

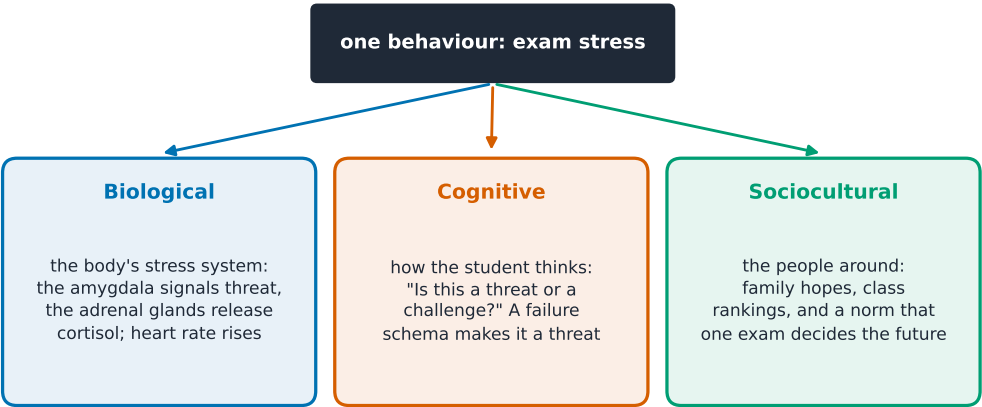
The three approaches: biological, cognitive and sociocultural (Paper 1 Section A)

International Baccalaureate · IB Diploma · Psychology · SL

The three approaches: biological, cognitive and sociocultural

IB Diploma Programme Psychology SL (the course first assessed in 2027). The course has three parts: **concepts**, **content** and **contexts**. This topic teaches the content: the **biological approach**, the **cognitive approach** and the **sociocultural approach**. Topic 2 adds the six concepts and the four contexts, and Topic 3 the research methods. Paper 1 Section A asks two short-answer questions (4 marks each) from two of these three approaches, so every idea below comes with a named study you can describe.

Every June about 13 million students in China sit the gaokao. In the weeks before it, many sleep badly, lose their appetite and forget things they knew well. Why? A biologist points to the stress hormone cortisol. A cognitive psychologist asks how each student thinks about the exam. A sociocultural psychologist looks at families, class rankings and the belief that one exam decides a life. All three are right, and they explain the same behaviour at different levels.



The levels interact: a threat appraisal raises cortisol, and a calm teacher can lower both.

One behaviour, three levels of explanation; the levels affect each other

Must-know for this topic:

Approach	Key content	Key studies
biological	brain localisation and neuroplasticity; chemical messengers; genes	Maguire (2000); Kosfeld (2005); Caspi (2003)
cognitive	models of memory; schemas; thinking and bias; reliability of memory	Bartlett (1932); Tversky and Kahneman (1974); Loftus and Palmer (1974)
sociocultural	social identity; social learning; norms and conformity; culture	Tajfel (1971); Bandura (1961); Asch (1951); Berry (acculturation)

The biological approach

The biological approach explains behaviour by what happens in the body: the brain, chemical messengers and genes. It assumes that thoughts and feelings have a physical basis, so changing the body can change behaviour.

■ The brain and behaviour

Localisation of function means that some brain areas do special jobs. After an operation in 1953, the patient H.M. lost both hippocampi. He could still hold a conversation, but he could not form new long-term memories of events (Scoville and Milner, 1957). This suggests the hippocampus is needed to store new memories. A single case is rich in detail, but it may not apply to other people.

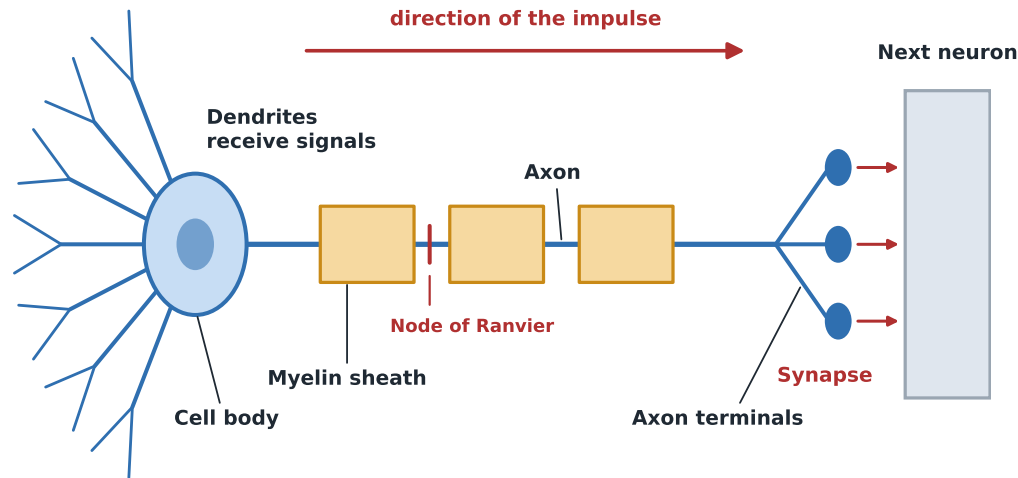
Neuroplasticity is the brain’s ability to change its structure with experience. Maguire et al. (2000) scanned the brains of 16 London taxi drivers and 50 other men. The drivers’ posterior hippocampus was larger, and it was larger in drivers with more years in the job. This is a correlation, so it cannot show cause by itself. Draganski et al. (2004) solved this with an experiment: people who learned to juggle for three months grew more grey matter in an area that tracks movement, and it shrank again when they stopped.

Psychologists study the living brain with **brain imaging**:

Technique	What it shows	Main limit
MRI	structure: the size and shape of areas	shows no activity
fMRI	which areas are active, from blood flow	slow; activity is not cause
EEG	electrical activity, very precise in time	poor at showing where

■ Chemical messengers

Neurotransmitters carry signals between neurons across the **synapse**. Serotonin is linked to mood, and dopamine to reward.



A neuron: dendrites receive, the axon carries the impulse, terminals pass it across the synapse

Hormones travel in the blood and act more slowly. Cortisol is released under stress; in the short term it gives the body energy, but long-term high cortisol can harm memory. **Oxytocin** is linked to trust and bonding.

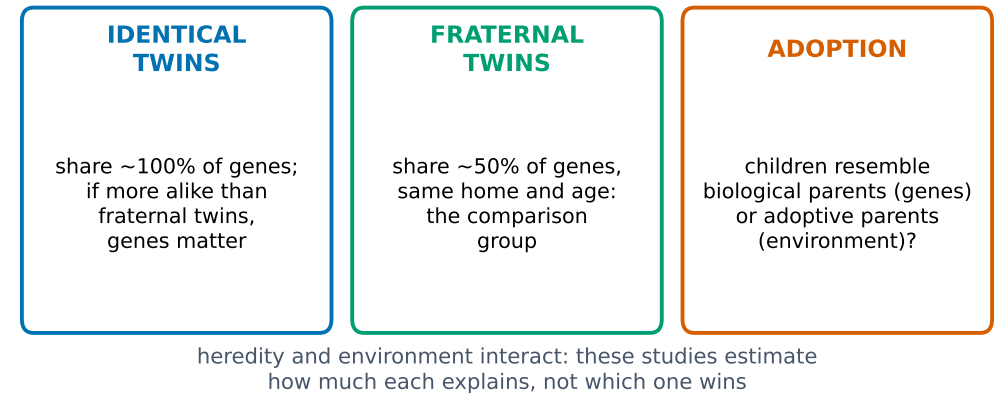
Worked example (Paper 1 Section A). *Describe how one chemical messenger plays a role in one human behaviour.* (4 marks)

Oxytocin is a hormone that may increase trust. Kosfeld et al. (2005) gave male students a nasal spray of oxytocin or a placebo, then they played a money game as “investors”. 45% of the oxytocin group gave all their money to the other player, against 21% of the placebo group. The researchers concluded that oxytocin makes people more willing to accept social risk, so it plays a role in trust.

The answer names the messenger, the behaviour, a study with its result, and a link back to the question. Later studies did not always find the same effect, so in a longer answer you would also discuss this.

■ Genes and behaviour

Genes can make a behaviour more likely, but they do not decide it. **Twin studies** compare identical twins, who share almost all their genes, with non-identical twins, who share about half. If identical twins are more alike, genes probably play a part. A study of about 15,000 Swedish twin pairs (Kendler et al., 2006) estimated that genes explain about 38% of the differences in risk of major depression.



Twin and adoption studies estimate how much genes and environment each explain

Genes and environment work together. Caspi et al. (2003) followed 847 people in New Zealand from birth. People with a short version of a serotonin gene (5-HTT) were more likely to become depressed, but only after several stressful life events. This is a **gene–environment interaction**.

The cognitive approach

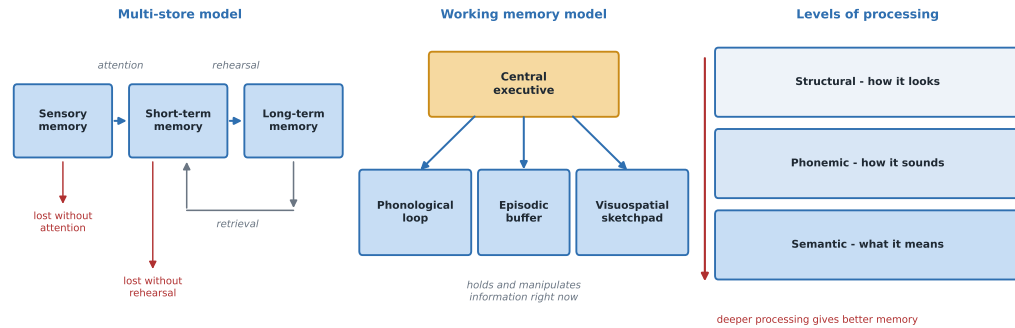
The cognitive approach studies mental processes such as memory, thinking and attention. Because we cannot see these processes, cognitive psychologists build **models**: simple pictures of how a process might work. A good model makes **predictions** that an experiment can test.

■ Models of memory

The **multi-store model** (Atkinson and Shiffrin, 1968) says memory has three stores in a line: sensory memory, short-term memory and long-term memory. Attention moves information into short-term memory, and rehearsal moves it into long-term memory. Case H.M. supports separate short-term and long-term stores.

The **working memory model** (Baddeley and Hitch, 1974) splits short-term memory into parts. The phonological loop holds sounds, the visuospatial sketchpad holds pictures, the central executive controls attention, and the episodic buffer (added in 2000) links them. It predicts that two tasks clash only when they use

the same part: you cannot easily repeat a word list while you count aloud, but you can while you picture a map.



Three models of memory; each makes different predictions

■ Schemas

A **schema** is an organised set of knowledge about something. Schemas help us understand quickly, but they also change what we remember. In Bartlett's study (1932), English students read a Native American story, "The War of the Ghosts", and retold it several times. Their versions got shorter and changed strange details into familiar ones (a canoe became a boat). This is **reconstructive memory**: we rebuild a memory with our schemas instead of playing it back like a video.

■ Thinking and decision-making

Kahneman describes two systems of thinking. System 1 is fast and automatic; System 2 is slow and effortful. System 1 uses short cuts called **heuristics**, and these can produce a **cognitive bias**.

Anchoring bias means a first number pulls our later estimate towards it. Tversky and Kahneman (1974) spun a wheel that stopped at 10 or at 65, then asked people what percentage of United Nations countries were African. People who saw 10 gave a typical answer of 25%; people who saw 65 gave 45%. The wheel was clearly random, yet it still changed the answer. Shops use the same effect when they show a high "original price" next to the sale price.

Confirmation bias is the habit of looking for facts that support what we already believe and ignoring facts that do not.

■ Is memory reliable?

Loftus and Palmer (1974) showed 45 students films of car crashes, then asked, "About how fast were the cars going when they ____ each other?" The verb changed the answers: "smashed" gave a mean of 40.8 mph and "contacted" gave 31.8 mph. One week later, 32% of the "smashed" group said they had seen broken glass (there was none), against 14% of the "hit" group. A **leading question** can change the memory itself. This matters for police interviews. But students watching a film do not feel the fear of a real crash, so the result may not transfer to real witnesses.

Emotion also affects memory. Brown and Kulik (1977) said that shocking events create a **flashbulb memory**, a vivid and detailed memory. Neisser and Harsch (1992) asked students how they heard about the Challenger space shuttle disaster the day after it happened, then again about two and a half years later. Many later accounts were quite different, but people were still very sure of them. Emotion seems to raise confidence more than accuracy.

The sociocultural approach

The sociocultural approach explains behaviour by the groups and culture around us. It assumes we learn how to behave from other people.

■ Social identity and social learning

Social identity theory (Tajfel and Turner) says part of our self-esteem comes from the groups we belong to. In Tajfel's "minimal group" study (1971), Bristol schoolboys were split into groups by a trivial task (which of two painters they preferred). They still gave more points to boys in their own group, and often chose the biggest gap between the groups over the most points for their own group. Belonging to a group, even a meaningless one, was enough to create **in-group favouritism**.

Social learning theory (Bandura) says we learn by watching a **role model** and copying behaviour that is rewarded. In Bandura's Bobo doll study (1961), 72 children aged 3 to 6 watched an adult either attack an inflatable doll or play quietly. Children who saw the aggressive model copied many of the same attacks. Learning needs four steps: **attention**, **retention**, **reproduction** and **motivation**.

Worked example (Paper 1 Section B style). A school wants students to recycle more. *Explain how social learning theory could be used to achieve this goal.*

Choose models students pay attention to, such as popular older students (attention). Show the same short recycling routine every week so it is remembered (retention). Put the bins next to the classroom door so the behaviour is easy to copy (reproduction). Praise the models in front of others, so watching students see the behaviour rewarded (motivation). Bandura (1961) showed that children copy a model's behaviour closely,

so a visible model should increase recycling.

■ Norms, conformity and culture

A **social norm** is an unwritten rule about how a group behaves. **Conformity** means changing your behaviour to match a group. In Asch's study (1951), students judged which of three lines matched a test line, after several actors gave the same wrong answer. About one third of the answers followed the wrong group, and three quarters of the students conformed at least once. Conformity is higher in some cultures: a review of 133 line-judgement studies in 17 countries (Bond and Smith, 1996) found more conformity in **collectivist** cultures than in **individualist** ones.

Culture is the shared beliefs, norms and practices of a group. Children learn their own culture by **enculturation**. When people move to a new culture, they go through **acculturation**. Berry describes four strategies, depending on whether people keep their first culture and whether they join the new one: integration (both), assimilation (only the new one), separation (only the first one) and marginalisation (neither). Integration is usually linked to the least stress.

How the approaches work together

Good answers often use more than one approach. Depression, for example, has a biological side (genes and serotonin), a cognitive side (negative thinking) and a socio-cultural side (poverty, loneliness and how a culture talks about mental illness). Caspi's study shows two of these working together. Topic 2 uses this idea in each context, and the concept of **perspective** asks you to say which approach a claim comes from and which approaches it leaves out.

Checklist

- Biological: localisation (H.M.); neuroplasticity (Maguire, Draganski); MRI, fMRI and EEG; neurotransmitters and hormones; the oxytocin model answer (Kosfeld); twin studies and gene–environment interaction (Kendler, Caspi).
- Cognitive: what a model is and why it must make predictions; the multi-store and working memory models; schemas and reconstructive memory (Bartlett); System 1 and 2, anchoring (Tversky and Kahneman) and confirmation bias; leading questions (Loftus and Palmer); flashbulb memory (Brown and Kulik; Neisser and Harsch).
- Sociocultural: social identity theory (Tajfel); social learning theory and its four steps (Bandura); norms and conformity (Asch; Bond and Smith); culture, enculturation and Berry's four acculturation strategies.
- For a 4-mark question: name the idea, describe one study with its result, and link it back to the behaviour in the question.