The Development of Social Cognition

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Social Cognition Foundations...
“the study of how people make sense of themselves and others...”

- Infants’ social worlds are **filled with others** (parents, siblings, others...)
- Interest in attending to social information is **adaptive**

There is evidence to suggest that this tendency toward interest in humans exists from a very early age:

- Children (from infancy) show a preferential interest to people as opposed to objects.
- Infants are highly attentive to complex human features (e.g., faces and voices as compared to other human features)
- Also show a preference for infant-directed speech or “motherese” (e.g., baby talk), showing that they can make fine discriminations
- Young infants can also discriminate mother’s voices from those of other women
- As young as 5-8 wk old infants (!) imitated mouth movements e.g., sticking out tongue, but did not imitate similar movements produced by inanimate objects (e.g., a tube with a “tongue” that could protrude”), showing that they expect people to behave differently from objects
We’ll talk about the development of...

- Understanding of Others
- Understanding of Self
- Knowledge of Mental Activity
- Understanding of the Social World
At about 2 months, infants and caregivers begin to display contingent interaction:

- reciprocal actions that mimic the mutual give-and-take of conversation
- indicates they are anticipating certain types of behaviors on the part of their co-actors (in fairly specific ways)

Beginning at 3 months infants expect others to interact with them! e.g., “still face” violates expectations (they smile less, avert gaze, heart rate changes, fuss, cry)

- http://www.youtube.com/watch?v=apzXGEbZhto

Similarly, joint attention is thought to be an important part in the development of communication skills:

- at 3 months, infants begin to follow adults’ gaze
- This becomes well-established by 9 months
- Also at 9 months, infants begin to follow adults’ pointing gestures
From early in 1st year, infants are able to discriminate among different emotional expressions (e.g., angry vs. happy in soundtrack study)

In the second half of an infant’s first year, social referencing begins:

- gauging emotional reactions of other people in order to evaluate situations or objects a safe (as young as 6 months)

Classic study (Sorce, Emde, Campos, & Klinnert, 1985):
www.youtube.com/watch?v=p6cqNhHrMJA

- 12 month old kids wouldn’t cross cliff if their caregivers looked scared, but most did when they looked happy

This indicates that infants use information from social world to guide behavior (that is, they see emotional expressions as a potential source of information)
UNDERSTANDING OF OTHERS:

Concepts of Other People

* As child’s skills grow, their concepts of people change from concrete, external, observable (physical appearance, possessions)...
  * E.g., “John is my best friend. We play in the street. He has a big sister. I like him because I play with his toys...” (representative of children younger than 5)

* ... ➔ More advanced:
  * More abstract concepts including unobservable (e.g., peoples emotions)
  * Also become less self-focused in descriptions
  * By age 9, descriptions are more trait focused (which is super important because it allows them to predict future behavior!)
    * However, if you tell 5-6 yr olds that they will have a future interaction with person, they will focus more on these psychological attributes rather than overt

* -By adolescence, we routinely include info about traits and patterns of behavior, as well as social context
  * E.g., “…Phil is very modest. He is even shyer than I am with strangers and yet is very talkative with people he knows and likes. He always seems good-tempered and I have never seen him in a bad temper. He tends to degrade other people achievements and yet never praises his own. He does not seem to voice his own opinions to anyone. He easily gets nervous...” (15 yr old)
UNDERSTANDING OF SELF:
Awareness of Self/Self-Concept

* Even beginning at birth infants have implicit pre-verbal concept of self!

* Rouge test: [http://www.youtube.com/watch?v=M2I0kwSua44](http://www.youtube.com/watch?v=M2I0kwSua44)
  * Most 12 month olds touch the mark on the nose of the mirror image, but by about 15 months, most infants touch their own noses [indicating they recognize the infants in the mirror as themselves]
  * Note: This is not just due to growing experience with mirrors. Was replicated in Israeli desert community in kids that had never seen mirrors.

* As cognitive skills grow, the nature of self-concept changes → incorporating more variable, internal, nonobservable information
One particularly important task in the realm of social cognition is for kids to extend their social understanding inward, to grasp the nature of their own and other people’s mental lives, including learning that...

...people have goals, intentions, and expectations
...people know some things and not others
...the fact that they themselves believe/know something does not mean that other people do.

Here is a young three year old failing: http://www.youtube.com/watch?v=FLV2bGGRrIY&feature=related
The Belief-Desire Theory of Mind Model

**Perception**
- see, hear, smell
- touch, feel

**Belief**
- believe, suppose
- know, expect
- doubt, suspect

**Basic Emotions/Physiology**
- love, like, enjoy
- hate, dislike, fear

**Desire**
- want, desire
- wish, hope
- ought, should

**Action**
- hit, grab
- search
- attend to

**Reaction**
- happy, sad
- angry
- surprised
Knowledge of Mental Activity: Understanding Intention

At 6 months infants understand some important regularities about intentional action (e.g., people have different intentions when interacting with people as opposed to objects).

How can we examine this further?

* One way to look at this is to examine whether infants can distinguish intentional (There!) vs. unintentional (Whoops!) actions
  * This occurs at 14-18 months

* Another study: Infants were shown a video of adults trying to carry out target action such as pushing a button with a stick, but failing to succeed.
  * When 14-18 month olds were given chance to interact with these same objects, they tended to produce the target action, even though they had never seen the task completed.
  * The same paradigm was attempted with toy robots. The children did NOT try to produce target action!

* -Yet this is STILL NOT ENOUGH to convince us infants understand intention, which in reality is driven by beliefs and desires.
  * For example, young children confuse accidents, mistakes, and reflexes with intentional behavior (e.g., knee-jerk reflex = labeled as intentional for 3 yr olds; not so for 5 yr olds)
DESIRE is defined as mental states that can be motivated by physiological states [hunger, thirst, pain, etc...] or by emotions [love, anger, fear, etc...]. A very basic understanding of how desire motivates action occurs early...

- **12 month olds** can connect info about others’ direction of gaze and emotional expressions to their actions (e.g., kitten experiment)
At 18-24 months, kids begin to utilize mental state terms to get what they themselves want (e.g., “want juice”; I’m scared).

At this age, they also realize that others may have desires that differ from their own (e.g., goldfish vs. broccoli experiment)

http://www.youtube.com/watch?v=YiT7HFj2gv4&feature=related

*At age 2, children are even more advanced and can predict emotion and action links
Understanding of how beliefs motivate action is required for a full-fledged, representational theory of mind.

This fully develops later than understanding of desires.

**Two important markers of understanding beliefs:**

1. Visual perspective taking (generally occurs as early as 18 months)

2. Appearance-reality distinction = “looks can be deceiving” (not until ~4 yrs, replicated in Chinese children so not unique to Western cultures)
Although the two markers previously mentioned are important, the **gold standard** that we use to demonstrate understanding of belief is success on tasks that require understanding of one’s own/someone else’s **false belief** (*generally ~ age 4*):

* **“misleading appearance”** task
  * E.g., although the subject is shown that there is candy inside the crayon box, someone who did not see inside would guess that there were crayons inside (not candy)

* **“location change”** task
  * E.g., A child puts chocolate in the cupboard and leaves room → Mom comes in and moves it to the table drawer then leaves to visit a friend → child returns → Will he/she look for it in the cupboard or the table drawer?

* [http://www.youtube.com/watch?v=YGSj2zY2OEM](http://www.youtube.com/watch?v=YGSj2zY2OEM)
There is controversy over how to interpret the findings from false-belief tasks. Some argue that children cannot pass false belief tasks without necessary abilities and skills:

- Demands the task places on verbal skills
- Inability to understand conversational conventions
- Information processing demands such as the ability to reason with complex hierarchical rules
- Inability to inhibit dominant response (executive functioning)

*In fact, naturalistic observations in the real world suggest otherwise...
What influences development of understanding the mind?

* There is no one consensus, but four main propositions:
  * 1.) maturation of specific processes
  * 2.) Growth of general information processing capacities
  * 3.) experience with other people
  * 4.) language development
*Strong consistency* in the timing of development of false belief understanding (3 yr olds “fail”; 5 yr olds “pass”)

* Autistic children:
  * perform worse on theory of mind tasks than would be expected based on general intelligence.
  * Also use mental verbs such as “think” and “know” less often than do other children with comparable IQ’s...
  * Engage in less pretend and fantasy place

* This suggests that the mechanisms for understanding the mind are at least partially independent of other mental phenomena (i.e., children with autism suffer from specific impairments to the mechanisms that allow understanding of their own and other people’s minds).
Tasks that tap understanding of mind pose a considerable information-processing load; increases in information processing abilities may increase performance!

- The false belief task requires children not only to remember what the other person saw, but also to inhibit saying what they themselves know to be true.
- 3 year olds do better on false-belief task when info-processing requirements are reduced (e.g., by having the child learn the premise of the problem ahead of time, by coaching through deception, or by not exposing child to visual stimulus demonstrating the scenario).
Preschoolers with more siblings perform better on the false belief task than children with fewer siblings.

Older siblings are particularly advantageous!

Possible explanations for sibling advantage:

- Siblings are likely to engage in activities that promote understanding of minds...like pretend play
- More opportunities for communicating about mental processes

Communication is generally more helpful for kids, even in the absence of siblings:

- E.g., deaf children display a delay in theory of mind when raised by hearing parents; less likely for deaf parents who primarily communicate via sign language.
* There are correlations between language abilities and theory of mind (replicated amongst diverse child populations: typically developing children, children with autism, and deaf children)

  * Possible explanations:
    * 1.) general language abilities are involved in mastering the task
    * 2.) Theory of mind depends on acquisition of words to articulate mental states, such as THINK, KNOW, and WONDER
    * 3.) The ability to embed ideas is crucial for the development of false belief understanding. Language provides children with representational structures called complement structures: (which enables the child to embed one idea in another...he thought that...he said that...).

  * Indeed, understanding and use of complement structures was shown to be a good predictor of simultaneous and subsequent performance on theory of mind task.