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THEORY OF MIND AND ITS REFLECTION IN CHILDREN'S NARRATIVE ABILITIES

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Abstract

Theory of Mind and narrative abilities are closely related in a bidirectional way. On the one hand, Theory of Mind is reflected in the quality of discourse production and comprehension, and on the other hand narrative input influences the development of Theory of Mind in children. The present contribution is theoretical in nature, defining the Theory of Mind, its development, and describing in more detail its relationship to narrative abilities in children. It also provides information on the possibilities of assessing Theory of Mind within a narrative context in the child population.

Keywords

Theory of Mind, internal states terms, narrative abilities, MAIN

Introduction

The concept of Theory of Mind came to the attention of the professional public several decades ago with a study by David Premack and Guy Woodruff (1978), who investigated whether a chimpanzee can understand the mental states of a human being by observing human behaviour. The pioneering work by these authors is one of the key studies that prompted extensive research into the concept of the Theory of Mind in the field of psychology, linguistics, speech therapy or even neuroscience, both in the child and adult population.

Theory of Mind (ToM) can be defined as the ability to attribute mental states such as thoughts, beliefs, desires, goals, or emotions to other people, and to understand that these states may be different from our own. This ability allows the individual to interpret and predict the behaviour of others based on their mental states (Premack and Woodruff, 1978). The term 'Theory of Mind' befits the essence of this concept: since internal states are not directly observable entities, we need to be able to form theories or ideas about other people's minds. This is often associated with the property of empathy, and we can gauge this in children, first on a non-verbal level and later on as it becomes reflected in narrative and textual structures.

The ability of Theory of Mind is shown to be deficient in children with autism (Baron-Cohen, 2000), with hearing impairments (Schick et al., 2007), or in children with developmental language disorder (Farrant et al., 2006). Individual differences in the level of Theory of Mind are positively correlated with reading comprehension (Atkinson et al., 2017), children's popularity among peers (Slaughter et al., 2015), prosocial behaviour (Imuta et al., 2016), and mental health (Nestor et al., 2022). Theory of Mind plays a significant role in the formation of friendships (Fink et al., 2015), is a key skill for social cognition, and enables meaningful interpersonal interaction and communication. It is a whole complex of abilities that develops from an early age, and its relationship with language and communication skills is the subject of extensive *research*.

Development of Theory of Mind in children

Wellman and Liu (2004) hypothesize that in normally developing children understanding of the mind develops in a predictable order, similar to speech and language development, and is closely related to social cognition, where the ability to imitate plays a central role (Meltzoff, 2014). Wellman (2014) notes that the child's development of their understanding of others begins from birth. In the first days after

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birth, infants prefer to watch people and especially their faces, imitating them, but this preference does not extend to inanimate objects. Physical mimicry progressively leads to revealing the intentionality of behaviour. As Tomasello (2014) states, language is conventional, and the most fundamental process of language acquisition is the ability to do things the way other people do. Yet this does not mean mere mindless repetition, because linguistic units inherently serve to direct other people's attention, but they also facilitate our cultural learning and understanding and being able to 'read' other people's intentions. During development we witness the manifestations, i.e. precursors of the Theory of Mind. Zafferey (2010) states that already in the first year of a child's life we observe abilities that are essential for Theory of Mind development.

Around the 9th month, the child begins to understand a certain intentionality in action, as s/he is able to associate a movement stimulus with a potential agent. At the same time, s/he is also able to detect the direction of another person's gaze. Brooks and Meltzoff (2015) report that the more a child follows another person's gaze between 10 and 11 months of age, the superior the vocabulary of mental states s/he achieves at two and a half years of age. Around the age of one, we develop a significant ability to share attention. An important manifestation of shared attention is the gesture of pointing to an object; its declarative but not imperative form is moreover considered a precursor of the Theory of Mind (Tomasello, 2005 in Colonnesi et al., 2008).

At approximately 14 to 18 months of age the baby is able to turn its head in the direction of another person's gaze when that indicates the location of an object (Zafferey, 2010). During this period, the child also begins to understand the mental states of *desired goals and intended purpose* (Meltzoff, 1995). Brüne and Brüne-Cohrs (2006) conclude that children aged 18 to 24 months recognize the difference between reality and pretence and are able to distinguish between a real event and a representation of a hypothetical state. Pretend-play typically appears shortly after reaching the age of 18 months. These important changes in children's cognition are also reflected in their vocabulary. Between two and three years of age, children begin to communicate about the internal states of others and their own (Bretherton and Beeghly, 1982), which initially reflect physiological, perceptual and volitional states. Progressively, a vocabulary reflecting emotional, moral and cognitive states develops (Kristen et al., 2012).

The period between three and six years of age is probably the most studied in relation to Theory of Mind, since it represents the period between the unsuccessful and successful mastery of classical tests of false beliefs, the mastery of which is often considered an indicator of the development of Theory of Mind in children.[4] Wellman et al. (2001) affirm, in their meta-analysis, that the ability to understand erroneous beliefs develops dramatically between the ages of three and four. While younger children have difficulty with misconception tasks and perform worse than they would with random guessing, older children begin to consistently understand these tasks and answer them correctly, achieving better results than they would have achieved by guessing. While at the age of 30 months more than 80% of children fail the given tests, at the age of 44 months children have a 50% success rate and by the 56th month of age the children's success rate would rise to 74.6%. It follows that during this period there is a shift in realization – that thoughts may not be truth-based. Later, at school age, an understanding of metaphor or irony emerges (Pexman, Glenwright, 2007). Even more difficult to grasp is the 'faux pas' situation, which may not be properly understood before the age of 9 to 11 (Baron-Cohen et al., 1999).

The Relationship of Theory of Mind to Narrative Abilities

In parallel with the development of the Theory of Mind, the child's language and communication skills are also developing. Both these abilities are closely linked and their connection is still the subject of research. However, it seems to be a two-way relationship. On the one hand, thinking about the mind of others is reflected in the child's language development (Kristen et al., 2012; Bretherton and Beeghly, 1982), but at the same time the level of language skills supports the development of Theory of Mind. Brooks and Meltzoff (2015) report that children with a broader vocabulary of mental states at age two and a half perform better on explicit Theory of Mind tasks two years later. At the same time, the relationship between syntactic abilities and Theory of Mind is shown. Specifically, the adoption of sentence structures in which one statement serves as an argument within another statement (complement syntax) is related to ToM level (Kaltefleiter et al., 2021).

Significant development of narrative competence is typical for preschool age – the ability to understand and express oneself coherently on a particular topic. The first monologues appear in children's speech relatively early and in a very simple form, between the ages of two and three (Westby, 1984). As Fečková-Kapalková (2002) states, we can already consider as narration some three separate speeches by a child that relate to the same one event. The production and understanding of stories evolves throughout life. From simple narratives focused on action they become comprehensive narratives that include not only the description of external events, but also the mental states of the characters, their feelings, thoughts and intentions (Gamannossi and Pinto, 2014), and thus correspond to how the child reflects on the minds of others. Kapalková and Nemcová (2020) state that although with preschool children the expression of narrative is dominated by information that can be 'visually read' from illustrations – as they get older, statements appear more and more often reflecting an understanding of information that may not be obvious at first glance and requires a deeper understanding of the goals and other internal states of the characters.

However, Theory of Mind is not only essential for the production of stories with a higher level of structure, but is a key aspect of understanding discourse. Stories cannot be properly understood without understanding the mental states of the characters and how these mental states motivate their behaviour (Tompkins et al., 2020). On the other hand, narratives, especially in the form of stories and conversations, play a key role in the development of Theory of Mind in children and represent an effective way to stimulate it (Guajardo and Watson, 2002). Through stories, children are exposed to different characters with different perspectives, beliefs and emotions. This exposure helps them practice and refine their understanding of how others think and feel (Tompkins et al., 2019). Especially stimulating are the stories in children's books with complex plots, where the characters have ulterior motives

[4] False-belief tasks are tests used to assess the ability to recognize and understand that another person may have beliefs that are fallacious. Among these are the so-called *Sally-Anne Test* or *The Smarties*, which we shall briefly describe in a forthcoming section here.

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or false beliefs. Cassidy et al. (1998) state that up to 78% of children's books aimed at preschoolers contain information about the inner states of the characters, and about 34% of them also contain elements of false beliefs. The aforementioned authors consider children's books to be a context even more explicit than everyday interactions, through which children learn about mental states. A method of interactive dynamic reading of children's books, which develops an understanding of the story with an emphasis on understanding the inner states of the characters, was described in our conditions by Kapalková and Mičianová (2015). As Tompkins (2015) states, an important role is played by the quality of reading together. Tompkins conducted an experiment during which selected children's books with elements of Theory of Mind were read to children. Children in the experimental group were engaged in a discussion of concepts of Theory of Mind, and were exposed to labelling and explaining concepts of mental states. At the same time, the contrast between thought and reality was explicitly explained to them. The finding of that study was that the children in the experimental group experienced an improvement in Theory of Mind compared to the control group, who had the same books read to them, but without discussing Theory of Mind concepts.

Evaluation of Theory of Mind in a Narrative Context

The level of Theory of Mind attained can be assessed by several methods, e.g. the Theory of Mind scale (Wellman and Liu, 2004), questionnaires for parents (Hutchins et al., 2012; Tahiroglu et al., 2014) or direct testing of the child (Happé, 1994). False belief tests are perhaps the most commonly used method to assess this ability. The most famous version of the misconceptions tests, the *Sally-Anne Test* so-named by Baron-Cohen (1985), consists of performing a game with two characters – Sally and Anne.

During testing, the child is shown how Sally takes her marble, puts it in a basket and walks away. While Sally is out of the room, Anne arrives and takes the marble out of the basket and puts it into a box. Then Sally returns to the room and the child is asked *"Where will Sally look for her marble?"*. The child's response then reflects the un/awareness of the character's false beliefs.

Another experimental tool used to investigate Theory of Mind is called *The Smarties* (Perner et al., 1987), where the name derives from the name of the chocolate lentil sweets used in the task. In this task, the child is presented with a closed tube of sweets with which to rattle, and the child is asked the question *"What is in here?"*. The child replies *"Smarties"* and then the experimenter opens the tube, which contains pencils. The experimenter returns the pencils to the tube, and then asks the child what s/he thinks another person will think is inside.

However, Nicolopoulou and Ünlütabak (2017) report that understanding the concepts of Theory of Mind in narratives is a task cognitively more challenging than traditional tests of misconceptions, and at the same time, examining Theory of Mind in the context of a story is closer to everyday situations. Thus, we can look at Theory of Mind through the evaluation of the understanding of the story in children's books. In their study, Nicolopoulou and Ünlütabak (2017) tracked the understanding of the concepts of Theory of Mind through picture books, while also tracking performances in the classic ToM exams. Their research involved 48 English-speaking children, aged four, five and six, who were individually read three picture books. During the reading, the children answered literal questions and inferential questions. The results of their research showed that only children aged six (72%) were able to understand the misconception in the story. None of the four-year-olds understood the misconception in the story, and only 14% of the five-year-olds passed this test. However, younger children performed better in traditional tests of false beliefs. Therefore, the authors state that in children, the examination of the Theory of Mind should be supplemented with tests involving misconceptions that are set in a narrative context. However, in our Slovak and Czech conditions, there is no standardized and valid narrative tool that would be able to objectively evaluate ToM abilities in children.

Use of the MAIN tool in the evaluation of ToM

The production and understanding of stories can be assessed in children from the age of three, using a short picture sequence, e.g. through the MAIN (Multilingual Assessment Instrument for Narratives) tool, which has been adapted into both Slovak (Kapalková and Nemcová, 2020) and Czech (Nováková, Schöffelová et al., 2023) for assessment of narrative skills in multilingual children. MAIN consists of subtests mapping the level of production as well as understanding of the stories, both of which also assess the ability to understand the intentions and goals of the characters, as well as their reactions within the story.

MAIN provides an evaluation of the production of a story from the point of view of the presence of macrostructural components, the elements that make up the grammar of the story.[5] These are mental components that reflect information about external observable phenomena, such as the *Attempt*, the *Outcome*, and the *Setting* (place and time) where the story takes place. At the same time, however, it makes it possible to map the production of such components that are not outwardly observable, but relate to the mental states of the main protagonists and reflect partially (marginally) the ability of the Theory of Mind. The components are: *the character's internal state as the initiating event, the goal, and the character's internal state as a reaction*. By identifying and interpreting the initial event, the child demonstrates an understanding of the relationships between the character's internal states, such as their motivations, beliefs, knowledge, or feelings that set the plot in motion, and how these mental states affect subsequent events. Recognizing the *goal* points to an understanding of the character's inner intent. The expression of the *goal* component also reflects elements of the Theory of Mind, since to express it, the child needs to identify the desires or intentions of the character and estimate how they will affect their actions. *The character's internal state as a reaction* reflects an understanding of how the character evaluates and internally responds to the events that have taken place. It is usually an expression of the feelings and emotions that the *outcome* evoked in the character's experience.

Kapalková et al. (2016) state that with bilingual Slovak-English-speaking children the dominant components are those that reflect external phenomena, i.e. *attempt and outcome*, while progressively adding elements that reflect the inner world of the characters – the *initial event*, the *goal* and the *reaction*, regardless of the language being studied. The same trend is found by Kapalková and Nemcová (2020) in monolingual Slovak-speaking

[5] The relevant rating corresponds to the MAIN tool manual section entitled *A. Story Structure.*

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children. Thus, the order of expression of the components of the macrostructure in preschool children turns out to be developmentally determined, while the demands placed on the Theory of Mind differ between the individual components of the macrostructure. Therefore, it is advisable to take into account the order of acquisition of the components of the macrostructure in the therapeutic process. The relationship between the expression of the mental components of the macrostructure in the narrated narratives of the MAIN tool, and the experimental tool assessing the understanding of a complex story in a children's book with elements of the Theory of Mind, was explored by Nemcová (2018) in her final thesis. That author finds a relationship, albeit a tenuous one, between how children of younger school age are able to produce the mental components of a story, and an understanding of the story that draws on the abilities of the Theory of Mind.

The MAIN narrative tool also allows the evaluation of microstructure, i.e. the expression of vocabulary that reflects the mental states of the protagonists in the story.[6] The expression of these states indicates that the child is able to take into account the perspective of the character, and reflects on what the character is experiencing internally. Theory of Mind and so-called 'mental state talk' are closely linked (Kim et al., 2021). These are states reflecting the *perceptual modes* of the characters (e.g. seeing, hearing, feeling) and their *physiological states* (e.g. being thirsty, hungry, being tired). Then there are states reflecting *consciousness* (e.g. being alive, awake, sleepy), *emotional experience* (e.g. being angry, sad, happy), *states of mind* (e.g. wanting, thinking, planning) and finally words referring to *communicative expressions* (e.g. say, shout, ask). Gamannossi and Pinto (2017) consider the vocabulary describing the characters' internal states as an indicator of Theory of Mind, since they find positive relationships between the production of these concepts in children's narratives and standardized tests of Theory of Mind.

Theory of Mind is essential for social and communicative interactions, including understanding discourse in both oral and written form (Kim et al., 2021). Bohnacker and Gagarina (2020) state that understanding stories does not comprise of the ability to summarize facts and details that have been explicitly verbalized or visualized, since this rather more reflects the child's memory skills. To understand the story, one has to understand meaningful relationships, causes and their consequences. In their view, the key aspect is taking into account the perspective of the characters and making judgements about their inner world. Such an understanding places demands on inferential abilities and a developed Theory of Mind ability.

The MAIN tool offers ten questions to assess understanding of the story. These questions are implicit in nature and require an interpretation of those components of the story that relate to the internal states of the characters. Three questions map the understanding of the goals of the characters' actions, e.g. *Why was the mother goat in the water?*, three questions map the understanding of internal states tied to either the initial event or the character's reaction, e.g. *How does the cat feel?*, and three questions map the understanding of mutual relationships, and thus the causes of internal states, e.g. *Why do you think the cat is feeling bad?*. These questions always follow the child's previous answer. Two of the questions are also hypothetical in nature, because the child must imagine a certain situation that did not actually take place in the story and draw conclusions from it. The last question also requires an understanding of the character's mind, e.g. *"Who does the mother goat like best, the fox or the bird? Why?"*, based on taking into account the entire plot line. Assessment of narrative skills is clinically important in children with suspected Developmental Language Disorder (DLD). This diagnosis is associated with weakened story understanding, but also with deficits in Theory of Mind ability (Nilsson and de López, 2016). Nemcová, Oláhová and Kapalková (2022) found that children with DLD score significantly worse in understanding the story of the MAIN tool than their typically developing peers. These findings point to the need for appropriately selected therapy of narrative skills. If we find difficulties in expressing or understanding the mental elements of a story in children through the MAIN tool, it is beneficial for these children to include work with stories that contain elements of Theory of Mind in speech therapy, for example through the interactive dynamic reading approach (Kapalková and Mičianová, 2015).

Although the MAIN tool is primarily designed to evaluate the production and understanding of narratives, its theoretical background points to its possible applicability in assessing the partial abilities of the Theory of Mind in children. However, the extent to which it reflects the more complex capabilities of the ToM remains the subject of future research.

Conclusion

Theory of Mind is essential for understanding what others feel, what they think, what they know, or what their intentions are. It allows us to interpret why people around us act in a certain way, and also to predict their behaviour. It is an essential ability for ensuring functioning social interaction or communication. Theory of Mind develops in parallel with language and is closely related to the production and understanding of stories. We can support the development of Theory of Mind in children by means of appropriate narrative input, naming mental states, and discussing the concepts of Theory of Mind in children's books. At the same time, by analyzing the understanding and production of narratives, the professional can assess how the child thinks about the minds of others.

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[6] The relevant rating corresponds to the MAIN tool manual section *C. Internal State Terms* i.e. the mental states of the character.

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