

## Chapter 5

# The Role of Teaching Materials in Cognitive Development Focusing on the “Emergence of Symbolic Functioning” and Behaviour Issues

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### **ABSTRACT**

*The purpose of this chapter is to discuss the role of teaching materials focusing on the “Emergence of Symbolic Functioning” and latent behaviour issues. First, a literature review is performed on the behaviour issues associated with intellectual disability (ID) and autism spectrum disorder (ASD). Three kinds of assessment tools used in this study are described with underlying developmental meanings. Especially, one of those tools, a teaching device named “Tamahimo” is introduced as a practical assessment tool to visualize participants’ cognitive conditions. Three cases, two adolescents and one young adult with ID, are discussed, with their autism-like behaviours and characteristic cognitive profiles evaluated using the assessment tools. All cognitive development is judged as corresponding to the “Emergence of Symbolic Functioning,” that is, the qualitative transition phase from non-symbolic to the explicit existence of a symbolic functioning stage. Factors preventing social adaptation are discussed as they relate to unstable cognitive conditions.*

### **INTRODUCTION**

Representational drawing emerges at about the age of 20 months and is indicated when children claim an identity for their scribbles, either before or after they have produced them (Cox, 1992 in Ford & Rees, 2008, p. 197). By this time, the child would be able to point at the object, expressing at least one word, and finding another person sitting by him/her as a target, which communicates reciprocally. Sharing at-

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tention to an object with others, which is called “Joint Attention” in developmental psychology, begins when a child is 9 to 12 months of age (Mundy & Crowson, 1997; Tomasello, 1999). This is the explicit evidence of an individual’s ability and awareness to be able to differentiate between one’s self and others. To date, *joint attention* has been considered as specific factor in early intervention. For example, “Joint Attention Symbolic Play Engagement and Regulation” or (JASPER) is recognized as an effective intervention for young people diagnosed with Autism Spectrum Disorder (ASD) (Goods, Ishijima, Chang, & Kasari, 2013; Paparella & Freeman, 2015).

Emerging representation is a breakthrough that leads to language comprehension for the infant who is leaving the non-symbolic stage. An infant who finds the role of language as a means of communication will try to use the function spontaneously. He/she will soon find names of familiar objects and, in general, will try to use pointing actions to express the pleasure of object finding or discovery. Representation underlying these behaviours grows and enhances rapidly in the infant’s mind. Then, the infant becomes able to discriminate something to symbolize it (e.g. depicted picture) from a real object. The infant who has reached the age of three, no longer tries to pick up foods from, or put his foot on in a shoe, in a depicted picture (DeLoache, 2005). This cognitive “qualitative” transition occurring right after joint attention would have great influence on an infant’s mind and behaviour.

Researchers Ohta and Nagai (1992) referred to this phase as the “Emergence of Symbolic Functioning” or “Stage II.” Stage II is considered as a cognitive qualitative transition phase from the developmental stage of “Non-Symbolic” (Stage I) to the “Explicit Existence of Symbolic Functioning” (Stage III-1), corresponding to 18 to 24 months in typical human development, which soon passes through to the next stage (see Table 1). This cognitive “qualitative” transition is accompanied by the remarkable change of how to use each of the senses or modalities in the surrounding world. We can easily find this evidence in infants reaching toward objects in front of him/her. For example, a baby, prior to 12 months of age, often puts an object into his/her mouth as soon as he/she grasps it, before gazing at it (tactile sense is prior to visual sense), conversely, an infant over the age of 18 months, who has found a small hole, would pick up a smaller object (e.g. ball or stone), look at it, and then try to put it into the hole (visual sense supports tactile-kinetic sense and participant’s interests change directly to the external world).

However, there seems to be “hidden” evidence underlying behaviour issues in adolescents and young adults with developmental equivalence to typically developed infants, which has not been given much attention in practical situations, such as special support schools and social welfare institutions. The author has known empirically that adolescents or young adults on “Emergence of Symbolic Functioning” often show reflexive offensive behaviours that parents feel are impossible to deal with, and believe that these are due to the severity of the disability and puberty. In another words, it can be a hypothesis resolving the background of onset or persistence of behavioural issues preventing social adaptation.

Kamei, Miyatake, and Sone (2013) indicated that persons with severe motor and intellectual disabilities often exhibit autism-like challenging behaviour, however these individuals are rarely diagnosed with ASD due to the difficulties in differentiating Autism behaviours from severe intellectual disabilities. The researchers reported that four young adults, with Intellectual Quotients (IQs) of 12 to 24, presented self-injurious behaviour, such as head butting, picking off scabs and tearing open the wounds until they bled, or demonstrating injurious behaviours towards others, such as biting and hitting others or crying loudly when facing the unknown. These cases, regardless of whether they were with or without cerebral palsy or epilepsy, may have irritability concerns related to cognitive conditions (a delay or imbalance).

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