

Theory of Mind and Its Development in Preschool Children

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Introduction

Theory of mind is a skill related to the individual's understanding that his/her thoughts and other individuals' thoughts are different. The development of theory of mind is influenced by both hereditary and environmental processes. In this section, the conceptual and theoretical aspects of theory of mind and its developmental stages in preschool period are discussed.

Theory of Mind

Theory of mind is the ability of individuals to understand their own mental states as well as the mental states of others. These states can include, but are not limited to, beliefs, desires, tensions and emotions (Bjorklund et al., 2005). Theory of mind represents the ability of people to understand and predict their own and others' actions by considering their mental states. This ability forms the basis of understanding human behavior. Because most behaviors of individuals depend on the processes that take place in their minds. Such mental analysis and predictions constitute the basic elements of social interactions (Astington & Dack, 2008).

Theory of mind refers to the capacity to understand, predict and explain the behavior of others by taking into account the mental states underlying these behaviors. This ability is present in typically developing individuals and usually emerges in early childhood (Scholl & Leslie, 1999). The ability to understand the mental states of others varies across individuals (Welsh, 2021). Children begin to better comprehend the social world by considering the perspectives of others. Understanding a speaker's intentions in communication helps children go beyond the surface meaning of messages. Children also begin to use these skills to achieve social goals, such as peer acceptance. This depends on the child's progress in theory of mind and how they use this knowledge in everyday life (Keenan, 2003).

Although there is general agreement on the critical milestones in the development of theory of mind, there are different theories about how this process takes place. While some researchers consider theory of mind to be a product of learning processes, others argue that it is based on a more complex module of mental states. This module is activated early in life and takes into account factors such as language development and increases in cognitive capacity. Moreover, experts agree on the importance of developmental differences and developmental data in understanding this process (Wellman, 2011). Various theories and views on theory of mind have been developed. Theory theory suggests that individuals' beliefs can have biasing effects on their perceptual processes. It also emphasizes that experiences play a critical role in the development of children's theory of mind. In this framework, when children encounter new information that cannot be explained by their existing theory of mind, they evaluate this information and revise their theory of mind. As a result, experience stands out as an important mechanism that improves children's social interactions and their ability to understand others' thoughts (Flavell, 1999). Modular theory argues that children's concepts such as belief, imitation and desire play a critical role in the processes of predicting and explaining behavior. While the modular theory suggests

that these basic concepts are determined by innate modules, it states that these modules are shaped over time by the developmental process and evolutionary factors. It also emphasizes that some components of the theory of mind are endogenous and are activated by appropriate neural maturation and environmental stimuli (Doherty, 2009). Simulation theory explains the ability of individuals to transform their own mental states into the predicted mental states of others. This process starts with the individual perceiving the other person's current mental state and supporting it with his/her own thinking mechanism. He then uses this mental state to understand the behavior of others instead of his own behavior. At the heart of the theory is the understanding of environmental psychological characteristics and the process of acquiring knowledge about the emergence of different mental states. In addition, there are procedures such as generalization, concept formation and inference making in the background of this theory (Ratcliffe, 2007). The innatist approach considers the theory of mind as a basic evolutionary adaptation. In contrast, constructivists argue that theory of mind is a product of early social learning. This approach also emphasizes that theory of mind is shaped through individuals' social interactions and experiences (Westra & Carruthers, 2021).

Theory of mind refers to the ability of individuals to understand the thoughts and beliefs of others, and in this context, the false belief task is used as an important tool. This task tests a person's ability to interpret or predict another person's behavior by comprehending their false beliefs. In the example false belief task, children are presented with two different stories about cooperation and competition. Through these stories, the aim is to assess children's understanding of the characters' beliefs and how these beliefs affect their behavior. Such practices play a critical role especially in the development of children's social skills and empathy levels, and provide important findings on how social cognition is shaped (Wimmer & Perner, 1983).

Development of Theory of Mind

In its most basic forms, theory of mind develops during infancy and early childhood, within the first four to five years of life. The most basic form of theory of mind, perception-goal psychology, begins to develop at around 9 months of age. At this stage, children are able to understand that others have different perceptual perspectives and goals about the world and can adjust their behavior accordingly. Later, around the age of 4 years, metatheory emerges in the form of belief-desire psychology. This stage involves recognizing that others may represent the world in detailed ways that are incompatible with the individual's own view and may be inaccurate. Important developmental milestones in this process are shown in Figure 1 (Rakoczy, 2022).

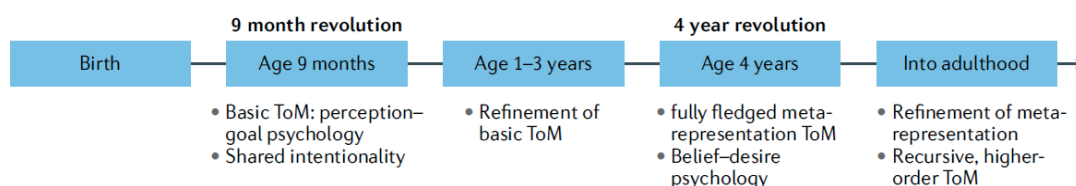


Figure 1. Milestones in the development of theory of mind (Rakoczy, 2022)

The most well-known developmental sequence related to the development of theory of mind deals with the skills that emerge between the ages of 3-5, that is, in preschool years. This progressive developmental sequence is presented in Table 1 (Peterson, & Wellman, 2009 and Wellman & Liu, 2004 as cited in Tucci, 2016):

Table 1. *Developmental sequence of theory of mind*

Stage	Age of Mastery	Task Description
Diverse Desires	3.0 – 4.0 yrs	Child is given a choice of two snacks (e.g., carrots and cookies). Child picks favorite snack. Another character (e.g., doll) chooses the opposing snack as her favorite. Child is asked what the character will choose to eat. Child must inhibit his desire and choose the opposing snack to score correctly.
Diverse Beliefs	3.0 – 4.0 yrs	Child is given a choice of two locations for a missing cat. Child picks the location where he thinks the cat is hiding. Another character chooses the opposing location. Child is asked where the character will look for the cat. Child must inhibit his desire and choose the opposing location to score correctly.
Social Pretend	4.0 – 4.5 yrs	Child and assessor pretend to paint a blue cup green. Another character not involved in the pretend play enters the situation. Child is asked what color the character thinks the cup is. Child should say the initial color of the cup (i.e., blue) to score correctly.
Knowledge Access	4.6 yrs	Child is shown a nondescript box with a random object inside (e.g., toy dog). Toy is concealed inside the box, and another character (who has not seen inside the box) enters the situation. Child is asked what the character thinks is inside the box. Child must say the character doesn't know to score correctly.
False Belief – Unexpected Contents	5 yrs	Child is shown a recognizable box (e.g., M&M box) and asked what they think is inside. Child should say candy. Contents of the box are revealed. It is something other than what the outside of the box would suggest. (e.g., toy fish). Object is placed into the box and another character enters the situation. Child is asked what the character thinks is inside the box. Child should say candy to score correctly.

Theory of mind refers to the ability of individuals to understand the thoughts and feelings of others and is usually acquired rapidly in typically developing children based on specific abilities in infancy (Wellman, 2014). During typical development, children show a specific developmental sequence of acquiring ToM between the ages of 2.5 and 5 years. Therefore, tasks related to ToM are usually aimed at children in this age group. Preschool children's capacity to understand mental states in these tasks helps to assess individual differences in mindreading (Slaughter & Repacholi, 2003).

In children's development, the ability to reason about desires appears about a year and a half earlier than reasoning about beliefs. Infants at 18 months have a limited ability to think non-self-centeredly about people's desires. By 2.5 years of age, children begin to understand the relationship between desires and emotional outcomes; for example, they recognize that a person is happy when he or she achieves something he or she wants (Bartsch & Wellman, 1995). However, understanding of false beliefs usually develops by age 4. Children aged 3 years and younger have difficulty understanding that the mental representation of a person may differ from reality. These conceptual distinctions are related to other understandings such as appearance reality and the ability to perceive the same object from different visual perspectives, and these skills are also acquired around the age of 4. From the age of 4, children begin to use beliefs systematically in their daily lives (Flavell & Miller, 1998, as cited in Sodian & Kristen, 2010).

Theory of mind is a process that starts with intuitive social skills developed in infancy and progresses with reflective social cognition in toddlerhood and preschool years (Astington & Edward, 2010). Babies gain the ability to distinguish between the movements of animate and inanimate objects at around six months, while their joint attention skills begin to develop at twelve months. At eighteen months, the first signs of the development of theory of mind are seen, along with the ability for joint attention. At the age of three, children have difficulty distinguishing the beliefs of others from their own beliefs, while by the age of four, their ability to understand these beliefs is significantly improved (Şahin et al. 2019). 3-year-old children understand that different individuals can have different desires, loves and feelings. Between the ages of 4 and 5, they understand that people can have different thoughts and realize that a person can have a false belief. Theory of mind enables individuals to understand others by recognizing their own mental

states (thoughts, desires, motives and emotions). Individuals use theory of mind to explain their behavior by expressing their own feelings and thoughts and interpret other people's speech and behavior by considering their thoughts and desires (Astington & Edward, 2010).

The rate of development of ToM abilities varies across individuals. While the general age of success in the classical version of the false belief task is set at 4 years, some typically developing children successfully complete this task at age 3, while others do not succeed until age 5. Therefore, it is important to investigate whether individual differences are genetic or environmental (Zufferey, 2010). Hughes et al. (2005) conducted studies on identical and fraternal twins and found that the main factors affecting the development of ToM are environmental, not genetic. Ruffman et al. (1998) emphasize the important role of the presence of older siblings in the development of belief understanding. They also emphasize the importance of social interactions in both facilitating and providing these interactions.

Research reveals that the child's environment plays a critical role in the development of ToM abilities. However, this does not mean that ToM does not have a genetic basis. While ToM is supported by genetic factors, environmental influences also significantly shape this development. Therefore, innate ToM abilities are determined by the developmental process and environmental factors (Zufferey, 2010).

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