Are You Thinking What I’m Thinking?
Development of Theory of Mind in Children with Hearing Loss

Donna Sperandio, MEd, LSLS Cert AVT®
Jill Mustard, MSpEd, LSLS Cert AVT®
Development of Theory of Mind in Children with Hearing Loss

• What is Theory of Mind?
• Theory of Mind and children with hearing loss
• How can we intervene?
What is Theory of Mind?
What is Theory of Mind?

• The term 'Theory of Mind' was coined by Premack and Woodruff in 1978

• The understanding that each individual has their own mind, with their own thoughts, beliefs and emotions…

  …and that people act according to what they think, believe or feel
What is Theory of Mind?

He knew his parents would be proud.

He thought they wouldn’t look for him there.
What is Theory of Mind?

Affective and Cognitive Theory of Mind

Affective Theory of Mind
Awareness of and ability to infer emotions

Cognitive Theory of Mind
Awareness of and ability to infer beliefs and knowledge
What is Theory of Mind?

Affective Theory of Mind

Progress: face 5 of 37

Do not press "Reload" or the back button. If you do, you will have to restart the experiment from scratch!

What emotion are the eyes showing?
- joking
- insisting
- amused
- relaxed

- joking
- insisting

- amused
- relaxed

http://socialintelligence.labinthewild.org

© MED-EL
What is Theory of Mind?

Cognitive Theory of Mind

Unexpected Transfer
## What is Theory of Mind?

### Cognitive and Affective ToM

<table>
<thead>
<tr>
<th>Theory of Mind</th>
<th>Cognitive</th>
<th>Affective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intraperisonal (reflective)</td>
<td>Understanding of own thoughts and beliefs</td>
<td>Recognition and understanding of own emotions</td>
</tr>
<tr>
<td>Interpersonal (social)</td>
<td>Understanding of others’ thoughts and beliefs</td>
<td>Recognition and understanding of others’ emotions</td>
</tr>
</tbody>
</table>
Theory of Mind and children with hearing loss
ToM and hearing loss

- Severe delays have been shown in the development of ToM in deaf children (Merистo et al., 2007; Peterson 2002; Peterson 2009; Schick et al., 2007)

- The minimum average delay in false belief understanding is about 4 years (Courtin, 2000; Peterson et al., 2005; Schick et al., 2007; Woolfe et al., 2002)
ToM and hearing loss

- Natively signing deaf children of deaf parents develop ToM at similar stages to hearing peers (Peterson & Siegal 2000)

- Native signers were outperformed by hearing peers on advanced ToM in later childhood (O’Reilly et al, 2014)
ToM and children with hearing loss

ToM and cochlear implants

• 30 CI children (between 3-12 years) 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 (Ketelaar et al, 2012)

• Children implanted before 27 mos solved ToM problems to a significantly higher degree than those implanted later (Sundqvist et al, 2014)
• **Basis of social understanding**
  - Pro-social behaviours e.g. helping, sharing, cooperation, comforting (Caputi et al, 2012)
  - Successful peer relationships (Peterson & Siegal 2002; Slaughter et al, 2002; Punch et al, 2011; Caputi et al, 2012)

• **Critical for literacy** - understanding narratives - reading between the lines (Astington & Pelletier 2004; Nicholas & Geers 2006)

  - Critical for ability to learn by instruction and through collaboration (Astington, Pelletier & Homer 2002; Astington & Pelletier 2004)
How can we intervene?
What is the mechanism causing this delay?

Language development has been shown to be closely correlated with ToM development.
Increased use of mental state language has been shown to accelerate ToM development of typical children.
What is the mechanism causing this delay?

Goals that focus on what is concrete and ‘SMART’??

- ‘to learn the names of five foods’
- ‘to develop auditory memory for three items e.g. find the cow, the sheep and the horse’
Ideas for Intervention

Increasing Use of Mental State Language

- want
- surprised
- disappointed
- desire
- Think
- anxious
- guess
- Imagine
- Remember
- upset
Restoring parental interactions
Using Causal Explanatory Talk

- Explanation of emotions
  - “Sam is upset because she loves her dog and her dog’s lost.”
  - “I’m happy that John passed his exam. I’ll give him a hug.”
- Behaviour regulation “When you shout at James, he feels frightened, and doesn’t want to play with you”
- Contrastive language “Sarah likes chocolate ice-cream best, but James like hokey-pokey.”
Perspective taking

• Visual
• Role playing
Literature

- Talk about why the character acts the way he does
- Talk about what the reader knows that the character doesn’t know

Images of books:
1. Smiley Shark
2. The Gruffalo
The Theory of Mind Inventory

http://www.theoryofmindinventory.com/
References and Bibliography


References and Bibliography


References and Bibliography


References and Bibliography


References and Bibliography


