Developing Theory of Mind in Deaf Children

Donna Sperandio, MEd, LSLS Cert AVT®
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Acknowledgement, Jill Mustard, LSLS Cert AVT®
Southern Cochlear Implant Programme, Christchurch, New Zealand

What is Theory of Mind?

Theory of mind (ToM) = social cognition = mind reading
- The understanding that each individual has their own mind, with their own thoughts, beliefs and emotions
- The understanding that people act according to what they think, believe or feel
  …‘people knowledge’

What is Theory of Mind?

• Typically developing children’s understanding of ToM develops rapidly in the preschool years.
  • Initial understanding begins in infancy, but developments 3-6 years are particularly pronounced and important, including mastery of false belief tasks. (Wellman & Peterson 2013)
What is Theory of Mind?

- ToM is the base of children’s social understanding
- ToM predicts social popularity with peers (Peterson & Sigel, 2002; Slaughter et al, 2002; Punch et al, 2011)
- ToM predicts skilled interactions with peers (Dunn et al, 2000; DeLuca & Giorgetti, 2011; Sundqvist et al, 2014)
- ToM predicts teacher rated social competence (Peterson et al, 2007)

Why is this important?

- Critical for literacy - understanding narratives - reading between the lines (Astington & Pelletier 1996; Nicholas & Geers 2006, 2007)
- Critical for ability to learn by instruction and through collaboration (Astington & Pelletier 1996)

Why is this important?

- Diverse Desires
- Diverse Beliefs
- Knowledge Access
- Contents False Belief
- Real-Apparent Emotion

The Development of Theory of Mind

Wellman and Liu (2004) developed a hierarchy of tasks which have been shown to be robust in the development of Theory of Mind

- Severe delays have been shown in the development of ToM in deaf children (Merrill et al, 2007; Peterson 2000; Peterson 2009; Schick et al, 2007)

ToM and deaf children

- Poor language development?
  - Language development has been shown to be closely correlated with ToM development in children with typical hearing (Mollergen, Astington & Deck 2007; Remmel et al, 2009)
  - As the cohort of children with age appropriate language and CI increases, will we see a change?
    - Some conflicting results so far (Remmel et al, 2009)
    - 30 CI children showed little or no delay compared to NH peers (Remmel & Peters 2009)
    - 72 CI children implanted < 3 years of age showed delays compared to NH peers (Kanowski et al, 2012)

What is the mechanism causing this delay?
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Effects of diagnosis on parental interaction?

- Increased use of mental state language has been shown to accelerate development of typical children.
- Diagnosis of deafness has been shown to decrease the amount of mental state language used with deaf children (Moeller & Schick 2006; Meins & Fernyhough 1999; Wellman & Peterson, 2013; Lecciso et al, 2013).

What is the mechanism causing this delay?

- Intervention that ignores the importance of parents
- Intervention that encourages use of concrete vocabulary

What is the mechanism causing this delay?

- Use of mental state language
  - Make own and others' thoughts overt
  - What are you thinking?
  - Explain others' actions e.g., “Dad’s gone back to work because he’s worried he left the lights on.”
  - Give reasons for behaviour correction

Ideas for Intervention

- Contrastive speech has been shown to predict False Belief understanding better than simple mention of mental states. (Brown et al, 1996)
  - “It’s not real, it’s only pretend.”
  - “You like the puppy but Mummy likes the bird.”

Ideas for Intervention

- Talk about desires, and emotions. Understanding diverse desires precedes understanding diverse thinking.
  - What do you want? Want is one of a child’s first fifty words
  - Which one do you like? I like ……… Mummy likes ………
  - How do you feel? Why? “Sarah is upset because she liked her dog and it is lost.”
  - Emotions lead to actions “I am happy that John passed his exam. I am going to give him a hug.”

want, wish, love, promise
happy, sad, tired, cross, surprised, worried, upset………..
I don’t know because I haven’t seen it.’
• ‘I don’t know because I haven’t heard it.’
• ‘Do you know what happens in this book?’
• ‘Do you know where the keys are? I’ve forgotten, did you see where I put them?’

Ideas for Intervention

• Knowledge Access
• Lots of pretend play
• Socially shared pretend play is more significant in development of ToM than solitary pretend play (Astington & Jenkins 1995)
• Dress up
• Talk about pretending
• Shared pretend activities/role play
• Take different roles
• Small world play

• Particular language structures may be important
• Sentential complements (de Villiers et al., 2002)
  • “Jane knew that Mummy would be proud.”
  • “I thought you were going to London.”
  • “Can you remember where you put it?”

Ideas for Intervention - Literature

• Children’s literature
• Many stories for adults and children are based on deception
  • Cassidy et al. (1998):
    • 317 children’s books
    • 78% contained references to internal states
    • 34% contained false belief
    • 43% contained personality descriptors

Use stories to talk about what’s happening in the character’s mind
• Why do they act the way they do?
• What does the reader know that the character doesn’t know? E.g. Little Red Riding Hood
• What do you think the character will do next? What might happen? Why?
The Theory of Mind Inventory

- Developed by Tiffany Hutchins, Patricia Prelock and Laura Bonazinga (2010)
- 42 statements, parents indicate the degree to which they believe each statement is true for their child
- Professionals enter data online – website below “For professionals”
- Percentile rank and standard score generated, based on preliminary norms

For further information: http://www.theoryofmindinventory.com/

The Theory of Mind Task Battery

- Developed by Tiffany Hutchins, Patricia Prelock and Laura Bonazinga (2010)
- 16 test questions within 9 tasks
- Presented in story book format
- Responses can be made either verbally or by pointing

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References

References

Have fun thinking and talking about thinking!