

Specialized and updated training on supporting advance technologies for early childhood education and care professionals and graduates



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technologies for early childhood education and care  
professionals and graduates**

## **MODULE III. 5**

**Pathologies at early ages: Autism Spectrum Disorders**

Teacher

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## I. Introduction

Autism Spectrum Disorder (hereinafter ASD) is a **neurodevelopmental disorder**, which shows great heterogeneity and is difficult to identify since there are no observable **biological markers**. Early detection, based on the observation of certain risk indicators; the assessment of the child's development and behaviour, as basic diagnostic tools, and early intervention will be essential for people with ASD to receive, as soon as possible, support and specialised services that favour the development of personal competences and adequate coping strategies to face everyday life situations.

## II. Objectives

1. To know what ASD is and its diversity.
2. Know and identify warning signs.
3. To learn about different tools and strategies for early detection, diagnosis and intervention.
4. Understand the importance of early action in the acquisition of skills to help minimise the impact of ASD.

## III. Content specific to the theme

### 5.1. Definition

The term Autism Spectrum Disorders (ASD) comprises a heterogeneous group of **neurodevelopmental alterations** of neurobiological origin and beginning in childhood that affect the configuration of the nervous system and brain functioning. They accompany the person throughout his/her life affecting fundamentally the development of communication and social interaction, and the flexibility of behaviour and thought (Confederación Autismo España, 2022). They present a chronic evolution, with different degrees of affectation, functional adaptation and personal development in the indicated areas according to the evolutionary moment (Hervás et al., 2017), the experiences and supports received (Rivière. 2001).

### 5.2. Approach to the concept of Autism Spectrum Disorders (ASD)

Although recent studies have confirmed that the first technical description of autism was made by the Ukrainian psychiatrist and researcher Grunya Efimovna Sukhareva in 1925 (Merino, 2016), Kanner (1943) (Austrian psychiatrist living in the USA) has been considered the first to describe this disorder in his article *Autistic Affective Contact Disorders* where he refers to a set of symptoms that characterised a population of 11 children, in such a precise way that his definition has endured for a long time.



The symptoms identifying the group of children described by Kanner were, according to Rivière (1991): Inability to establish relationships with people, extensive set of delays and disturbances in the acquisition and use of language; obsessive insistence on keeping the environment unchanged, accompanied by the tendency to repeat a limited range of ritualised activities and repetitive and stereotyped play sessions; occasional appearance of special skills, generally related to mechanical memory, and good cognitive potential, normal physical appearance and intelligent physiognomy and appearance of the first symptoms very early (from birth). This last characteristic has generated great difficulties in diagnosis, it has now been shown that skills in certain areas can coexist with great deficiencies in others, and that from a special ability it cannot be inferred that there is a general level of intelligence.

In October 1943, shortly after the publication of Kanner's article, Hans Asperger, an Austrian neuropsychiatrist, published in German the article "*Die, Autistische Psychopathen" im Kindesalter*" (Asperger, 1944) which did not become internationally known until 1981, when Lorna Wing published an English-language review of the Austrian doctor's work. In this work, Asperger describes four cases of people without intellectual disabilities, which he called "autistic psychopathy".

Following Martín Borreguero (2004), both Kanner and Asperger used the same term "autism" to refer to the primary and central deficit: the child's incapacity for social contact with other people. Both describe children with egocentric behaviour, a tendency towards social isolation and an apparent disregard for the emotions expressed by their reference figures. On the other hand, both doctors postulate the existence of an organic aetiology with unknown genetic involvement. In addition, they emphasise the existence of a profound deficit in the child's non-verbal communication skills, the presence of a restricted pattern of obsessive behaviours and interests, the absence of flexibility for symbolic play and a marked tendency to resist change (Murillo, 2013).

Despite these similarities, there are some differences between the two. Asperger considers "autistic psychopathy" to be a personality disorder whose initial symptoms do not manifest themselves until late in the child's childhood. Furthermore, according to this author, the child affected by this disorder showed adequate or advanced language development.

Wing (1981) has been the driving force behind the idea of a continuum, considering that the pathologies described by Kanner and Asperger were not different and independent categories, but that both were included within the broad spectrum or continuum of autistic disorders. This author replaces the original term "autistic psychopathy" with the term "Asperger's syndrome", establishes that the first symptoms begin to manifest themselves during the first year of the child's life, postulates that although language development is adequate, in some cases there may be an initial moderate delay and highlights the possibility that the child may show a degree of specific cognitive difficulties (repetitive and rigid reasoning strategies; difficulties in the effective application of their knowledge and cognitive strategies, with serious problems in solving practical questions, making basic decisions...; use of



their memorising capacity with a high degree of difficulty, with a high degree of difficulty in the use of their cognitive skills, with a high degree of difficulty in the use of their cognitive skills...; use of their memorising capacity with a high degree of difficulty in the use of their cognitive skills...); use of their memoristic capacity for the mere purpose of accumulating unlimited amounts of information about a particular topic of their interest).

This author differentiated four main dimensions of autism spectrum variation: 1. impairment in social recognition abilities, 2. in social communication abilities, and 3. in imagination and social understanding skills (these three dimensions define what is called "Wing's triad") to which is added, 4. repetitive patterns of activity. It also refers to other psychological functions such as language, response to sensory stimuli, motor coordination and cognitive abilities.

It is now widely accepted that the clinical presentation of autism is highly variable, which has led to the idea of heterogeneity being promoted, prompting a pluralistic and individualised view of "Autism" (Coleman and Gillberg, 2012; Waterhouse, 2013). Until specific **biological markers** are identified, ASD will continue to be defined by virtue of the behavioural symptoms it manifests. These symptoms are described in the international diagnostic and identification systems of the American Psychiatric Association and the World Health Organisation, DSM-5 and ICD-11 respectively.

### 5.3. Core characteristics of autism

Despite the existing diversity, people with ASD have specific characteristics, which can sometimes be associated with other conditions such as intellectual disabilities, language disorders or mental health problems.

#### 5.3.1 Disturbances in communication and social interaction

Difficulties focus on the pragmatic and intersubjective aspects of communication and interaction, such as adjusting language, initiating an interaction, maintaining it, regulating paralinguistic aspects such as tone of voice, rhythm, prosody, silences, gestures, interpersonal spaces.

People with ASD have difficulties in **joint attention**; in communicative and social initiative; in the use of communication and pragmatic interaction, despite the appearance in many cases of a remarkable command of language; in the use and understanding of verb tenses that involve abstraction, tending to use imperative rather than declarative forms to a greater extent; in the development of creative language that they compensate for with reproductive and sometimes echolalic language (Merino, 2016). They show difficulties in showing adequate social and emotional reciprocity, so that, as they do not grasp social details, their social behaviour is often difficult to understand, generating great difficulties in making friends.

#### 5.3.2 Restrictive patterns of interests and behaviour

The insistence on invariance, the difficulty to regulate sensitivity to certain stimuli and to react flexibly to them is affected, as well as imaginative activity, which influences their ability to understand the emotions and intentions of others. Many



people with autism fail to develop normal pretend, fictional or fantasy play. Although in some cases imaginative activity may be present in the form of absorbing and evasive fantasies, in most cases it is ineffective, reproducing in some way scenes or visualisations that interfere with the person's appropriate participation in their contexts. Lacking the ability to imagine the thoughts of others, it is very difficult for them to anticipate what might happen and to cope with past events.

Behavioural patterns are often repetitive and ritualised. They may include attachment to strange and unusual objects. Repetitive and stereotyped movements and the use of verbal or behavioural rituals are common. They often show great resistance to change, manifesting significant behavioural alterations when their routines are varied or when their expectations are not met. Many people affected by autism develop specific interests or preoccupations with peculiar themes. Their thinking is also usually rigid and they only conceive of one way of understanding the world (Martos and Llorente, 2019).

In many cases they show unusual sensitivity (hypo- or hyper-sensitivity) to sensory stimuli - tactile, auditory, visual - which would imply either reduced reactivity to stimuli such as pressure, pain, heat, loud sounds or hypersensitivity, showing extreme reactions to light sounds, textures, touch, as well as a combined pattern in which some stimuli are barely perceived and others show hyper-reactivity.

### 5.3.3 Other associated characteristics (comorbidities)

*Psychiatric conditions:* anxiety disorders (generalised anxiety disorder, panic disorders, agoraphobia, specific phobias, social phobia, separation anxiety disorder); obsessive-compulsive disorder (OCD); depressive disorders, bipolar disorder, sleep disorders, behavioural problems...

*Cognitive and learning dysfunctions:* attention deficit hyperactivity disorder (ADHD); intellectual disability (associated in three out of four cases, so that the degree of intellectual disability covaries with the severity of the disorder). If we talk about learning difficulties, the percentage can be around 25%, problems in auditory and visuospatial processing and motor clumsiness.

*Medical pathologies:* Genetic syndromes (Fragile X syndrome or tuberous sclerosis), epilepsy, tic disorders...

## 4.4. Diagnostic criteria for ASD according to DSM-5 (APA, 2014)

**A. Persistent impairments in social communication and social interaction** in a variety of contexts, as manifested by the following, currently or by history:

1. Deficits in social-emotional reciprocity range, for example, from abnormal social approach and failure of normal two-way conversation through diminished shared interests, emotions or affections to failure to initiate or respond to social interactions.
2. Impairments in non-verbal communicative behaviours used in social interaction range, for example, from poorly integrated verbal and non-verbal communication through abnormalities of eye contact and body language or deficiencies in understanding and use of gestures, to a complete lack of facial expression and non-verbal communication.





<p>3. Impairments in the development, maintenance and understanding of relationships range, for example, from difficulties in adjusting behaviour in various social contexts through difficulties in sharing imaginative play or making friends, to lack of interest in other people.</p>
<p><b>B. Restrictive and repetitive patterns of behaviour, interests or activities</b>, which are manifested in two or more of the following, currently or by history:</p> <ol style="list-style-type: none"> <li>1. Stereotyped or repetitive movements, use of objects or speech (e.g. simple motor stereotypies, alignment of toys or repositioning of objects, echolalia, idiosyncratic phrases).</li> <li>2. Insistence on monotony, excessive inflexibility of routines or ritualised patterns of verbal or non-verbal behaviour (e.g. great distress at small changes, difficulties with transitions, rigid thought patterns, greeting rituals, need to take the same route or eat the same food every day).</li> <li>3. Very restricted and fixed interests that are abnormal in intensity or focus of interest (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).</li> <li>4. Hyper- or hyporeactivity to sensory stimuli or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive sniffing or touching of objects, visual fascination with lights or movement).</li> </ol>
<p><b>C. Symptoms must be present early in the developmental period</b> (but may not be fully manifested until social demands exceed limited capacities, or may be masked by strategies learned later in life).</p>
<p><b>D. Symptoms cause clinically significant impairment</b> in social, occupational or other important areas of usual functioning.</p>
<p><b>E.</b> These disturbances are not best explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder often overlap; to make <b>comorbid</b> diagnoses of autism spectrum disorder and intellectual disability, social communication must be below that expected for the general developmental level.</p>
<p><b>Note:</b> Patients with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disease or pervasive developmental disorder not otherwise specified shall be given a diagnosis of autism spectrum disorder. Patients with marked impairments in social communication, but whose symptoms do not meet criteria for autism spectrum disorder, should be evaluated for a diagnosis of social communication disorder (pragmatics).</p>

According to DSM-5, the diagnosis of ASD includes several conditions that used to be diagnosed separately: autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger's disorder. Instead it proposes three levels of severity of ASD, depending on the need for supports required.

	<b>Social communication</b>	<b>Restricted and repetitive behaviours</b>
<p><b>Level 3</b> "Needs very noticeable help"</p>	<p>Severe impairments in verbal and non-verbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions and minimal response to social overtures from others. For</p>	<p>Behavioural inflexibility, extreme difficulty coping with change or other restrictive/repetitive behaviours interfere markedly with functioning in all domains. Intense anxiety/difficulty in shifting focus of action.</p>





	example, a person with few intelligible words rarely initiates interaction and, when he/she does, engages in unusual strategies only to meet needs and only responds to very direct social approaches.	
<b>Level 2</b> <b>"Needs remarkable help"</b>	Notable deficits in verbal and non-verbal social communication skills; apparent social problems even with <i>on-site</i> assistance; limited initiation of social interactions; and reduced or non-normal responses to the social openness of others. For example, a person who utters simple sentences, whose interaction is limited to very specific special interests and who has very eccentric non-verbal communication.	Behavioural inflexibility, difficulty coping with change or other restricted/repetitive behaviours often appear clearly to the casual observer and interfere with functioning in a variety of contexts.  Anxiety and/or difficulty in shifting the focus of action
<b>Level 1</b> <b>"He needs help"</b>	Without help <i>in situ</i> , deficiencies in social communication cause significant problems. Difficulty in initiating social interactions and clear examples of atypical or unsatisfactory responses to other people's social openness. May appear to have little interest in social interactions. For example, a person who is able to speak in full sentences and establishes communication, but whose extensive conversation with others fails and whose attempts to make friends are eccentric and usually unsuccessful.	Behavioural inflexibility causes significant interference with functioning in one or more contexts. Difficulty in alternating activities. Organisational and planning problems hinder autonomy.

Regarding the core characteristics of ASD, the ICD-11 (WHO, 2022), also includes the same two categories as the DSM-5 (difficulties in social interaction and communication, on the one hand, and restricted interests and repetitive behaviours, on the other), eliminating a third one that appeared in the previous version, related to language problems. Both classifications also point out the importance of examining unusual sensory sensitivities, something common among people with autism.

However, there are also some differences between ICD-11 and DSM-5. For example, the WHO classification provides detailed guidelines to distinguish between autism with and without intellectual disability, but the DSM-5 only states that autism and intellectual disability can occur simultaneously. ICD-11 also includes the loss of



previously acquired skills as a feature to be taken into account when making a diagnosis.

As far as the infant stage is concerned, ICD-11 puts less emphasis on the type of play children engage in (as it may vary according to country or culture) and focuses more on whether children follow or impose strict rules when playing, a behaviour that can be perceived in any culture and that may be a sign of inflexibility in thinking, a common feature among people with autism.

### 5.5. Aetiology

Since 1943, when the symptomatology of autism was identified until nowadays, there have been multiple causes that have been pointed out as responsible for the disability generated by autism. In the first years, the mother-child relationship was pointed out as the main factor. Its defender was Leo Kanner himself, who affirmed that the origin of the autistic disorder was in not having established an appropriate affective relationship with the child in the first childhood. This is the so-called "refrigerator mother" theory (cold, incapable of showing affection). This explanation constitutes one of the myths of autism and nowadays it has been completely discarded. It has been demonstrated that there is no causal relationship between the attitudes and actions of fathers and mothers and the development of autism (Murillo, 2013).

It is now known that ASD is a genetic condition, although so far no single gene directly linked to autism has been discovered, but rather it is the result of multiple mutations in interaction with the environment. Scientific studies lead to consider that more than one hundred possible different genes and environmental factors (such as certain characteristics of parents or perinatal events) may be involved in ASD and contribute to the development and evolution of this condition (Confederación Autismo España, 2022).

### 5.6. Explanatory theories

In the study of autism, three epochs can be differentiated. The first one (from 1943 to 1963) considered autism as an "emotional disorder" produced by inadequate affective factors in the relationship of the child with the foster figures, and in order to help the child with autism, the dynamic therapy was used with the aim of re-establishing the emotional bonds. In the second period (from 1963 to 1983), the first indicators appear that allow associating autism with neurobiological disorders; in this period, the efficacy of behavioural techniques for the treatment of autism is demonstrated. From the 80's onwards, specific programmes are created, education is recognised as the best treatment for autism, and autism is considered from an evolutionary perspective as a "developmental disorder" (Rivière, 2000; Alcantud and Dolz, 2003). Finally, research has been focussing on finding a cause that explains the wide set of anomalies and developmental lags observed in people with autism. In this way, theories have been generated that try to explain the reason of these disorders. Some of these theories are commented below.

Several attempts have been made to explain the cognitive processes underlying autistic disorder. The **theory of mind deficit theory**, one of the best known, shows the



existence of a deficit in the ability to attribute mental states, thoughts, beliefs, intentions and emotions in others, i.e. the difficulty in inferring or making representations about the minds of others (Baron-Cohen et al., 1985). These authors propose that people with ASD lack this ability to think about thoughts and therefore have problems in certain (but not all) communication, social and imaginative skills.

The presence of mentalistic evidence and the analysis of social behaviours, moral judgements and the development of social motivation dependent on this explanatory theory, has boosted the development of works of intervention and behavioural explanation of autism that have notably improved the understanding of the cognitive mechanisms that differentiate people with ASD. Nevertheless, this theory presents limitations in the explanation of aspects such as the insistence on invariance. Later studies have shown the capacity of learning and solving first and second order mentalistic skills, as well as the generalisation of these competences in their life, existing skills such as deception or insight (Fombonne et al., 1994).

Another of the explanatory theories of autism is the theory of *executive function deficit* proposed by Ozonoff et al. The difficulties in organisation, time comprehension, goal orientation linked to autonomy and social behaviour of people with ASD suggest the presence of an executive dysfunction, i.e. difficulties in establishing self-instructions and internal regulation systems linked to the achievement of goals, flexibility and adaptation to change, decision making, problem solving and control of actions and impulses, through processes of monitoring and inhibition of responses.

A third theory is that put forward by Frith and Happé (1994) which states that autism is characterised by *weak central coherence* or detail-focused processing. This theory suggests that in autism this aspect of information processing is impaired, and that people with ASD show part-centred processing, in which details are captured and retained at the expense of global configuration and contextualised meaning, i.e. they fail to extract gist or to take context into account.

Happé and Frith (2006), reconsidered the original suggestion of a basic deficit in central processing and questioned it in three ways, firstly, posing it as an ability for local information processing, secondly, contemplating that this is not a cognitive deficit but a partial processing mode and thirdly, proposing the need to revise this theory as explanatory in itself of the cognitive deficits linked to autism. This theory proposed that difficulties in integrating information from the context explained social difficulties; nowadays, the authors add to the importance of studying each autism in a more particular way and admit that the deficit in **central coherence** does not explain, nor is it the origin, of the social deficits of ASD (Merino, 2016).

Other theories are those of the *deficit in intersubjectivity* (Hobson, 1993), which posits a deficit in the processing of emotions and their regulatory function in interaction. Or *deficits in joint attention*, deficits in sharing, and in showing and representing emotional states and affect (Mundy et al., 1992). Or deficits in the functioning of **mirror neurons** (Rizzolatti et al., 1999; Rizzolatti and Fabbri-Destro, 2010).



These theories, although necessary, since they allow explaining certain aspects of ASD, are still insufficient if they are considered in an isolated way. People with autism present alterations in areas that affect the whole development, so it is not possible to talk about a unique cause. It is fundamental the approach and knowledge, along the whole life cycle, considering other important variables such as gender, the presence of diagnostic **comorbidities** and the socio-cultural and family environment. The underlying deficits in autism should help to focus interventions by addressing not only the core symptoms, but also the way in which the daily life and functioning of the person are affected by these deficits. That is to say, intervention should also be directed towards the environment that represents society at large (Merino, 2016).

### 5.7. Prevalence

The increase in the **prevalence** of autism in the last years has meant a change in the image of people with ASD, as well as in the way of approaching intervention. The reference of studies carried out in different European countries allows us to say that ASD is present in 1 out of every 100 births (1%) (Zeidan et al., 2022). Data provided by the Atlanta Center for Disease Control based on an analysis of 2016 data (Maenner et al., 2020) indicated that ASD affects 1 in 34 boys and 1 in 144 girls.

In Spain, although there is no **prevalence** study with the necessary reliability and validity to provide us with realistic data on the incidence of these disorders, we could point to data on the **prevalence** of ASD in the province of Guipúzcoa, through a project<sup>1</sup> which has collected **prevalence** data from 14 European Union countries. This study was carried out with a general population and in the educational environment. The **prevalence** figure obtained was 0.6%, i.e. 1 in 160 (which corresponds to data from other international organisations such as the WHO). In addition, within the study a sensitivity analysis was performed to estimate potential new cases of ASD globally, leading to a final figure of 87 cases of ASD in this age group at the date of the study (2020) (Fuentes et al. , 2021), which would provide a population **prevalence** of 0.59%, lower than those reported by some other studies.

Starting from the estimation made on the basis of provisional data of the census (31/01/2021), as the exact number of people with ASD living in Spain is unknown, it can be stated that in Spain there are more than 450.000 people with autism; more than 4.500 babies with ASD are born every year and more than 1.500.000 people are linked to ASD, taking into account their relatives (Confederación Autismo España, 2022).

### 5.8. Early detection and diagnosis

Early detection constitutes a fundamental aspect in the approach to autism, since the beginning of an early intervention is intimately linked to its prognosis and, therefore, to the quality of life of the people who present it. According to Hernández et al. (2005)

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<sup>1</sup> Autism Spectrum Disorder in Europe of the European Union, ASDEU (<https://asdeu.eu>)

and Hervás et al. (2017) when we talk about ASD detection, different levels can be established: first, developmental surveillance; second, specific ASD detection, and third, specific diagnostic assessment by a specialised service.

The aim of screening is to improve the processes involved in detection in order to anticipate the moment when the first warning signs can be observed in order to achieve the highest quality care that will result in a reduction of diagnostic delay, the achievement of a diagnosis that meets internationally validated parameters and coordination with resources that guarantee specific ongoing intervention in the immediate environment of the person with ASD (Arnaiz & Zamora, 2013). Detection, diagnostic assessment and specific intervention in people with ASD constitute an inseparable triad that requires the coordination and training of specialists in the field of health, social services and the educational environment, as well as the development of specific intervention programmes.

Currently, there are no conclusive **biological** traits or markers to **make** a diagnosis of ASD, so behavioural indicators remain fundamental in the detection and clinical diagnosis. Research continues on the neurobiological, genetic and metabolic patterns of people with ASD with the aim of understanding the aetiology of this disorder and trying to determine early **neurobiological markers** that help to accelerate and facilitate the detection and diagnostic assessment processes (Arnaiz and Zamora, 2013; Hervás et al., 2017).

In recent years, progress has been made in the early diagnosis of ASD due to greater knowledge of early symptoms, improved detection and diagnostic tools (Busquets et al., 2018) and dissemination and information campaigns; greater specific and specialised training of professionals; access to detection and diagnostic tools; modification of diagnostic criteria through the DSM-5; better knowledge of protocols in detection and diagnosis. However, the inherent difficulties in the detection of these disorders still require professionals with good specialised training; stable coordination protocols and a high degree of ethical responsibility in understanding the impact that a diagnosis of ASD has on the person and their environment (Arnaiz & Zamora, 2013).

### 5.8.1. Early warning indicators and early detection tools

Throughout early childhood development, as babies mature and interact with their environment, they acquire a series of developmental milestones. When any of these milestones do not appear or appear atypically or very late, it is important to be alert to possible signs of ASD. These signs, in an isolated way, do not imply that a child has autism, but they do make advisable to start a surveillance system and to carry out a specialised assessment to confirm or rule out the diagnosis. However, it should not be forgotten that not all signs occur simultaneously in all children (Diez-Cuervo et al., 2005; Jimenez, 2013).

**Developmental monitoring** involves the systematic use of assessment scales. According to the Confederación Autismo España (2022) we could talk about the



following warning signs that can be detected through the **monitoring** of the child's **development** (Centre for Disease Control and Prevention<sup>2</sup>):

Before 12 months:

- Little eye contact.
- Does not show anticipation when to be held.
- Irritability or emotional lability.
- Lack of interest in simple interactive games (such as tickling, peek-a-boo).

At 12 months:

- Absence of babbling, sounds or simple words.
- Little use of communicative gestures (such as pointing or waving goodbye).

Between 12 and 18 months:

- Absence of or limited response to own name.
- Do not look where others point.
- Do not point to ask for something; do not show objects.
- Unusual response of rejection to certain auditory stimuli.

Between 18 and 24 months:

- Delayed or precocious language development.
- Do not imitate gestures or actions.
- Repetitive and non-symbolic forms of play (e.g. lining up objects or repeatedly opening and closing doors).
- Lack of interest in interacting with other children.

The most successful studies in identifying early indicators of ASD have been prospective studies of siblings of children with ASD, based on evidence that siblings have an increased risk (5-10% higher than in the normal population) of developing an ASD (Zwiangenbaum et al., 2009). According to these authors, behaviours that may raise suspicion of ASD and/or initiate a surveillance system could be grouped into the following areas:

Language

- Delayed onset of first words and phrases.
- Altered response to naming.
- Delay in the use of communicative signs. s
- Reduced babbling.

Visual attention

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<sup>2</sup> <https://www.cdc.gov/ncbddd/spanish/autism/screening.html>;



- Fixation on certain objects.
- Reduced visual attention flexibility.
- Reduced social orientation (low motivation towards social interests) and increased orientation towards non-social stimuli.
- Prolonged exploration of play materials and difficulty in changing games.

#### Social communication

- Atypical gaze (**eye tracking** studies).
- Different visual orientation (1st year).
- Altered, less intense and less frequent expression: social smile, social interest, anticipatory response, **joint attention** behaviours, expression of positive affect).

#### Game

- Imitations of scarce actions.
- Interest in reduced social play.
- Repetitive game actions.
- Prolonged visual examination of toys (observed, manipulated, but not played with).

#### Motor development

- Delayed fine and gross motor skills.
- Atypical and repetitive motor behaviours and postures (in 5-month-old infants).

#### Temperament

- Abnormal behavioural reactivity.
- Atypical sensory reactivity.
- Irritability, difficult to console.
- Passivity, non-reaction to any social stimulus.
- Regulation of atypical care.

The identification and recording of early symptoms or warning signs is done by means of detection tools. Among the many existing ones, the following are highlighted:

- M-CHAT, M-CHAT-R/F (*Modified Checklist for Autism in Toddlers*) (Robins et al., 2009). It is a screening tool that parents respond to in order to assess the risk of autism spectrum disorder. It is the most widely used screening test internationally and has been adapted and validated for the Spanish population of 16-30 months of development (Hernández et al., 2005; Canal et al., 2011).
- 25 typical indicators of autism at the 18/24 months stage (Rivière, 2000).
- *Pervasive Developmental Disorder Screening Test-II* (PDDSTII) (Siegel, 2004). It comprises questions about the child's development in the first 48





months of life. It is based on information from parents and has 3 versions for 3 different stages of consultation.

- ESAT (*Early screening for autistic traits questionnaire*) (Dietz et al., 2006). It is a 14-item questionnaire designed to identify children at risk for ASD at 14-15 months in combination with specific **developmental monitoring**.
- **CSBS DP** (Wetherby and Prizant Social and Symbolic Behaviour Scale, 2002). It is not specific for the detection of ASD, but it is used to monitor social and communicative development between 6 and 24 months. It allows to establish alterations in the areas of language (vocalisations, words...), social (emotions, eye contact, gestures...) and symbolic (understanding and use of objects). It consists of 24 questions to be answered by the child's parents or carers.
- For older ages, the Social Communication Questionnaire (SCQ) can be used (Rutter et al., 2003). It is a questionnaire answered by parents and caregivers to assess possible ASD. It is composed of 40 items that add up to a total score and three possible additional scores (social interaction problems, communication difficulties and restricted, repetitive and stereotyped behaviour). It is indicated from the age of 4 years. It is divided into two parts: A (lifelong) and B (current). The cut-off point is 15.
- The Haizea-Llevant Scale, (Fernández Matamoros, 1991) validated in Spain, allows to check children's maturation between birth and 5 years of age, to alert about the possible presence of ASD and other disabilities in childhood (Hernández et al., 2005).

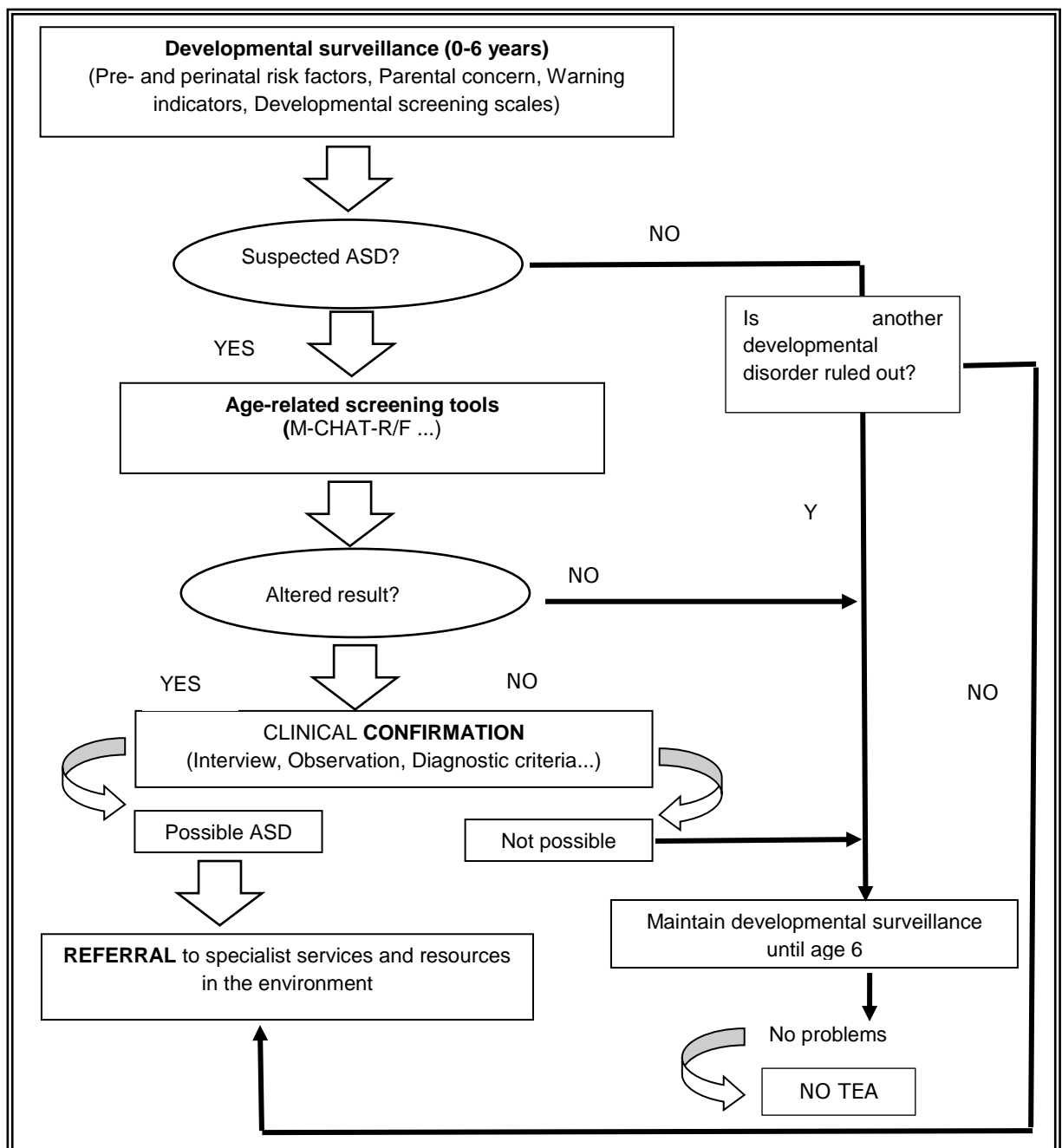


Figure 1. Decision algorithm for the detection of autism spectrum disorders. Adapted from Arnaiz, and Zamora (2013).

The figure above shows an example of the screening and referral process to be carried out by health, education and social services.

Alonso-Esteban et al. (2020) in their study on the quality of available ASD screening instruments concluded that more coordinated and joint research efforts are needed to improve our understanding of ASD and to increase and improve early detection tools in the Spanish-speaking population.



In the field of early detection of ASD it is important to note that research studies using **eye-tracking**<sup>3</sup> as a biomarker, which aim to find risk indicators in infants, are currently of particular note.

### 5.8.2. Early diagnostic assessment

Once signs of ASD have been detected, the child should be referred to specialists for a comprehensive assessment. The diagnosis is made based on observation of their behaviour, knowledge of their developmental history and the application of medical and psychological tests to detect the presence of the signs and symptoms of autism. That is to say, the diagnostic assessment must include: an exhaustive medical and neurological assessment, complete family history, physical and neurological examination (head circumference, general examination -including mental state in all aspects associated to autism-, motor examination, audiometry) and laboratory tests (metabolic and genetic studies, electrophysiological tests, neuroimaging tests...) (Hervás et al., 2017).

It must be carried out quickly and effectively, avoiding any delay in diagnosis and therapeutic intervention, by a multidisciplinary team of professionals specialised in ASD, with the collaboration of other professionals who are in contact with the affected person (teachers, professionals from early intervention teams, etc.) and, of course, the family.

The current international criteria used (DSM-5 and ICD 11) have sufficient reliability to ensure the validity of the diagnosis. The assessment should include information from parents, observation of the child, interaction with the child and clinical judgement. For this purpose, there are structured systems to obtain information, such as the ADIR interview and structured observation systems such as the ADOS, which confer a higher reliability to the diagnostic classification (Autismo Burgos, 2005). The ADI-R (autism *diagnostic interview-revised*) and the ADOS2 (*autism diagnostic observational schedule*) are considered key instruments in the clinical and research assessment of ASD. The ADI-R is an interview with parents or caregivers of children, adolescents and adults with ASD. The ADOS2 (updated version of the ADOS) is a semi-structured interview for children, adolescents and adults with ASD. These tools should be used by professionals trained in their use.

As established in the guidelines for good practice in assessment and diagnosis (Díez Cuervo et al., 2005), it is necessary to use standardised tests and examinations, validated and adapted to the Spanish population, for the assessment of cognitive and language areas that can establish criteria for making decisions on the development of the person in these areas.

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<sup>3</sup> The BB Miradas programme for the early detection of autism <https://www.autismoburgos.es/programa-bbmiradas/> has collected millions of data from 276 babies aged 4 to 36 months in Burgos, of which 60 have been diagnosed early, "which greatly improves their quality of life and that of their families". <https://www.diariodeburgos.es/noticia/zc2e8f416-d479-6f9c-0c3efed265b2a0cf/202209/fundacion-miradas-autismo-y-la-ubu-refuerzan-su-colaboracion>; <http://bbmiradas.fundacionmiradas.org/>



### 5.8.3. Difficulties in the diagnostic process

When making the diagnosis, especially at early ages, it can be difficult to establish the limits with respect to other developmental disorders that show some behavioural overlap (specific language disorders, intellectual disability, comorbid psychological disorders...). To overcome these difficulties, it is necessary to effectively and thoroughly assess the behaviours and competences indicated in the diagnostic criteria, mainly the socio-communicative area and the repertoire of interests, activities and repetitive behaviours (Arnaiz and Zamora, 2013).

Another important challenge relates to improving the diagnosis of girls with ASD. The presentation of symptoms may be different from that of boys, and this means that in some cases their difficulties may go unnoticed. Merino (2018) points out some of these divergences. Girls may not show: repetitive or stereotyped behaviours, or clearly show unusual interest, symptoms that are expected and observable in many children with ASD, but just because they are not observed in girls does not mean that they are not present; repetitive and stereotyped behaviours that are as marked or frequent as in boys (Merino, 2022). In addition, they may present special interests similar to their typically developing girl peers with the same themes, and often less quirky or peculiar than those more commonly reported in their male peers on the autism spectrum, etc. (Martos and Llorente, 2019).

Detection and diagnosis is particularly difficult when we encounter individuals with ASD in what the DSM-5 calls grade 1 (previously called Asperger syndrome). These cases are diagnosed, on average, at the primary school stage. This does not imply that before this age their main characteristics had not manifested (parents usually report their first suspicions at around 22 months of age) but that, in many cases, they have not been correctly diagnosed and may be referred to erroneous diagnoses such as communication disorders, ADHD, schizoid personality disorder (Arnaiz et al., 2007). A proper diagnosis benefits the family and professionals in different areas, but above all the person with ASD, as it has a direct impact on the planning of educational resources and medical and social support which, together with society's increasing awareness of ASD, can offer the person the ideal context for their personal and social development.

To finish the section of diagnostic assessment, to point out the importance of families in this process. They present a multiple and diverse role: they constitute the most exhaustive source of information on the development of the child, providing key data in the issuing of the diagnosis; they request and receive the diagnosis; they unconditionally support the family member with autism in all the stages of his/her life, they look for and plan supports and resources; and they bear for life the effects and impact of this disorder on the persons and the family functioning (Arnáiz and Zamora, 2013). To these roles, we must add their responsibility as creators and managers of resources, as they are an active part of Associations that run specific services for ASD.



## 5.9. Early intervention and care

Nowadays, there is no specific medical treatment to modify the nuclear characteristics of autism. Early detection and the consequent implementation of an early intervention programme is still the main option, as it is related to a better clinical evolution of the child.

The main approach to ASD is of a psychoeducational nature, through interventions that are used alone or in combination with pharmacological treatments, which do not explicitly address the main symptoms of autism. These constitute support measures for behavioural management and reduction of associated clinical symptomatology, such as uncontrolled behaviours, insomnia, self-harm, etc. (Saldaña and Moreno, 2013).

According to Rivière (2001), intervention priorities depend on the developmental stage and characteristics of each child. Taking into account that a child with ASD does not necessarily learn at a slower pace than others, but has a learning style that is divergent from others, the degree of evolution will vary according to his intelligence and the severity of his symptoms, as well as his possibilities of symbolic and linguistic development, the degree of family assimilation, the quality of educational and therapeutic services.

The implementation of intensive and comprehensive early interventions specifically designed for children with ASD indicates very satisfactory results. These interventions have certain common aspects: persisting in a naturalistic approach, empowering parents and significant others, and being designed taking into account both the theories of interpersonal development and the implementation of behaviour modification techniques and strategies aimed at managing behavioural problems of infants with ASD (Hervás et al., 2017).

Early intervention needs to include goals based on the expected developmental milestones of a "typical" child. It should revolve around social routines, taking into account the child's motivation and interests, in order to stimulate and work on the most impaired areas of neurodevelopment (imitation, communication and language, social initiation and motivation, development of motor and cognitive skills such as play, and, at the centre of all intervention, interaction with an adult). Priority should be given to developing the capacity to generate opportunities for social interaction in which the child with signs of ASD is the natural initiator of the interaction. Therefore, the person providing the intervention needs to be sensitive, skilled and creative and therefore motivating. Through imitation and initiation of actions, movements and activities in interaction with another person, the aim is to stimulate brain structures related to gaze following, **joint attention**, facial perception, emotion recognition and imitation, among others.

According to Hervás et al. (2017) any type of intervention must meet the following requirements:

- Start as early as possible.



- Shared and coordinated between the parents, the educational centre and the therapist responsible for the child, throughout the different stages of development.
- Individualised, applying strategies adapted to the needs and characteristics of each child.
- In the child's natural environment, whenever possible,
- Intensive, including the hours the child is in school and the hours spent with his or her family.
- As in the diagnosis, count on a multidisciplinary team and the collaboration of other professionals, if deemed appropriate.

### 5.9.1. Early intervention programmes

#### 5.9.1.1. Communication programmes

Alternative or augmentative communication systems aimed at people with ASD who have little verbal communication capacity, either because they have not developed language, or if they have language, it is scarce and they need visual support as a complement to their verbal language.

One of these programmes is the *Picture Exchange Communication System* (PECS) created by Bondy, and Lori Frost in 1985 and whose main objective is to teach functional communication. Through pictures, images or pictograms the person with ASD can make requests for things they want or can make comments or longer sentences and through a "sentence strip" answer questions. It presents different levels of complexity, from teaching the child to deliver the image of an object to the receiver (request) to expressing wishes, feelings, emotions... The progress in the levels is determined by the age and characteristics of the people to whom it is applied.

#### 5.9.1.2. Programmes on social interaction and promotion of social competences

As we have already mentioned, people with ASD have difficulties in **theory of mind**, i.e. in attributing mental states to others, giving them their own thoughts and feelings, different from those of oneself; and in **executive functions**, i.e. in attending to the signs of the environment and the people with whom they interact, planning actions, solving possible problems and being flexible to seek more than one solution, evaluating the consequences of each one. Therefore, in order to develop competences in the social area, it is first necessary to work on mentalistic capacity (Rivière, 1991), through mentalistic stimulation programmes (Saiz Manzanares and Román Sánchez, 2010, 2011) and **executive functions**.

There are different types of interventions to teach social skills (understanding social situations, responding to others' social initiatives, initiating social behaviours directed



at both adults and peers, decreasing stereotyped behaviours and using a varied repertoire of flexible responses, thus developing self-regulatory behaviour). Social stories, social scripts, etc. are some of the strategies to be used to improve these kinds of competences.

### 5.9.1.3. TEACCH Programme

The TEACCH programme, *Treatment and Education of Autistic and Related Communications Handicapped Children* (Schopler 1988, in Mesibov, and Howley, 2021), is based on the knowledge of the abilities of the person with ASD, in understanding autism. Its main objective is to offer security and to generate autonomy in people with ASD. It starts from the general philosophical principle of the need for an adjustment between the person and his/her environment, through the improvement of the person's abilities by means of education and the introduction of changes in the environment to respond to his/her difficulties (Saldaña and Moreno 2013).

It is the educational intervention methodology that best understands people with ASD and is primarily based on structured teaching, which, according to Mesibov and Howley (2021), evolved in order to make educational actions responsive to the different ways of understanding, thinking and learning of people with ASD.

Structured teaching is based on the evidence and observation that people with ASD share a neurological pattern of strengths and weaknesses called Autism Culture (Mesibov and Shea (2010). It is designed to address the main neurological differences that occur in autism (Mesibov, and Howley, 2021).

According to these authors, the main elements of structured teaching, which should be present, as far as possible, at home and in the pre-school, are:

- Physical structuring and spatial organisation: This refers to the way furniture, materials and the general environment are placed in order to add meaning and content to the environment. ... It allows to organise and clarify the purpose of the space, as well as to reduce distractions ...
- Timetables and agendas: They provide cues that tell children with ASD what activities will take place over a period of time and in what order; they organise and communicate sequences of events in a way that is understandable to the person.
- Work system and task organisation: It provides a systematic way of approaching the work to be done in order to get the tasks done. It serves as a complement to the timetable that outlines the sequence of activities a person has to follow during the day, the work system tells the person what activity to do and how to do it. It is a type of support that helps people with ASD to develop organisational skills.
- Visual information: Includes everything that is used to organise, clarify and differentiate tasks and activities. They are visual aids to guide the person with





ASD, providing information on how to complete tasks and how to use the necessary materials. Each task should be visually organised and structured to minimise anxiety. Therefore, three components must be taken into account: visual clarity, visual organisation and visual instructions.

#### **5.9.1.4. Positive Behavioural Support**

Educational intervention strategy, based on the principles of behaviour modification, with scientific support and experience, in terms of its high efficacy in people with ASD.

According to this approach, a behavioural problem is due to confusion, a lack of communication skills... in other words, it is a reaction to a situation that the person with ASD does not understand or for which he/she does not have communication or coping tools. Therefore, in order to cope with behavioural problems, environmental conditions and/or skill deficits must be corrected (Carr et al., 1996). It therefore places emphasis on the context, modifying it, and on the person's skills, helping to empower the person by acquiring communication, social and coping skills.

The principles of Positive Behavioural Support are:

1. Behaviour has a function for the person.
2. Behaviour is related to context.
3. Effective understanding must be based on an understanding of the person, their social context and the function of the behaviour.
4. Intervention should focus on the values of the individual, respect for his or her dignity, preferences and aspirations.

#### **5.9.1.5. Sensory Stimulation and Integration**

As has also been discussed throughout this module, hyper- and hyposensitivities are a characteristic of ASD, consisting of either an increased (hyper) or decreased (hypo) capacity for sensory perception and integration (commonly auditory and nociceptive or physical pain perception). This different form of sensory processing is often the cause of problems in learning, behaviour and motor coordination, and may affect global development (social, cognitive, care and personal autonomy skills and communication).

Sensory stimulation and integration facilitate the ability to organise oneself in the world around us. However, taking into account the diversity of response to stimuli that people with ASD may present, when intervening it is important to know the individual characteristics and to make a specific sensory profile in order to maximise the intervention and facilitate the assimilation and understanding of information.

In terms of intervention, modifications can be made to the environment, such as reducing clutter, minimising noise and other distractions... Space dividers can be helpful



in reducing alertness by removing stimuli. For example, it can be useful to divide the space into a work area, a movement area and a quiet zone.

According to Miñano (2019), sensory integration could be a useful tool for improving adaptive skills in children with ASD, improving their sensory experiences and their occupational performance in their daily lives, although he refers to the need for more rigorous studies. Abelenda et al. (2020) conclude their study by stating that the use of sensory integration with people with ASD is currently an evidence-based intervention.

### **5.10. Characteristics of Early Intervention Programmes**

In conclusion, we present the main aspects that, according to AETAPI (2012) (see Márquez, 2013), need to be taken into account in order to achieve quality programmes.

1. To offer *advice and coordination to families* in their daily problems and in everything related to the regulatory framework and resources available in the environment.
2. To start from *psychoeducational approaches* as these are the ones that provide the best evolution for people with ASD. They include psychological and educational services focused on assessment and intervention in socio-emotional, communicative, play and behavioural aspects, without neglecting aspects related to personal self-regulation, autonomy, family relationships, academic skills, leisure and community life.
3. Using *specific programmes and techniques* that facilitate the understanding of the physical and social environment around the child and thus increase the child's possibilities to communicate and relate. Use of visual systems to support communication and/or understanding of the environment, the strategy of minimising or reducing or adapting language to children's needs and abilities, the strategies of the natural model or pragmatic model for language stimulation, or the strategies of the motivational model and structured work environments.
4. Include the family. The *participation of the family* is relevant within the early intervention programme, and for this reason, it is very important to count on the full inclusion of the family as members of the team and to offer training for this task.
5. Individualisation of intervention. After a detailed assessment, a *global or comprehensive* intervention plan should be drawn up, agreed upon by all the adults in the different settings, which responds to individual needs and characteristics, which promotes the best possible development and which is focused on everyday life, on the promotion of legitimate personal and family well-being.
6. Intervene *intensively* and *extensively*. Provide an intervention that is feasible to develop at all times, in a generalised manner and by the people who make up the child's social and educational environment.
7. The intervention programme should focus on developing *meaningful* and motivating *learning*, taking into account personal interests, age and different environments.
8. The areas of *communication skills, social development and play*, those most in need of support, should be a priority target for intervention, as overall development can be advanced as a result of intervention that focuses on these areas as opposed to the



sometimes excessive weighting on cognitive, oral, motor, academic skills or general stimulation programmes. During the first years of life, learning is basically *incidental*. Learning takes place through play and experimentation with the environment and in relation to others, accompanying these interactions with the appropriate strategy at any given moment. Children with ASD also learn through interaction with their environment, as long as intentional incidental learning is promoted.

9. The early use of *augmentative and/or alternative communication systems* is very useful for the improvement of communication and oral language in people with ASD, so it is necessary to ensure that communication will be favoured from the earliest ages using these systems from practical experience and flexibility. It is essential that communication aids are used by all the people in the child's environment and it is also necessary to have an individualised intervention, focused on the interests of the child and his/her family.

10. The principles of *positive behavioural support* recognise that the best way to manage problem behaviours is to know in advance the function of the behaviour for the person engaging in the behaviour and that the intervention respects the legitimate aspirations and desires of the family and, therefore, of the child. Once the reason for the inappropriate behaviour is known, preventive and/or educational strategies are proposed, in addition to promoting appropriate skills and behaviours that fulfil the same function as the inappropriate behaviour.

## Summary

Throughout this module III. 5 we have been getting into the reality of the Autism Spectrum Disorders (ASD). The definition, history, core characteristics, aetiology, explanatory theories and **prevalence** have been approached. It has been highlighted that early detection and attention constitute a primordial need to improve the quality of life of people who, in their condition of ASD, present a different cognitive style, a different learning rhythm, given that their brain processes information in a different way. Tools (assessment tests, intervention programmes) aimed at achieving this goal have been demonstrated.

## Glossary

**Joint attention:** Interactions in which attention is paid to the same thing as the interlocutor's attention and are mediated by gestures such as **eye tracking** or non-verbal body and facial language.

**Central/global coherence:** Tendency to process the information we receive, within a context in which the essentials are captured - piecing information together to make more sense - often at the expense of memory for details.

**Comorbidity:** Presence of one or more disorders in addition to the primary disorder.



**Eye-tracking:** A technological tool that aims to extract information from the user by analysing their eye movements. Its artificial intelligence-based software algorithms capture eye movements and translate them into precise actions on a screen to provide information on children's eye movements when exposed to a stimulus. This technology can be used to look for the connection between gaze and deficits associated with ASD and for the assessment of emotional recognition and the degree of communicative development of a person with autism.

**Executive function:** Set of skills involved in maintaining an appropriate framework for problem solving (planning, working memory, inhibition of inappropriate responses, monitoring one's own task...).

**Intersubjectivity:** Primary psychological mechanism that makes it possible to innately pay attention to human characteristics and to perceive the underlying emotions and attitudes in interaction and in the act of another human sharing attention and transcribing an emotion towards an object. It is the basis for the knowledge of others as persons with thoughts, emotions and states.

**Biological marker:** Any characteristic that can be objectively measured and evaluated as an indicator of a state of health or disease because it is characteristic and specific to a particular situation. Such as, genetic markers.

**Developmental monitoring:** The active and ongoing process of observing a child's growth and encouraging conversations between parents and/or caregivers and professionals about the child's skills and abilities. It involves observing how the child is growing and whether the child is reaching the typical developmental milestones, or skills that most children reach by a certain age, in playing, learning, talking, behaving and moving.

**Mirror neurons:** Motor cells found in the premotor cortex and inferior parietal lobe of our brain. They allow us to understand the feelings of others and make connections between other people. When one person observes another person acting, thinking or feeling, small "electrical triggers" are produced in the brain that activate the received signal. They play an important role in imitation, learning and empathy.

**Prevalence:** Proportion of individuals in a population suffering from a disorder at a given time or time period.

**Theory of mind:** Ability to attribute independent mental states to oneself and others in order to explain and predict behaviour, enabling the representation of mental states.

**Neurodevelopmental disorders:** Group of disorders that originate in the development period. They often manifest themselves at an early age, before beginning primary school and are characterized by a development deficit that results in limitations in personal, social, academic and occupational functioning.

## Bibliography

- Abelenda, A. and Armendariz, E. (2020) Scientific evidence of sensory integration as an occupational therapy approach in autism. *MEDICINA* (Buenos Aires) Vol. 80 (Suppl. II): 41-46 1 ISSN 1669-9106
- Alcantud, F. and Dolz, I. (2003). Concept of pervasive developmental disorders, autism or autistic spectrum disorders. In F. Alcantud (Coord.) *Intervención psicoeducativa en niños con trastornos generalizados del desarrollo* (19-34). Alianza.
- Alonso-Esteban, Y., Marco, R., Hedley, D., Barbaro, J., Uljarević, M., Canal-Bedia, R. and Alcantud-Marín, F. (2020). *Screening instruments for the early detection of Autism Spectrum Disorders in Spain* Infocop (online) [https://www.infocop.es/view\\_article.asp?id=15035](https://www.infocop.es/view_article.asp?id=15035)
- Arnáiz, J., Casado Muñoz, R., Cuesta Gómez, J. L., Lezcano, F., Martínez Martín, M. A., Pérez de la Varga, L., Bustos, M. V., Giacinti, M. F., Pretel, A. and Varona, M. C. (2007). *Guía de atención a personas con trastornos del espectro autista*. San Rafael: Zeta.
- Arnaiz, J. and Zamora, M. (2013). Detection and diagnostic assessment in ASD. In M.A. Martínez-Martín and J.L. Cuesta (Coords) *Todo sobre el Autismo. Autism Spectrum Disorders (ASD). A complete guide based on science and experience* (pp. 89-132). Altaria.
- Asperger, H. (1944). Die "Autistischen Psychopathen" im Kindesalter. *European Archives of Psychiatry and Clinical Neuroscience*, 117(1), 76-136.
- American Psychiatric Association (APA, 2014). *Diagnostic and statistical manual of mental disorders (DSM-5)*. Masson
- Asociación Autismo Burgos (2005). *Support manual for the detection of autism spectrum disorders*. Autismo Burgos.
- Baron-Cohen, S., Leslie, A. and Frith, U. (1985). Does autistic children have a "theory of mind"? *Cognition*, 21, 37-46.
- Busquets, L., Miralbell, J., Muñoz, P., Muriel, N., Español, N., Viloca, L. and Mestres, M. (2018). Early detection of autism spectrum disorder during the first year of life in the paediatric clinic *Pediatría Integral* 2018; XXII (2), 105.
- Canal, R., García, P., Martín, MV., Santos, J., Guisuraga, Z., Herráez, L., Herráez, del M., Boada, L., Fuentes-Biggi J, Posada-de la Paz, M. J. (2011). Modified checklist for autism in toddlers: cross-cultural adaptation and validation in Spain. *Journal of Autism and Developmental Disorders*, 41 (10), 1342-51.
- Carr, E. G., Levin, L., Mcconnachie, G., Carlson, J. I., Kemp, D. C., and Smith, C. E., (1996). *Communicative intervention on behaviour problems*. Alliance.
- Coleman, M., and Gillberg, C. (2012). *The autisms*. OUP USA.

- Confederación Autismo España (2022). *What is autism*. <https://autismo.org.es/>
- Dietz C, Swinkels S, van Daalen E, van Engeland H, Buitelaar J, K. (2006). Screening for autistic spectrum disorder in children aged 14-15 months. II: Population screening with the Early Screening of Autistic Traits Questionnaire (ESAT). Design and general findings. *Journal of Autism and Developmental Disorders*; 36(6), 713-22.
- Díez-Cuervo, A., Muñoz-Yunta, J. A., Fuentes-Biggi, J., Canal-Bedia, R., Idiazábal-Aletxa, M. A., Ferrari-Arroyo, M. J., Mulas, F., Tamarit, J., Valdizán, J. R., Hervás-Zúñiga, A., Artigas-Pallarés, J., Belinchón-Carmona, M., Hernández, J. M., Martos-Pérez, J., Palacios, S., Posada-De la Paz, M. (Grupo de Estudio de los Trastornos del Espectro Autista del Instituto de Salud Carlos III. Ministry of Health and Consumer Affairs, Spain) (2005). Good practice guidelines for the diagnosis of autism spectrum disorders. *Revista Neurología 41* (5): 299-310.
- Fernández-Matamoros, I. Fuentes, J. and Rueda, J. (1991). *Haizea-Llevant scale*. Basque Government Publications Department.
- Fombonne, E., Siddons, F., Achard, S., Frith, U. and Happé, F. (1994). Adaptive behaviour and theory of mind in autism. *European Child & Adolescent Psychiatry*, 3(3), 176-186.
- Frith, U., and Happé, F. (1994). Autism: Beyond "theory of mind". *Cognition*, 50(1), 115-132.
- Fuentes, J., Basurko, A., Isasa, Galende, I., Muguerza, M. D.,; García-Primo, P. , García, J. , Fernández-Álvarez, C.J. , Canal-Bedia, R. , Posada, M. (2021). The ASDEU autism prevalence study in northern Spain. *European Child and Adolescent Psychiatry* 30(4):579-589. doi: 10.1007/s00787-020-01539-y.Epub 2020 May 9.
- Happé, F. and Frith, U. (2006). The weak coherence account: detail-focused cognitive style in autism spectrum disorders. *Journal of autism and developmental disorders*, 36(1), 5-25.
- Hernández, J. M., Artigas-Pallarés, J., Martos-Pérez, J., Palacios-Antón, S., Fuentes-Biggi, J., Belinchón-Carmona. M., Canal-Bedia, R., Díez-Cuervo, A., Ferrari-Arroyo, M. J., Hervás-Zúñiga, A., Idiazábal-Alecha, M. A., Mulas, F., Muñoz-Yunta, J. A., Tamarit, J., Valdizán, J. R. Posada-De la Paz, M. (Grupo de Estudio de los Trastornos del Espectro Autista del Instituto de Salud Carlos III. Ministry of Health and Consumer Affairs, Spain) (2005). Good practice guidelines for the early detection of autism spectrum disorders. *Revista Neurología 41* (4): 237-245.
- Hervás, A., Balmaña, N. and Salgado, M. (2017). Autism spectrum disorders (ASD). *Pediatría integral*, XXI (2), 92-108.



- Hobson, R. P. (1993). The intersubjective domain: Approaches from developmental psychopathology. *Journal of the American Psychoanalytic Association*, 41, 167-192.
- Jiménez, P. (2013). Developmental development in autism spectrum disorders, In M.A. Martínez-Martín and J.L. Cuesta (Coords) *Todo sobre el Autismo. Autism Spectrum Disorders (ASD). A complete guide based on science and experience* (pp. 65-88). Altaria
- Kanner, L. (1943). Autistic disturbances of affective contact. Included in an anthology of his articles entitled *Childhood Psychosis: Initial Studies and New Insights* (1973), 217-250.
- Maenner, M., Shaw, K., Baio, J., Washington, A., Patrick, M., DiRienzo, M., Christensen, D., Wiggins, L., Pettygrove, S., Andrews, J., Lopez, M., Hudson, A., Baroud, T., Schwenk, Y., White, T., Rosenberg, C., Lee, L., Harrington, R., Huston, M., ..... Dietz, P. (2020). Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years - Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016. *MMWR Surveillance Summaries*. 2020 Mar 27; 69(4): 1-12  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7119644/>
- Márquez, C. (2013) (Coord AETAPI). Recommendations for families seeking early intervention for their child with ASD In M.A. Martínez-Martín and J.L. Cuesta (Coords) *Todo sobre el Autismo. Autism Spectrum Disorders (ASD). A complete guide based on science and experience* (pp. 169-190). Altaria.  
<http://aetapi.org/download/recomendaciones-familias-buscan-atencion-temprana-hijo-trastorno-del-espectro-del-autismo/>
- Martín Borreguero, P. (2004). *El síndrome de Asperger ¿Excentricidad o discapacidad social?* Alianza.
- Martos, J. and Llorente, M. (2019). *Life in alphabetical order. The world of people with Asperger's*. La esfera de los libros.
- Merino, M. (2016). Doctoral thesis: *Design and validation of a life skills programme for people with autism spectrum disorders*.
- Merino, M.; D Agostino, C.; de Sousa, V.; Gutierrez, A.; Morales, P.; Pérez L.; Camba, O., Garrote, L. and Amat, C. (2018). *Good practice guide for girls, adolescents and women with Autism Spectrum Disorder*. AETAPI.  
<http://aetapi.org/mesa-de-mujeres-con-tea/>
- Merino, M. et al. (2022). *Women and autism: The camouflaged identity*. Altaria.
- Mesibov, G. B. and Shea, V. (2010). The culture of autism: from theoretical understanding to educational practice. <https://autismuk.com/the-culture-of-autism/>



- Mesibov, G. and Howley, M. (2021) (2nd Ed.). *Access to the curriculum for students with autism spectrum disorders: Using the TEACCH programme to promote inclusion*. Autismo Ávila.
- Miñano, M (2019). Effectiveness of sensory integration therapy in children with ASD. Boletín Psicoevidencias nº 54 ISSN 2254-4046 <https://www.psicoevidencias.es/contenidos-psicoevidencias/banco-de-cat-s/732-efectividad-la-terapia-de-integracion-sensorial-en-ninos-con-tea>
- Mundy, P., Kasari, C., & Sigman, M. (1992). Nonverbal communication, affective sharing, and intersubjectivity. *Infant behavior and development*, 15(3), 377-381.
- Murillo, E. (2013). Conceptual update of Autism Spectrum Disorders. In M.A. Martínez-Martín and J.L. Cuesta (Coords) *Todo sobre el Autismo. Autism Spectrum Disorders (ASD). A complete guide based on science and experience* (pp. 23-63). Altaria
- World Health Organization (WHO) (2022). *International Classification of Diseases (ICD-11)*. <https://icd.who.int/browse11/l-m/es>
- Ozonoff, S., Pennington, B. F. & Rogers, S. J. (1991). Executive function deficits in high-functioning autistic individuals: Relationship to theory of mind. *Journal of child Psychology and Psychiatry*, 32(7), 1081-1105.
- Rivière, A. (1991). The development and education of the autistic child. In A. Marchesi, C. Coll and J. Palacios (Comp.) *Desarrollo psicológico y educación III. Special educational needs and school learning* (313- 333). Alianza.
- Rivière, A. (2000). How does Autism appear? Early Diagnosis and Early Indicators of Autistic Disorder". In A. Riviere and J. Martos (Eds.) *El niño pequeño con Autismo*. APNA.
- Rivière, A. (2001). The treatment of autism as a developmental disorder: General principles. In A. Rivière and J. Martos (Comp.) *El tratamiento del autismo. New perspectives* (pp. 23-59). Ministry of Labour and Social Affairs.
- Rizzolatti, G. and Fabbri-Destro, M. (2010). Mirror neurons: from discovery to autism. *Experimental Brain Research*, 200(3-4), 223-237.
- Rizzolatti, G., Fadiga, L., Fogassi, L. and Gallese, V. (1999). Resonance behaviors and mirror neurons. *Archives italiennes de biologie*, 137(2), 85-100.
- Robins, D. L., Fein, D., Barton, M. L., & Green, J. A. (2001). The Modified Checklist for Autism in Toddlers: an initial study investigating the early detection of autism and pervasive developmental disorders. *Journal Autism Developmental Disorders*, 31 (2), 131-44.
- Rutter, M, Bayley, A and Lord, C. (2010). *Social Communication Questionnaire*. TEA.
- Saiz-Manzanares, M.C. and Román Sánchez, J. M. (2010). *Programme for the development of mentalistic skills in young children*. CEPE.



- Saiz-Manzanares, M.C. and Román Sánchez, J. M. (2011). *Mentalistic stimulation in early childhood*. CEPE.
- Saldaña, D. and Moreno, F.J. (2013). Effectiveness of psychological interventions in ASD. In M.A. Martínez-Martín and J.L. Cuesta (Coords) *Todo sobre el Autismo. Autism spectrum disorders (ASD). A complete guide based on science and experience* (pp. 191-220). Altaria.
- Waterhouse, L. (2013). *Rethinking autism: variation and complexity*. San Diego: Academic Press.
- Wetherby, A. M.; Prizant, B. M. (2002). [CSBS DP manual: communication and symbolic behavior scales developmental profile](#). Paul H. Brookes Pub., Baltimore, Md. 2002.
- Wing, L. (1981). Asperger's syndrome: a clinical account, *Psychological Medicine*, 11, 115-129.
- Zeidan, J., Fombonne, E., Scolah, J., Ibrahim, A., Durkin, M. S., Saxena, S., ... & Elsabbagh, M. (2022). Global prevalence of autism: A systematic review update. *Autism Research*, 15, 778-790.
- Zwaigenbaum, L., Bryson, S., Lord, C., Rogers, S., Carter, A., Carver, L., Chawarska, K., Constantino, J., Dawson, G., Dobkins, K., Fein, D., Iverson, J., Klin, A., Landa, R., Messinger, D., Ozonoff, S., Sigman, M., Stone, W., Tager-Flusberg H, and Yirmiya N. (2009). Clinical assessment and management of toddlers with suspected autism spectrum disorder: insights from studies of high-risk infants. *Pediatrics*, 123 (5), 1383-91. Review.

### **Basic bibliography Module III. 5**

- Martínez-Martín, M. A and Cuesta, J. L. (Coords). *All about Autism. Autism spectrum disorders (ASD). A complete guide based on science and experience*. Altaria.
- Rivière, A. and Martos, J. (2000) (Eds.). *The young child with Autism*. APNA.
- Rivière, A and Martos, J. (Comp.) *El tratamiento del autismo. New perspectives* (pp. 23-59). Ministry of Labour and Social Affairs.
- Martos, J. and Llorente, M. (2019). *Life in alphabetical order. The world of people with Asperger's*. La esfera de los libros.

### **Recommended bibliography Module III. 5**

- Jabato, M.J y Esteban, L. (2010). *Camilo's silence*. Autismo Burgos.
- Esteban, L. y Merino, M. (2013). *Zara is transparent*. Autismo Burgos.
- Esteban, L. y Merino, M. (2013). *Zara is growing up*. Autismo Burgos.
- Merino, M. y Esteban, L. (2021). *El verdadero interés de Felisa/Felisa's true interest*. Autismo Burgos.

## Resources and websites

AETAPI. Association of Autism Professionals <https://aetapi.org/>

<https://aetapi.org/informe-evidencia/> (document in English)

ARASAAC. Aragonese Centre for Augmentative and Alternative Communication  
<https://arasaac.org/>

Application Follow the development  
<https://www.cdc.gov/ncbddd/spanish/actearly/spanish-milestones-app.html>

The birthday party. Video about the signs of autism in children .

<https://autismwales.org/en/community-services/i-work-with-children-in-health-social-care/the-birthday-party/>

Testing and diagnosis of autistic spectrum disorders  
<https://www.cdc.gov/ncbddd/autism/screening.html>

Tools for monitoring development indicators  
<https://www.cdc.gov/ncbddd/actearly/freematerials.html>

Early Signs of Autism Spectrum Disorders Tutorial I Kennedy Krieger Institute  
<https://www.youtube.com/watch?v=Jkiz0pYqJ4k>

<https://firstwordsproject.com>

<https://pecs-spain.com/el-sistema-de-comunicacion-por-el-intercambio-de-imagenes-pecs/>

<https://teach.com/>

