK and the four nations (England, Northern Ireland, Scotland and Wales) based on 2011 census figures. These estimates were calculated by applying the prevalence rate of 1.1% to the population figures. (The National Autistic Society, 2015. <<http://www.autism.org.uk/about-autism/myths-facts-and-statistics/statistics-how-many-people-have-autism-spectrum-disorders.aspx>>

The first clinical description of the Asperger disorder came along with the Viennese paediatrician Hans Asperger, who published his founding article on autistic psychopathy in 1944 (months before Leo Kanner had presented his classification of child autism, in 1943), as a result of his empirical work from a sample of children who shared similar traits referring to their socio-communicative behaviour (Rodríguez, 2009).

According to Asperger, this disorder appeared around the third year of life and was mainly characterized by repetitive, stereotyped and idiosyncratic behaviour patterns; these obsessive and absorbing interests usually appeared altogether with a delay in the motor disability acquisition steps.

In this respect, as Rodríguez (2009) states, from a communicative perspective, the linguistic development of the individuals affected by Asperger Syndrome results in an advanced process taking into account his/her chronological age. Nevertheless, there exist important deficiencies with regard to the pragmatic communication or the social use of language. The non-verbal communicative behaviour is altered in the same terms, frequently showing kinetic –body posture, gesture, sight, facial expression-, proxemic -proximity regulation and physical contact with the speaker- and paralinguistic –voice modulation, pitch, rhythm and pauses- deficits.

With the contributions of the British psychologist Lorna Wing (1981) the Asperger's findings were recovered and submitted to revision; with her work, the term 'Asperger Syndrome' will be coined. This denomination is reserved to individuals who, presenting an autistic frame, own an adequate intellectual development –having a normal intelligence coefficient and, usually, above the average- and do not show severe learning difficulties.

It will not be until the last decade that the AS is officially recognised and introduced as an independent label within the Autism Spectrum Disorders (ASD) or Pervasive Developmental Disorders (PDD), in the clinical diagnostic categorical classifications, case of the CIE-10 (WHO 1992) and the DSM-IV (APA 1994).

With regard to this matter, it is essential to highlight that the diagnosis of Asperger Syndrome was eliminated in the 2013 fifth edition of the Diagnostic and Statistical Manual of Mental Disorders² (DSM-5) and replaced by a diagnosis of Autism Spectrum Disorder (ASD) on a severity scale, leading to a vast controversy, concretely in relation to the categorisation of Asperger Syndrome as High-functioning autism within ASD.

In the words of Wing (2005), there are different severity degrees in which one same condition appears: autism. In fact, AS portrays some similar traits in common with classic autism –mainly social and stereotyped limitations, behaviour patterns, repetitive rituals and activities-, but the former separates from the latter in terms of cognitive abilities and, especially, in the communicative area where AS individuals mainly show an outstanding display of language.

As essential as it seems at first sight, it is commonly stated by researchers on the field that being SA language acquisition one of the basic determinings to diagnose ASD precisely, it has been scarcely researched.

With this in mind, it is worth mentioning that one of the characteristics which could obstruct the adaptation of AS subjects is the so-called *social cognitive deficit*. Following the Theory of Mind (Baron-Cohen et al. 1985), it is suggested that the individuals with AS could lack this ability due to the difficulties to imagine mental representations –wishes, beliefs and intentions- and to associate these to the others (Rodríguez, 2009).

All in all, and independently from those differences in the referred prevalence rates among several countries, empirical evidence suggests that the ASD incidence, and especially Asperger Syndrome (AS), may be increasing. The fact that general development disorders as the one in question are more commonly observed, should logically lead to consider those as a prevailing problem for Health and Education authorities.

² ICD-10: *International classification of diseases*, published by the World Health Organisation; DSM IV: *Diagnostic and statistical manual of mental disorders* (version IV), published by the American Psychiatric Association.

1.2. Objective of the study

In view of the remarkable growth of ASD –where Asperger Syndrome is formally included- over the past 25 years, and focusing on Asperger Syndrome (AS) as a category which should be differentiated within the Autism Spectrum Disorder (ASD), this study examines the narrative statements on the acquisition of English as a second language by students with Asperger Syndrome.

As already mentioned, in this study we take into account the 2013 elimination of Asperger Syndrome diagnosis and its subsequent integration in ASD³ as a subtype which gave rise to the comparison of AS and HFA. In our opinion, an accurate differentiation between AS and HFA within ASD is more than reasoned and convenient in order to approach the specific characteristics and needs of both disorders. With this in mind, we isolate AS as different from ASD, owing the three main characteristics that make AS different from ASD: IQ, no delay in language acquisition and what we consider a probable ability to acquire a second language. These features are pointed out through this study and constitute the focus of our thesis.

Hence, the topic selected will raise awareness of the potential factors and characteristics –favourable and unfavourable- that teachers and students with AS should take into account when dealing with AS students' acquisition of English as a second language.

With this study we aim at offering a broader perspective on contemporary second language acquisition theories and providing a solid basis for a future field research which enables a review on the assumption that AS individuals have difficulties with L2 acquisition.

³ Under the latest criteria from the DSM-V (Diagnostic and Statistical Manual 5) what used to be separate classifications, Autism, Asperger's syndrome, CDD and PDD-NOS now come under the one ASD diagnosis. <<http://www.dsm5.org/Documents/Autism%20Spectrum%20Disorder%20Fact%20Sheet.pdf>>. Despite the above, not all countries use the DSM-V and those who use the ICD 10 (International Classification of Diseases 10) will likely continue to use ASC and Asperger's Syndrome (F.84.5 vs. ASD which is F.84.0). <<http://www.who.int/classifications/icd/en/GRNBOOK.pdf>>. However, it is worth mentioning that ICD11 may revise the classification before its due release date of 2017.

In addition, besides the presumption that the L1 production could be attained more easily by AS individuals due to their lexical competences and grammatical abilities (Rodríguez, 2009), we assume the hypothesis that individuals affected by AS may have a remarkable facility with L2 acquisition. As Thrainsson (2012) states, it could be called into question that the L1 production facility in the brain might be affected by the disorder and not the area in the brain that is thought to be common to both L1 and L2 which processes language reception.

With this objective, we will firstly provide a theoretical framework to facilitate a precise contextualization of Asperger Syndrome as well as its possible determinings liable to affect the acquisition of language. Then, we will comment on those features from a neurolinguistic perspective and background as a previous step to deal with the specific characteristics, factors and variables affecting the process of AS students' L2 acquisition. After this, having included a general theoretical background on the concrete characteristics and variables taking part in AS students' second language acquisition, and in order to complement this state of art study, we will introduce a research proposal containing an empirical study project to support –along a future doctoral thesis- the hypotheses presented in here.

With this in mind, we consider absolutely essential to stress that, according to the classic differentiation within the experimental research, we distinguish three stages within a research study: observation, hypothesis and verification. Thus, in our study, we will deal with the examination of narrative on the selected field –as a study of state of art- to state, afterwards, some hypotheses aiming at verifying them in a future doctoral thesis. However, we will provide a research proposal in order to contextualize a future empirical research and briefly mark its basic methodology and corpus. Therefore, we will remain within a hypothesis foundation stage.

Finally, we will present our discussion and conclusions.

2. LITERATURE REVIEW

2.1. Asperger Syndrome

Asperger Syndrome is a neuro-developmental disorder which normally appears within the first years of life. It is characterized by social impairments, difficulties in communication, and a set of circumscribed interests and/or a rigid adherence to routines. Its clinical base is a deep alteration with regard to social relationships, established on the lack of the necessary neurocognitive bases to understand the mental state of the others and the social interpretation of non-verbal behaviours, such as facial, and any other sort of learning based on experience (Gold, 2010; Baron-Cohen, 2010).

The diagnostic term Asperger Syndrome is based on the remarkably perceptive descriptions of Dr. Hans Asperger, a Viennese paediatrician, who, in 1944, noticed that some of the children referred to his clinic had very similar personality characteristics and behaviour. By the mid-1940s, the psychological study of childhood in Europe and America had become a recognized and growing area of science with significant advances in descriptions, theoretical models and assessment instruments, but Asperger could not find a description and explanation for the small group of similar and unusual children that he found intriguing (Atwood, 2007).

According to Asperger (1944), the children's social maturity and social reasoning were delayed and some aspects of their social abilities were quite unusual at any stage of development. The children had difficulty making friends and they were often teased by other children. There were impairments in verbal and non-verbal communication, especially the conversational aspects of language. The children's use of language was pedantic, and some children had an unusual prosody that affected the tone, pitch and rhythm of speech. The grammar and vocabulary may have been relatively advanced but, at the end of the conversation, one had the impression that there was something unusual about their ability to have the typical conversation that would be expected with children of that age. Asperger also observed and described conspicuous impairments in the communication and control of emotions, and a tendency to intellectualize feelings. Empathy was not as mature as one would expect, considering the children's intellectual abilities. The children also had an egocentric preoccupation

with a specific topic or interest that would dominate their thoughts and time. Some of the children had difficulty maintaining attention in class and had specific learning problems. Asperger noted that they often needed more assistance with self-help and organizational skills from their mothers than one would expect. He described conspicuous clumsiness in terms of gait and coordination. He also noted that some children were extremely sensitive to particular sounds, aromas, textures and touch. Asperger considered that the characteristics could be identified in some children as young as two to three years, although for other children, the characteristics only became conspicuous some years later. He also noted that some of the children had specific talents that could lead to successful employment and some could develop life-long relationships (Atwood, 2007).

With attention to the features previously depicted, and in spite of the numerous studies on the possible causes of this chronic disorder, it is important to remark that those are still unknown. However, family studies have shown that autism has a strong genetic component (Santangelo & Folstein, 1999).

In diagnostic terms, psychiatrists consider Asperger Syndrome (AS) as a mild Autism Spectrum Disorder (ASD). In this sense, it has been widely reported that children with AS do not usually experience language delay. On the contrary, AS children usually pick up language fast and are often especially noticeable for their advanced speech pattern and large adult-like lexicon (Thrainsson, 2012). At the same time, recent evidence suggests that AS children have a language acquisition impairment due to the social interaction skills deficiency the children show (American Psychiatric Association, 1994; Foudon et al., 2008; Frith & Happé, 1994; Koning & Magill-Evans, 2001; Leekam, Libby, Wing, Gould, & Gillberg, 2000; Saalasti et al., 2008; Wire, 2005; Woodbury-Smith & Volkmar, 2009; World Health Organization, 1992).

For the purpose of shedding light on the origin and causes of AS, neuropathological and neuroimage studies⁴ indicate that alterations in the brain development of these individuals are evidenced from the first months of life. Those are

⁴ Currently, the neuropathology of autism is based on Bauman & Kemper who obtained consistent neuropathological findings in the limbic system and in cerebellar circuits of eleven brains investigated so far (Gadia et al., 2004).

principally manifested by structural and functional alterations in the regions within the brain which have an implication with the main AS symptoms such as social skills, language with communicative purposes, motor clumsiness, repetitive or obsessive behaviour and limited interests.

Additionally, it is necessary to say that the degree of affection is not the same for every AS individual. Thus, and consequently, the characteristics may also vary. Hence, the importance in the qualitative conditioning within the ASD diagnoses.

Table 1. *The Gillberg diagnostic criteria for Asperger's syndrome (Gillberg, 1991)*

-
1. Social impairment (extreme egocentricity) (at least two of the following):
 - difficulties interacting with peers
 - indifference to peer contacts
 - difficulties interpreting social cues
 - socially and emotionally inappropriate behaviour

 2. Narrow interest (at least one of the following):
 - exclusion of other activities
 - repetitive adherence
 - more rote than meaning

 3. Compulsive need for introducing routines and interests (at least one of the following):
 - which affect the individual's every aspect of everyday life
 - which affect others

 4. Speech and language peculiarities (at least three of the following):
 - delayed speech development
 - superficially perfect expressive language
 - formal pedantic language
 - odd prosody, peculiar voice characteristics
 - impairment of comprehension including misinterpretations of literal/implied meanings

5. Non-verbal communication problems (at least one of the following):

- limited use of gestures
- clumsy/gauche body language
- limited facial expression
- inappropriate facial expression
- peculiar, stiff gaze

6. Motor clumsiness:

- poor performance in neurodevelopmental test
-

2.1.1. Asperger Syndrome as an independent category within the Autistic Spectrum Disorders

Undoubtedly, if there exists a symptomatic overlapping between the AS and other ASDs, the probability to make an error in the diagnosis will grow. Some of the most common errors with regard to an AS child or adult diagnosis have been identified by Wing (1986). The first of those diagnosis errors referred to the mistaken interpretation in the abnormal behaviour of the AS individuals and, accordingly, the erroneous inclusion into a different symptomatic frame. The second type of error commonly made in the diagnosis evaluation consists in the failure of the detection of an additional clinical frame which coexists with the AS (Wing, 1986). The precise delimiting of comorbidity of Asperger Syndrome would be a key point for a diagnosis since, as Mazzone et al. (2012) state, one of the main problems with individuals suffering from AS/HFA is that behavioural symptoms due to one of the comorbid conditions that often run together with this type of ASD could arise in different social environments, including family and school, and during social activities. For these and other reasons in the daily clinical practice it is difficult to make a decision about the most appropriate diagnosis and therapeutic strategies.

In the same way, and according to Klin (2006) many children exhibit high levels of activity in early childhood, and, as noted, may develop anxiety and depression in adolescence and young adulthood. Nevertheless, it is discussed that a social abnormal

behaviour together with a restricted pattern of interests very characteristic of the AS may mask the depressive frame and its symptoms.

In conclusion, it has been claimed by some researchers that the lack of an independent diagnostic directly associated to an accurate study and knowledge of the AS could lead to a high difficulty when providing the proper measures and treatment to the AS subjects as well as setting the basis to prevent those.

2.1.2. Asperger Syndrome vs. High-Functioning autism

At this point, it is essential to highlight that the diagnosis of Asperger Syndrome was eliminated in the 2013 fifth edition of the Diagnostic and Statistical Manual of Mental Disorders⁵ (DSM-5) and replaced by a diagnosis of Autism Spectrum Disorder (ASD) on a severity scale. ASD are split into low-functioning and High Functioning groups: Low-functioning individuals are very slow language learners and many of them never acquire a spoken language at all during their lifetime (Foudon et al. 2008).

Since this is a latter development and there is substantial discussion among the research community, it is necessary to emphasize the several controversies arising between AS and High-Functioning autism and its consequent implications in the research.

In the words of Thrainsson (2012), High-Functioning ASD children usually learn a language for communication although in a majority of cases language acquisition is severely delayed. Their language acquisition is therefore different from typical development (TD) children. The average delay of ASD first word utterances compared with TD is a staggering 27 months (38 months vs. 11 months respectively). ASD first word combination is delayed on average by 35 months. The interval between the first word and first word combination is 8 months longer than with TD children. This difference continues into adulthood. That is to say that High-Functioning ASD

⁵ ICD-10: *International classification of diseases*, published by the World Health Organisation; DSM IV: *Diagnostic and statistical manual of mental disorders* (version IV), published by the American Psychiatric Association.

people do not catch up with their TD peers in language proficiency (Foudon et al., 2008).

Differently from the language features of High-Functioning ASD individuals, we find those traits characterizing Asperger Syndrome (AS) –supposed to be a disorder formally classified as High-Functioning ASD-. At this point, and as previously referred, it is essential to bear in mind that AS individuals do not normally show a delay in language acquisition.

Considering this linguistic distinguishing characteristic, the World Health Organization and the American Psychiatric Association developed two decades ago a set of diagnostic criteria for AS where delay in language learning is especially noted as not being a characteristic of AS (World Health Organization, 1992. American Psychiatric Association, 1994). Since then, the statement defending the lack of a delay in the language development of AS subjects has been continuously put into question (Leekam et al. 2000).

Going into detail about this linguistic distinguishing marker, a symptom typically noted by psychologists diagnosing AS is a history of fluent, if somewhat archaic use of language during childhood, colloquially known as *adult speech* (Thrainsson, 2012). This form of speech pattern and language use does not necessarily suggest a normally developing language speaker (Frith & Happé, 1994). This can be argued as displaying a lack of normal language acquisition process rather than an advanced form of it (Frith & Happé, 1994; Koning & Magill-Evans, 2001; Saalasti et al., 2008; Woodbury-Smith & Volkmar, 2009).

In short, on the one hand, there are those authors considering that both terms – AS and HFA- could be exchanged as they are hardly differentiated or share most of descriptive characteristics and, to some extent, have normally been exchangeable diagnoses for the same symptoms part of the ASD (Atwood, 2008) and, on the other, those stating that the main difference between the both disorders is thought to be in language development: individuals with AS, typically, will not have had delayed language development when younger. Gillberg & Ehlers (1998), who identify four main

areas where controversy over the difference in diagnosis still exists, note this last question.

However, it is worth mentioning that several authors, besides having considered the language acquisition (L1) in AS individuals within normal levels, have not detected any meaningful alteration in relation to the lexical and grammatical output (Rodríguez, 2009).

2.1.2.1. Asperger Syndrome Vs High-Functioning autism: four main areas of discrepancy

As previously introduced, the main controversial domains where researchers do not seem to coincide have been pointed out by Gillberg and Ehlers (1998) and detailed later on by the National Autistic Society, as can be seen in the following table:

Table 2. Signs of High Functioning autism and Asperger syndrome⁶. Gillberg and Ehlers (1998)

- Level of cognitive functioning

The view that Asperger Syndrome is autism without any additional learning disability is helpful from the diagnostic point of view as it is fairly easy to make a distinction in these circumstances. However, Asperger himself said that there might be unusual circumstances where a person could present the symptoms of Asperger Syndrome with additional learning disability. It is widely recognised that High Functioning autism cannot occur in someone with an IQ below 65-70.

- Motor skills

In recent years the view that Asperger Syndrome can only occur when there are additional difficulties with motor skills has become more prominent. Certainly Asperger himself was well aware of the prevalence of motor skill

⁶ The National Autistic Society, 2015. <<http://www.autism.org.uk/about-autism/introduction/high-functioning-autism-and-asperger-syndrome-whats-the-difference.aspx>>

problems in the group of people he tried to describe. It seems likely that most children with Asperger Syndrome experience poor co-ordination and difficulties with fine motor control. However, many children with higher functioning autism will also have difficulties in these areas.

- Language development

This is the area that probably causes the greatest controversy. Both ICD-10 and DSM-IV1 state that for a diagnosis of Asperger Syndrome, spoken language development must be normal. Children with High-Functioning autism may have had significant language delay. However, Asperger's original descriptions of the condition stated that speech and language peculiarities are a key feature of Asperger Syndrome. Often diagnoses of Asperger Syndrome are made when a child is quite old and they or his/her parents may have difficulty remembering the details of their language development.

- Age of onset

A diagnosis of High-Functioning autism and one of Asperger Syndrome can be made in the same individual at different stages of development. Occasionally a child has been diagnosed with High-Functioning autism in early childhood and this diagnosis has been changed to Asperger Syndrome when they started school. Some diagnosticians are clearly of the view that Asperger Syndrome cannot be diagnosed before a child starts school. However this is largely because areas such as social skills deficits may not become apparent until a child spends a lot of time in social settings.

In spite of the different studies contrasting and remarking the convenience or inconvenience concerning the recent change in the diagnostic of Asperger Syndrome (AS), the differentiation of AS and High-Functioning autism (HFA) still raises a polemical and complex debate within the scientific community, as we have analysed.

The usefulness in differentiating the Asperger Syndrome from classic autism, and concretely from High-Functioning autism, relies on being able to predict as

accurately as possible the consequences in the individuals who suffer the disorder as well as establishing the most convenient intervention taking into account the diagnosis.

In relation to the diagnosis criteria related to the *communicative abilities* within AS, this is still another part of the core of discussions within the scientific community. The application of the categories previously mentioned, including the DSM-IV and the CIE-10, result into a lack of operability when dealing with limiting frameworks (Rodríguez, 2009). As referred, the complexity in establishing the difference between AS and High-Functioning autism is severe. In this sense, the communicative symptomatology could also contribute to the proper delimitation of these intersection diagnoses.

To propitiate a wider perspective on the matter, it may be interesting to take into account the statements presented by Baron-Cohen (2002) with regard to the label ‘disability’ associated to both AS and HFA, as well as its implications. In this line, the author states that the arguments in favour of viewing AS/HFA as a ‘difference’ are more compatible with the ‘continuum’ notion, and may be morally more defensible. At the same time, Baron-Cohen (2002) stresses that the sole reason for retaining the term disability in relation to AS/HFA may be to ensure access to provision; it may be the legal system that needs revision, so that a child whose autistic ‘difference’ leads them to have special needs, will still receive special support.

Through his article *Is Asperger’s syndrome/High-Functioning Autism necessarily a disability?* Baron-Cohen (2002) provided a straightforward list of arguments to support the idea that AS and HFA should be considered a difference rather than a disability.

Table 3. *The arguments for viewing AS/HFA as a difference rather than a disability* (Baron-Cohen, 2000)

1. The child spends more time involved with objects and physical systems than with people (Swettenham et al., 1998);
2. The child communicates less than other children do;

3. The child tends to follow their own desires and beliefs rather than paying attention to, or being easily influenced by, others' desires and beliefs (Baron-Cohen, Leslie & Frith, 1985);
 4. The child shows relatively little interest in what the social group is doing, or being a part of it (Bowler, 1992; Lord, 1984);
 5. The child has strong, persistent interests;
 6. The child is very accurate at perceiving the details of information (Plaisted, O'Riordan & Baron-Cohen, 1998a; Plaisted, O'Riordan & Baron-Cohen, 1998b)
 7. The child notices and recalls things other people may not (Frith, 1989);
 8. The child's view of what is relevant and important in a situation may not coincide with others (Frith, 1989);
 9. The child may be fascinated by patterned material, be it visual (shapes), numeric timetables), alphanumeric (number plates), or lists (of cars, songs, etc.);
 10. The child may be fascinated by systems, be they simple (light switches, water taps), a little more complex (weather fronts), or abstract (mathematics);
 11. The child may have a strong drive to collect categories of objects (e.g., bottletops, train maps), or categories of information (types of lizard, types of rock, types of fabric, etc.);
 12. The child has a strong preference for experiences that are controllable rather than unpredictable.
-

2.1.3. Linguistic characteristics

As stated by Gillberg and Ehlers (1998) in their previous classification, this AS is classified as a subgroup into the ASD, having thus to share many clinical features with Autistic Disorder (American Psychiatric Association., 1994) but without clinically significant developmental delays in language acquisition (Hayashi et al., 2007). Along these lines, according to Stein et al. (2004) in Asperger disorder, basic language skills are intact, although there are delays in nonverbal communication skills and pragmatics.

In order to enrich this debate, Atwood (2007) formulates the example of young children with high-functioning autism who subsequently develop fluent language, and

eventually have a profile of abilities that resembles the profile of children with Asperger Syndrome who did not have early language delay. In his research, Atwood (2007) stands up for the statement that early language delay is not an exclusion criterion for Asperger Syndrome and may actually be an inclusion criterion, as in the Gillberg & Ehlers (1998) criteria. Then, the focus during the diagnostic assessment should be on current language use –the pragmatic aspects of language- of the individuals diagnosed rather than their history of language development.

On the contrary, according to Baron-Cohen⁷, it is true that the differentiation between ASD and AS relies exclusively on the IQ –normally above of the average or even gifted in the AS- and the acquisition and development of language –also normal in the AS-, while both disorders share characteristics as social and non-verbal communicative skills difficulties, repetitive behaviour or limited interests. For these reasons, the AS diagnosis change, may be precipitated taking into account the important and remarkable differences between both disorders and the scarce research carried out on those and their multiple variable and affections.

Having narrowed the scope of the diagnostic criteria in reference to AS and HFA, it might be highlighted the list of atypical language skills associated to Asperger Syndrome proposed by Gillberg (at least three of the speech and language peculiarities are required for a diagnosis of Asperger Syndrome).

Table 4. *The Gillberg diagnostic criteria for Asperger's syndrome (Gillberg, 1991)*

-
- delayed speech development
 - superficially perfect expressive language
 - formal pedantic language
 - odd prosody, peculiar voice characteristics
 - impairments of comprehension including misinterpretations of literal/implied meanings
-

⁷ Simon Baron-Cohen. The New York Times. (*The Short Life of a Diagnosis*, 9th of November, 2009).

Additionally, the diagnostic criteria of Szatmari et al. also points out several abnormal features (at least two of the following of the speech and language peculiarities are required for a diagnosis of Asperger Syndrome).

Table 5. *The diagnostic criteria of Peter Szatmari et al. (Szatmari et al., 1989)*

-	abnormalities in inflection
-	talking too much
-	talking too little
-	lack of cohesion to conversation
-	idiosyncratic use of words
-	repetitive patterns of speech

2.1.4. Recognition of common language deficiency

Concerning language skills, as Martín (2008) introduces, AS and High-Functioning autism differ in the language development process during the three first years of life. As a matter of fact, HFA show evident difficulties in the language development, contrary to AS individuals who present a proper language development during the same childhood stage. Moreover, individuals with HFA manifest a well-developed expressive language and echolalia is appreciated frequently. On the contrary, AS individuals express their ideas easily and use a sophisticated and idiosyncratic vocabulary. In addition, and regarding cognitive skills and adaptive behaviour, HFA individuals show an advanced behaviour in the reasoning of non-verbal areas as well as spacial skills, construction of non-verbal concepts and visual memory. On the other hand, in AS an advanced behaviour is observed with regard to the verbal reasoning and understanding, vocabulary and auditory memory.

For the purpose of fully understanding the influence of the linguistic variability over the differences and similarities of AS and HFA, we present the classification of the main subgroups forming the Autism Spectrum Disorder (ASD) diagnosis. It is equally important to mention that a language delay is diagnosed when the child has not pronounced isolated words before two years old or complete sentences before three.

Table 6. Main Subgroups within the Autism Spectrum Disorders. *Autism and Asperger Syndrome*. Baron-Cohen (2010)

- Asperger syndrome (AS)

IQ above 85, with no delay in the acquisition of language.

- High-Functioning autism (HFA)

IQ above 85 with delay in the acquisition of language.

- Medium-Functioning autism (MFA)

IQ between 71-84, with or without delay in the acquisition of language.

- Low-Functioning autism (LFA)

IQ below 70 with or without delay in the acquisition of language.

- Autism (A)

Either due to its late manifestation or only one of the typical features is shown.

- Pervasive Development Disorder Not Otherwise Specified (PDD-NOS)

Symptoms are too mild to clearly diagnose autism or Asperger Syndrome, despite the individual shows more autistic traits than normal.

As noted, we observe a meaningful difference between AS and HFA essential, thus, to diagnose. That is to say that the AS individual has necessarily to reach an IQ within or above the average as well as showing no delay in the acquisition of the linguistic skills while HFA individuals have to show an IQ within or above the average but experimenting a delay in the acquisition of linguistic skills.

It is important to state that, nevertheless, some children with AS may develop their linguistic skills later than expected, leading to a mistaken diagnosis of High-Functioning autism. This last consideration is, unfortunately, what may be happening in several diagnosis environments. Moreover, the situation depicted could be worsened

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with the recent change in the official diagnosis, as AS is currently included and considered a HFA (Baron-Cohen, 2010).

3. THEORETICAL FRAMEWORK ON ASPERGER SYNDROME LANGUAGE ACQUISITION

3.1. Neurolinguistic framework

3.1.1. The brain: language areas

As a matter of introduction to language areas in the brain, Bogdashina (2005) states that in approximately 95% of people, the language areas are situated in the brain's left hemisphere, in the temporal and frontal lobes. The two main areas associated with language have been known as Wernicke's and Broca's. Wernicke's area is believed to be responsible for speech comprehension, and Broca's area for speech production. The same brain activity was shown in deaf individuals 'speaking' sign language. This supports the idea of specific areas of the brain devoted to language.

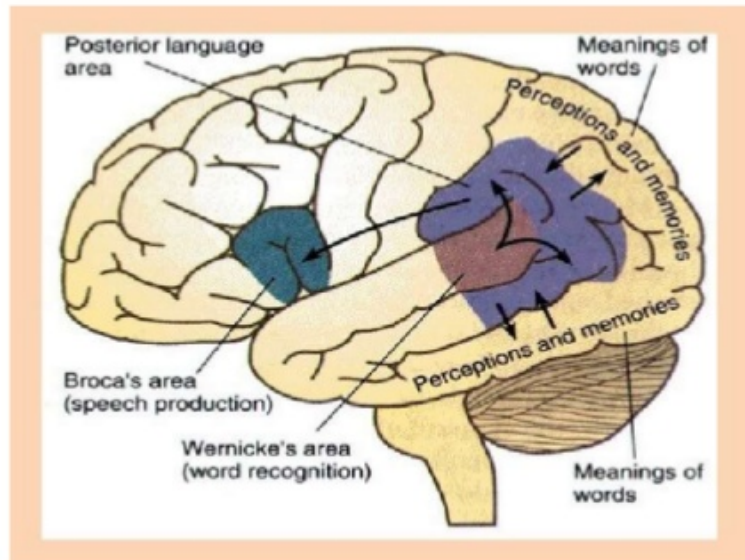
Brain-imaging studies, however, have revealed that other areas are also involved, and each main language area is probably split into many different sub-areas each of which is responsible for its own type of processing and production of speech. The specific functions of these sub-areas are identified by studying people with different language disorders caused by brain injuries (Bogdashina, 2005)

In addition to Broca's and Wernicke's areas, other regions of the brain are in language function; for instance, motor control areas. Language understanding would result from the integration of sounds, feelings and memories –located in other areas in the brain.

Even so, the language areas of the brain differ slightly from one person to the next, and even from one language to another in people who are multilingual (Ojemann, 1991).

Figure 1 Language areas in Brain⁸

Language areas in Brain



3.1.2. Theory of Mind

The Theory of Mind (ToM), created in 1978 by Premack & Woodruff, is one of the recent theories assuming ASD individuals have a failure when imputing mental states to the others as well as to themselves. Henceforth, it is claimed that the subsequent deficit is manifested as a failure to take the mental states of the others into account and, in this way, getting to understand them as well as showing empathy (Premack & Woodruff 1978). In this sense, it is by means of the Theory of Mind that individuals are able to foresee the behaviour of others, and to understand them.

Having considered that, and as we have exposed, since one of the main features of AS is the impaired ability to recognize and attribute mental states along with the inability to make sense of others behaviours, the Theory of Mind could help to explain why AS individuals have a difficult time with social interactions. In effect, AS individuals cannot understand the non-verbal messages from the person they are

⁸ Source: University of Hawaii.

interacting with. Differently, normal developing individuals unconsciously analyze others behaviours and try to read one's mind when interacting (Fair, 2010). In that case, this theory might be a plausible explanation for the pragmatic impairment –taking this into account as one of the language domains- observed in AS individuals.

As shown above, people diagnosed with Autistic Spectrum Disorders (ASD) often lack the communicative skills acquired by their typical development (TD) peers. The reason for this deficiency is discussed in a landmark article: *Does the autistic child have a 'theory of mind'?* (Baron-Cohen, Leslie, & Frith, 1985).

Coming after his pioneer research on Autism and Theory of Mind, Baron-Cohen (2001) found afterwards, in his study *Theory of mind in normal development and autism*, after running *false believe tests*⁹, that most of ASD individuals assessed in the study failed the tasks included in different *false believe tests*. From this data, it could be inferred that the ASD individuals experiment a deficit in the Theory of Mind. However, it is important to stress the possibility that some individuals with High-Functioning autism or Asperger Syndrome may pass even second-order false belief tests, later on, by their teens (Bowler, 1992; Happe, 1993; Ozonoff, Pennington & Rogers, 1991).

In contrast, we have to mention that *false believe tests/tasks* have been called into question and proposed to abandon. This claim formulates, firstly, that passing the false belief task requires abilities other than Theory of Mind. And that, second, Theory of Mind needs not to entail the ability to reason about false beliefs (Bloom & German, 2000).

In terms of language development, the Theory of Mind may be able to explain how neurologically diminished social capacity inhibits language development of the autistic individuals by depriving them of proper social interaction and, to this extent, of social interpretation. This assumption has, to a varying degree, a significant effect on the key language domains of discourse: pragmatic functions and syntax. Autistic individuals often have limited vocabulary and syntax; their speech may have strange

⁹ These tests depart from the understanding that different people can have different thoughts about the same situation. They are called first-order tests because they only involve inferring one person's mental state (Baron-Cohen, 1985).

intonation or pitch; and they may have limited or no notion of how to conduct a conversation (Thrainsson, 2012). Both the American Psychiatric Association and the World Health Organization have recognised this common language deficiency in their diagnostic manuals (American Psychiatric Association, 1994; Eigsti, de Marchena, Schuh, & Kelley, 2011; Frith & Happé, 1994; World Health Organization, 1992).

Along the same lines, according to Foudon et al. (2007), the Theory of Mind (ToM) could offer an explanation to shed light over the identical delay between first words and first combinations in autistic (14 months) and specific language impairment (SLI) children; and that it is higher than in normal (6 months) and even in Asperger children (11 months). Assuming this supposition, there are three main (mutually compatible) hypotheses:

(a) Dissociation between comprehension and linguistic production in autistic children. In other words, they're linguistically competent and their linguistic deficit lies in their performance.

(b) Deficit in ToM (Theory of Mind) in autistic population, in addition to an specific language impairment (SLI) in verbal autistic children explaining the delay. Given that the autistic syndrome population suffers from a deficit in ToM (Theory of Mind), in verbal autistic children, specific language impairment (SLI) is compounded with the deficit in ToM, which explains the delay and the difference with the Asperger population.

(c) Deficit in ToM in all autistic population but with different degrees of impairment. Finally, autistic children might have a problem limited to ToM, as do Aspergers. However, the difference in language acquisition between Asperger, verbal and non-verbal autistics could be due to different degrees of impairment in ToM in the different groups –Asperger, verbal and non-verbal autistic patients (Foudon et al., 2007).

In their empirical study *Language Acquisition in Autistic Children: A Longitudinal Study*, Foudon et al. (2007) propose a tentative explanation, based on the comparison of normal and autistic children on lexical results. In this way, during the two first stages of language acquisition, the lexical results of normal and autistic children are somewhat equivalent, in terms of the proportion of each lexical group. The true difference concerns the size of vocabulary, which is bigger in normal children. At the last stage of language acquisition, the proportion of grammatical words of normal children increases and that of autistic children does not. One possibility into

consideration is that autistic children do not have enough referential vocabulary to trigger syntax and the grammatical lexicon increases with the progression of syntax.

On the whole, Baron-Cohen (2001) concludes that the brain basis of the Theory of Mind deficit in autism is being researched using both functional neuroimaging and studies of acquired brain damage. These suggest that key neural regions for normal mindreading are those of the amygdala, orbito-frontal cortex, and medial frontal cortex. Finally, and given these points, much of the basic research in this field may have clinical applications in the areas of either AS intervention or early diagnosis.

3.1.2.1. Mirror neurons

Since autism was identified and diagnosed, researchers have struggled to determine its causes. To some extent, researchers know that susceptibility to ASD is inherited, although environmental risk factors also seem to play a role (Baron-Cohen, 2010).

With regard to language development in childhood, it requires a remapping of sorts between brain areas. To imitate the mother's or father's words, for instance, the child's brain must transform auditory signals in the hearing centres of the brain's temporal lobes into verbal output from the motor cortex. Whether mirror neurons are directly involved in this skill is not known, but clearly some analogous process have been associated to it. Besides, mirror neurons may enable humans to see themselves as others see them, which may be an essential ability for self-awareness and introspection (Ramachandran & Oberman, 2006).

In the late 1990s the research group of Ramachandran & Oberman at U.C.S.D. noted that mirror neurons appear to be performing precisely the same functions that seem to be disrupted in autism. If the mirror neuron system is indeed involved in the interpretation of complex intentions, then a breakdown of this neural circuitry could explain the most striking deficit in individuals with autism, or their lack of social skills, for instance. The other cardinal signs of the disorder –absence of empathy, language deficits, poor imitation, and so on- are also the kinds of things that are expected to see if mirror neurons were dysfunctional (Ramachandran & Oberman, 2006).

Owing to the fact that mirror neurons appear to be involved in social interaction, dysfunctions of this neural system could explain some of the primary symptoms of autism, including isolation and absence of empathy.

In this way, studies of individuals with autism show a lack of mirror neuron activity in several regions of the brain. Researchers speculate that treatments designed to restore this activity could alleviate some of autism's symptoms. A complementary hypothesis, the salience landscape theory¹⁰, could account for secondary symptoms of autism such as hypersensitivity (Ramachandran & Oberman, 2006).

Nevertheless, and according to Baron-Cohen (1995), some of the regions in the brain where the empathy circuit is thought to be located do contain mirror neurons. Then, mirror neurons may well be important as part of understanding empathy. It is not certain, though, that they are all they are supposed to be, mirror neurons are proposed to explain things like imitation. It has been observed, for instance, that some people with autism despite the difficulties in social understanding can have excellent imitation. That is true even in classic autism where the person may develop echolalia; they can repeat what they have heard from someone else's speech, so their imitation is very exact. If they had difficulties with their mirror neuron system you might expect that they would not be able to imitate other people (Baron-Cohen, 1995).

3.1.3. Interconnectivity Theory

As Marsh et al. (2008) exemplify in their study, attention to what another person is paying attention to is a cornerstone for social learning and underlying neurobiological differences evidenced by children with ASD result in joint attention being a common area of difficulty. Joint Attention involves interconnectivity within various brain areas which function in synchrony in typical development (Mundy, 2006).

¹⁰ To account for some of the secondary symptoms of autism –hypersensitivity, avoidance of eye contact, aversion to certain sounds, and so on- researchers have developed the salience landscape theory. In a typical child, sensory information is relayed to the amygdala, the gateway to the emotion-regulating limbic system. Using input from stored knowledge, the amygdala determines how the child should respond emotionally to each stimulus, creating a salience landscape of the child's environment (Ramachandran & Oberman, 2006).

Interconnectivity Theory is a model in autism in which either too many or too few neuronal connections are made in the brain of children with ASD so that there is an emphasis upon local processing and a lack of integration and cohesive inter-working of specialised local neural networks, leading to fragmented processing which leads to many challenges including social motivation challenges seen in children with autism (Marsh et al. 2008).

From a neurolinguistic point of view, although it is not possible to discuss about the brain in global terms, the global or central Interconnectivity Theory among the areas in the execution system, Wernicke and Broca, is being empowered, since it would explain the high development of the former in the AS individuals –mechanical and formal comprehension of meaningless words or the grammatical structure, for instance- and the discoordination with the neuronal areas in the latter.

This hypothesis could clarify some aspects within the so-called semantic-pragmatic disorder, being generalized to all the AS individuals (Rodríguez, 2009). In the same case, there have also been observed certain dysfunctions depicted in the non-verbal learning or right hemisphere disorder (Klin et al. 1995) that will be examined later on.

3.2. Language acquisition on Asperger syndrome

Up to this point, we consider essential for this study to depart from the statement which emphasizes that language development and, more concretely, bilingual development suggests that good proficiency in the first language (L1) is a prerequisite for acquiring a second language (L2) (Thrainsson, 2012).

Foudon et al. (2007) synthesize that the acquisition process of ASD children differs from that of normal children –acquisition by immersion- in their need of speech therapy support. What is more, it is remarked that only half of autistic patients speak as adults and their linguistic level remains lower than that of normal individuals (Howlin, 2003).

As we have previously examined, Asperger Syndrome individuals show no delay in the acquisition of language when compared to those individuals affected by other ASD. More accurately, and as the same Asperger (1944) claimed once, language of AS individuals feels unnatural.

According The American Psychiatric Association (2002) diagnostic criteria for Asperger disorder in DSM-IV and the World Health Organization, criteria in ICD-10 briefly refer to language abilities stating, though, that there is no clinically significant general delay in language.

Table 7. The diagnostic criteria for language in ASD listed in APA (2000)

-
- late or lack of development of language without attempt to compensate with gestures
 - impairment in the ability to initiate or sustain a conversation
 - stereotyped, repetitive and idiosyncratic language.
-

In the concrete case of AS, it is noticed that the lexical competency of AS individuals is considerably higher than that of a medium speaker and the grammatical mastery results into mechanical or automatic, to some extent, the combination of these two particularities confer the speaker some sense of pomposity or linguistic pedantry, owing to the lack of adequacy of the speaker and the context where this interaction is developed (Rodríguez, 2009).

In the words of Atwood (2007), unfortunately, this may be interpreted as an absence of any unusual qualities in language skills. By the age of five years, the child with Asperger Syndrome does not have a general delay in language, but research studies, clinical experience and the descriptions of parents indicate that the child or adult is unusual with regard to specific and more subtle aspects of language. The accompanying text to the diagnostic criteria in the DSM-IV refers to the way in which the language may be abnormal in terms of the individual's preoccupation with certain topics, verbosity and failure to appreciate and utilize conventional rules of conversation, and the fact that the child may have a vocabulary that would be typical of an adult.

Besides, some young children who subsequently have a diagnosis of Asperger's syndrome can be delayed in the development of speech but the first spoken words can be an utterance comprising several words or sentences. These characteristics are not included in the DSM diagnostic criteria and, considering unusual language abilities are an essential characteristic of Asperger's syndrome, should be included in future revisions of the DSM criteria.

All things considered, we could state that there are three important diagnosis criteria directly related to language acquisition which mark the differences between the classifications provided, first, by DSM-IV and, second, by Gillberg et al. Following this line, the American Psychiatric Association understands that there is no general delay of the clinically meaningful language while Gillberg stands out problems with speaking and language in general terms. Additionally, according the APA there is no clinically meaningful delay in the cognitive development and, on the other hand, Gillberg et al. do not mention any diagnosis criterion regarding the IQ.

From a genetic perspective on the conditionings taking part into the process of language acquisition, after the region containing ROBO1 (Chromosome 3p12.3) has been implicated as a susceptibility gene for reading disorder and language deficit by translocation and linkage data, Bates et al. (2010) support within their study on the genetic variance in a component of the language acquisition that the results provided give strong support for ROBO1 as a gene involved in a core trait underpinning language acquisition, with a specific function in supporting a short-term buffer for arbitrary phonological strings.

These effects of ROBO1, initially, appear to be unrelated to brain mechanisms underpinning reading ability, at least by adolescence. Bates et al. (2010) claim that, while replication will be critical, the results into question strongly support ROBO1 as the first gene discovered to be associated with language deficits affecting normal variation in language ability. Its functional role in neuronal migration underlying bilateral symmetry and lateralization of neuronal function further suggests a role in the evolution of human language ability.

3.2.1. Language domains

In order to consider the AS linguistic characteristics and conditionings, it will be necessary to contextualize and analyze those within the five basic language domains.

Figure 2. The five basic language domains (*American Speech-Language-Hearing Association*¹¹).

	Spoken Language		Written Language	
5 Language Domains	Listening	Speaking	Reading	Writing
Phonology	ability to identify and distinguish phonemes while listening (i.e., phonological awareness)	appropriate use of phonological patterns while speaking	understanding of letter-sound associations while reading (i.e., phonics)	accurate spelling of words while writing
Morphology	understanding morphemes when listening	using morphemes correctly when speaking	understanding grammar while reading	appropriate use of grammar when writing
Syntax	understanding sentence structure elements when listening	using correct sentence structure elements when speaking	understanding sentence structure while reading	using correct sentence structure when writing
Semantics	listening vocabulary	speaking vocabulary	reading vocabulary	writing vocabulary
Pragmatics	understanding of the social aspects of spoken language	social use of spoken language	understanding point-of-view, needs of the audience, etc.	conveying point-of-view, needs of the audience, etc.

3.2.2. Language impairment

Having to do with the linguistic conditionings that AS individuals experience and, thus, with their language acquisition process, AS language phenomena are listed below not only to portray the most common and prototypical disorders concerning linguistic skills, but to make use of them as an unifying thread which connects them to what has been widely reported by researchers as an outstanding linguistic abilities.

3.2.2.1. Echolalia

¹¹ American Speech-Language-Hearing Association. <<http://www.asha.org/Practice-Portal/Clinical-Topics/Spoken-Language-Disorders/Language-In--Brief/>>

Echolalia consists on a repetition of words and sentences previously spoken by others. Within this linguistic characteristic commonly observed in most of ASD, and depending on the type of repetition, researchers have differentiated two kinds of echolalia.

As introduced by Prizant (1983), echolalic behaviours are probably the most frequently discussed speech and language characteristics, most likely due to their high prevalence among verbal autistic individuals, as well as their ‘ear-catching’ quality. Such verbal repetition is characteristic of at least 75% of verbal autistic people and is comprised of a continuum of patterns of behaviour, which may vary in many aspects (Prizant, 1983; Schuler, 1979). The clearest distinction that has been made differentiates two general categories of echolalic behaviour based on the temporal latency between the original production of an utterance and its subsequent repetition.

In his study of art of language acquisition and communicative behaviour in autism, Prizant (1983) distinguishes immediate echolalia as a first category, which refers to utterances produced either immediately following or a brief time after the production of a model utterance. And, secondly, with delayed echolalia refers to utterances repeated at a significantly later time. The process involved with the production of delayed echolalia involves retrieval of utterances committed to some type of long-term memory, while for immediate echolalia, short-term echoic memory is most often implicated (Fay, 1983).

As Prizant (1983) examines in his study, Fay and Schuler (1980) pointed out, the differences between immediate and delayed echolalia may warrant a reconsideration of their common label. More specifically, immediate echolalia has been defined as the meaningless repetition of a word or word group just spoken by another person (Fay & Schuler, 1980).

Delayed echolalia, moreover, which has been defined as the ‘echoing of a phrase after some delay or lapse of time’ (Simon, 1975) has also received very little attention in reference to its value and possible function in the communicative process. This is supported by the fact that research has considered most forms of delayed echolalia to be meaningless, produced without intent, and simply “triggered” by stimuli which were

either present or associated with stimuli which were present when an utterance was first heard.

Besides, we have to add that there may be a third possibility if the echolalia has some sort of modification in relation to the original stimulus.

Table 8. *Functional categories of immediate echolalia* (Prizant & Duchan, 1981).

<i>Category</i>	<i>Description</i>
Interactive	
1. Turn taking	1. Utterances used as turn fillers in an alternating verbal exchange.
2. Declarative	2. Utterances labeling objects, actions, or location (accompanied by demonstrative gestures).
3. Yes answer	3. Utterances used to indicate affirmation of prior utterance.
4. Request	4. Utterances used to request objects or others' actions. Usually involves mitigated echolalia.
Non-interactive	
5. Nonfocused	5. Utterances produced with no apparent intent and often in states of high arousal (e.g., fear, pain).
6. Rehearsal	6. Utterances used as a processing aid followed by utterance or action indicating comprehension of echoed utterance.
7. Self-regulatory	7. Utterances which serve to regulate one's own actions. Produced in synchrony with motor activity.

Table 9. *Functional categories of delayed echolalia* (Prizant & Rydell, 1981).

<i>Category</i>	<i>Description</i>
Interactive	
1. Turn taking	1. Utterances used as turn fillers in alternating verbal exchange.
2. Verbal completion	2. Utterances which complete familiar verbal routines initiated by others.
3. Providing information	3. Utterances offering new information not apparent from situational context (maybe initiated or respondent).
4. Labelling (interactive)	4. Utterances labelling objects or actions in environment.
5. Protest	5. Utterances protesting actions of others. May be used to; prohibit others' actions.
6. Request	6. Utterances used to request objects.
7. Calling	7. Utterances used to call attention to oneself or to establish/maintain interaction.
8. Affirmation	8. Utterances used to indicate affirmation of previous utterance.
9. Directive	9. Utterances (often imperatives) used to direct others' actions.
Noninteractive	
10. Nonfocused	10. Utterances with no apparent communicative intent or relevance to the situational context. May be self-stimulatory.
11. Situation association	11. Utterances with no apparent communicative intent which appear to be triggered by an object, person, situation, or activity.

- | | |
|----------------------------|---|
| 12. Self-directive | 12. Utterances which serve to regulate one's own actions. Produced in synchrony with motor activity. |
| 13. Rehearsal | 13. Utterances produced with low volume followed by louder interactive production. Appears to be practice for subsequent production. |
| 14. Label (noninteractive) | 14. Utterances labelling objects or actions in environment with no apparent communicative intent. Maybe a form of practice for learning language. |
-

3.2.2.2. Semantic-Pragmatic Language disorder

In the case of individuals with Semantic-Pragmatic Language disorder (SPLD), they have relatively good language skills in the areas of syntax, vocabulary and phonology but poor use of language in a social context. Semantic abilities are affected such that the individual tends to make a literal interpretation of what someone says. The diagnosis of SPLD explains the individual's language skills but a comprehensive assessment of abilities and behaviour indicates that the broader clinical picture is explained by a diagnosis of Asperger Syndrome (Atwood, 2007). Despite the highly sophisticated language in certain domains as vocabulary or syntax, the skills which could allow them an appropriate use of language with a communicative and social purpose are noticeably altered. The subjects with SPLD do not respond to the social clues that rule the spoken language, thus the language of the subjects affected sounds irrelevant, monotonous and inadequate.

The development of language in these cases is usually an early disorder, even before than TD language acquisition. Most of occasions, the excessive and detailed output, along with their verbal memory, provoke a mechanical and pedantic language. Probably, in numerous cases the delayed echolalia has a key importance in this aspect.

Within this disorder, neurolinguistic conditionings previously reviewed such as the Theory of Mind, mirror neurons or Interconnectivity Theory have necessarily to be taken into account.

3.2.2.3. Prosody

As Atwood (2007) states, the prosody and especially the vocal tone of speech can be unusual, with some children and adults with Asperger Syndrome having a ‘flat’ vocal tone that is perceived as monotonous. The speech characteristics can include problems with volume, being too loud or too quiet for the context. Speech that is too loud can be extremely irritating for family members and especially difficult for teachers who are trying to encourage less noise in the classroom. The individual’s speech may also be unusually high-pitched or have a ‘nasal’ quality that is quite distinct and distracting for the listener. The fluency or delivery of speech can sometimes be too rapid, particularly when the person is excited or talking about a special interest. In contrast, speech may be unusually ponderous when the person has to think what to say, especially if the reply requires understanding what someone is thinking or feeling during a social conversation.

In addition, it has also been noticed that some of the subjects presenting this disorder make an effort in order to give a proper intonation to sentences, but most of times the intonation turns into an interrogative statement in declarative constructions. On the other hand, in other occasions the intonation presents an incoherence regarding the context and information used.

3.2.2.4. Non-verbal learning or right hemisphere disorder

This disorder alludes to the impairment that AS individuals experience when dealing with figurative language –irony, sarcasm, jokes, etc.

According to Gold & Faust (2010), previous researches indicate severe disabilities in processing figurative language in people diagnosed with Autism Spectrum Disorders (ASD) (Dennis et al. 2001; MacKay and Shaw 2004). A few studies addressed the issue of irony comprehension (Martin and McDonald 2004) and

context-appropriate interpretations (Jolliffe & BaronCohen 1999) in AS. These studies viewed the difficulty in nonliteral language comprehension as part of the pragmatic impairment and as an index of the Theory of Mind deficit in AS (Jolliffe and Baron-Cohen 1999, 2000; Losh & Capps 2003).

Gold & Faust (2010) examined the relative contribution of the right (RH) and left (LH) cerebral hemispheres in AS to metaphor comprehension, regardless of social, linguistic or any other context. Both cerebral hemispheres have access to word meanings. As might be expected, research on RH-damaged patients shows that these individuals have difficulties in the comprehension of metaphorical language that echo the findings on the role of the intact RH in metaphor processing (Bottini et al. 1994; Giora et al. 2000).

The studies referred showed that AS participants perform poorly on metaphor comprehension tests, similarly to people with disabilities associated with the RH (Gunter et al. 2002). Their findings suggest that the individuals with AS were not impaired in processing either literal language or written and pictorial well-known metaphors. However, this group was severely impaired on the unusual metaphors comprehension task. The specific difficulties in understanding unusual metaphoric expressions experienced by individuals with AS is consistent with recent findings that suggest enhanced RH involvement in novel metaphor comprehension and thus may reflect RH dysfunction in individuals with AS (Gold & Faust, 2010).

3.3. Second language acquisition in Asperger Syndrome

All things considered, most of the representative researchers on AS and ASD recognise the immature stage in which the study of AS language acquisition is. This circumstance is particularly outstanding if we consider that this topic is, as we have reviewed, one of the key points when dealing with differences within diagnosis –ASD and AS-. All in all, it is certain that this topic has not been properly developed in order to cope with the needs that the rise of AS prevalence reflects.

If the situation of the ASD and AS language acquisition is considered to be poorly studied, the case of the second language learning in ASD and AS is dramatically limited and lacking from research.

Even though the author does not openly differentiate between the several ASD categories, Wire (2005) has been one of the few researchers to shed light on this matter. Then, the author introduced “the triad of impairments” in ASD. According to him, second language learning can help ASD individuals.

Table 10. *The triad of impairments.* Wire (2005)

1- There is always impairment in social interaction in ASD. Learning a foreign language can make a useful contribution to raising an autistic pupil’s awareness of social skills, right from early attempts at social ‘meetings and greetings’. Modeling and prompting by the teacher and selected pupils may also be helpful.

2- Unusual social communication has been seen in individuals with ASD. This means these pupils’ voices may be too soft or loud, they may have speech that is garbled and long-winded, or too brief, and there may be elective muteness, or echoing of words and phrases. Some individuals with ASD find direct eye contact with others difficult, even painful, and may focus on the mouth or a point beyond the face. In a subject such as foreign languages where oral communication is so important, patience and prompting are required, but this subject has the potential to help the pupil with ASD communicate more appropriately, as all pupils have to demonstrate their ability to understand others and equally be understood by them.

3- Lack of flexibility can be seen in varying ways in individuals with ASD but just the most frequent one is explained here. An important issue for the classroom teacher is the real difficulty most pupils with ASD have in coping with change. It may well take them time to get used to a new school, new teachers and possibly a new subject. These pupils may not like it if a supply teacher takes over and varies the routine, so prior warning to the pupil can help. In these examples, the pupil with autism may arrive at the languages class highly

distracted. Individuals with ASD may start and do the class tasks slower than others and they may need prompting and motivating to continue. However, the lack of flexibility associated with pupils with ASD is complemented by a liking for routine, rote learning and lots of repetition. They may apply themselves well to learning vocabulary, numbers, set phrases and grammar, taught in a straightforward way, and thus acquire a good basic grounding that helps them through the more challenging social interaction side of learning a language.

After having worked with ASD students during his career as a teacher, Wire (2005) points out some strengths in ASD students that, according to him, should be taken advantage of, as AS students' blind attachment to routine. Besides, Wire (2005) highlights in his references to ASD that, more concretely, those students diagnosed as having Asperger Syndrome, are reported to have good general language skills from an early age. Regarding this last point, the author remarks their well-developed reading skills –and the consequent higher range of unusual words these individuals possess-. Furthermore, these students frequently succeed to copy and adopt foreign accents, as according to Wire (2005) experience as a teacher, it has been observed that AS students have normally the best accents in the class. Likewise, AS students have also proved good memories and high interest in using a L2 new code in order to refer to familiar objects –previously approached in their L1-. Another interesting characteristic that could be used as a positive conditioning in a second language classroom is, as Wire (2005) states, that the majority of those students with ASD have at least one subject of special interest, or that have even evolved to obsession, and one or more pockets of real ability. In this sense, it is explicitly stressed that helping them to use the mentioned skills in a class could take the form of a well-researched topic on which AS students have a store of facts and figures.

Having already presented AS phonological conditionings, it is important to notice that AS individuals' articulation can be appropriated to their age but, besides, it may be unusual in being nearly over-precise. Thus, the word might be pronounced as it is written rather than spoken. In the especial case of the AS child, he/she could have learned language more by reading than from listening during his/her both L1 and L2 language acquisition.

Following this pattern, and aiming attention at pragmatic disorder, there may be stress on specific syllables that changes the expected pronunciation. It has been reported during tests and interviews that young children with Asperger Syndrome often pronounce the word with the accent of the person whom they heard first say the word. According to Atwood (2007), these episodes might explain the tendency for some young children with Asperger Syndrome in the United Kingdom and Australia to speak with an American accent. The explanation for this phenomenon is due to the fact that their vocabulary and pronunciation of words was developed by watching television rather than talking to people –owing AS limited social skills- and especially by watching cartoons and films that use American actors and voices. On top of all this, this feature can be quite conspicuous when other family members have the local accent but, in contrast, the child with Asperger Syndrome talks as though he or she is a foreigner.

As Wire (2005) summarizes, it is important to find a way to motivate ASD students to learn a second language, and the best way to motivate them is to involve them actively in the learning process. It is particularly important to give these pupils reasons and motivation for what they are being asked to do. As Gardener & Lambert (1972), cited in Ellis (1985), it has been noted that, in acquiring a second language, motivation plays as important a part as aptitude.

3.3.1. Influential factors on Asperger Syndrome students

After having presented some of the most remarkable characteristics when approaching the second language acquisition of ASD students (Wire, 2005) in order to examine and consider the level of difficulty or facility in AS students to acquire a second language and, consequently, to take advantage of their natural characteristics during second language lessons, it is also necessary to aim at some of the factors that may influence the SLA of AS students.

Personality factors are, according to Saville-Troike (2006), together with cognitive style, what characterise learning styles. On the one hand, in reference to those that could affect favourably to AS students, we point out those exposed by Wire (2005), which could undoubtedly help and elicit the SLA in AS students. Additionally, it is appropriate to consider the intrinsic motivation that AS students show when canalising

it throughout the deep and intense interests and curiosity they possess. Moreover, their higher lexical competency, together with an outstanding visual and auditory memory, as well as salient abilities of concentration and persistence towards the subjects they have a predilection for are characteristics which could turn out to be an evident advantage in the acquisition of ESL process. The facility AS students have proved in L2 pronunciation is also a highlighting trait, as we have examined through this study. Regarding this, it is worth remembering some characteristic AS language disorders as echolalia or 'foreign accent' disorder. Likewise, as another remark to add, we also point out that these AS features are normally elicited by an IQ above the average, a trait that allows these students a faster and more detailed processing of information and mental stimulus in general terms.

It is also important to stress that, in order to take advantage of these characteristics, it is essential to count on the help of a teacher who necessarily acts as a facilitator who prompts his/her students in a constant dynamic of observation and attention to the diversity which make up the classroom. In the same way, it is equally important the active involvement of educational authorities capable of canalising both peculiar features of AS students and teaching training, skills and strategies diversity-oriented.

On the other hand, we cannot overlook the possible unfavourably factors susceptible to affect AS students in a negative way. With regard to this, we may remark some personality factors such as self-esteem, introversion or anxiety. These three conditionings have been analyzed throughout many studies owing the fact that those are some of the most prevailing features in AS individuals. Under those circumstances, it is important to notice that these three AS students' prototypical and significant factors could lead to the dropping out of the matter and the resulting academic failure.

In the case of AS students' self-esteem, it has been reported a –usually negative-distorted perception of themselves and their possibilities. Then, this main determinant could provoke a negative and passive behaviour in an acquisition of ESL environment, preventing AS students from participating actively due to their likely fear of making mistakes and failing. With this in mind, it is convenient to add that most of AS students'

hypersensitivity and low tolerance to criticism might make even more difficult the approach towards the correction of error during lessons.

Furthermore, when dealing with introversion, this personality feature is an obvious obstacle when AS students have to interact and communicate with the teacher and their own classmates. As a result, this limiting conditioning enables a low number of occasions to practise L2 output and/or notice and correct errors.

Finally, and with regard to anxiety, a high number of AS individuals experiment anxiety episodes or ‘meltdowns’ due to their perfectionism obsession, inflexibility and low tolerance to frustration. Having this in mind, in this case we are dealing with a trait anxiety –thus an idiosyncratic part of many of AS students-, we should note that within these circumstances, in contrast to facilitating anxiety, AS students normally experiment a debilitating anxiety, understanding this type by a negative feeling which presents itself in many guises: worry, putting oneself down, frustration, helplessness, insecurity, fear, and physical symptoms (Alpert & Habert, 1960; Scovel 1978).

All things considered, we could infer from the characteristics exposed that AS students experience a number of factors which allow them to have a wider and richer theoretical knowledge of L2 –in line with the outstanding acquisition process and facility experimented with L1- in either case, empowered and limited by their poor social skills, as do not normally interact and practise with the others the output of L2. Bearing this in mind, however, the opportunities to put this theoretical knowledge and language facilities into practise are scarce, as some factors as self-esteem, introversion or anxiety restrict their active interaction and participation in the L2 dynamics. Accordingly, their output of L2 may be mostly limited to listening. Moreover, other questions should be taken into account, as a likely shift or mental block in their L2 output when practising in –what AS students could consider- a socially-pressured environment.

As examined along this study of state of art, controversy about the causes, prevalence and diagnostic criteria for what are now most often referred to as ‘Autistic Spectrum Disorders’ (ASD) continues. It is perhaps worth commenting that a diagnosis of autism is more likely than formerly. A greater awareness among a range of

professionals whose work brings them into contact with children and young people will be playing some part in the rise of those diagnosed (Wire, 2005).

However, recent figures suggest that the current prevalence rate for all those with ASD, for instance, among the UK population, oscillates around 700,000 people, or more than 1 in 100 in the population (The National Autistic Society). Taking this into account, it is more than probable that ASD continues its growth as diagnostic institutions do not consider and target every Autism Spectrum disorder independently, framing these disorders within a necessary and detailed analysis.

In reference to reports noticing that AS/HFA is increasing in prevalence, Baron-Cohen (2000) states that it is unclear if this simply reflects better detection or if there is a genuine increase. However, if there is a genuine increase, this presents something of a paradox for the disability view: disabilities with a genetic basis which affect social skill and thus potentially reduce mating opportunities should be subject to negative selective pressures. Such disabilities should therefore be expected to reduce in prevalence with time. In order to be on the increase, such genes would have to be being positively selected. Increased prevalence presents no difficulties for the difference view however, since a cognitive style can at different times or under different conditions confer advantages to the individual (Baron-Cohen, 2000).

All in all, up to this point it may be mandatory to raise awareness of this problematic as well as note the potential determinants which could enable both teachers and AS students to take advantage of the natural AS characteristics that would be considered as favourable in an acquisition ESL class, apart from taking control of those unfavourable AS factors aiming at canalising and foreseeing possible inconveniences or problems and their subsequent options or proposals to solve them.

3.3.2. Gifted students, Asperger students and Gifted Asperger Syndrome students

Given the fact that one of the main differential features in diagnosis of AS is IQ, we consider highly convenient to note that there may be an important variable within

the AS. This is the case of a possible misleading diagnosis that some gifted students could suffer, in case those also present AS.

According to Gallagher & Gallagher (2002), a relatively new category in the continuum of behaviour disorders, Asperger Syndrome (AS) is both compelling and alarming to educators in gifted education. What does it mean to be gifted with Asperger? It is a question that gifted educators must learn to answer, to ensure proper programming for children who are gifted, children who are Asperger's, and children who are both.

Approaching this variable, we find an important diagnosis problem occurring lately. Frequently, these gifted students cases end up in a misdiagnosis. In this sense, it is essential to assume that, although most gifted individuals do not have Asperger Syndrome, some do.

During the study carried out by Gallagher & Gallagher (2002), for the most part, parents reported that giftedness was the first exceptionality identified, often in the form of advanced verbal skill, a trait shared by both gifted and AS children, but more likely to be classified as gifted. Some parents indicated that identification of AS was delayed because attention was centred on giftedness. Failing to recognize the presence of AS, parents and teachers may focus only on the student giftedness, thinking the child is simply "geeky". At other times, social interaction problems of gifted/AS students may be attributed incorrectly to a diagnosis of a learning disability. Although the AS literature suggests that some girls are identified as AS, this group was typical because the children discussed were all boys. A couple of respondents made reference to a possible genetic link, even saying that the child's diagnosis led to a retrospective diagnosis for his father. Most frequent in the list of AS qualities was poor social interaction, or a simple lack of attention to the social world.

As shown below, there are a number of representative characteristics which may be considered and analyzed when having to deal with what, firstly, could be understood as an overlapping of features with a resulting misleading or even mistaken diagnosis.

Table 11. *Distinctions in Behaviours of Highly Gifted and Asperger's Syndrome*

Highly Gifted	Asperger's Syndrome
Socially Isolated	Socially Inept
Independent of Age Mates	Unskilled with Age Mates
Highly Focused Interest	Highly Focused Interest
Advanced, Sophisticated Vocabulary	Hyperlexia
Complex Cognition	Simple Cognition
Advanced Understanding	Advanced Memorization

Table 12. *Giftedness/Asperger's Disorder Checklist (GADC).* Amend et al. (2008).

Gifted	Asperger's Disorder
Speech and Language	
<ul style="list-style-type: none"> - Extensive, advanced vocabulary - Communicates understandings of abstract ideas - Rich and interesting verbal style - Engages others in interests - Asks challenging questions - Expressive language/speech pattern of an older child - Elaborates with or without prompts - Understands and engages in sophisticated and/or socially reciprocal humour, irony, and sarcasm - Understands cause/effect or give and take of conversation 	<ul style="list-style-type: none"> - Advanced use of words with lack of comprehension for all language used - Thinks and communicates in concrete and literal terms with less abstraction - Uninviting verbal style - Style or content lacks reciprocity and engagement of others in their personal interests - Repeats questions and information - Pedantic and seamless speech - Little or no elaboration with run-on speech - Misunderstands jokes involving social reciprocity - Has difficulty understanding give and take of conversation
Able to communicate distress verbally	

- Communicates distress with actions rather than words

Gallagher & Gallagher (2002) state as a conclusion of their study that what is important is that we all acknowledge and bear in taking into account the ambiguity that is ever present in cases like those showing characteristics associated to both gifted and AS. Depending on the observed characteristics, any of the possible diagnoses –AS, G, or AS/G- may be correct.

4. RESEARCH PROPOSAL

The present research proposal aims at offering an empirical study which examines and confirms the hypotheses that we have assumed after having reviewed, through a previous study of state of art, the narrative on the English SLA by AS students. In this sense, besides the presumption that the L1 production could be attained more easily by AS individuals due to their lexical competences and grammatical abilities (Rodríguez, 2009), we assume the hypothesis that individuals affected by AS may have a remarkable facility with L2 acquisition. As Thrainsson (2012) states, it could be called into question that the L1 production facility in the brain might be affected by the disorder and not the area in the brain that is thought to be common to both L1 and L2 which processes language reception.

Having mentioned this, we have to say that the empirical study will be developed with the data provided by a number of diagnosed AS individuals, using both qualitative and quantitative analyses, such as personal interviews and rigorous evaluation of their language –written and spoken- output. The study will be carried out with 25 participants from several Spanish Asperger Federations to guarantee the validity of data, and considering diverse variables which could affect their acquisition of language as personal factors such as affective or personality ones as IQ –due to the noticeable number of gifted AS subjects (Gallagher & Gallagher, 2002)-, as well as some other phenomena as echolalia. It will be considered crucial the background analysis of the individuals from a communicative-linguistic perspective to determine the lacking or altered communicative aspects in AS –as age of L1 acquisition.

We also have to take into account that, in order to compare and determine the academic texts of AS students in contrast to neuro-typical students, we will need an equivalent group of neuro-typical students (25) who provide exactly the same number of samples to be contrasted.

4.1. Methodology

Along this study, it will be necessary to establish the level of both Spanish and English proficiency of the AS students in the group selected. We have to consider that,

in order to validate that the participants in the study have a lexical competence higher than that of the average speaker, we will need to observe, assess and verify their proficiency within their L1 (Spanish) language as well. Moreover, it will be necessary for the participants having had no long-term stays within an English-speaking community or any other kind of bilingual education.

With regard to our participants' English language output, and in case their English fluency can be proved as proficient, a secondary goal will be to examine why these cases exist. Thus, the main questions within this project will be:

- Can Spanish AS students acquire English as a second language more easily than neuro-typical students?

- And, secondly, in case the study obtains a positive result: What are the reasons explaining this result?

As introduced above, the number of students will be selected according very specific criteria. First, the students will be interviewed orally in Spanish and English. Prior to this, a certain number of the academic written texts produced by the students in both languages will have been reviewed (one text in Spanish and one in English). Parallel to the students' interviews, the English and Spanish teachers and the psychologists of the students participating in the study will be interviewed in order to complete and detail both the academic information and psychological background of the students.

In order to collect the data, the study will be performed by means of two main methods, as already mentioned. To start with, every one of the students participating in the study will be interviewed once the samples of their academic written texts –in both Spanish and English- have been reviewed. The aim of these interviews will be that of checking the oral proficiency (Spanish and English) of every student. In doing so, we will confirm or discard the language acquisition background of the students –with possible language delay or any other type of impairment- that we will already have been reported by both their academic profiles and their English teachers.

Those interviews will be transcribed to include them in our corpus as spoken Spanish and English. Besides, we will observe and level the degree of awareness that every student has regarding his/her own language acquisition in both languages. The latter will be helpful in order to take into account other possible factors which influence their language acquisition –self-esteem, for instance-. In addition, the samples – academic texts- will help to determine the degree of their language proficiency in written language. The texts will be provided by their Spanish and English teachers.

The second part of the data's collection will be an interview with their teachers about the students' linguistic background. Moreover, we will access either social and psychological profiles or any other kind of information useful for our study provided by the Asperger Federations' psychologists –those Federations collaborating with the study- where the students belong in order to build a more detailed profile of the students' progress with a special focus on second language acquisition.

4.2. Corpora

Having introduced and contextualized the project, we will centre now in the concrete part within this study where the corpus linguistic analysis will be a key point. As mentioned before, the collected student's information will be categorised (students, teachers and psychologists' personal interviews, students' academic written texts in Spanish and English, and students' psychological profiles).

Specifically, in reference to Spanish and English second language proficiency, the data collected by means of the written academic texts and transcribed oral interviews in both languages will be crossed and analysed by means of the method of carrying out linguistic analyses Corpus Linguistics¹² (Nesselhauf, 2011) in order to have both Spanish and English –oral and written- proficiency categories which provide

¹² As it can be used for the investigation of many kinds of linguistic questions and as it has been shown to have the potential to yield highly interesting, fundamental, and often surprising new insights about language, it has become one of the most wide-spread methods of linguistic investigation in recent years. Corpus linguistics thus is the analysis of naturally occurring language on the basis of computerized corpora. Usually, the analysis is performed with the help of the computer, i.e. with specialised software, and takes into account the frequency of the phenomena investigated.

<http://www.as.uni-heidelberg.de/personen/Nesselhauf/files/Corpus%20Linguistics%20Practical%20Introduction.pdf>

an assessment of the real competence that participants have in each of the languages, comparing the level of proficiency between both.

4.2.1. Corpus linguistics

As Clavel-Arroitia (2012) states, the purpose is to unveil systematically occurring language patterns in those corpora. Through the use of CL we can obtain information about different characteristics of language such as lexis, multi-word phrases, grammar, semantics, pragmatics and textual features, covering different domains of language.

The corpus to include in the Corpus Linguistics' section of our study will consist of academic written texts –essays- in L1 (Spanish) and L2 (English) written by students between the stages of the 3rd year of Secondary Education and the end of Baccalaureate –before taking the test to access Spanish Higher education-. Every participant will provide one text in Spanish and one text in English –the topics in those will be the same- with a minimum length of 300 words –without a maximum length-. Up to this point, let us mention that, as asserted by numerous researchers (e.g. Wolfe-Quintero et al. 1998), the length of an essay can be an indicator of learners' fluency, or at least of the differences in fluency between students.

The oral interviews –in Spanish and English- will be transcribed to be included within the corpus.

Vocabulary size will be another measure to be presented as a discarding factor. As Milton (2010) states, it would be expected that as language level increases so would the learner's knowledge of vocabulary and the sophistication with which that vocabulary can be used. The samples provided by the students will be assessed regarding their length and vocabulary characteristics in reference to levels C2 (L1) and B1 (L2). To do so, it might be used the English Vocabulary Profile of the Common European Framework for the referred levels.

As introduced before, and regarding written texts to include within CL, we necessarily have to take into account that, in order to compare and determine the texts of

AS students in contrast to neuro-typical students, we will need a group of neuro-typical students who provide exactly the same number of samples. That is to say, we will have two groups: one with neuro-typical students (25 participants) and another with Asperger Syndrome students (25 participants). Every participant will provide one text in Spanish and another in English.

We consider important to note that neuro-typical students will be selected aiming at an equivalence regarding the age variable. Then, we will select the neuro-typical group taking the age factor of the Asperger group as a reference. Thus, neuro-typical students will be also selected according the number of participants taking part in the study of every area. For instance, if we have the possibility to count on the participation of 8 students from the Federación Asperger de Zaragoza, we will select a neuro-typical group of 8 students –with equivalent ages- among the schools and/or high schools in the area.

The corpus within CL will be developed as an essential resource to analyse the linguistic features of the students' language and will consist of a minimum of 30.000 words.

The results will be compared between both groups neuro-typical and AS students in order to establish differences and discrepancies.

4.2.1.1. Clusters (N-grams), word lists and keyword lists analyses

According to McEnery, T. & Wilson A. (2001) clusters analysis is especially useful in corpus linguistics when we want to see in purely empirical terms whether the nature of a number of corpora or linguistic features can be accounted for in terms of a smaller number broader but distinct groupings.

In this study, the different corpora may be so accounted for the analysis distinguishing two groups representing AS students and neuro-typical students respectively. As it is used to show clusters based on the search, it scans the entire corpus for 'N' (e.g. 1 word, 2 words...) length clusters. This will allow us to find common expressions in a corpus (Clavel-Arroitia, 2012).

On the other hand, word lists count all the words within the corpus and presents them in an ordered list allowing us to quickly find which words are the most frequent in a corpus. And concerning keywords, these will show which words are unusually frequent –or infrequent- in a particular corpus when compared with the words in a reference corpus (Clavel-Arroitia, 2012).

4.2.2. CHILDES

To complete our corpus, and following the practise of Foudon et al. (2007), we will transcribe the oral corpora according to the recommendations of CHILDES¹³. We will then compare our corpora with those of neuro-typical students and students with SLI at similar stages of language acquisition which are available on the site of CHILDES.

4.3. Hypotheses

By means of the methodology and specific tools –Corpus Linguistics, CHILDES- proposed along this study, we expect to determine if AS students find easier to use words and form sentences in English than neuro-typical students. If so, we intend to delimit and analyse the level of complexity in these uses. In addition, we aim at establishing some sort of relation between the participants' proficiency in L1 and their proficiency in L2 to determine if the degree in L1 proficiency –due to their Asperger Syndrome- has some type of interrelation with L2 proficiency.

Moreover, we expect to register and analyse the English participants' pronunciation in relation to their grammar, spelling and vocabulary output or language errors/fossilizations. Phenomena as echolalia or 'foreign accent' syndrome will also be remarked within the study and taken into account.

¹³ An international project on language acquisition which puts on line corpora in various languages of normal or language impaired children.< <http://childes.psy.cmu.edu>>

5. DISCUSSION

Through this study we have focused on Asperger Syndrome from a second language acquisition point of view. In order to do so, it has been necessary to take into account AS particularities and determinants, specifically and most important, all those related to AS language acquisition (L1) and its related characteristics. The linguistic transcendence we have attributed to this study is due to the basic feature that, in our opinion, distinguishes Asperger Syndrome from Autism Spectrum Disorders and, more specifically from High-Functioning Autism: acquisition of language.

Thus, with the examined narrative in mind, we consider that this is sufficiently important to discuss and reconsider the APA diagnostic of Autism Spectrum Disorders, for the sake of the affected individuals and the proper measures to carry out in this regard. In the case of this study, it may be mandatory to raise awareness and discussion of this problematic as well as to note the potential determinants, which could enable both teachers and AS students to take advantage of the natural AS characteristics that would be considered as favourable in a SLA class, apart from taking control of those unfavourable AS factors, aiming at channelling and foreseeing possible inconveniences or problems, and their subsequent options or proposals to solve them, as we have analyzed along the study.

On the other hand, studying in depth SLA by Asperger Syndrome students, we have been fully aware of the necessity of creating an interdisciplinary space to open the scope and lay bridges across several disciplines such as neurology, linguistics, psychology and ELT. In doing so, we have gone through a scientific terminology and concepts that should be necessarily taken into account when dealing with Asperger Syndrome and SLA and which are, unfortunately, scarcely and poorly used nowadays, with the subsequent increase of difficulty for teachers when approaching this issue.

Finally, we insist on the fact that our study only covers the observation and hypothesis stages considering, moreover, that we have strong enough evidence to aim at our hypotheses foundation with the objective of verifying those within a future doctoral thesis, where we will be able to provide further data to analyze and discuss the results.

6. CONCLUSIONS

The objective of this study has been that of examining the narrative statements which analyze the Asperger Syndrome and its different aspects, implications and associations. Especially, those concerning the acquisition of English as a second language by students with Asperger Syndrome from a theoretical approach.

Therefore, the topic selected aims at raising awareness of the potential factors and characteristics that students with AS, and their teachers, should take into account as well as elicit within the AS students' Acquisition of English as a Second Language.

To do so, we have provided a theoretical framework to facilitate a precise contextualization of Asperger Syndrome as well as its possible determinings liable to affect the acquisition of language. Then, we have commented on those features from a neurolinguistic perspective and background as a previous step to deal with the specific characteristics, factors and variables affecting the process of AS students' L2 acquisition. After this, having included a general theoretical background on the specific characteristics and variables taking part in AS students' second language acquisition, and in order to complement this state of art study, we have introduced a research proposal containing an empirical study project to support –along a future doctoral thesis- the hypotheses presented herein.

As we have exposed along the study, language development and bilingual development suggest that good proficiency in the first language (L1) is a prerequisite for acquiring a second language (L2) (Thrainsson, 2012). With this in mind, we have taken into account that the L1 lexical competency of AS subjects is considerably higher than that of the average speaker, and his/her grammatical mastery results into mechanical or automatic. To some extent, the combination of these two particularities together with several others presented in this study, confer the AS speaker some sense of pomposity or linguistic pedantry, owing to the lack of adequacy of the speaker and the context where this interaction is developed (Rodríguez, 2009). In the same way, a proficient use of the vocabulary and syntax may be observed.

Taking this into account, and as Thrainsson (2012) states, it could be called into question that the L1 production facility in the brain might be affected by the disorder and not the area in the brain that is thought to be common to both L1 and L2 which processes language reception.

With the findings of the research, we aim at offering a new perspective on contemporary second language acquisition theories as well as providing a solid basis to enable a review on the assumption that AS subjects have difficulties with L2 acquisition. In addition, besides the presumption that the L1 production could be attained more easily by AS subjects due to their lexical competences and grammatical abilities (Rodríguez, 2009), bearing in mind all the factors, characteristics and conditionings that AS individuals present, we assume our initial hypothesis that individuals affected by AS may have a remarkable facility with L2 acquisition.

Hence, it could also be interesting a deep analysis on the detailed differences and determinants of both AS and High-Functioning autism in order to propitiate a reflection and review of the last change in both diagnoses in order to reflect on the advantages and disadvantages this recent diagnostic change may mean.

Moreover, the deep research of the echolalia phenomenon or ‘foreign accent’ syndrome among AS individuals, and its direct relationship with the phonological patterns’ acquisition would lead to a focused research on the phonological aspects of the ESL acquisition by AS and how this disorder might have affected their language development.

To conclude, some of the possible variables within the field for the application of a research project have been included in the state of art of this study and will be considered within our future research study. The differentiation and relationship between AS and gifted AS along with the proper steps to determine these limits would be the main variable to bear in mind.

7. BIBLIOGRAPHY AND REFERENCES

American Psychiatric Association [APA]. (2014). *Diagnostic and statistical manual of mental disorders*. Washington, DC: American Psychiatric Association.

American Psychiatric Association [APA]. (2013). *Diagnostic and statistical manual of mental disorders*. Washington, DC: American Psychiatric Association.

American Psychiatric Association [APA]. (2000). *Diagnostic and statistical manual of mental disorders*. Washington, DC: American Psychiatric Association.

American Psychiatric Association [APA]. (1994). *Diagnostic and statistical manual of mental disorders*. Washington DC: American Psychiatric Association.

Amend, Beaver-Gavin, Schuler, and Beights (2008). Giftedness and Asperger's Disorder. *Gifted child today*, 61.

Alpert, R. and Haber, R. N. (1960). Anxiety in academic achievement situations. *Journal of Abnormal and Social Psychology* 10: 207-215.

Atwood, A. (2007). *The Complete Guide to Asperger's Syndrome*. London and Philadelphia: Jessica Kingsley Publishers.

Baron-Cohen, S. (2009) The Short Life of a Diagnosis. *The New York Times*. 9th of November, 2009.

Baron-Cohen, S., Scott, F. J., Allison, A., Williams, J., Bolton, P., Matthews, F. E. and Brayne, C. (2009). Prevalence of autism-spectrum conditions: UK school-based population study. *The British Journal of Psychiatry*, 2009, 194 (6) 500-509.

Baron-Cohen, S. (2008). *Autism and Asperger Syndrome*. London: Oxford University Press.

Baron-Cohen, S. (2001). Theory of mind in normal development and autism. *Prisme*, 2001, 34, 174-183.

Baron-Cohen, S. Wheelwright, S., Skinner, R., Martin, J and Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): evidence from Asperger Syndrome/high-functioning autism, males and females, scientists and mathematicians. Published: *Journal of Autism and Developmental Disorders*, 2001, 31, 5-17.

Baron-Cohen, S. (2000). Is Asperger's syndrome/High-Functioning Autism necessarily a disability? *Invited submission for Special Millennium Issue of Developmental and Psychopathology Draft*. 2000.

Baron-Cohen, S. (1999). The extreme-male-brain theory of autism. In Tager-Flusberg, H, (ed) *Neurodevelopmental Disorders*. MIT Press. 1999.

Baron-Cohen, S., Wheelwright, S., and Jolliffe, T. (1997). Is There a "Language of the Eyes"? Evidence from Normal Adults, and Adults with Autism or Asperger Syndrome. *Visual cognition*, 1997, 4 (3), 311–331.

Baron-Cohen, S., Jolliffe, T., Mortimore, C. and Robertson, M. (1997). Another Advanced Test of Theory of Mind: Evidence from Very High Functioning Adults with Autism or Asperger Syndrome. *Journal of Child Psychology and Psychiatry* Vol. 38, No. 7, 1997, 813-822.

Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a 'theory of mind'? *Cognition*, 21, 37-46.

Bates, T. C., Luciano, M., Medland, S. E., Montgomery, G. E., Wright, M. J. and Martin, N. G. (2010). Genetic Variance in a Component of the Language

Acquisition Device: ROBO1 Polymorphisms Associated with Phonological Buffer Deficits. *Behaviour Genetics*.

Bauman M. L. and Kemper T. L. (2005). Neuroanatomic observations of the brain in autism: a review and future directions. *International journal of developmental neuroscience: the official journal of the international Society for Developmental Neuroscience*. 2005, Apr-May; 23(2-3):183-7.

Bednarek, M. (2012). "Get us the hell out of here" Key words and trigrams in fictional television series. University of Sydney, Australia.

Bialystok, E. (2011). Reshaping the mind: The benefits of bilingualism. *Canadian Journal of Experimental Psychology*, 65(4), 229-235.

Bialystok, E., Craik, F. I. M., Klein, R., & Viswanathan, M. (2004). Bilingualism, aging and cognitive control: Evidence from the Simon task. *Psychology and Aging*, 19(2), 290-303.

Bialystok, E., Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, 122, 67-73.

Birdsong, D. (2006). Age and second language acquisition and processing: A selective overview. *Language Learning*, 56, 9-49.

Bloom, P. and German T.P. (2000). Two reasons to abandon the false belief task as a test of theory of mind. *Cognition* 77, 2000, 25-31.

Bogdashina, O. (2005). *Communication Issues in Autism and Asperger Syndrome: Do We Speak the Same Language?* Jessica Kingsley Publishers, 2005.

Bottini, N et al. (2004). A functional variant of lymphoid tyrosine phosphatase is associated with type I diabetes. *Nature Genetics*. 2004 Apr; 36(4):337-8. Epub 2004 Mar 7.

Clavel-Arroitia, B. (2012) *Second Language Acquisition and Teaching English as a Foreign Language*. PUV. Universitat de València.

Eigsti, I. (2013) Low to high: Simple functions and complex sociocommunicative difficulties in ASD. *19th International Congress of Linguists*.

Eigsti, I. M., de Marchena, A.B., Schuh, J. M., & Kelley, E. (2011). Language acquisition in autism spectrum disorders: A developmental review. *Research in Autism Spectrum Disorders*, 5, 681-691.

Fair, L. (2010). *Social skills and attributions of Asperger's syndrome*. Thesis Master of Arts Degree. Rowan University. 2010.

Frank, C. K., Baron-Cohen, S., Ganel, B. (2015). Sex differences in the neural basis of false-belief and pragmatic language comprehension. *NeuroImage* 105. 2015, 300–311.

Frith, U., & Happé, F. (1994). Language and communication in autistic disorders. *Philosophical Transactions B*, 346, 97-104.

Fombonne, E. (2003). Epidemiological surveys of autism and other pervasive developmental disorders: an update. *Journal of Autism and Developmental Disorders*. 2003 Aug; 33(4):365-82.

Foudon, N., Reboul, A., and Manificat, S. (2007). Language Acquisition in Autistic Children: A Longitudinal Study. *CamLing* 2007, 72-79.

Fuster-Márquez, M and Clavel-Arroitia, B. (2010). Corpus Linguistics and its Application in Higher Education. *Revista Alicantina de Estudios Ingleses*, 23: 51-67.

Gadia, C.A., Tuchman, R., Rotta, N.T., (2004). Autism and pervasive developmental disorders. *J Pediatr (Rio J)*. 80, 83-94.

Gallagher, S. A. & Gallagher, James, J. (2002) Giftedness and Asperger's Syndrome: A New Agenda for Education. *Understanding Our Gifted*, 14(2), 2002.

Gardner, R. C. and Wallace, E. L. (1972). *Attitudes and Motivation in Second Language Learning*. Rowley, Mass.: Newbury House.

Gardner, R. C. and Wallace, E. L. (1959). Motivational Variables in Second Language Acquisition. *Canadian Journal of Psychology* 13: 266-272.

Gathercole, S. E. (2006) Nonword repetition and word learning: The nature of the relationship. *Applied Psycholinguistics* 27, 2006, 513–543.

Gillberg, C. and Ehlers, S. (1998). High-Functioning people with autism and Asperger Syndrome. A literature review. *Asperger Syndrome or High-Functioning Autism?* Shopler et al. ed. New York: Plenum Press. 79-106.

Giora, R. (2008). Is Metaphor Unique? In R. Gibbs, (Ed.), *The Cambridge Handbook of Metaphor and Thought*. New York: Cambridge University Press.

Gold, R. and Faust, M. (2010). Right Hemisphere Dysfunction and Metaphor Comprehension in Young Adults with Asperger Syndrome. *Journal of Autism and Developmental Disorders*, 40(7): 800–811.

Golestani, N., Alario, F.-X., Meriaux, S., Bihan, D. L., Dehaene, S., & Pallier, C. (2005). Syntax production in bilinguals. *Neuropsychologia*, 44, 1029-1040.

Halsband, U. (2006). Bilingual and multilingual language processing. *Journal of Physiology - Paris*, 99, 355-369.

Hamers, J. F. and Blanc, M. H. A. (2000). *Bilinguality and bilingualism*. United Kingdom: University Press, Cambridge.

Hayashi, M., Kato, K., Igarashi, K. and Kashima, H. (2007). Superior fluid intelligence in children with Asperger's disorder. *Brain and Cognition*, 2007.

- Howlin, P. (1982). Echolalic and spontaneous phrase speech in autistic children. *Journal of Child Psychology and Psychiatry* Volume 23, Issue 3, 1982, 281-293.
- Inokuchi, E. and Kamio, Y. (2013). Qualitative analyses of verbal fluency in adolescents and young adults with high-functioning autism spectrum disorder. *Research in Autism Spectrum Disorders* 7. 2013, 1403-1410.
- Jolliffe, T. and Baron-Cohen, S. (1997). Are people with autism and Asperger Syndrome faster than normal on the Embedded Figures Test? *Journal of Child Psychology and Psychiatry*, 1997, 38, 527-534.
- Juknevičienė, R. (2013) Insights from a corpus secondary school English examination essays in Lithuania. Vilnius University. *ICAME* 34.
- Klin, A., (2006). Autism and Asperger syndrome: an overview. *Rev Bras Psiquiatr.* 2006; 28 (Supl I): 3-11.
- Koning, C., & Magill-Evans, J. (2001). Social and language skills in adolescent boys with Asperger syndrome. *Autism*, 5, 23-36.
- Kovelman, I., Baker, S. A., & Petitto, L. A. (2008). Bilingual and monolingual brains compared: A functional magnetic resonance imaging investigation of syntactic processing and a possible "neural signature" of bilingualism. *Journal of Cognitive Neuroscience*, 20 (1), 153-169.
- Lenko-Szymanska, A. (2013) The English Vocabulary Profile as a benchmark for comparing learner essays within and across corpora. University of Warsaw. *ICAME* 34.
- Lenneberg, E. (1967). *Biological foundations of language*. New York, NY: Wiley.

Lyman, Jon Alan. (2008). Qualitative Study of Male Asperger's Syndrome Students: Transition from High School to College. *PCOM Psychology Dissertations*. Paper 86.

Mazzone, L., Ruta, L. and Reale, L. (2012) Psychiatric comorbidities in Asperger syndrome and high functioning autism: diagnostic challenges. *Annals of General Psychiatry*. 2012, 11-16.

McEnery, T. & Wilson A. (2001) *Corpus Linguistics: An Introduction*. Edinburgh University Press, 2001.

McCarthy, M. (2006). *Explorations in Corpus Linguistics*. Cambridge University Press.

Martin Borreguero, P. (2004): *El síndrome de Asperger ¿excentricidad o discapacidad social?*, Ed. Psicología, Alianza Editorial, Madrid.

Milton, J. (2010). The development of vocabulary breadth across the CEFR levels. A common basis for the elaboration of language syllabuses, curriculum guidelines, examinations, and textbooks across Europe. In I. Bartning, M. Martin & I. Vedder (eds.). *Communicative proficiency and linguistic development: Intersections between SLA and language testing research*. *Eurosla Monographs Series, 1*. European Second Language Association: 211-232.

Moseley, R. L., Shtyrova, Y., Mohr, B., Lombardob, M. V., Baron-Cohen S., Pulvermüller, F. (2015). Lost for emotion words: What motor and limbic brain activity reveals about autism and semantic theory. *NeuroImage* 104 (2015) 413-422.

Mundy, P., & Sigman, M. (2006). Joint attention, social competence, and developmental psychopathology. In D. Cicchetti (Ed.), *Developmental psychopathology* (2nd ed. Vol. 1, 293-332). Hoboken: John Wiley & Sons, Inc.

Muñoz, C. and Singleton, D. (2011). A critical review of age-related research on L2 ultimate attainment. *Language Teaching*, 44, 1-35.

- Nelson, C. A., Collins, and M. L. *Handbook of Developmental Cognitive Neuroscience*.
Wisconsin: MIT Press, 2001.
- Nesselhauf, N. (2005). *Corpus Linguistics: A Practical Introduction*. (Last updated
September, 2011). University of Heidelberg.
- Ojemann, G. A. (1991). Cortical Organization of Language. *The Journal of
Neuroscience*, August 1991, 7 I (8): 2281-2287
- Oyama, S. (1979). The concept of the sensitive period in developmental studies. *Merill
Palmer Quarterly*, 25, 83-103.
- Ozonoff, S., Rogers, S. J. and Pennington, B. Asperger's Syndrome: Evidence of an
Empirical Distinction from High-Functioning Autism. *Journal of Child
Psychology and Psychiatry* Volume 32, 1991, Issue 7, 1107-1122.
- Pájaro, D. (2002) La formulación de hipótesis. *Cinta moebio*. 15: 373-388.
- Petitto, L. A., (2009) New Discoveries From the Bilingual Brain and Mind Across
the Life Span: Implications for Education. *International Mind, Brain, and
Education*. Volume 3—Number 4 Journal Compilation. 2009.
- Poulin-Dubois, D., Blay, A., Coutya, J., & Bialystok, E. (2011). The effects of
bilingualism on toddlers' executive functioning. *Journal of Experimental Child
Psychology*, 108, 567-579.
- Premack, D. and Woodruff, G. (1978). Does the chimpanzee have a theory of mind?
Behavioral and Brain Sciences. Volume 1. Issue 04. December 1978, 515- 526.
- Prizant, B. M. (1983). Language acquisition and communicative behavior in autism:
toward an understanding of the "whole" of it. *Journal of Speech and Hearing
Disorders*, Volume 48, 1983, 296-307.

Ramachandran, V. S. and Oberman M. L. (2006). Broken mirrors. A theory of autism. *Scientific American*, 2006, 62-69.

Rodríguez, F.J. (2009). Síndrome de Asperger. Materiales y Aproximación Pragmalingüística. *Volumen VI del Corpus PerLa (Percepción, Lenguaje y Afasia)*. Valencia: Universitat de València, 2009.

Rubinyi, S. (2006). *Natural Genius: The Gifts of Asperger's Syndrome*. Jessica Kingsley Publishers, 2006.

Sampietro, A. (2012). Aproximación neurolingüística al estudio del bilingüismo. *Ponencia presentada al X Congreso de Lingüística General – Zaragoza*.

Santangelo, S. and L., Folstein, S. E. (1999) Autism: a genetic perspective. In: Tager-Flusberg H (ed) *Neurodevelopmental disorders*. MIT Press, Cambridge, MA, 431-447.

Saville-Troike, M. (2012). *Introducing Second Language Acquisition*. 2nd Edition. New York: Cambridge University Press.

Schuler, A. Echolalia: Issues and Clinical Applications. *Journal of Speech and Hearing Disorders*, November 1979, Vol. 44, 411-434.

Scovel, T. (1978). The effect of affect: A review of the anxiety literature. *Language Learning* 28: 129-142.

Silva, A. E. (2005). *English language learner special education referral and placement outcomes in instructional consultation teams schools*. Master of Arts. University of Maryland.

Stein C. M., Schick, J. H., Taylor, H. G., Shriberg, L. D., Millard, C., Kundtz-Kluge, A., Russo, K., Minich, N., Hansen, A., Freebairn, L. A., Elston, R. C., Lewis, B. A., Iyengar, S. K. (2004) Pleiotropic effects of a chromosome 3 locus on speech-sound disorder and reading. *American Journal Human Genetics* 74:283-297.

Szatmari P. (2004). *A Mind Apart: Understanding Children with Autism and Asperger Syndrome*. New York: Guilford Press.

Szatmari P. (2000). The classification of autism, Asperger's syndrome, and pervasive developmental disorder. *Canadian Journal of Psychiatry* 45(8), 731-738.

Szatmari P. and Jones . M. (1991). IQ and the genetics of autism. *Journal of Child Psychology and Psychiatry* 32(6), 897-908.

Szatmari P. , Bremner R. , Nagy J. (1989). Asperger's syndrome: a review of clinical features. *Canadian Journal of Psychiatry* 34(6), 554-560.

Szatmari P. et al. (1989). A follow-up study of high-functioning autistic children. *Journal of Autism and Developmental Disorders* 19(2), 213-225.

Práinsson, K.O. (2012). *Second Language Acquisition and Autism*. B.A Essay. Hugvísindasvið: University of Iceland.

United States Government Accountability Office (2005). *Special Education: Children with Autism*. GAO-05-220, Washington: GAO.

Walmsley, K., Marsh, M. and Nunn, A. (2010) *The Developmental, Individual Difference, and Relationship Based (DIR®) Model Theory and Application with Autistic Spectrum Disorders*. Perth: Learning Tree Therapy Centre.

Widyorini, E. (2001) *Gifted children with Asperger Syndrome: Emotional and Social Implications*. Soegijapranata Catholic University, Indonesia.

Wilkinson, K. M. (1998). Profiles of language and communication skills in autism. *Mental retardation and developmental disabilities Research reviews* 4, 1998, 73-79.

Wire, V. (2005). Autistic Spectrum Disorders and Learning Foreign Languages. *The British Journal of Learning Support*, Volume 20, Number 3, August 2005.

Wolfe-Quintero, K. I. Shunji & K. Hae-Young. 1998. *Second language development in writing: Measures of fluency, accuracy and complexity*. Honolulu: University of Hawaii Press.

Woodbury-Smith, M. R., & Volkmar, F. R. (2009). Asperger syndrome. *European Child Adolescence Psychiatry*, 18, 2-11.

World Health Organization. (1992). *The ICD-10 classification of mental and behavioural disorders. Clinical descriptions and diagnostic guidelines*. Geneva: Author.

Wulandari, A. (2012) English Language Teaching and Learning for Autistic Students. *English Language Teaching Encounter*: Volume 3. No. 2, 2012.