Food for thought about words for thoughts: Why mental state vocabulary should be on our radar

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With so many goals to address in order to help the children on our caseloads, something like "mental state words" may not be high on your list. You may think that this is a goal only for older children or children on the autism spectrum. However, this special group of words that describe our thoughts and feelings may develop earlier than you think and may be relevant for many of the children with whom you work.

What are mental state words?

This class of vocabulary includes words that describe the contents of someone's mind or general cognitive processes (Barnes & Dickinson, 2018). Understanding mental state words gives children the ability to analyze others' goals and motives and how these relate to the child's own goals and motives (Bretherton & Beeghly, 1982). An early study about the development of mental state words by Bretherton et al. (1982) described them according to different categories:

Types of Mental State Words (Bretherton et al., 1982)

Perceptual – includes words related to the five senses, pain, and temperature, such as "see", "look", "watch", "cold", "hurt", etc.

Physiological – includes words related to hunger, thirst, and states of consciousness, such as "hungry", "tired", "sick", "wake up", etc.

Emotional and affective – these include both positive and negative words related to feelings, such as "like", "love", "cry", "kiss", "hug", "funny", "happy", "angry", "nice", etc.

Volition and ability – words related to desires, needs, and abilities, such as "want", "need", "have to", "hard", "can", etc.

Cognition – words related to knowledge, memory, dreaming, pretending, or uncertainty, such as "know", "think", "remember", "forget", "maybe", "understand", "dream", "real", "guess", etc.

Moral judgement and obligation – words related to permission, moral conformity or transgression, such as "good", "bad", "naughty", "may", "let", "supposed to", "must", etc.

When do mental state words emerge?

In their longitudinal study of 30 young children, Bretherton et al. (1982) found that, by 28 months, children:

- interpret their own and other people's mental states
- comment on their own or someone else's expected and past experiences
- discuss how their own or someone else's state might be changed or what gave rise to it
- use words referring to volition (especially "want"), perception, and physiological states more often than words referring to affect and moral obligation. Cognition words were the least common at 28 months.

They also noticed that children tend to speak about their own mental states before they label those of others, although this lag is relatively small.

Cognitive words like "think", "know", and "guess" start to appear at age 3 (Bartsch & Wellman, 1995). However, these words are first used in a rote, formulaic way to serve conversations functions (such as "I don't know", "I think so", or "You know what?") (Shatz, Wellman, & Silber, 1983; Becker Razuri, Hiles Howard, Purvis & Cross, 2017). Eventually, children use these types of words to refer to genuine cognitive states.

According to Carlson Lee & Rescorla (2002), another important change happens in children's mental state language at around age 3. This occurs when children begin to talk about a wider variety of feelings, and they refer to the causes and consequences of feelings more often.

Between ages 4 and 5, children learn about subtle differences in speaker certainty, such as understanding that the word "know" expresses greater certainty than the words "think" or "guess" (de Mulder, 2015).

Becker Razuri et al. (2017) report that it's not until about age 5 that children's talk about beliefs becomes as frequent as their talk about desires. The word "know" becomes the most frequent mental state word used among school aged children, and its meaning continues to grow in complexity throughout older childhood (Becker Razuri et al, 2017). It takes several years before children understand and use a wide variety of mental state words, possibly beyond age 8 (Bartsch et al., 1995.)

What's so special about mental state words?

Mental state vocabulary is important for many aspects of children's development, including:

- **Theory of Mind** – For children to understand other peoples' perspectives and the hidden meaning behind their words and actions, they need to understand words that describe peoples' thoughts and feelings. Conversations that include mental state vocabulary expose children to the language of the mind and promote an understanding of peoples' thoughts.
- **Conversations** – In order to have successful conversations, children need to be able to put themselves in the other person's shoes. When they can talk about their own thoughts and feelings and understand what might be going on in someone else's mind, conversations can last longer and have deeper meaning.
- **Story comprehension** – Literate language is characterized by decontextualized talk, which includes talk about mental states. When children understand mental state vocabulary, they can better understand the language used to describe characters' actions and motivations.
- **Self-regulation** – When children learn the words associated with how they are feeling emotionally and physically, they are better able to externalize their feelings, which results in better self-regulation (Binns, Hutchinson, & Oram Cardy, 2019).
- **Academic discussions** – Mental state words are part of the academic language used by teachers and found in textbooks (e.g. words like "hypothesize", "predict", "infer.") Children's academic achievement is associated with their knowledge of academic vocabulary   (Barnes et al., 2018; Carlson Lee et al., 2002).

Many of the children with whom we work may have difficulty acquiring mental state vocabulary. We might automatically think about this in relation to children with autism spectrum disorder or hearing impairment, for whom challenges with theory of mind development and mental state language are well-documented (Peterson, Wellman, Liu, 2005; Westby & Robinson, 2014). However, "late talkers" also demonstrate lags in their understanding and use of mental state words. Carlson Lee et al. (2002) found that even late talkers who "caught up" to their peers in terms of MLU used significantly fewer mental state words to express cognitive states. Late talking children were more likely to use earlier developing mental state words that relate to their physiological state (hungry, sleepy) and their wants and needs. This could have a negative influence on their social understanding and peer interaction.

Why are mental state words tricky for children?

Mental state verbs are harder for children to learn because they "…differ in their semantic-conceptual properties and in their typical learning signatures from most other words in several ways" (Papafragou, Cassidy, & Gleitman, 2007, p. 126). The differences relate to the following:

- they label concepts that cannot be perceived with our senses (cannot be seen or touched)
- the concepts that they encode are complex or abstract
- they are difficult to identify from context, even by adults, who understand their meanings

It's not surprising, then, that while mental state words appear frequently in maternal speech to babies, they appear comparatively late in children's own speech (Papafragou et al., 2007).

Why encourage caregivers to use mental state words

Research has shown that parents' and teachers' use of mental state language influences children's development of this type of vocabulary and develops their theory of mind.

- **Parents' use of mental state words influences children's development** – Longitudinal studies have shown that mothers' mental state language plays a direct and causal role in the development of children's theory of mind:
  - Mothers who make more frequent references to mental states early on during everyday interactions have children who demonstrate advanced theory of mind when they are between 2 – 6 years of age.
  - Mothers' mental state talk is related to the frequency of children's own use of mental state language at ages 3 and 4, and also at age 10 (Carr, Slade, Yuill, Sullivan, & Ruffman, 2018; Taumoepeau & Ruffman, 2008).

  In addition, children who are exposed to more mental state talk early on experience fewer behavioural difficulties when they are 10 years old (Carr et al., 2018).

- **Teachers' use of mental state verbs is related to children's vocabulary growth** – A recent study that looked at the relationship between preschool teachers' use of mental state verbs and the vocabulary growth of the 402 children in their classrooms found that:
  - teachers' use of mental state verbs during group content instruction (e.g. a science-oriented lesson) was positively related to children's year-end receptive vocabulary scores
  - there was a significant relationship between references to mental states which placed the child as the referent of the verb and children's year-end receptive vocabulary. Placing the child as the referent might suggest that the teachers were following the children's interests and engaging them by making them the topic of conversation (Barnes et al., 2018).

- **Parents of children with delayed language may use fewer mental state references with their children** – There is evidence that parents of children with delayed language development may use fewer mental state words or less complicated mental state vocabulary with their children (Ruffman, Slade, & Crowe, 2002).

Carlson Lee et al. (2002) noted that mothers of late talking children used fewer cognitive state words and more words about wants and physiological states with their children. The same is true for children with autism spectrum disorder, who use less mental state language themselves and, consequently, may receive more concrete language input from their parents (The Hanen Centre, n.d.)

How caregivers can promote mental state words

Research shows that children learn mental state vocabulary from a young age as a result of exposure from their caregivers. In addition, studies show that children with delayed language development struggle with these words and may be at risk for less exposure to this type of input. In our work with young children with communication difficulties, we can promote the development of mental state language by helping parents and teachers model this type of vocabulary during everyday activities and conversations.

Here are some things to think about as you help caregivers promote mental state language with young children:

→ **Consider the developmental sequence of mental state words**

Typically developing children first learn words about their wants (especially "want"), perception (e.g. "see", "look", "hurt"), and physiological states (e.g. "thirsty", "sleep", "wake up") (Bretherton et al., 1982). Research has also noted mothers' natural tendency to refer to desire terms (about children's wants and needs) when children are young, and that mothers gradually increase their use of cognitive words over time (Rollo & Sulla, 2016). This may be because young children's desires are made salient as a result of their facial expressions and actions, and their daily life is marked by many attempts to satisfy their desires reference here.

> **How we can support children**: Coach parents to use earlier developing mental state words in everyday conversation, especially words about children's wants and needs, and gradually introduce words that relate to others' thoughts and beliefs.

→ **Start with comments about the child's own mental states**

Researchers have found that children express their own mental states before they talk about the mental states of others. When caregivers use mental state words that pertain to the child, it prompts the child to connect the topic to his own life and ensures a degree of responsiveness on the part of the adult (Barnes et al., 2018). In this way "…talking about a child's mental state prior to referring to the mental states of others may serve as a foundation for building vocabulary" (Barnes et al., 2018, p. 310).

> **How we can support children:** Put children's thoughts and feelings into words before modelling talk about others' mental states (e.g. "What do you think, Sarah?", "You chose the blue one…you must like the colour blue", "Do you need a pair of scissors?", "You like cookies, don't you?"). This idea is echoed in the TalkAbilty™ program, in which parents are encouraged to "begin with comments about what your child wants and thinks. After all, he has to understand himself before he can understand others" (Sussman, 2006, p. 74).

→ **Think about the context**

It's easy to use mental state vocabulary such as "want", "like" and "see" during everyday conversations. There are a few activities, though, that provide many opportunities to use mental state words and talk about people's thoughts and feelings:

- **Books** – "Picture book reading poses an important context for promoting socio-cognitive understanding" (Rollo et al., 2016, p.3). Shared reading is a context rich with mental state language due to discussions about the characters' thoughts and actions, and the opportunity to connect those with the child's own thoughts and feelings.
- **"Tuning in" games** – In the TalkAbility™ program, parents learn to use simple games like guessing games or barrier games, which provide many opportunities to use words like "know", "think", "guess" and "wonder."
- **Large-group content instruction in preschool classrooms** – Preschool teachers' use of mental state verbs during lessons to the class about science, social studies, or socio-emotional topics is related to children's year-end receptive vocabulary. Therefore, "Teachers should continue to incorporate [mental state verbs] into conceptually rich discussions that encourage children to think deeply about decontextualized academic topics" (Barnes et al., 2018, p. 319).

> **How we can support children**: Encourage caregivers to use a variety of contexts, including daily activities, everyday conversations, and some of the special contexts listed above to model mental state language according to the child's developmental level

Working on mental state vocabulary shouldn't be reserved only for verbal children with autism spectrum disorder. We can be thinking about these "thinking" words to ensure children with language difficulties are developing the ability to understand and use mental state language as it becomes developmentally appropriate.

To help you in your work with families, we've written an article for parents about mental state vocabulary which has some of the above ideas and information. For additional ideas about how to help parents promote their child's mental state language and theory of mind development, please refer to the TalkAbility™ guidebook.

References

Barnes, E. M. & Dickinson, D. K. (2018). Relationships Among Teachers' Use of Mental State Verbs and Children's Vocabulary Growth. *Early Education and Development, 29*(3), 307–323.

Bartsch, K. & Wellman, H. M. (1995). *Children Talk About the Mind*. Oxford University Press, New York, NY.

Becker Razuri, E., Hiles Howard, A. R., Purvis, K. B., & Cross, D. R. (2017). Mental state language development: The longitudinal roles of attachment and maternal language. *Infant Mental Health Journal, 38*(3), 329–342.

Binns, A. V., Hutchinson, L. R., & Oram Cardy, J. (2019). The Speech-Language Pathologist's Role in Supporting the Development of Self-Regulation: A Review and Tutorial. *Journal of Communication Disorders, 78*, 1-17.

Bretherton, I. & Beeghly, M. (1982). Talking About Internal States: The Acquisition of an Explicit Theory of Mind. *Developmental Psychology, 18*(6), 906-921.

Carlson Lee, E. & Rescorla, L. (2002). The use of psychological state terms by late talkers at age 3. *Applied Psycholinguistics, 23*, 623–641.

Carr, A., Slade, L., Yuill, N., Sullivan, S., & Ruffman, T. (2018). Minding the children: A longitudinal study of mental state talk, theory of mind, and behavioural adjustment from the age of 3 to 10. *Social Development, 27*:826–840.

de Mulder, H. (2015). Developing communicative competence: a longitudinal study of the acquisition of mental state terms and indirect requests. *Journal of Child Language, 42*, 969-1005

Papafragou, A., Cassidy, K. & Gleitman, L. (2007). When we think about thinking: The acquisition of belief verbs. *Cognition, 105*, (125–165).

Peterson, C. C., Wellman, H., & Liu, D. (2005). Steps in Theory-of-Mind Development for Children With Deafness or Autism. *Child Development, 76*(2), 502 – 517.

Rollo, D. & Sulla, F. (2016). Maternal Talk in Cognitive Development: Relations between Psychological Lexicon, Semantic Development, Empathy, and Temperament. *Frontiers in Psychology, 7*(394), 1-10.

Ruffman, T., Slade, L., & Crowe, E. (2002). The Relation between Children's and Mothers' Mental State Language and Theory-of-Mind Understanding. *Child Development, 73*(3), 734-751.

Shatz, M., Wellman, H. M., & Silber, S. (1983). The acquisition of mental verbs: A systematic investigation of the first reference to mental state. *Cognition, 14*, 301-321.

Taumoepeau, M. & Ruffman, T. (2008). Stepping Stones to Others' Minds: Maternal Talk Relates to Child Mental State Language and Emotion Understanding at 15, 24, and 33 Months. *Child Development, 79*(2), 284-302.

The Hanen Centre. (n.d.). *The Research Base for TalkAbility™ – The Hanen Program® for Parents of Verbal Children on the Autism Spectrum*. Retrieved from http://www.hanen.org/Helpful-Info/Research-Summaries/TA-Research.aspx.

Westby, C. & Robinson, L. (2014). A developmental perspective for promoting theory of mind. *Topics in Language Disorders, 34*(4), 362-383.