Mental State Term Use by Preschoolers in a Storytelling Task

Phyllis Schneider and Denyse Hayward

University of Alberta
Why are mental state terms interesting?

- *Theory of Mind (ToM)* studies
  - “Where will X go to look for the toy?”
  - Do children have difficulty understanding what others know?
- Other evidence: children show sensitivity to others’ knowledge states
  - “spoon...spoon...spoon”
  - Bandaid story
Sensitivity: not whether, but when

• The question is not whether children are sensitive to others’ cognitive states
• The questions are
  – Is the situation simple enough for the child’s level?
    • Some ToM tasks can be quite convoluted
  – Under what circumstances will the child reveal knowledge of others’ states?
Expressing cognitive states in stories

“Personal” stories

• Stories are considered better when they contain “evaluation”
  – Anything that indicates the speaker’s feelings, thoughts, or attitudes about the story events
  – Personal stories usually contain evaluation
Expression of feelings in personal story
(5-year-old girl)

I got jabbed with a bee.
E: By a bee. Oh, tell me about it.
See, I got jabbed on my foot. I was barefooted. I screamed and I screamed and I cried and I cried. I screamed and I screamed. Until my next door neighbor came out and my Dad came out and my brother came out. And, they all carried me into the house. But after that happened I got to sleep overnight with my neighbour.

Evaluation in this story:

- Expression of feelings: screamed, cried
- Repetition: I screamed and I screamed
- Emphasis: screamed
Fictional stories

• Models of fictional stories also include reports of mental states of characters
  – Internal responses to and plans regarding an initiating event that sets off story action
    • E.g.: [IE] He saw a man selling balloons. [IR] The boy wanted a balloon. [IP] So he decided to buy one.
  – Reactions to an outcome
    • E.g.: [O] The balloon floated away. [R] The boy was upset.

• Adults include these units, judge stories as less good without them
Fictional story example
5 year old – story told from pictures

• One day (um) she saw a dinosaur bone.
• And then (um) there was a bee on it.
• And then she hit it.
• And then all of the pieces came down.
• And then the elephant was mad.

First and last pictures (from M. Mayer, “Oops”)
Picture suggesting mental state
(second picture)
Fictional stories

• When stories are fictional, young children are much less likely to include feelings, thoughts, and attitudes

• Why?
  – Don’t identify mental states of others?
  – Don’t feel it is necessary to include them?
The current study: Can we get young children to mention mental states?

• We tried to induce children to mention information usually left out by:
  – Showing pictures that highlight the information
  – Asking questions if necessary to ‘scaffold’ provision of the information

• We compared stories told before and after the intervention
  – Did they include the scaffolded information when telling stories post-intervention?
Stories without highlighted information

• Two before intervention, two after
• Counterbalanced
• Each 5 pictures long
• Same main character in each
• Different secondary character in each
• Similar plots in each
Intervention conditions

Two versions of intervention story was created
Each had two additional pictures

• Main character condition highlighted:
  – Internal response to the initiating event
  – Reaction to the outcome

• Secondary character condition highlighted:
  – Presence of character
  – Reaction to the outcome
Basic story example
Intervention stories
Participants

- **Main Character condition:**
  - 21 children, M age 60.86, SD = 6.7, range 4;2-5;11
  - 9 girls, 12 boys

- **Secondary Character condition:**
  - 20 children, M age 58.0, SD 7.37, range 4;0-5;11
  - 11 girls, 9 boys
  - One additional child dropped because of missing data
Procedure

• Each child told 2 basic stories without assistance
• Then the child received the MC or SC story
• If the child did not spontaneously mention the target information, the examiner asked increasingly explicit questions to elicit it
• The child told 2 basic stories without assistance again
Analysis

• Stories were transcribed and scored for mention of Internal Response/Plan and Reaction and for mention and reaction of the secondary character

• Intervention stories were scored for
  – Spontaneous mention of targets
  – Elicited mention of targets
    • MC targets: MC IR/P and Reaction
    • SC targets: introduction of SC and Reaction of SC
Examples

Mental state of boy:
• He was hungry / That made him hungry.
• He went ‘yum yum’.
• The boy licking his lips. (what does that mean?) Yummy.
• He wanted to get cookies.

Mental state of man:
• The man was mad.
• He made a bad face and he growled.
Results for Main Character

Mental state terms for main character used in each condition

Group difference for spont. MS: $X^2 = 17.98$, df = 1, $p = .00001$
Results for Secondary Character

- Introduced man
- Introduction elicited (SC only)
- Gave MS of man at end (spontaneously)

MS for man group difference: $X^2 = 24.42$, df = 1, $p = .00000005$
Effective at getting the child to mention MS or SC in other stories?

• No particular trend
  – Children were not more likely to mention the target that was focused on in their intervention condition in the post-test stories
  – Interestingly, in pre- and post- stories, children were more likely to mention anger of SC than mental states of MC
    • Possibly anger is more salient than hunger or upset
What did we learn?

• Children are highly likely to mention a mental state if its depiction is highlighted
  – Most did so spontaneously – scaffolding not necessary in most cases

• Highlighting one aspect may inhibit mention of others
  – E.g., SC’s anger mentioned in pre/post stories more often than in MC intervention
  – Focus on MC may have distracted child from noting SC’s mental state
Conclusions

What does this tell us about children’s understanding of fictional characters’ mental states?

• Children understand emotions depicted when they are made obvious (i.e., in a single picture with nothing else to talk about)
• Do they understand them when they are not made obvious?
• Perhaps they just do not think it worth mentioning
• Or maybe they are using their limited resources to provide the most important information
To contact the authors...

- Edmonton Narrative Norms Instrument (ENNI) website:
  - [http://www.rehabresearch.ualberta.ca/enni/](http://www.rehabresearch.ualberta.ca/enni/)