

**SHARED INTENTIONALITY AND AUTISM:
A COMMENT ON MURATORI AND MAESTRO'S "AUTISM AS A
DOWNSTREAM EFFECT OF PROBLEMS IN INTERSUBJECTIVITY
INTERACTING WITH DIFFICULTIES IN BRAIN CONNECTIONS"**

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ABSTRACT. Muratori and Maestro (2007, this issue) lay out fundamental issues by highlighting the importance of looking at early signs of autism, essential for early intervention, and by combining the most recent and relevant psychological and neuropsychological approaches to the syndrome. In accordance with Muratori and Maestro, we start from the recent definition of 'shared intentionality' to stress the importance of differentiating the ability to share intentions (neural representation), which has recently been reported to be deficient in autism, from the intention/motivation to share experiences. Intersubjectivity requires both in order to let interpersonal experiences become part of a 'dialogical self'. An inability to understand social interactions, in addition to other cognitive impairments, might lead to an impoverished and distorted internal dialogue, resulting in an incapacity to satisfy the preserved desire to share.

Muratori and Maestro (2007, this issue) do the field of autism research a great service by highlighting how in combination, cognitive (or representational) impairments and affective (a motivation or capacity to share attention) impairments help explain why individuals with autism are not fully able to deal with social interaction. Many recent neurodevelopmental models do emphasize that the developmental and behavioural impairments shown by individuals with autism cannot be explained by cognitive deficits alone [whether in theory of mind, executive function, central coherence or other cognitive processes (for a review, see Burack, Charman, Yirmiya, & Zelazo, 2001)], but instead by a combination of factors that altogether are responsible for development of the disorder.

As mentioned by Muratori and Maestro (2007, this issue), an interesting recent explanation is that the social impairments seen in children with autism reflect a disturbance in the mechanism that normally draws infants' attention to social stimuli and social interactions (Mundy & Neal, 2001; Tomasello, Carpenter, Call, Behne, & Moll, 2005). According to the recent literature the developmental foundations for interpersonal

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understanding, which involve the domain of registering, responding to, sharing and coordinating attitudes, is the core of human social competence, and is called Shared Intentionality or sometimes ‘We-intentionality’ (Tomasello et al., 2005). It refers to collaborative interactions in which participants have a shared goal and coordinated action roles for pursuing that shared goal. The capacity to share intention with others is unique to human social cognition and makes human social skills very different from those of other animal species. Tomasello et al. suggested that children with autism have a particular problem with shared intentionality and that this accounts for the social-cognitive impairments typical of the autistic spectrum.

In our opinion this new conceptualisation of autism as an early impairment in sharing intentions needs some clarifications.

In their seminal work, Tomasello et al. (2005) include two different aspects in their definition of shared intentionality, both of which are crucial in the development of social competence. They refer to shared intentions, sometimes meaning the possibility to share representations, at a neural and cognitive level, that complementarily exist in different minds. In this case *shared intentions* mean that two or more individuals hold the same cognitive representation when they produce and observe actions (shared neural representation). Sharing intentions seems to be crucial in imitation and to develop cooperative social interactions. The Mirror Neuron System (MNS) provides a possible neural basis for these shared representations (Gallese, 2006).

In other cases shared intentionality seems to refer to the motivation to share experience with others; which is distinct from the capacity to share representations. In Tomasello et al. this motivation is the *basis* for the cognitive representations. We can define this second meaning as the *intention to share* rather than the capacity to share. A prototypic behavioural sign of the intention to share can be considered *declarative pointing*. Declarative pointing describes the infant’s (from 12 months old) attempts to obtain an adult’s attention by pointing to share interest about an object or event. A recent study demonstrates that 12-month-olds begin pointing with the motive of sharing attention and interest with other people, and that they are less satisfied when the adult only looks at the object or event while ignoring the child or only looks and responds to the child while ignoring the event (Liszkowski, Carpenter, Henning, Striano, & Tomasello, 2004). The intention to share has not been investigated yet at a neural level and this distinction between shared intentions and intention to share is particularly important in autism.

Evidence for the lack of a representation of *shared intentionality* can be taken from neuroimaging studies. Some studies report impaired premotor activation in the region thought to be part of the MNS, during imitation of actions (for a review, see Oberman & Ramachandran, 2007) or imitation of emotional facial expressions (Dapretto, Davies, Pfeifer, Scott, Sigman, Bookheimer, & Iacoboni, 2006). It has been

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suggested that children with autism have an abnormal MNS, and that this deficit may play a critical role in weaknesses in imitation performance, poor theory of mind skills and impaired social cognition (Williams, Whiten, Suddendorf, & Perrett, 2001). However no evidence in individuals with autism directly measures activation of the MNS during periods of shared-intention, for example during a task involving joint actions. While there is evidence that the MNS is deficient in children with Autistic Spectrum Disorders (ASD), leading to impaired performance on imitation tasks, the hypothesis that these low level imitation impairments in ASD are a causal factor in social abilities in these children remains speculative.

More problematic seems to be the second definition of sharing, which refers to the motivation/intention to share with others. In the autistic spectrum, Wing and Gould (1979) identified three types of social interaction, namely, 'aloof and indifferent', 'passively accepting', and 'active but odd' social approaches. This distinction makes it possible to distinguish children with autism who have the intention to share but are not able to pursue it in their motivation ('active but odd'), and children with autism who do not show any interest in sharing experience with the other (the first two types). This distinction seems to us a very important one for clinical practice.

Most children with high-functioning ASD have intact social interest and initiate social contact as frequently as other children do (Frith, 2003). Sigman, Kasari, Kwon, and Yirmiya (1992) suggesting that autistic individuals are not affectively flat, but display socially inappropriate extremes of emotions. Capps, Kasari, Yirmiya, and Sigman (1993) conducted two separate studies (one with mentally retarded autistic children and the other with autistic children with IQs of 75 or higher) in which emotional expressiveness was examined by parental reports and experimental situations designed to elicit empathy. The autistic individuals did not display less emotion or facial expressions, but reacted more intensely than the normally developing subjects. However, the subjects used in the Capps et al. studies were not infants and thus do not have any bearing on infant development.

So, if the core deficit lies in the area of social motivation, it cannot be due to a lack of social interest in general, but because of a more specific reason, for example, lack of interest in other people's mental states. One such form of social interest is joint attention, the coordination or sharing of attentive activities such as gaze - following and looking where someone is pointing – all essential activities for so-called triadic engagement.

Clinical experience shows that at least some high-functioning adults with ASD have a strong – sometimes even fanatical – interest in what other people feel or think: They spend a great deal of time trying to infer what a certain behaviour or utterance means. Often they describe this uncertainty about what is going on in other people's minds as the greatest stressor in their lives. These adults clearly do not suffer from a

lack of motivation to share things psychologically with others, but rather from the conflict between their desire to understand others and their inability to do so adequately. We could argue that they have the motivation to share but they did not develop the cognitive neural mechanisms (shared intention), that would allow them to pursue this desire.

In combining the literature of primary intersubjectivity, mirror neurons and connectivism, Muratori and Maestro maintain the same confusion present in Tomasello. Mirror neurons and connectivism may contribute at a neural level in sharing the same mental representation during an action, but are they also responsible for the genuine desire to share a common goal, and to help or to cooperate with others? We can speculate that primary and secondary intersubjectivity requires both aspects of shared intentionality in order to function well.

From a developmental point of view, we can agree with Muratori and Maestro that the ‘dialogical self’ is based on the experience of intersubjectivity. But to become a ‘miniature-society’ of multivoiced intrapersonal space (Hermans & Dimaggio, 2004), it needs significant interpersonal experiences and several cognitive abilities. During interpersonal experiences, individuals incorporate and make stable the meaning of events which emerge from personal dialogue with significant others.

If intersubjectivity comprises both shared intentions and intentions to share, we can postulate that individuals with autism have incorporated an internal dialogical self, since we have suggested that they develop at least some components of intersubjectivity. However, our hypothesis is that the impoverished and awkward interpersonal experiences that people with autism collect during development, results in an internal dialogue that is poor and often distorted. To give a simple example, children with High Functioning Autism/Asperger Syndrome (HFA/AS), due to their odd behaviour, are often victims of bullying which they cannot defend themselves against properly (Heinrichs, 2003). These interpersonal experiences often generate in them a hypersensitivity to jokes and teasing. They develop a chronic fear of to being teased and ridiculed and they cannot differentiate between situations where people are laughing at them or with them (Reddy, Williams & Vaughan, 2002).

In this case people with autism could develop some internal dialogue, but it seems to be distorted and very rigid compared to those without autism.

Muratori and Maestro also lay out a fundamental issue, which is one of the major foci of recent research, concerning the early sign of the disorder. There is evidence that early detection of autism is important because early behavioural intervention can have substantial impact on the long-term prognosis of many individuals with autism (Oserling & Dawson, 1994; Rogers, 1998). Parental reports and home videos indicate that symptoms of autism exist very early in life, well before a diagnosis is made, and they include lack of response to the parents’ voice, an absence of

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attempts to interact, failure to orient to their own name (Gillberg, Ehlers, Schaumann, Jakobsson, Dahlgren, Lindblom, Bagenholm, Tjuus, & Blidner, 1990; Rogers & DiLalla, 1990), extremes of temperament and other behaviours ranging from passivity to marked irritability (Gillberg et al., 1990; Hoshino, Kaneko, Yashima, Kumashiro, Volkmar, & Cohen, 1987), poor eye contact, reduced social smiling, and lack of pointing and the production of facial expressions.

However, data from these retrospective sources have several limitations. First of all they generally lack appropriate controls. In particular most of these studies do not distinguish infants with autism from infants with mental retardation, so that behaviour recorded at this early age may be related to mental retardation and not to autism per se. It is important for clinical practice and for the understanding of early neurodevelopment in humans to examine whether the above early behavioural indicators are specific to autism.

More importantly observations from home videos are subject to great methodological variability and depend on the particular context selected for taping (Palomo, Belinchon & Ozonoff, 2006). The resulting data is based mainly on interactions made at variable time points and on sampling strategies that are not fully independent of later outcome. Additionally, environmental factors might influence the infant's behaviour on the tape (for example, the number of people present, the type of social occasion taking place and so on). All of these methodological limitations explain why it is still not possible to reliably make a diagnosis of autism earlier than 18 months old.

Another important issue is that the early signs of autism do not involve social signs only, but rather subtle symptoms in different areas, that are present at 9-12 months. Several findings suggest that early assessment procedures need to consider sensory processing/sensory-motor functions in addition to social responses during infancy (Baranek, 1999). There is a dearth of empirical information about the various qualitative aspects of sensory-motor behaviours (e.g., sensory perceptual responses, arousal modulation, movement patterns, object manipulations, postural adjustments) that may be disrupted early on in the development of children with autism. These types of difficulties are reported extensively in older children with autism (e.g., Adrien, Ornitz, Barthelemy, Sauvage, & LeLord, 1987) as well as in retrospective accounts of the infancy period based on medical chart reviews and/or parental reports (Dahlgren & Gillberg, 1989; Gillberg et al., 1990; Kanner, 1943). A variety of specific sensory-seeking behaviours (e.g., scratching fabrics, staring at lights) are also reported retrospectively during infancy. Many of these *qualitatively* different sensory-motor behaviours are not the focus of conventional assessments, and thus, potential markers of autism during infancy could be overlooked by practitioners.

Additionally, autism seems to involve a basic and general impairment in attentional functioning and in the ability to shift attention between different stimuli (Bryson, Wainwright-Sharp & Smith, 1990; Courchesne, Townsend, Akshoomoff, Saitoh, Yeung-Courchesne, Lincoln, James, Haas, Schreibman, & Lau, 1994). Courchesne, Akshoomoff, Townsend, and Saitoh (1995) proposed that attentional impairment might contribute to the profound social disabilities seen in autism because early social exchanges require rapid shifting of attention between different stimuli.

As with other theoretical approaches, such as Theory of Mind and Executive Function, the hypothesis of impaired intersubjectivity, suggested by Muratori and Maestro, seems to account for the early social deficit in autism but it cannot explain other relevant abnormalities (such as attentional shift and sensory-motor peculiarities) typical of autism which also are likely play a role in social development.

We consider the ability to shift attention from one's own perspective to another person's as one of these cognitive components, additional to intersubjectivity, that is necessary to develop a functioning dialogical self. The inability to rapidly shift between different internal representations may cause the internal dialogue of these patients to be less flexible and poorer in function.

To conclude, we agree with Muratori and Maestro that some components of intersubjectivity may be impaired in autism. However, these components are not sufficient to predict if and *how* the dialogical self will develop in these individuals. Other cognitive abilities and social experiences are also responsible for these multivoiced internal dialogues. The complex interaction of several of the developmental components, necessary for a properly functioning dialogical self, may be responsible for an impaired dialogical self in autism. The lack of shared intentions, attentional shifts, mentalization and problematic interpersonal experiences may result in an impoverished, rigid and distorted dialogue with him/her self: autism.

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