

Piaget's theory of cognitive development

Schema: mental structure containing all the information we have about one aspect of the world e.g. a schema of a dog. **Assimilation:** We incorporate new info into an existing type of schema e.g. different type of dog. **Accommodation:** when we acquire new info that changes our understanding a topic and therefore need to develop a new schema or radically change existing e.g. cat doesn't fit into a dog schema, develop a cat schema. **Disequilibrium:** unpleasant sensation when we come across something new e.g. new type of dog. **Equilibration** – when we adapt to a new situation by exploring and learning what we need to know. ☺application to education – activity orientated classrooms☺ evidence for individual mental representation – children worked in groups and still developed own schemas☺underplayed role of other people – Vygotsky suggested learning is a social process☺overestimated importance of equilibration – children vary in curiosity.

Baillergeon

Stated that younger babies may have a better-developed understanding of the physical world than was previously thought (Piaget). **Violation of expectation (VOE) task** – infants see two test events: expected (consistent with the expectation examined in the experiment) and unexpected (violates the expectation). -24 infants, aged 5-6 month. Tall and short rabbit passed behind screen with window. **Possible** - tall rabbit seen, short rabbit cannot be seen. **Impossible** – neither rabbit appeared at window. Infants looked longer at impossible event – surprised. Evidence of understanding of object permanence. **Occlusion** – one object in front of another. **Containment** – object enters container, should still be there. **Support** – object should fall when unsupported. Children born with a **physical reasoning system** – hard wired with a basic understanding of the physical world and ability to learn more details easily. **Object persistence** = object remains in existence and does not spontaneously alter in structure.☺ better test than Piaget – children shifted attention because they lost interest. ☺ Hard to judge what an infant understands – validity. ☺ Evidence that PRS is universal – therefore innate.

Piaget's stages of intellectual development

Sensorimotor (0-2yr) Object permanence – object exists when they are out of sight -develops around 8 months. **Pre-operational (2-7yr)** - Can't perform following tasks: **Conservation** – quantity remains the same despite appearance changing. **Egocentrism** – only seeing the world from someone else's eyes. **Class inclusion** – objects fall into categories. **Concrete operational (7-11)**- Problems with transitivity – Adelbert is taller than Bartholemew is taller than Casper. Who is taller, Adelbert or Casper? **Formal operational (11+)** – can think hypothetically and capable of hypothetico-deductive reasoning. ☺naughty teddy – 72% of 4-6yr olds could conserve – younger than Piaget believed ☺ evidence that children as young as 5 could complete class inclusion tasks ☺ policeman task – children as young as 3 ½ could decentre.☺sample used for Piaget's research is limited – friend children☺not everyone reaches formal op stage.

Theory of mind (ToM)

Our understanding of what other people are thinking and feeling. **Intentional reasoning task:** 18-month-old observed adults placing beads in a jar. In one condition adults appeared to struggle and dropped beads, toddler still completed tasks successfully. Children imitated what adults intended to do- ToM. **False belief task:** sally-Anne task. Sally puts marble in basket, leaves, Anne moves marble to box. Children asked where sally will look for marble. 85% control group correct, 4/20 with autism correct, explanation for autism? **Eyes task:** P's judge facial expressions from eyes. Adults with Asperger's syndrome could not carry out this task. ☺low validity on false belief tasks – other cognitive abilities needed, some children who perform poor still able to complete pretend play.☺hard to distinguish ToM from perspective-taking.☺partial explanation for ASD – useful ☺eyes task artificial - in real life we have whole face.

Selman's work on perspective-taking

Research: 4/5/6-year old's given a task to measure role-taking ability. This involved asking them how each person felt in various scenarios. Found that level of role-taking correlated with age, suggesting developmental sequence. Stage 0 (3- 6yr) – **socially egocentric:** can identify emotional states in others but don't understand what social behavior might have caused them. Stage 1 (6- 8) – **social information role-taking** – can tell difference between their own point of view and others, but focus on one. Stage 2 (8-10) – **self-reflective role-taking:** put themselves in position of another person. Stage 3 (10-12)- **mutual role-taking:** can look at situation from own and others' point of view. Stage 4 (12+) - **social and conventional system role-taking:** understanding others' viewpoints is not enough to allow people to reach agreement. Social conventions are needed to keep order. ☺sig pos correlations found between age an ability to take different perspectives ☺ mixed evidence for the importance of perspective-taking ☺ helps understanding of ADHD and autism.

Vygotsky

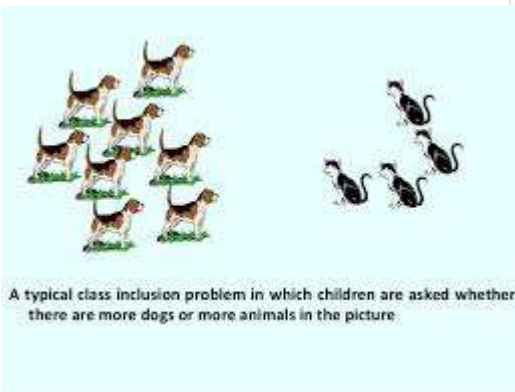
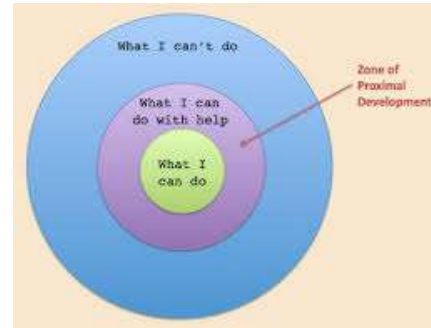
Believed learning was a social process. **Experts** key in development. **Cultural differences-** children pick up mental 'tools' that are most important for life within their physical, social, and work environments. **ZPD** – gap between what children can currently understand and what they could potentially understand after interaction with more expert others. Experts allow us to cross the ZPD. **Higher mental processing** could only be acquired through interaction with more advanced others. **Scaffolding** – types of help adults and more advanced peers give a child to help them cross the ZPD. **Level of help:** 5 (demonstration) – mother draws object with crayons, 4 (preparation for child) – mother helps child grasp a crayon. 3 (indication of materials) – mother points to crayons. 2 (specific verbal instructions) 'how about a green crayon', 1 (general prompts) – 'now draw something else'. **Bruner** – ways in which an adult could help – recruitment (engage child), reduction of degrees of freedom (focus child on where to start to solve the task), direction maintenance (motivate child, marking critical features (highlighting most important part) and demonstration. ☺support for ZPD – sweet estimation study. Worked alone or help from older child. Children with help succeeded ☺support for scaffolding – longitudinal study, distinctive changes in help were observed over time. ☺applications to education – effectiveness of theory being applied to education e.g. peer tutoring and teaching assistants ☺doesn't consider individual differences.

Mirror neurons

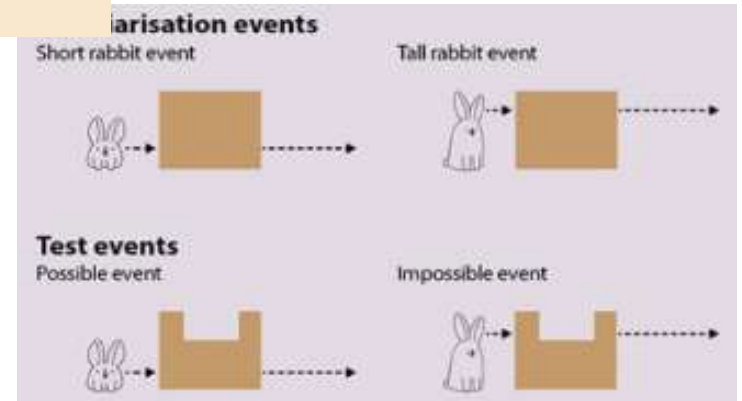
Brain cells in motor cortex fire when observing an activity and then repeating it. **Intention** – mirror neurons respond not just to observed actions but to intentions behind behaviour. **Perspective taking** – if mirror neurons fire in response to others' actions and intentions this may give us a neural mechanism for experiencing, and hence understanding, other people's perspectives and emotional states. **Evolution** – without these we could not live in large groups with complex social roles and rules. **ASD** – associated with problems with all these social -cognitive abilities. 'Broken mirror theory' – neurological deficits including dysfunction in the mirror neuron system prevent a developing child imitating and understanding social behaviour in others. ☺contagious yawning evidence – activity in frontal lobe (rich in mirror neurons) ☺ evidence comes from scanning – doesn't allow for activity in individual brain cells ☺ mixed evidence of ASD. ☺ Hicock suggests that MN don't exist.



Tests of Various Types of Conservation		
Type of Conservation	Initial Presentation	Transformation
Volume	Two equal glasses of liquid. 	Pour one into a taller, narrower glass.
Number	Two equal lines of checkers. 	Increase spacing of checkers in one line.
Matter	Two equal balls of clay. 	Squash one ball into a long, thin shape.
Length	Two sticks of equal length. 	Move one stick.



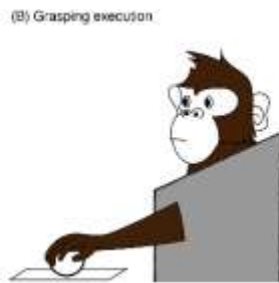
Cognition and development



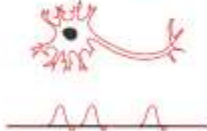
A mirror neuron is in a resting state



(No electrical signals)



A mirror neuron **fires**



A mirror neuron **fires**

