

Theory of mind

How we understand others
– an introduction

The alien friend and the birthday party

Why gift wrap?

What is in the Smarties tube?

A real conversation about Smarties

Experimenter: Look. Here's a box.
Subject: Smarties!
E: Let's look inside.
S: Okay.
E: Let's open it and look inside.
S: Oh ... holy moly ... pencils!
E: Now I'm going to put them back and close it up again. [does so]
E: Now ... when you first saw the box, before we opened it, what did you think was inside it?
S: Pencils.
E: Nicky [friend of the subject] hasn't seen inside this box. When Nicky comes in and sees it ... When Nicky sees the box, what will he think is inside it?
S: Pencils.

Astington & Gopnik (1994)

William James

To the psychologist alone can such questions occur as: Why do we smile when pleased and not scowl? Why are we unable to talk to a crowd as we talk to a single friend? Why does a particular maiden turn our wits upside down? The common man can only say, "Of course we smile. Of course our heart palpitates at the sight of the crowd. Of course we love the maiden". And so probably does each animal feel about the particular things it tends to do in the presence of certain objects. To the lion it is the lioness which is made to be loved; to the bear the she-bear. To the broody hen, the notion would probably seem monstrous that there should be a creature in the world to whom a nestful of eggs was not utterly fascinating and precious and never to be too-much-sat-upon object which it is to her.

In real life

- <http://www.youtube.com/watch?v=wwMZmjsCQ9w>

Story

Steve is at the mall. He sees his friend from school. His friend looks happy and says "Hi". Steve says "Hi" as well.

Some questions

- Where is Steve?
- Does his friend see him?
- Does Steve believe that the boy is happy to see him?
- How does he feel then?

Some questions

- Where is Steve? (Literal)
- Does his friends see him? (Inferential)
- Does Steve believe that the boy is happy to see him? (ToM 2)
- How does he feel then? (ToM 1)

The development of how we understand others

Understanding emotions

Emotions – "empathy"

- Understanding that someone else is happy / in pain etc.
- Understanding that others' emotions may differ from ones' own

Understanding desires

Children see a toy figure of an adult and a sheet of paper with a carrot and a cookie drawn on it. "Here's Mr. Jones. It's snack time, so, Mr. Jones wants a snack to eat. Here are two different snacks: a carrot and a cookie."

Understanding desires

Which snack would you like best? Would you like a carrot or a cookie best?"

If the child chooses the carrot: "Well, that's a good choice, but Mr. Jones really likes cookies. He doesn't like carrots. What he likes best are cookies."

"So, now it's time to eat. Mr. Jones can only choose one snack, just one. Which snack will Mr. Jones choose? A carrot or a cookie?"

Understanding desires

Most children learn this by 3 years. But do YOU always understand others' desires?

Please discuss

- When is it important to understand others' desires?
- How could one make it easier for people to understand others' desires?

Understanding desires

- Ross, Greene & House (which you will read)
- Would you agree to walk around campus wearing a sign stating "Repent"?
- How many of your fellow students would agree to do so?

Understanding attention

Understanding attention

- Follow gaze
 - With head turned as well ~ 6 months
 - Without head turned ~ 12 months
 - Outside own field of vision ~ 18 months

Understanding attention

Making someone notice something

Understanding attention

- Often your job – we can make people notice things in a number of ways
- Knowing how attention works helps us do so
- Examples?

Understanding attention

- Making someone notice something
- Noticing what others are noticing and noticing the same thing – sharing attention in different ways

Why is it good to share attention?

Discuss

- How could we make it easier for people to share attention with one another?

Knowing that others may view things differently

How would someone sitting opposite you see these mountains?
~ 7 years

Discuss

- Are there ways to make it more easy for people to appreciate that others may see things differently?

Understanding what others want (intentions)

Other people do things for a reason. By understanding those reasons, it is easier for us to understand their actions.

Understanding intentions

The model is either holding the blanket or not, and turns on the light with her forehead
How will a 14 month old child turn on the light?

Van Damme et al 2002 (Nature)

Understanding intentions

- Hands free – most use the forehead
- Hands occupied – most use their hands

Teasing or accident?

Understanding intentions

- Teasing with a toy or dropping it by accident
 - ~ 6 months equally impatient
 - ~ 9 months more impatient with teasing
- Teasing a chimp with food or trying but failing to give it
 - The chimps leave earlier when teasing

Even more advanced

- <http://www.youtube.com/watch?v=-KSryJXDpZo>

Sharing intentions

- 12 months

Sharing intentions

- <http://www.youtube.com/watch?v=zrv91Pa3jgs>

How can we help people share intentions?

Understanding others' beliefs

Knowing that others may not know what you know
~ 4 years

Not so easy!

Keysar et al 2003

Attributors but not targets know that a paper bag contains a roll of tape. Attributors spontaneously orientate towards the bag when targets refer to 'the tape' despite a videotape being clearly visible to both.

Understanding others' beliefs

Knowing that others may believe what (you know) is wrong

In real life

- <http://www.youtube.com/watch?v=EUG24VRjp7c>

~ 4 years

Understanding others' beliefs

~ 4 years

Discuss

- How could we support the understanding of others' beliefs?

Understanding others' beliefs

I know that you know that I know that you ...

Discuss

- When do we have to assume that we all know the same thing
- When do we have to assume that you know that I know that you know etc...

Where do you meet me in NY?

Understanding others' beliefs

Joint intentions

Discuss

- How can we support the emergence of joint intentions?

General points

- Try to "solve" every part of the assignment.
- All the different tasks
- All the parts of the assignment
 - Similar situations you might have been in
 - Ways in which you could have avoided these situations
 - Conclusions to draw as a designer

Structure!

- This particular task is difficult because the child will have to do....
- This can also be a problem for normal adults, such as when ... [concrete example]
- This particular situation could have been made easier if [concrete examples]
- In general, we as designers have to think about

Common misunderstanding

- Tasks like real-apparent emotion
- The difficulty does not lie in displaying emotions you do not have.
- Rather to understand that *others'* may look like they feel one way, but that they actually are feeling another way.

The developmental perspective – or how difficult are the various tasks?

- Diverse desires
- Diverse beliefs
- Knowledge access
- Contents false beliefs
- Explicit false beliefs
- Belief – emotion
- Real – apparent emotion

Task difficulty (Wellman & Liu)

| | |
|-----------------------|--|
| Diverse desires | Child judges that two persons (the child vs someone else) have different desires about the same objects |
| Diverse beliefs | Child judges that two persons (the child vs someone else) have different beliefs about the same object, when the child does not know which belief is true or false |
| Knowledge access | Child sees what is in a box and judges (yes-no) the knowledge of another person who does not see what is in a box |
| Contents false belief | Child judges another person's false belief about what is in a distinctive container when the child knows what is in the container |

Task difficulty continued

| | |
|-------------------------|---|
| Explicit false belief | Child judges how someone will search, given that person's mistaken belief |
| Belief emotion | Child judges how a person will feel, given a belief that is mistaken |
| Real – apparent emotion | Child judges that a person can feel one thing but display a different emotion |