**12 Cognitive development**

Infant cognition

* From a few hours after birth, babies appear to distinguish their mother’s face and voice from others. This cannot be directly tested; however, there are physiological markers for it such as increased heart rate.
* Rule violation studies show that infants appear to be aware of some key attributes of the physical world, including properties of solid objects and basic numerical understanding.
* The extent of infant knowledge and perception is part of the nature-nurture debate, with the nativist position holding that these abilities are present at birth and the empiricist position that they are acquired through experience.

Piaget’s constructivist theory of cognitive development

* Piaget believed that we are agents of our own cognitive development in the sense that we are motivated to understand the world and actively explore it in order to construct our own understanding.
* Understanding exists in mental structures called schemas. Schemas become more sophisticated with age and experience by processes of assimilation and accommodation.
* Piaget proposed a set of developmental stages, each of which is characterized by particular reasoning abilities.
* In the sensorimotor stage, children learn through reflexes and acquire understandings like object permanence.
* In the preoperational stage, children are mobile and verbal but lack much reasoning ability. Thus they cannot conserve and are egocentric.
* In the stage of concrete operations, children can conserve and decentre; however, they struggle with more abstract and scientific reasoning.
* In the stage of formal operations children and adolescents (over the age of 11) acquire abstract and scientific reasoning.
* Later researchers have supported Piaget’s principle that children become capable of increasingly sophisticated reasoning with age; however, it is now widely believed that Piaget underestimated younger children and overestimated older children. Thus, the extent of cognitive change in childhood is perhaps not as dramatic as Piaget believed.

The Vygotsky–Bruner social constructivist theory

* Lev Vygotsky, and later Jerome Bruner, proposed a social constructivist alternative to Piaget’s theory in which social interaction rather than personal exploration is the main influence on cognitive development.
* Mental tools are transmitted from more expert individuals to less expert individuals through social processes. Cultural transmission means that different mental abilities are more or less well developed in different cultures.
* Learning takes place when children cross zones of proximal development, the gap between what they can achieve alone and with expert help, with scaffolding from the expert.
* Language is more important in social constructivist theory, becoming internalized and used as a tool for thinking.

The development of moral judgement

* Kohlberg produced a stage theory of moral development in which children pass through three levels of development. In the first *preconventional* level, children are motivated to access rewards and avoid punishment.
* In the second *conventional* level, children have a respect for social norms, rules, and laws.
* In the third *postconventional* level, adolescents begin to prioritize more abstract ideas like justice and fairness as opposed to rules.
* Kohlberg’s essential principle that people advance through levels of increasingly sophisticated moral reasoning holds true; however, his tests of moral reasoning are not predictive of moral behaviour in real-life contexts.
* Haidt offers an alternative perspective on moral development based on the idea of moral dumbfoundedness; we can find some decisions morally repugnant but be unable to reason why this is so.
* Social intuitionism is the term used to describe the spontaneous moral response to a scenario. To Haidt, conscious moral reasoning comes after this instant response.
* There is support from neuroscience for the idea that our first responses to moral dilemmas are too fast to be reasoned; therefore, our initial responses do seem to be intuitive.

Theory of mind

* Theory of mind is the cognitive ability to mind-read (ie, to perceive the thoughts, emotions, and intentions of other people).
* False belief tasks like the Sally Anne story are used to study theory of mind abilities. A significant shift in theory of mind abilities appears to take place at around 4 years of age when children become capable of false belief tasks.
* Children on the autistic spectrum have difficulty with theory of mind and lag several years behind others in false belief tasks.
* Another line of research has investigated intentional reasoning in much younger children. Research has found that toddlers can imitate intended adult behaviours even when the adults fail at them.

There are several competing explanations for the development of theory of mind, including Piagetian and Vygotskian perspectives and the more recent innatist modular approach.