

## CONSIDERATIONS ON BODY, MIND AND SPEECH IN AUTISTIC CHILDREN (2)

—Deficits in sharing body-experience and joint attention deficits—

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### 自閉症児のからだ・こころ・ことば論(2)

—からだの体験の共有の障害と共同注意の障害—

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#### [Summary]

There is a close relationship among body, mind and speech. We can realize well functioning speech or reciprocal communication in a social context, when both the speaker and the listener have a common mind or affective states shared with each other. Then, how can human being develop the ability in sharing affective states? The author proposes “the body-experience sharing theory (BEST)”. This theory insists on the importance of sharing body-experience or reciprocal communication through body sensation such as warmth and softness, as the premise for developing affect sharing. On the basis of sharing of body-experience with each other, a human being comes to be able to get into a world in which common meaning is to be shared. In the previous study, the author argued this issue in terms of the relation between the disturbance of “tracing activity” (“nazori”) and deficits in meaning understanding. In this study, the author attempted to discuss this issue from the view point of joint attention, and suggested that deficits in sharing of body-experience caused joint attention deficits in autistic children.

#### [Deficits in Social Behaviors]

Kanner (1943) initially recognized a social and emotional deficit in autism, and proposed that autistic individuals “have come into the world with innate inability to form the usual, biologically provided affective contact with people”. According to the earliest description of the social deficits in autism by Kanner (1943) and Kanner & Eisenberg (1956), we can find the following different aspects of social deficit: lack of apparent affection, withdrawal from people, lack of attention to people, noncommunicative use of language, lack of communicative gestures, treating parts of people as detached objects, lack of eye contact, treating people as inanimate objects, lack of behavior appropriate to cultural norms, atten-

tion to nonsocial aspects of people, lack of awareness of the feeling of others, and lack of savoir-faire.

Wing & Gould (1979) found that the social deficit could be distinguished into three types: social aloofness, passive interaction, and active-but-odd interaction. This latter description referred to social behavior that was undertaken mainly to indulge some repetition, idiosyncratic preoccupation, showing no interest in the other person's needs.

Mirenda, Donnellan, & Yoder (1983) found qualitative differences between eye gaze use in autistic and normal children. Autistic children tended to look for longer periods of time and more frequently during monologues than did normal children. This abnormality may be related to deficits in turn-taking in dialogue, in which eye signals play an important role. In test of face-recognition, Langdell (1978) found autistic children were able to recognize their peers in photographs, and found they made fewer errors than their controls when lower half of the face was shown only. This suggests that they were less dependent on the information contained in the upper part of the face, perhaps the eye region, for recognition.

In testing comprehension of emotions, Hobson (1986a, 1986b) found that autistic subjects made more errors in choosing schematic faces to match videotapes showing emotions expressed in gesture, vocalization, or context. This intermodal matching of different emotional indices appears to be more difficult for autistic subjects than recognizing emotions in one modality. Yirmia, Kassari, Sigman, & Mundy (1989) examined the facial affect expressions of autistic, mentally retarded and normal children. Results indicated that the autistic children were more flat/neutral in their affect expression than the mentally retarded children. Moreover, they displayed a variety of ambiguous expressions which were not displayed by any of the other children. This study suggests that autistic individuals display fewer facial and gestural expressions of emotion, especially expressions of positive affect. It may be that autistic children simply do not know how to show appropriate affect. In fact, when asked to put on a happy and a sad face, autistic children were less successful than mentally retarded children in producing a happy face.

Concerning play of children with autism, Wulf (1985) described three major characteristics. First, play of the autistic children are qualitatively different from the play of the retarded, normal, or physically handicapped children. Second, the symbolic aspect of play is dramatically affected. Whereas retarded and normal children develop predictably along a continuum toward emergence of the use of symbolism, the autistic play is striking in its lack of fantasy and all other aspects of symbolic play. Third, imitation of language are retarded. Curcico (1978) confirmed that imitation per se was not an autism-specific deficit, but imitation of abstract gestures was difficult for autistic children.

Baran-Cohen (1985) found perfect performance by autistic children in knowing what another person was looking at. However, significant differences between autistic and control children were found on tests of conceptual role taking, in which children were impaired in their ability to predict where a person would look for an object if it was moved from its last location in the person's absence. Similar results have been obtained using a

picture-sequencing paradigm in which autistic children were tested the ability to sequence social stories in which the attribution of mental states to the characters was required.

### [Deficits in Pragmatic Skills]

As mentioned above, infantile autism is characterized by a severe developmental disorder of communication. The disturbance of language behaviors reported for autistic children include reversals of first-and-second person pronouns, poor functional use of language, echolalia, neologisms, inappropriate intonation, and primitive syntax (Bloom & Lahey, 1978; Ricks & Wing, 1975). In particular, they have a difficulty using language in relation to the context of discourse. Autistic children have trouble using their skills appropriately in a variety of social situations. That is they have severe deficits in pragmatics skills.

The definition of pragmatics is using speech and gesture in a communicative way, appropriate to social context (Bates, 1976). Therefore, pragmatics are defined as a part of social skills. It is reasonable to assume, then, that whatever underlies the deficit in social skills is also likely to underlay the deficit in pragmatic skills. The first study to specifically examine pragmatic skills in autistic children was Baltaxe (1977). She found that autistic children frequently failed to shift out the hearer role to become a speaker. She also found the autistic subjects violated "conversational postulates" of acceptability and politeness. Their behavior did not suggest that they intended to be rude, but simply that they did not understand the social rules governing what is acceptable to conversation.

Landgell (1980) reported that autistic children tended to ask embarrassing questions, such as "How old are you?" to a stranger in the supermarket, and not recognize that this is not acceptable. Another pragmatic deficit he noted was the pedantic and formal style of speech frequently heard in higher-level autistic children, inappropriate to an informal social context. In addition, autistic children often start to talk to people without first using boundary markers such as "Hello" or attempting to engage the listener's attention by trying to establish mutual gaze. Landgell concluded that such examples reveal autistic children's difficulty in taking another person's point of view.

Hurting, Ensrude, & Tomblin (1982) manipulated another variables, namely, listener-response to question. They found that more conversational breakdowns (discontinuations) occurred if the listener did not ask a question back to the child, suggesting that the autistic children were unable to maintain the conversation by themselves. In addition, the autistic children appeared to use questions as their main device to initiate and continue conversation, but tended to ask questions to which they already knew the answers. They appeared not to understand the function of questions as requests for information.

There are a number of reasons why a speaker must be aware of the listener's mental states in order to communicate in a socially appropriate way. These include the following: (a) The listener holds certain beliefs about what particular words refer to when the speaker use them; (b) the listener is trying to represent the message in just the way the speaker in-

tended it to be represented; (c) the listener and the speaker share some information. This involves the speaker making what Bates (1976) calls "psychological representation"; and finally (d) the listener holds certain beliefs about how the speaker will act, such that the speaker will be informative, truthful, relevant, sincere, etc. Speech Act Theory (Austin, 1962) defines communication as comprising "complex intention", that is, the speaker's intention to affect the listener's intentions and beliefs. Under this theory, the pragmatic impairments in autistic children are not restricted to spoken language, but include the deficits in use of gesture, comprehension and production of communicative facial expression.

### **[Deficits in Joint Attention Behaviors]**

Joint attention behaviors are defined as three-way exchanges that involve another, self, and object and may be expressed in the form of referential looks between people and object, pointing and showing gestures. According to the model of communication development, the emergence of joint attention behaviors succeeds an earlier phase of face-to-face interaction (Adamson & Bakeman, 1982). The preceding dyadic phase consists largely of the regulation of mutual attention and the exchange of affective expressions between the infant and caregiver. As infants become interested in object play towards the middle of the first year of life, there is a shift from exclusively dyadic affective interactions to interactions that involve both objects and people. The shift to object play generally marks the beginning of joint attention interactions. That is the joint attention process is expanded as infants become able to coordinate gaze between the object of focus and the care-giver and back again to the object during play episodes (Walden & Ogan, 1988) and to use the more advanced joint attention gesture and showing (Hannan, 1987; Leung & Rheingold, 1981).

The goal of joint attention behaviors appears to be in sharing an experience with another vis-a-vis an object or event (Bruner, 1983). Joint attention behaviors do not seem to involve obvious object goals and therefore differ from other types gestural communication behaviors that emerge within the same developmental period, such as requesting behaviors (Bruner, 1981).

Recent investigations of normal language development have suggested that joint attention behaviors are important to learning about conversation skills. In addition, these interactions are important to the development of normal language use, and perhaps also to acquiring terms such as personal pronouns (Bruner, 1975; Loveland & Landry, 1984). Tomasello & Todd (1983) and Tomasello & Farrar (1986) explored the role of joint attentional process in the child's acquisition of language. They found that during periods of joint attentional focus both mothers and children talked more, the dyads engaged in longer conversations, and mothers used shorter sentences and more comments. These evidences suggest that periods of joint attentional focus in some way build the foundation for early mother-child linguistic interaction. They also found that the types of object references mother made inside the episodes of joint attentional focus were related to the child's subsequent language development, whereas these same measures outside the joint episodes did

not correlate.

Kasari, Sigman, Mundy, & Yirmiya (1990) examined the association of shared positive affect during two different communication contexts: joint attention and requesting. Compared to the normal children, the autistic children failed to display high levels of positive affect during joint attention. This result supports the hypothesis that the joint attention deficits in autistic children are also associated with a disturbance in affect sharing. Loveland & Landry (1986) examined the relation between joint attention skills and language development in autistic children. They found that an autistic child's language problem was compounded by a developmental impairment of the mechanisms that are the basis for effective communication, and discussed that impairment of joint attention skills will certainly affect the acquisition of strategies and techniques for using language effectively in a social context.

Gestural joint attention skills refer to children's use and comprehension of conversational gestures such as pointing to objects and showing objects to other people. These social skills also involve the use of eye contact in conjunction with gestures or alone as when children alternate their gaze between an interesting object and a care-giver. In general these behaviors serve to coordinate attention between interactive social partners in order to share an awareness of objects or events. These behaviors typically emerge between 8 and 13 months of ages in normally developing children (Bakeman & Adamson, 1984; Bates, 1979; Leung & Rheingold, 1981). Mundy, Sigman, & Kasari (1990) examined the degree to which individual differences in gestural joint attention skills predicted language development among autistic children. They found that even controlling for language level, mental age, or IQ, autistic children displayed deficits in gestural joint attention skills. Furthermore, the measure of gestural nonverbal joint attention was a significant predictor of language development in the autistic children.

### **[Joint Attention Deficits and its Related Theories]**

Most investigators recognize that language, cognition, and social behavior are intimately interconnected in development, and tend to agree that the social deficit, especially for joint attention deficit, is most central to the autistic disturbance. There are now several competing theories that focus on the joint attention behaviors in autistic children.

#### **1. The Cognitive Theory (The Meta-Representation Theory)**

Some investigators have interpreted the joint attention deficits in terms of an impaired development of the theory of mind (Baron-Cohen, 1988; Leslie, 1987), such that the autistic person has little awareness of what other people know or perhaps even that other people have minds. They asserted that autistic people are deficient in "metapresentation", that is, the ability to form mental representation of other people's mental representations.

The cognitive theory starts from the premise that mental states are not directly observable but have to be inferred, and an inference that requires a complex cognitive mechanism. The cognitive theory also places more emphasis on the ability to infer mental

states such as beliefs and desires rather than emotions. Beliefs and desires are held to be the most important mental states in making sense of the social world, because they have a causal relationship to action. Our beliefs about or concepts of the physical world may be called "primary representations". On the contrary, our beliefs about other people's mental states (such as beliefs and desires) are representations of other representations. These may be called "second-order representations" or "meta-representation".

The cognitive theory posits that in autism the capacity for meta-representation is impaired. The deficit of meta-representation brings about consequent deficits for the reasons of as follows: (1) Autism is caused by central cognitive deficits. (2) One of such deficits is in the capacity for meta-representation. (3a) A meta-representational capacity is required in social skills which involve attributing mental states such as beliefs and desires to others; (3b) Social skills which do not require a meta-representational capacity may be unimpaired in autism. (4) A meta-representational capacity is required in symbolic skills (e.g., pretend play). (5) Almost all pragmatic skills require a theory of mind, which itself requires a meta-representational capacity.

Baron-Cohen (1989) argued that meta-representation is indeed involved in the mechanism of joint attention. In his analysis, two components are necessary if the child is to understand the meaning of another person's joint attention behavior (particularly, the person's attention to something). (1) The first is percept diagnosis, which is knowing whether another person can see something. Percept diagnosis could be accomplished using a line-of-sight strategy, which would involve "rule-based operations on a primary representation". (2) The second component is attention diagnosis, which is the additional ability to know if other person is interested in the object seen. If this analysis of joint attention is correct, the child must know something about the other person's mental state before joint attention can be achieved. In Baron-Cohen's view, the ability to "represent another person's representation" in this fashion constitutes an example of meta-representation; thus, the young child who is beginning to manage joint attention must in some sense have a theory of mind.

## **2. The Affective Theory**

The second is the affective theory. According to the affective theory, autistic children are essentially deficient in interpersonal awareness, including understanding of other people's feelings. This deficiency begins very early in development. Hobson (1989b) postulates that normal infants are programmed to be sensitive to and comprehend another person's emotions. This assumption is drawn from studies on mother-infant interactions such as that Murray and Trevarthen (1985). According to Hobson, their ability to do this is "beyond cognition". He argued that, unlike the cognitive theory, other people's mental states do not need to be inferred, but can be perceived "directly" in their bodily expressions. He calls this "non-inferential empathy". In autism, however, this biological, noncognitive prewiring for understanding emotional states in others is nonfunctional. Furthermore, Hobson proposes that the development of a symbolic capacity and a conceptual role-taking ability are both directly derived from the infant's affective relationships with others. In such relations,

the infant come to appreciate another person's way of conceiving and seeing an object, and it is this that provides the infant with the awareness of symbolic interpretation and other people's conceptual viewpoints.

Hobson's view of development finds support in many studies showing that the normal infant has considerable ability to interpret the expression, both affective and communicative, of other people (Murray & Trevarthen, 1985; Stern, 1985) and that these skills are important to the development of later social and communicative skills.

According to the affective theory, social deficits in autism are considered as follows: (1) Autistic children lack the constitutional components of action and reactions as are necessary for the development of reciprocal personal relations with other people, which involve feelings. (2) Such personal relations are necessary for the 'construction of an own common world' with others. (3) Autistic children's lack of participation in intersubjective social experience has two results which are especially important, namely (a) relative failure to recognize other people with their own feelings, thoughts, wishes, intentions, and so on, and (b) a severe impairment in the capacity to abstract and to feel and to think symbolically. (4) The greater part of autistic children's cognitive and language disability may be seen to reflect either lower-order deficits that have specially intimate relationship with affective and social development, and/or impairments in the social-dependent capacity to symbolize.

### **3. The Affordance Theory**

According to Gibson (1986), affordances are perceived directly rather than inferred, deduced, or retrieved by association. They are neither in the environment nor perceiver, but are derived from the ecological relationship between perceiver and perceived. Loveland (1991) proposed three exclusive categories of affordances. These categories of affordances may be thought of "layered", in that a given object, event, person, and so on, simultaneously presents multiple kinds and levels of meaning to the human perceiver. (1) The first category of affordance is that for physical transaction with the environment such as grasping, walking, eating. Failure to discover the first category of affordances in the human environment would lead to a catastrophic inability to get around, to explore, or to survive in the environment. Virtually no recognizable human behavior could take place. (2) The second is specific, culturally selected affordances that reflect preferred but not necessary interactions. For example, socks afford wearing on one's feet. A person who lacks awareness of the preferred affordances selected by culture will seem alien. By contrast, a person who perceives an idiosyncratic set of preferred affordances will look bizarre, perhaps unhuman. This is, for example, the person whose use of the telephone consists of swinging the receiver, or the person who gathers trash along the street and hoards it in a bag, or who spend a lot of time watching his or her own fingers move. (3) The third is social affordances that reflect the meaning of human activity.

These include not only the affordances of symbolic behavior such as human conversation and writing but also the affordances of nonsymbolic activity such as facial expressions, gesture, body postures and movements, tone of voice, and the direction of gaze that

provide information about the actor as well as about other aspects of the environment. Complete failure to grasp the third category (social and communicative affordances) would certainly lead to an absence of communication and to a complete disruption of interpersonal behaviors. An imperfect grasp of what human language, gesture, postural behavior, and so on afford would result in a less severe but still serious handicap, such as difficulty anticipating what others know or believe, difficulty identifying the meaning of facial expressions or matching them with appropriate gestures, difficulty anticipating what a listener needs to know, and difficulty using and understanding attention directing gesture.

From an ecological viewpoint, therefore, the joint attention deficits in autistic children would have to do with a difficulty perceiving what other people's gaze and indicating gestures afford the observer, as well as what the observer's behaviors afford to others. It should be emphasized that the affordances of other people's attention-directing behavior derive from the interaction of the observer and the environment.

#### **4. The Body-experience Sharing Theory (BEST)**

As mentioned above, there are several competing theories concerning joint attention deficits in the autistic children. The cognitive theory posits that autistic children have special difficulty reasoning about what others know and believe, while the affective theory emphasizes that they have difficulty detecting and interpreting information for other's emotional states. According to the affordance theory, autistic children appear to have trouble developing an awareness of the culturally determined meanings of objects and events they encounter.

From the view point of the affective theory, the normally developing infant is biologically ready to perceive social affordances and to be attuned to affective expressions of other people and to be appropriately responsive to these expressions. This early form of intersubjectivity then forms the basis for the development of more sophisticated interpersonal activities, including communication. Without this primitive attunement to the affective expressions of others, understanding other person (the meta-representation) is not possible (Hobson, 1989a). These problems all may bring about joint attention deficit in autistic children.

Concerning much more primitive attunement for the basis of joint attention, the author proposes another theory (Konno, 1992a). The author called this theory "the body-experience sharing theory(BEST)", in which body-experience sharing may have an important role for establishing joint attention. According to the model of communication development, as mentioned earlier, the emergence of joint attention behaviors succeeds an earlier phase of face-to-face interaction (Adamson & Bakeman, 1982). The preceding dyadic phase consists largely of the regulation of mutual attention and the exchange of affective expressions between the infant and care-giver. As infants become interested in object play towards the middle of the first year of life, there is a shift from exclusively dyadic affective interactions to interactions that involve both objects and people.

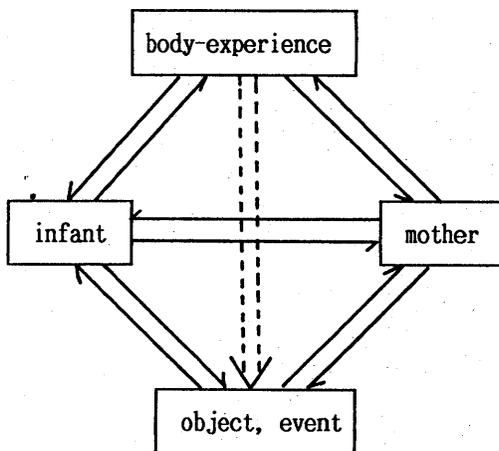


Fig.1. Schematic illustration of body-experience sharing as a basis of joint attention, and its shift toward sharing of object or event

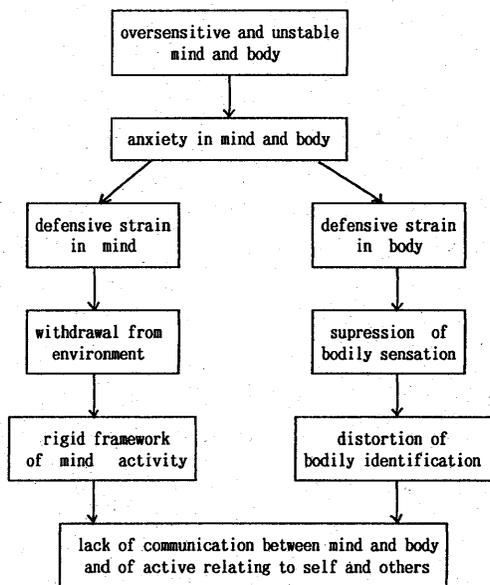


Fig.2. The schematic illustration of developmental process of autistic disturbance

Although this explanation stresses the role of gaze or visual attention in the joint attention development, the author considers that more important agent establishing joint attention may be a good body-experience which is shared with others. This reciprocal sharing of body-experience may contribute to establish a basis for the early form of intersubjectivity and for the affective world in which the infant and the care-giver live in, then the infant and the care-giver come to share the visual world as shown in Fig. 1.

However, autistic children have been suffering from a distortion in the linkage between mind and body from very early life, and have failed to establish a bodily-identification or body-image which is an integral construct of self-identification or self-image. Consequently, they have failed in establishing self-activity with which they relate to both themselves and their environment (Konno, 1992b; Konno, 1993).

Fig. 2 represents schematic illustrations concerning the relation between mind and body in autistic children. One of the conceivable reasons why autistic children have developed a functional discrepancy between mind and body is that they are too sensitive and vulnerable to stimuli which include human interaction. Since those stimuli strain both their minds and bodies, they perceive those stimuli as being too stressful to accept. Consequently, they have developed defensive attitudes towards those stimuli and have withdrawn from their environments. Another conceivable explanation is that autistic children have difficulties accepting their bodily sensations or body from very early life. Therefore, they have perceived their bodies as alien to themselves, and have failed in accepting their bodies as their own. Furthermore, they have developed defensive attitudes so as not to suffer from the stimuli by suppressing bodily sensations or by escaping from bodily process. As this defensive attitudes is enhanced, they come to fail in establishing bodily-identification or body-image and behave without definite self-identification.

According to the body-experience sharing theory (BEST), joint attention may be established based on reciprocal sharing of good bodily experience with others. Therefore, the intervention programs seeking to increase joint attention may benefit from bodily oriented approach such as Dosa-method (Konno, 1990) which helps autistic children establish reorganize body-image or bodily-identification to be shared with others.

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