UNIVERSITY OF CAMBRIDGE

TAKE YOUR PLACE

Activity 3: Naïve Psychology

Consider this situation – Sally is playing with a ball in her room. She puts it into a basket and leaves the room. Her naughty friend Anne comes into the room and moves the ball from the basket to a box and leaves the room. Sally returns to the room. Where will she look for her ball? The answer is of course in the basket. The situation describes something called a **false belief**. We know where the ball is *really*, but we also realise that Sally hasn't seen Anne move the ball to a different place, so we expect Sally to look in the basket, even though the ball is no longer there. Being able to separate the contents of your own mind, your own thoughts and beliefs, from those held by other people, lies at the heart of the **theory of mind**. If you have a theory of mind you realise that other people can think and reason just like you, but what you feel, think and believe may be different to what others think. This is quite a complex form of thinking, and most children before the age of 3-4 years fail it. It seems they cannot separate their own belief (the ball is in the box!) from what another person may be thinking (Sally still thinks the ball is in the basket). However, some psychologists have argued that the original version of the task relies too heavily on language – you need to process all the verbal information, hold many representations in your mind, select the appropriate response and so on. In other words, children might reason correctly, but their verbal skills might not yet be developed enough to pass the original task.

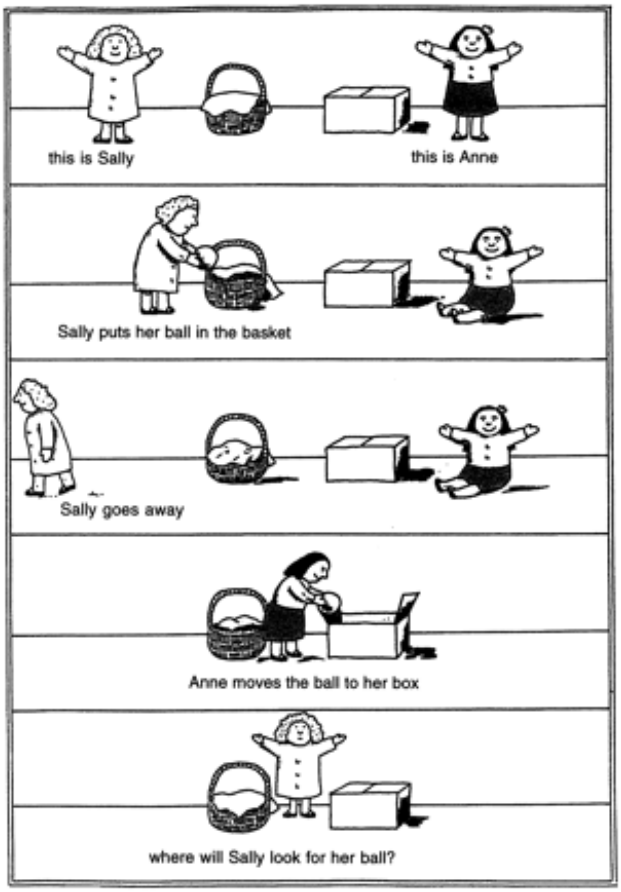

Fig. 1: The Salle-Anne task
©http://www.holah.karoo.net/baronstudy.html

Some have put forward even braver hypotheses – infants as young as 15-months might be able to pass the false belief task, based on their gaze. A version of the Sally-Anne task was developed for infants – someone looked at a toy being put into basket A. Then, they turn around and don't see that the location of the toy changed to basket B. Infants looked at basket A, expecting the actor to reach into it. They were also confused/surprised when the actor reached into basket B – yes, the toy is actually in that basket, but they didn't see the location change, so how did they know the toy was there?! It's amazing that babies were able to make these gaze-predictions which require quite complex forms of reasoning.

Fig. 2: The toy is placed into the green box, but then moves to the yellow box when the actor is not looking. Where would you expect the actor to search for the toy? Infants are surprised if the actor looks into the yellow box – after all, they did not see the toy change its location, so they should be looking in the green box!
©https://sciencev1.orf.at/news/134400.html

Activity 3: Naïve Psychology

Babies seem to understand that people or objects might have intentions. You might want to eat something, or go somewhere, or move something – your actions provide clues to what you are trying to do. Imagine that a ball was bouncing along a path and then reached a barrier and couldn't bounce any further, it just bounced in front of the barrier, as if waiting for it to move. If you're able to imagine this situation and to reason what the ball's intention is (and why it can't fulfil it), then you're able to take an **intentional stance**. It seems that infants can come to very similar conclusions, as they acted surprised when the barrier moved out of the way, but the ball kept bouncing in the same place. However, they were not surprised when the ball started bouncing along once the barrier was removed. It seemed babies interpreted the ball as 'wanting' to go somewhere.

Fig. 3: Why use your forehead, when your hands are free? ©Gergely, G., Bekkering, H., & Király, I. (2002). Developmental psychology: Rational imitation in preverbal infants. *Nature*, *415*(6873), 755.

Young infants are also capable of *rational* imitation – they don't just blindly copy others, but imitate actions depending on the context. Look at figure 3 – in the first image, the person's hands are wrapped in a blanket, so you might reason that they would use their hands to turn the light on if they could (but they can't, hence why they're using their forehead). In the second image, it's clear that the person's hands are free and so their decision to turn on the light using their forehead seems intentional. When the second situation was viewed by 14-month-old infants, they copied the actor by also turning the light on with the forehead. It seems they reasoned that using your forehead in this situation was necessary (otherwise the actor would use her hands). Look at that cute picture in figure 4!

Fig. 4: Infants can imitate rationally. ©https://www.researchgate.net/figure/Touching-the-box-with-the-forehead_fig1_228491768

But when infants viewed the first situation, they used their hands to turn on the light, showing that infants can already reason about other people's intentions and reasons for their actions at an early age.

Task

1. **Do you think that having a theory of mind is important? Why? List some of the situations in which you might have to use your theory of mind.**
2. **Why do you think that psychologists wanted to show that infants can imitate rationally (rather than just imitate whatever action was shown to them)?**
3. **Do you think there's enough evidence to conclude that infants have a theory of mind from a very early age?**

Explore More...

This resource focused on studies done on very young infants, however the brain keeps developing in many interesting ways during childhood (and adulthood too!). This is a great clip to watch if you're interested in developmental psychology https://www.youtube.com/watch?v=8nz2dtv--ok&index=19&list=PL8dPuuaLjXtOPRKzVLY0jJY-uHOH9KVU6

Interested in more baby physics? https://www.sciencedaily.com/releases/2016/02/160210110806.htm

Can baby brains amaze us even more? https://www.psychologytoday.com/gb/blog/babies-do-the-math/201101/brainy-babies