

**INTERSUBJECTIVITY AND AUTISM SPECTRUM DISORDER BETWEEN  
NEUROSCIENCE AND PSYCHOANALYSIS: EMERGING PERSPECTIVES AND  
PEDAGOGICAL IMPLICATIONS**

**INTERSOGGETTIVITÀ E DISTURBO DELLO SPETTRO AUTISTICO TRA  
NEUROSCIENZE E PSICOANALISI: PROSPETTIVE EMERGENTI E IMPLICAZIONI  
PEDAGOGICHE**

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**Abstract**

Aim of this work is to reflect on what neurobiology, cognitive sciences and psychoanalysis have understood about intersubjectivity and the organization of the mind in autism spectrum disorder integrating principles and constructs of the different approaches in order to outline new perspectives for intervention also in the educational field. Autism spectrum disorders, like all complex phenomena, in fact, require multiple points of view that reflect the variety and unpredictability of evolutionary dynamics and outcomes (Contini, 2012; Canevaro, 2013). The study of these disorders in an integrated perspective also favors not only the knowledge of atypical mental functioning but also, as Kandel (2018) points out, the understanding of normal mental processes and this has a great impact on educational practices. The study of intersubjectivity today represents a common basis for a constructive dialogue between neuroscience and psychoanalysis, providing large sharing areas for the study of interpersonal relationships and the implementation of interventions aimed at developing affective, communicative and emotional potential.

Scopo di questo lavoro è riflettere su ciò che la neurobiologia, le scienze cognitive e la psicoanalisi hanno compreso riguardo all'intersoggettività e all'organizzazione della mente nel disturbo dello spettro autistico integrando principi e costrutti dei diversi approcci al fine di delineare nuove prospettive di intervento anche in ambito educativo. I disturbi dello spettro autistico, come tutti i fenomeni complessi, infatti, richiedono molteplici punti di vista che riflettano la varietà e l'imprevedibilità delle dinamiche e degli esiti evolutivi (Contini, 2012; Canevaro, 2013). Lo studio di questi disturbi in una prospettiva integrata, inoltre, favorisce non solo la conoscenza del funzionamento mentale atipico ma anche, come sottolinea Kandel (2018), la comprensione dei normali processi mentali e questo ha un grande impatto sulle pratiche educative. Lo studio dell'intersoggettività rappresenta oggi una base comune per un dialogo costruttivo tra neuroscienze e psicoanalisi, fornendo ampi spazi di condivisione per lo studio delle relazioni interpersonali e la realizzazione di interventi volti allo sviluppo del potenziale affettivo, comunicativo ed emotivo.

## **Key Words**

Intersubjectivity, autism, education, neuroscience, psychoanalysis

Intersoggettività, autismo, educazione, neuroscienze, psicanalisi

## **1. Introduction**

The purpose of this paper is to reflect on what neuroscience and psychoanalysis have understood about the sphere of intersubjectivity and the organization of the mind in autism spectrum disorders, trying to integrate principles and constructs of the two different approaches in order to outline new perspectives of intervention also in the educational field. The reflections presented below are in line with the thinking of those authors (Damiani, Gomez Paloma, 2020; Sibilio, 2020; Contini, 2012; Canevaro, 2013; Demetrio, 1998) who in the last decades have reiterated, with always greater rigor and awareness, the need for an inter and transdisciplinary approach in the field of Educational. The affirmation of the ICF and of the bio-psycho-social model for the description of people's health conditions marks, moreover, a paradigmatic change in this direction. Autism spectrum disorder, like most of the complex phenomena subject to study and intervention in special pedagogy, therefore requires to be investigated from a variety of points of view that reflect the variety and unpredictability of evolutionary dynamics and outcomes. We believe the mutual contamination between special pedagogy, neuroscience and psychoanalysis, disciplines that have the human and the events concerning it as a common object of investigation and which, as Bertolini (1994) points out, have the task of restoring meaning to the complexity of reality called into question, considering the subjective peculiarities and the individual identity as the result of a particular combination of neurophysiological, cognitive, affective, social aspects. It is important to note that, while maintaining the corporeal and psychic dimensions (brain and mind) at the top, neuroscience today moves away from reductionist views and, in the specific context of development and learning, highlight the key role of epigenetics as the foundation of a new epistemological perspective. Studies relating to the field of epigenetics have, in fact, demonstrated how genes and the environment can mutually interact, causing structural changes both at the level of genetic and neurobiological activation (Rutter, 2014; Meek et al. 2013). The mind / brain dualism, which reflects the historical difficulty of dialogue between biological and psychological sciences, can therefore be overcome thanks to the affirmation of a new paradigm based on the discovery that experience, starting with the neonatal one, structures the morphology of the brain and builds its functionality (Schoore, 1994). In particular, the experience is centered and modulated on and by interpersonal relationships, meaning by relationship the set of unconscious emotional communications, conveyed by the non-verbal media of human interactions. Thus a circuit is created in which the interhuman experience, always exquisitely individual, structures the brain of the individual, generating the mind of that precise individual, and this structuring in turn conditions the peculiar way in which that subject will experience, and therefore the it will process, thus further structuring its brain. These new neuroscientific achievements relating to synaptic plasticity and the influence of environmental stimuli on the structure and activity of brain areas allow us to arrive at an integrated vision of mental functioning and a "new scientific humanism" (Kandel, 2018) for the understanding of mind and its disorders. Furthermore, never as today, the study of brain disorders offers significant contributions to the understanding of how our brain works normally and this naturally has an important impact in the field of education.

## **2. The intersubjectivity deficit in autism spectrum disorders**

The Autistic Spectrum is characterized by complex clinical pictures, difficult to reduce, hostile to reductivistic analyzes, in the face of a spectrum of manifestations with blurred boundaries and along a continuum of intensity. These are pathologies in many respects still largely unknown, with multifactorial aetiology on a neurobiological and genetic basis. Autism spectrum disorder is defined as a deficit in socio-emotional reciprocity, characterized by a reduced sharing of interests, emotions or feelings and a lack of use of communicative and verbal behaviors, which, if present, are poorly integrated with each other. In its typical aspect, this syndrome therefore insistently reveals the dysfunctional involvement of some areas (autistic triad): communication, social interaction, imagination (with the related repetitive, stereotyped and unmotivated behaviors) (Crispiani, 2016). Further complexity relates to the fact that each subject exhibits a variable intensity and expressiveness of their symptoms, hence the recent adoption of the concept of autism spectrum and continuum, with a progression of severity levels from mild to very severe. Zappella (2000) highlights the plural nature of this disorder, characterized by an increasing number of isolated causes and different clinical courses. In recent decades there has been a theoretical-conceptual rethinking with the abandonment of the placement of autism in the context of psychosis; qualitative visions are now more accredited which identify in autistic subjects a development trend marked by qualitative anomaly, diversity, rather than impairment tout court. At the base of all forms of autism there would be a “neurobiological defect due to an altered intersubjective constitution” (Barale and Ucelli di Nemi, 2006) for which in children with autism spectrum disorder the development of intersubjectivity appears compromised. In fact, we observe: deficit in eye contact and in the ability to coordinate the gaze, difficulty in experiencing the other as an emotional activator, deficit in shared attention, absence of proto-declarative or deictic gestures, deficit in imitative capacity, lack of sense of reciprocity in the game, lack of empathy. The precocity of the brain malfunction prevents the activation of those structural and functional predispositions typical of every child with typical development that allow rapid integration between environmental, relational and genetic resources. The difficulties in intersubjectivity and communicative development lead to considerable difficulties and deficiencies in interactive exchange as it manifests itself in the lack of intentionality and reciprocity, which are essential components for the development of interactions. The main problems arise in the difficult responsiveness and active involvement of the adult. Mothers, despite being able to adapt their language and their game to the child's abilities, often appear asynchronous in the relationship, probably due to the difficulty of maintaining attention with a child who is not predictable and who does not respond in the expected way. The solicitation, the stimulation, the recall of attention do not obtain the expected responses and on the contrary cause in the child greater confusion and a sense of frustration due to the inability to understand or respond.

### **3. The contribution of neuroscience and psychoanalysis to the study of intersubjectivity**

In recent years, neuroscientific research has allowed the identification of different points of contact with psychoanalysis, offering a morphofunctional basis to specific functions of the mind on which psychoanalytic theories have been based (Cena, Imbasciati, 2014). Specifically, neuroscience is investigating in areas, such as that of emotional exchanges, empathy and interpersonal relationships, which have always been the prerogative of psychoanalysis, providing the empirical validation of many phenomena to which psychoanalysis had attributed meaning. In particular, the study of intersubjectivity, while moving from different points of view and research fields, today represents a common basis for a constructive dialogue between the two disciplines, providing large areas of sharing for the study of interpersonal relationships. Several neuroscientific researches have suggested that dysfunction of the mirror neuron system (MNS) can lead to deficits in social behavior found in

various psychopathologies (Gallese, 2003; Williams et al., 2001), but the strongest evidence comes from studies reporting functional (Oberman et al., 2005; Théoret et al., 2005; Dapretto et al., 2006) and anatomical (Hadjikhani et al., 2006) abnormalities of the MNS in individuals with autistic disorders. In particular, autistic subjects show a total absence of activation of the premotor system of mirror neurons and a hypoactivation of the insula and amygdala, with instead a hyperactivation of the visual cortices. These results are very important as they show that, even when autistics are able to recognize and imitate emotions, they do so using a completely different strategy from that of normotypic subjects; above all, highly functioning autistic subjects would compensate for the enormous difficulties of understanding and interacting with others by activating alternative and parallel modalities such as the visual-imaginative function, developing a great capacity for visualization, thinking through images and associative connections with which it is possible to partially compensate disability. The hypothesis that the deficit of the MNS plays a determining role in autism (Rogers and Pennington, 1991; Altschuler et al., 2000;) is captivating, as it could explain three of the major manifestations of the disease: motor deficits, language and social. This hypothesis was further developed by Gallese (2006), who suggested that the MNS allows the emulation of the behaviors of other people through the sensorimotor simulation (embodied simulation), i.e. an internal representation of bodily states associated with actions and emotions. According to the author, the sensorimotor simulation can lead to intentional attunement (Gallese et al., 2007), a direct form of understanding others through experience. A destruction of the activity of the MNS would therefore lead to the inability in the experiential relationship with others typical of autism. However, according to Gallese (Gallese et al., 2006), the mirror neuron system would not be a real "mirror", because inhibitory mechanisms are active that prevent the action observed in the other from carrying on, so the simulation it is filtered by past experiences, abilities and a series of variables of the subject's personality. For example, in order to perform her function of reverie in an interactive exchange, the mother must tune in and, at the same time, "simulate" her baby's behavior in different ways, returning it to him in a form that is assimilable to him and not reproducing it in a slavish way (for example reacting with crying to the cry of the baby). The individual therefore has an "innate ability to assimilate, imitate, the state of another person, and mirror neurons form the basis of this ability" (Gallese et al., 2006, p 544) but, in order to manifest itself, it needs to be supported by an adequate behavior of the parent that "reflects" the child, interacting with him in a coherent or predictable way. Psychoanalysis, not only the Freudian orthodox one, but also the contemporary one that integrates the most recent contributions from Infant Research and attachment theory, has always supported the importance of the quality of the child's relationship with the parent and the role of experiences in structuring emotional and cognitive abilities. First of all, the recent perspectives of the Infant Observation have contributed to radically change the idea of the newborn, no longer conceived as a being closed in his autistic shell and confused with his mother, but already endowed with an "intentionality" and a predisposition to establish interactions (Vallino and Macincia, 2004) expressed through gestures, mimicry, gaze, calls, the rhythm of bodily vocalization. These are implicit, non-verbal and presymbolic dimensions of communication which, as we have said, are often absent or deficient in subjects with autism spectrum disorder; careful psychoanalytical clinical observation methodologies can reveal dysfunctional communication methods throughout the child's development, so as to be able to activate early interventions in relational exchanges between the child and the parents. Developments in psychoanalytic theories have also made it possible to recognize that the child appropriates the qualities of the other not because of a narcissistic investment aimed at denying their loss and control, but because of a need for recognition and a secure bond, being endowed from birth with a potential to perceive its communications plausibly (Moccia 2011). Bruner (1995)

developed the theme of intersubjectivity by analyzing the mother-child communicative exchange and the process of shared attention (fundamental for the understanding of the acts of linguistic reference) concluding that the encounter with the other's mind does not derive from maturation of an individual capacity, but of shared social interaction. Fonagy (Fonagy et al., 2002) identifies the "understanding of mental states" as a capacity for mentalization and refers not only to the development of the capacity to represent the psychic functioning of the other, but to the capacity to represent the mental world of the other based on affective states. Bion (1962) introduces the concept of reverie, understood as the mother's ability to think and react as correctly as possible to the child's mental states, which will allow him to build his ability to understand his own mental states as well as those of his other. Winnicott (1967) refers to the mother who mirrors the child, who in this way can "find himself" in the mother's eyes. In Stern's (1985) concept of "affective attunement", the mother responds to the child not simply by imitating him, but by referring to shared feelings, through transmodal stimuli. Inadequate mirroring can be the cause of various mentalization deficits, with serious consequences in adult life. In his latest works, Stern (2005) also highlights the presence of very early primitive forms of intersubjectivity, arguing that the newborn from the first months of life is able to perceive the intentions of the other in the intersubjective exchange, through the modifications of the level of arousal in the interaction. Sander (2008) also believes that the psychic organization of the child is linked to the ability to regulate his own endogenous arousal states with external stimuli and this develops in the context of reciprocal inter-regulation with the mother, who coordinates her own actions with those of your child. Regarding the possibility of these early forms of intersubjectivity, Stern (2005) considers the acquisition of the possibility of sharing the actions of the other, as if one were performing the same action in the first person, and in this description he considers the explanation offered since the discovery of mirror neurons.

#### **4. Perspectives for educational intervention**

As with other disorders of developmental age, in autism spectrum disorders the aim is not so much "rehabilitation" but "enabling", that is, the acquisition of skills that have been compromised by the disease, in order to improve the quality of life. It is important to state that there is no intervention that is suitable for all autistic children, for all ages, and that can respond to all the multiple needs directly and indirectly connected to Autism (Guidelines for Autism, SIMPIA, 2005) precisely due to the heterogeneity of the levels of socio-cognitive functioning that we can find in it and which differ according to the level of symptomatic severity and the intensity of stereotyped behaviors and sensory research. Psycho-pedagogical literature often focuses on behavioral interventions that help autistic children to acquire certain fundamental skills (for example, attaining a learning of those minimal educational rules that allow subjects to adapt to family and school life), neglecting the psychoanalytical approaches. An important aspect to consider is that behavioral treatment is focused on the child's "behavioral acquisitions" without enhancing the fundamental skills of relating with others, the ability to feel emotions and be able to share with others what the child is feeling. Furthermore, behavioral interventions may be appropriate for the most serious manifestations in which there is also an intellectual retardation, but in the forms of autism characterized by "high functioning" it is necessary to be able to intervene with methodologies and tools that can allow autistic subjects to enter protected in social life and that they can bring out all the potential not yet known and developed of that subject (Barale and Ucelli di Nemi, 2006). We believe that research in the psycho-pedagogical field can take advantage of the contributions of psychoanalysis and neuroscience to implement intervention programs aimed at expanding in the subject with autism spectrum disorder the fundamental skills of relating, the ability to feel emotions and to share them with others, in

particularly with caregivers and educators (Purgato, 2013). At the basis of every therapeutic action there should be the search for the meaning of the child's behaviors, even when apparently strange and incomprehensible, and the determination to awaken the child's interest and his attunement with caregivers (Stern, 1985, 2004; Schore, 1994, 2003, 2012). In fact, it has already been observed that in autistic children the primary deficit is found at an affective level even before it is cognitive (Di Renzo, Bianchi di Castelbianco, Petrillo, Racinaro and Rea, 2015) and that the block in emotional development lies in very emotional development. precocious, in the psycho-physical area (Bion, 1967; Anzieu, 1985; Stern, 1985, 1995, 2004; Anzieu, et al., 1987; Dodge, 1991). Italian projects of scientific excellence that envisage mediated interventions on the body, as a vehicle for emotions and based on the development of interpersonal relationships, have already given encouraging results (Vicari et al., 2013; Bianchi di Castelbianco and Di Renzo, 2013) also for active involvement of caregivers in the habilitation process. Having abandoned stereotypes and accusations against parents (see the myth of the "refrigerator mother" and "therapeutic distances"), caregivers are in fact now considered as an indispensable resource both in the diagnostic and in the enabling phase (Vallino, 2009). Moreover, the ICF perspective clarifies their role as environmental factors that act as a facilitator or barrier, consistent with the epigenetic perspective. Also the theories of intersubjectivity and attachment (Slade, 2000, 2005; Fonagy, Gergely, Jurist, & Target, 2002; Stern, 2004; Juffer, Van Ljzendoorn, and Bakermans-Kranenburg, 2008) and insightfulness studies demonstrate how the attunement of caregivers to the emotional states of the child can promote openness to relationships and communication (Oppenheim & Goldsmith, 2007). In particular in the case of autism, psychoanalytic support should be addressed to parents and teachers also to soothe the anxiety and suffering aroused in them by a subject who withdraws from relationships and who sometimes shows more interest in objects than in people, which is very difficult to tolerate from an emotional point of view. It is necessary to help adults to search for those non-verbal signals, often ineffable, in the child, in order to build a relationship with him and work on the "misunderstanding" and "pathological identifications" of the parents towards the child (Vallino, 2009). A careful observation of autistic children suggests that at least in those with higher functioning, there is social interest and that socio-cognitive skills are easily recoverable at an early age with timely and targeted interventions. The difficulties and social withdrawal could derive from a lower learning opportunity connected not to the absence of social initiative tout court, but to the repetition of adverse events related to socialization itself which can also be of simple sensorial origin. For example, interacting in a context in which there is an overabundance of sensory stimuli could prove to be a real hell for the autistic child, leading him to associate socialization with events with a negative emotional value, hence the subsequent avoidance. For this reason, both in the school and family context, adults should take care to eliminate or reduce excessive sensory stresses that can interfere with the possibility of rewarding interactions by providing an environment tailored to the child's mind. The intervention, of a multidisciplinary and integrated nature, should therefore primarily aim at an enhancement of the child's emotional-relational and cognitive potential (Stern, 1985, 2004; Schore, 1994, 2003, 2012), at a psychoaffective revitalization, exploiting the channel body and visual to enrich the repertoire of communicative behavior, thus allowing the expression of latent intellectual and social abilities.

## **5. Conclusions**

Autism is a complex phenomenon, in many respects still unknown that requires a multidisciplinary and systemic approach. The dialogue between neuroscience and psychoanalysis can lead to new insights into how the mind works in normal and pathological conditions and suggest new approaches to intervention in the educational field. The research has highlighted a genetic basis of autism, which

conditions brain development; however, epigenetics has made it clear that genetics is not an immutable destiny and can be modified and modulated with environmental interventions, with the attentive and sensitive presence of adults who must be supported and helped to participate in interventions for the child with autism spectrum. A psychoanalytically and empirically oriented educational intervention validated by neuroscientific studies can be useful to help children, parents and educators to activate emotional and relational potentials and to recognize and manage emotions in a more adaptive way. The starting assumption is the awareness of the difficulty for normotypical people to understand the mind of a person with autism and for people with autism to understand the neurotypical world. The study of intersubjectivity therefore represents today a common basis for a constructive dialogue between neuroscience and psychoanalysis, providing large sharing areas for the study of interpersonal relationships and the implementation of interventions also in the pedagogical field aimed at developing affective, communicative and emotional potential. of people with autism spectrum disorders.

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