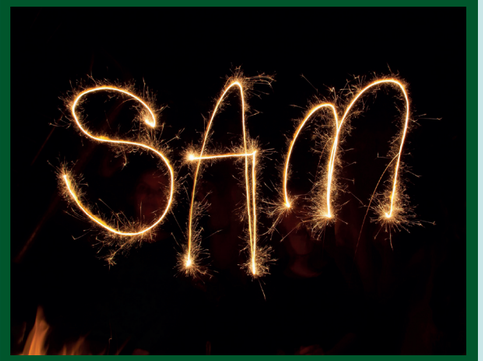
Key concept 1: Characteristics of three memory stores



Persistence of vision (and hearing)

Who doesn't love a sparkler?

You light one, it eventually catches, and you start waving it around with glee, just like you did when you were six. It's great fun because you can trace letters and words in the air – your name, 'Hello' and other less polite words perhaps. As a six-year-old maybe you accepted this air-writing without question.

But of course, a lit sparkler can't really leave words in the air (unless it's a magic sparkler, obviously).

You can 'see' the words because your eyes have a memory. An after-image persists on your retinas for about 1/25th of a second after the sparkler has moved on. This is called *persistence of vision* and is an example of sensory memory.

Your ears have a 'memory' too. Has a teacher or parent ever said to you, 'What did I just say?' when they spotted you daydreaming? If you surprised them (and yourself) by repeating their last few words back to them, that's another example of your sensory memory in action.

Specification terms

Capacity The amount of information that can be kept in a memory store.

Duration The length of time information can be kept in a memory store.

Encoding The process of converting information from one form to another so it can be stored in the various memory stores and passed between them.

Long-term memory (LTM) Permanent memory store with practically unlimited capacity, storing memories for up to a lifetime. Encoding is mainly semantic (meaning).

Sensory memory (SM) Memory stores for each of our five senses, e.g. vision (iconic store) and hearing (echoic store). Encoding in the iconic store is visual and in the echoic store is acoustic. Capacity is huge but duration is very brief.

Short-term memory (STM) Limited-capacity memory store. Encoding is mainly acoustic (sounds), capacity is between 5 and 9 items, duration is up to 30 seconds without rehearsal.

Duration

Sensory memory

Sensory memory (SM) is the first part of the memory system – all stimuli from the environment pass into it. SM is actually five stores, one for each of our senses. *Duration* of SM is very brief. For example, information in the visual store (called iconic memory) lasts for less than half a second. Information in the auditory (sound) store (called echoic memory) lasts for about 2–4 seconds.

Short-term memory

Short-term memory (STM) is a temporary store. Information lasts up to 30 seconds before it disappears (Peterson and Peterson 1959). We can keep information in STM for longer if we repeat it over and over again (maintenance rehearsal). If we do this for long enough, the material may pass into long-term memory.

Long-term memory

Long-term memory (LTM) is the potentially permanent memory store for information that has been rehearsed for a prolonged time. Material in LTM may last up to a lifetime. Harry Bahrick *et al.* (1975) found that many people could recognise the names and faces of school classmates after almost 50 years.

Capacity

Sensory memory

The *capacity* of SM stores is very high. For instance, there are over one hundred million cells in the retina of each eye and each of these cells stores sensory data.

Short-term memory

STM is a limited-capacity store because it can only contain a certain number of 'things' before forgetting occurs. George Miller (1956) noted that this capacity is between five and nine items of information. He called this 'the magic number 7 plus or minus 2'.

Long-term memory

The capacity of LTM is practically unlimited. We store everything we have learned in it. When you forget information in LTM, it may still be there but you just can't access it because you don't have the right cues (discussed on the next spread).

Encoding

Sensory memory

Encoding in SM involves converting information from the environment (sights, sounds, smells, etc.) into a form in which it can be stored in memory. Encoding in each SM store depends on the sense. For example, in the iconic store it is visual (it stores information received by the eye). Encoding in the echoic store is acoustic (it stores sound information received by the ears).

Short-term memory

Encoding in STM is mainly acoustic, i.e. based on sounds (e.g. of words). Alan Baddeley (1966a) found that when people recall words from a list immediately after hearing them, any mistakes they make are acoustic, such as substituting a word with another that *sounds* the same (e.g. recalling 'cat' instead of 'cap').

Long-term memory

Encoding in LTM is mainly semantic, i.e. based on meaning. Baddeley (1966b) found that mistakes in recalling words from LTM tended to involve substituting a word that *means* the same thing (e.g. recalling 'big' instead of 'large').

Evaluation

Research support for three memory stores

One strength is research evidence showing there are three memory stores with different characteristics.

The studies on the facing page demonstrate this clearly in terms of duration. STM lasts up to about 30 seconds (Peterson and Peterson 1959) but LTM is up to a lifetime (Bahrick *et al.* 1975). A study by George Sperling (1960) found that information in the iconic sensory store (vision) lasts for about 50 milliseconds.

The evidence shows that SM, STM and LTM are very different in terms of encoding, capacity and duration.

Application to improving memory

Another strength is that knowledge of memory stores has practical applications.

For example, the limited capacity of STM can be increased through 'chunking'. There are 15 letters in this list: C A R D O G L I T P E N B U Y. This is more than double the average capacity of STM. But you may have noticed that the letters are organised: CAR DOG LIT PEN BUY. Putting the letters into bigger 'chunks' (words in this case) means the number of items to be stored is five, which is well within most people's STM capacity. This 'chunking approach' is applied, for example, to license plate numbers, post codes and phone numbers.

This shows how understanding the characteristics of memory stores can help us to improve memory.

Artificial materials

One weakness is that most research studies use materials that are not typical of everyday memory.

For example, Lloyd Peterson and Margaret Peterson (1959) asked participants to recall consonant syllables that have no meaning (e.g. YCG). Other studies use letters or digits. But in everyday life we form memories related to many useful things – faces, names, facts, places, etc. This kind of information is much more meaningful to us than the artificial materials used in many studies.

This means that these studies are limited in what they tell us about the characteristics of memory stores in everyday life.

Cara says, 'Here is my own yearbook photo (taken and scribbled over some 50+ years ago when I was an American schoolgirl). Good old Karen, excelled at everything, Betsy not so much.'

Exam-style questions

Esther is a student who recently sat a psychology exam. When she was revising, she started by trying to learn a list of ten key concepts but found that she forgot some of them. However, she kept trying and in the exam itself she was able to remember nearly all of the concepts.

1. Describe how capacity of short-term memory may explain what happened when Esther revised. (2 marks)
2. Explain **one** characteristic of long-term memory that could be a reason for Esther's exam performance. (3 marks)
3. Describe **two** characteristics of sensory memory. (4 marks)
4. State what is meant by 'encoding' in relation to memory. (1 mark)
5. Describe what psychologists mean by 'duration' in relation to memory. (2 marks)
6. Explain what is meant by 'capacity' in relation to memory. (2 marks)
7. During revision, Esther tried to learn some theories by understanding the similarities and differences between them. She found that she could remember this material better in the exam.

   Describe how encoding in long-term memory could be a reason for this. (3 marks)
8. Explain **one** strength of either sensory memory, short-term memory or long-term memory. (3 marks)
9. Discuss characteristics of memory. In your answer you should consider **at least two** of the following:
   - sensory memory
   - short-term memory
   - long-term memory. (9 marks)

GET ACTIVE Digit span in STM

Here are five digits: 4 5 2 9 2

Close your eyes and try to repeat them in the same order. Was that easy? Now repeat the process with the following lists:

6 digits: 2 6 1 8 3 4

7 digits: 8 6 9 2 5 6 1

8 digits: 5 2 7 9 6 4 2 7

9 digits: 3 6 2 5 9 7 1 8 2

10 digits: 4 8 1 7 3 9 1 5 2 7

1. *How many digits was the last list which you got completely right?*
2. *How does this relate to capacity of STM?*

An issue to consider

List some examples of short-term and long-term memories you have recalled today.

Aside from duration, can you identify any differences between these short-term and long-term memories?

What conclusions can you draw about STM and LTM?

Specification content

A1 Cognitive approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Characteristics of sensory, short-term and long-term memory (encoding, capacity, duration).

Key concept 2: Remembering

The memory palaces of champions

The World Memory Championship is held each year. Competitors have to memorise long lists of numbers and words. You would think this is impossible but champions have a trick up their sleeve – the *method of loci*.

It's also called the *memory palace* (the fictional detective Sherlock Holmes used it). You turn words (e.g. a big shopping list) into images and mentally place them around an environment you know well – your school/college, your journey to college, your house, or simply your bedroom.

The weirder the links the better. Who could forget the sight of a river of batteries rushing towards you down the stairs?

You remember the items by taking a mental walkabout and retrieving them – the locations trigger your memory and you can even recall the items in order. It takes practice but if you put in the time it's a powerful method, very useful for remembering facts in exams.

You can see some demonstrations of this technique on YouTube, e.g. tinyurl.com/d4kfatj4

Specification terms

Cue A 'trigger' that allows us to access material in memory. Cues can be meaningfully linked to the material (e.g. mnemonics) or can be indirectly linked by being encoded at the time of learning (e.g. external context and internal state).

Recall In free recall the individual generates information without a cue. In cued recall, a cue assists retrieval of information.

Recognition A form of memory retrieval where you identify something based on previous experience.

Remembering The activity of retrieving information from a memory store.

What is remembering?

Everyday language uses words such as remembering, memory and recall interchangeably. But to a psychologist these are different things so we need to be more precise. There are two forms of *remembering – recall* and *recognition*.

Recall

We recall a piece of information when we retrieve it from a memory store such as short-term memory (STM) without any 'assistance'. This is known as *free recall*. For example, if an exam question asks you to write down a definition of 'remembering', you have to generate the answer from memory. In a research study, participants might read a list of words, put the list away and then try to retrieve the words from memory.

Sometimes we can only recall something if we get assistance from a *cue* (see below). For instance, you might struggle to recall a word but find it easier if someone says, 'It starts with F'. The letter F is a cue that triggers recall – this is called *cued recall*. You still have to retrieve the rest of the material.

Cued recall shows we have more in our memory than we can usually access. Often, when we can't recall something, we assume we must have forgotten it. But when the right cue appears we remember the information, which shows it must have been stored all along.

Recognition

A lot of remembering in everyday life is based on recognition. For example, we might not be able to recall the name of someone we went to school with 30 years ago but we would probably recognise it if we heard it.

Another example is a multiple-choice exam question such as, 'Which is the best definition of remembering?', followed by four alternative answers. You (hopefully) recognise the correct answer. The answer acts as a cue that triggers retrieval of the memory.

Like cued recall, recognition demonstrates that we store more in LTM than we can immediately retrieve.

Cues

Cues can be important in recall because they contribute to superior retrieval in cued recall and recognition. These cues can be meaningful or not meaningful.

Meaningful cues

Consider a cue such as 'STM'. You learn this cue at the same time as you learn other material about short-term memory. When you hear that cue, you will remember some things about STM such as it has short duration and limited capacity – the cue contains the word 'short' which reminds you of these things.

Cues without meaning (context-related cues)

Cues without meaning are also learned at the same time as you learn about or experience something. For example, when you read this page there might have been a thunderstorm outside. The next time you are in a thunderstorm this may cue you to remember some things about STM or the next time you think about STM you may recall the thunderstorm.

Emotions can also act as cues. For example, when people are feeling happy they tend to recall other happy events, and when they are feeling sad they think of sad experiences – which in turn may then lower their mood further. The emotion acts as a cue to remember times when the person experienced similar emotions.

GET ACTIVE Mars bars

I (Rob) am of the generation that grew up on the advertising slogan for Mars bars: 'A Mars a day helps you work, rest and play'. Even now when I hear that slogan, I really want a Mars bar!

There are several slogan generators available online (search 'free slogan-maker'). Generate a slogan and repeat it over and over while you think about (or eat!) your favourite chocolate bar. Wait a day or two and repeat the slogan to yourself. You'll most probably find it conjures up a lovely image of your favourite chocolate bar.

Can you explain this in terms of cues?

Evaluation

Research support for cues

One strength is support for cues from many studies in cognitive psychology.

For example, Endel Tulving and Zena Pearlstone (1966) gave their participants lists of words to learn and remember. The words came from distinct categories, such as animals and clothing. When participants were asked to recall the lists, one group of participants were given the category headings as cues whereas another group were not given the cues. The cued recall participants remembered significantly more words than the non-cued participants.

This finding shows that cues are important in retrieving memories that would otherwise be 'forgotten', and also suggests that cued recall is superior to free recall.

Application to improving memory

Another strength is that retrieval cues have practical applications.

Mnemonics are a method of improving memory based on an understanding of cues. For instance, you might be familiar with the mnemonic BIDMAS (each letter stands for one maths operation and reminds you of the order of maths operations) and 'Richard Of York Gave Battle In Vain' (each initial letter represents a colour of the rainbow). These are cues that trigger retrieval of information stored in LTM.

This shows how understanding the role of cues can help us to improve memory.

Cues are not always useful

One weakness is that some cues are not very important in everyday remembering.

For instance, the idea of a context-related cue is that the environment in which you learn acts as a cue to retrieve information. However, context-related cues are not as powerful as meaningful cues because it is rare that two contexts are very similar. For example, if you learn material in your classroom and then take an exam in that classroom then there may be some context effects, but usually you sit an exam in a different room. A meaningful cue will also be relevant, such as BIDMAS.

Therefore, not all cues are equally important and some are relatively useless in everyday situations.

Not that kind of cue. Except, if you think about it, it IS that kind of cue.

May is Stroke Awareness Month

FAST

Facial	Arm	Speech	Time
drooping	weakness	difficulties	to call emergency services

Mnemonics can be useful in everyday life. This one helps you to identify the signs of a stroke.

Exam-style questions

Most psychologists agree that there are different ways to remember things. One is recognition and another is recall. Psychologists also understand the importance of cues in remembering.

1. State what is meant by 'recognition'. (1 mark)
2. Describe what psychologists mean by 'recall'. (2 marks)
3. Explain **one** difference between recall and recognition. (2 marks)
4. Explain what is meant by 'cues' in relation to memory. (2 marks)
5. Torrey is a stand-up comedian. She has to remember jokes, funny stories, observations and the order in which to tell them. In her early days, Torrey could not remember much. Then a friend told her about the method of loci. Torrey now learns her material by imagining a room, which she mentally goes round putting jokes in various places. During the gig, she takes a mental tour of the room and 'finds' the material.

   Explain Torrey's success in remembering her material. Use **one** concept from the cognitive approach in your answer. (3 marks)
6. Bish is a big fan of Torrey and has been to several of her gigs. Bish can never remember any of Torrey's jokes, but he always notices when Torrey reuses some of her older material.

   Explain the reason for this in terms of recognition and recall. (3 marks)
7. Discuss the concept of remembering. In your answer you should consider **at least two** of the following:
   - recall
   - recognition
   - the importance of cues. (9 marks)

An issue to consider

TV ads often plant cues in the minds of viewers which later remind the viewer to use the advertised product. Can you think of an example? Is this unethical?

Specification content

A1 Cognitive approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Remembering (recognition, recall and the importance of cues).

Key concept 5: Cognitive scripts

Your first day

Do you remember your first day at college or your school sixth form? Or in a part-time job?

Were you a bit anxious beforehand? Maybe you were worried you wouldn't know what you were doing or where you were meant to be, especially if you went to a new place altogether.

On the other hand, perhaps you did have a bit of an idea about what to expect. After all, you've often been in situations 'for the first time' and some of them were probably similar to your first day at college/sixth form. You remembered some of these experiences and they helped to prepare you.

You might not have known which classroom to go to, but you knew how to behave like a student when you got there. You didn't know when your psychology lessons would be, but you knew what a timetable is and what it's for.

It's almost as if you knew the script for a play called 'My First Day'.

Specification terms

Cognitive scripts Information stored in memory that describes the behaviours typical in a given situation, which we retrieve to guide our behaviour.

Memory scripts Knowledge of behaviours, roles, outcomes, etc. stored in memory tell us what to expect in a social situation and how to behave.

Person perception Information stored in memory about which personality characteristics often go together, which guide our impressions of other people.

OK, he's friendly. But what else is he? Kind, helpful, clever, shy?

Memory scripts

We looked briefly at the role of *cognitive scripts* on the previous spread. Now we will investigate them in more depth by considering two aspects of cognitive scripts – *memory scripts* and *person perception*.

A memory script contains knowledge of how a social situation 'plays out'. It includes what we can usually expect to happen in a situation and how we should behave.

The classic example is the restaurant script (Schank and Abelson 1977). This memory script includes our knowledge and expectations of the setting (the restaurant itself), props (menus, tables, etc.) and actors (waiting staff, customers, chefs and so on).

Features of memory scripts

Using the example of a restaurant script, here are some of the main features of memory scripts:

- They are broken down into scenes ordered by time, e.g. entering the restaurant, sitting at a table, ordering, eating, paying the bill.
- They concern multiple goals, e.g. to satisfy hunger, to enjoy the occasion, to impress a partner, etc.
- They are dynamic and evolve with experience – the more often you visit restaurants, the more refined and detailed your restaurant script becomes.
- They influence memory – we remember events that are consistent with a script (because that is what we expect), but we may also remember those events that are inconsistent (because they stand out).

Person perception

When you meet someone, you immediately make assumptions about their character based on what you 'see'. Thus it is a perceptual process that draws on information you have stored in memory related to different types of people.

Person schema

Our memories contain our organised knowledge and expectations about other people's personalities (called a 'person schema'), especially which characteristics typically go together. For example, if I describe someone as 'outgoing', you would probably assume they had a few other attributes as well, such as being impulsive and loud.

There is substantial agreement between most individuals over which attributes co-occur. These are partly based on experience and partly on stereotypes (see page 000).

How person perception works

When we meet someone new, instead of perceiving them as an individual with their own unique combination of traits, we use information in memory to quickly categorise them, often on the basis of one central feature. Because there are gaps in our knowledge of someone we have just met, we fill in those gaps with information consistent with our memories, even if the information is wrong.

We tend to recall information about people that is consistent with the category we assigned them to. Person perception is not usually objectively accurate. It is affected by our own cognitive biases, which is the topic of the next spread.

GET ACTIVE A very familiar script

An example of a script that is highly relevant to students is 'sitting an exam'. As you have a lot of experience of this your script will be detailed – you are an expert on sitting exams. Make a list of the behaviours that form your 'sitting an exam' script and put them in time order.

1. *Does this script share any elements with other scripts such as 'attending a class' or 'going to a concert'?*
2. *How has your 'sitting an exam' script evolved over the years?*
3. *What are the differences between the script of an expert and a novice?*

Evaluation

Research support for memory scripts

One strength is evidence to support the role of memory scripts.

When people are presented with routine events where the steps are in the wrong order, they tend to recall them in the correct order. For instance, a 'getting ready for college' script might be presented as 'get dressed, get out of bed, wake up' but is recalled as 'wake up, get out of bed, get dressed' (Bower *et al.* 1979). The correct order is familiar and consistent with the script stored in memory.

This finding supports the argument that cognitive scripts strongly influence how we remember everyday events.

Research support for person perception

Another strength is evidence for the role of person schemas in person perception.

For example, Nancy Cantor and Walter Mischel (1979) gave participants a set of adjectives to describe someone (e.g. outgoing, loud) and linked this to a personality label (e.g. people who are outgoing and loud are extravert). Later on participants were given another task – they were shown all the adjectives from the original list, plus some previously unseen adjectives were added in. The participants were asked to identify the original adjectives from this new list. If a new adjective (e.g. lively) matched one of the personality labels (e.g. extravert) the adjective was often mistakenly included in participants' recall.

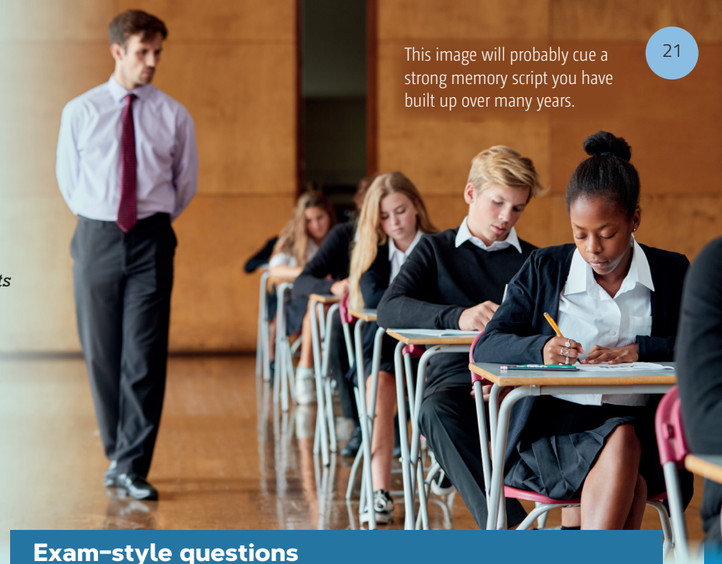
This suggests that people group personality characteristics together according to the contents of a person schema, which affects what is recalled.

Unjustified assumptions about behaviour

One weakness is that we may assume a script is guiding behaviour when it is not.

When someone behaves in a script-consistent way, how do we know it is because they are following a cognitive script? For instance, someone eating a meal in a restaurant might be imitating those around them and thus following external cues rather than an internal memory script. The same issue arises with person schemas. On meeting a stranger, my impressions of them may be guided more by how others respond than by any internal schema.

Therefore, scripts and schemas do not always have a significant influence on behaviour and memory.



This image will probably cue a strong memory script you have built up over many years.

Exam-style questions

Pearl pops into a supermarket to buy a few things because she and her friends will be watching the footie later. She takes a couple of carrier bags with her and picks up a basket from inside the door. This is only Pearl's third trip to this shop, but she knows she will get to the fruit and veg first and she will have to go to the other end of the shop for the drinks. Once Pearl has everything she wants to buy, she gets her loyalty card and bank card out and heads for the checkouts.

1. Give **two** examples from the scenario above that could be part of Pearl's script for 'shopping in a supermarket'. (2 marks)
2. Give **one** example of a behaviour that is part of a memory script from any everyday scenario other than the one above. (1 mark)
3. Explain what psychologists mean by 'memory scripts'. (2 marks)
4. When Pearl gets to the checkout she has a conversation with the assistant called Dean who she has never met before. Pearl feels that Dean comes across as very friendly and thinks to herself, 'I bet Dean is clever and knows lots of people. I reckon he's definitely interested in football!'

   Explain why Pearl thinks this about Dean. Use **one** concept from the cognitive approach in your answer. (3 marks)
5. Explain **one** weakness of the explanation given in your answer to question 4. (3 marks)
6. Discuss the role of cognitive scripts. In your answer you should consider:
   - memory scripts
   - person perception. (9 marks)

An issue to consider

It could be said that person perception is a bit like following a memory script. Can you explain how? [HINT: we expect some personality characteristics to go together – why is this?]

Specification content

A1 Cognitive approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- The role of cognitive scripts (memory scripts, person perception).

Key concept 4: Intra-group dynamics

'How could we have been so stupid?'

In April 1961, the United States government of President John F. Kennedy tried to remove by force the communist dictator of nearby Cuba, Fidel Castro. With the support of the US military, 1,400 Cuban exiles invaded Cuba at the Bay of Pigs. But it was a disaster, one of the most embarrassing foreign policy mistakes ever made.

The decision to invade was made by a group of experts. As Kennedy himself said years later, 'There were 50 or so of us, presumably the most experienced and smartest people we could get... How could we have been so stupid?'

Irving Janis was a psychologist at Yale University who asked himself the same question. He believed the answer was to do with how groups work, a process he called 'groupthink'.

Janis's teenage daughter challenged him to prove this because she didn't believe social psychological processes could explain such a catastrophic failure (Forsyth 1986).

Janis researched numerous other such failures (e.g. the US not pulling out of Vietnam) and concluded that groupthink is a feature of cohesive groups who value their 'groupiness'. Their desire to agree with each other is stronger than their motivation to realistically consider alternative courses of action.

Specification terms

Common goals The outcomes of group activity that all members share and work towards.

Group cohesion The extent to which group members are psychologically bonded and 'pull in the same direction'.

Groupthink The tendency of cohesive groups to strive for agreement, which overrides the need to analyse decisions realistically and to consider criticisms and alternatives.

Intra-group dynamics The psychological processes that take place in any group.

Roles The functions that individuals perform, for example within a group. Usually involves one of four types: task, social, procedural or individualist.

Social facilitation The tendency for individuals to perform better on a task when other people are present.

Group cohesion

In cohesive groups, members stick together to pursue *common goals* – they enjoy being in the group, look forward to meeting, communicate willingly and work together efficiently.

Cohesion is greater when group members perceive themselves to be similar, in both external characteristics (e.g. age) and internal characteristics (e.g. attitudes). Such similarity means intra-group conflict is less likely. This process creates a virtuous circle – greater trust and communication lead to more cohesion, which in turn produces greater trust and communication.

But despite these benefits, cohesive groups are especially susceptible to *groupthink* (see left and below) because no one wants to 'rock the boat'.

Roles

Kenneth Benne and Paul Sheats (1948) identified three categories of *roles* that increase *group cohesion*:

- **Task roles** focus on getting work done, e.g. *task leaders* coordinate the group's work, *energisers* challenge the group to move forward.
- **Social roles** focus on creating harmony in group relationships, e.g. *encouragers* support and praise others, *compromisers* back down for the good of the group.
- **Procedural roles** involve keeping the group 'on task', e.g. *gatekeepers* ensure everyone has a say, *recorders* keep track of the group's activities.

However, there is also a category of roles that weaken group cohesion:

- **Individualist roles** seek to undermine the group, e.g. *blockers* resist every idea but offer nothing themselves, *jokesters* make light of the group's work and distract others.

Common goals

Well-functioning groups are expected to share goals. This is another dynamic that makes the group more cohesive.

Goals are beneficial because they motivate group members to increase their efforts, provide direction and focus and give meaning to tasks. For example, common goals can help individuals understand their place in what may seem a large and impersonal organisation.

Goals also provide a standard against which to measure progress, evaluate performance and resolve conflicts.

Groupthink

Irving Janis (1982) investigated decision-making in cohesive groups. He found there is a strong need to agree, regardless of the outcome. In other words, everyone in a group agrees with each other, regardless of the correctness of the decision. Members quickly stop analysing decisions and, instead of looking for weaknesses, they convince themselves the reasons for the decision are sound. They refuse to listen to alternatives and actively discourage opposing views.

Groupthink is more likely in situations of stress and when the decision is very important. It is also more likely when the group is cohesive because members wish to maintain their cohesiveness, are like-minded and isolated from external influences that might challenge them.

Social facilitation

When group members work together on relatively simple tasks, the presence of others can enhance an individual's performance. This is called *social facilitation*. Note, the same is not true for complex tasks – this is called *social inhibition*.

According to Robert Zajonc (1965), if we believe other people are observing our task performance, we become physiologically and psychologically aroused (e.g. our heart rate increases and we become more alert). Arousal is even greater when we believe our performance is being evaluated by others in the group.

This state of arousal enhances our performance of simple, well-learned responses, but is unhelpful in complex tasks.

Evaluation

Research support

One strength is evidence to support some of the *intra-group dynamics* on this spread.

For example, Lukas Thürmer *et al.* (2017) found that when group members believe their contribution to shared goals is recognised by others, the group performs better. This is because members focus on the group's goals rather than their own individual goals. Colin MacDougall and Frances Baum (1997) found that groupthink can be partly avoided by assigning a group member the role of devil's advocate, so they can constructively challenge the group consensus by asking awkward questions and offering alternative viewpoints.

Therefore there is strong evidence that intra-group dynamics have a real impact on the functioning of many groups.

Practical applications

Another strength is that research has produced several practical applications in various real-world situations.

For instance, Janis (1982) suggested many ways to avoid groupthink such as encouraging criticism, involving people from outside the group and breaking the group into smaller (preferably competing) subgroups.

These findings show that there are many ways in which improving intra-group dynamics can have benefits for individuals, groups and organisations.

Contrary evidence

One weakness is evidence that challenges the role of intra-group dynamics.

For example, group roles are rarely clear-cut and well-defined. They can be vague and overlap significantly between members, who may not fully understand their roles in the group, so their performance suffers. As far as goals are concerned, Charles Gowen (1985) found that group performance on a task improved by 12% when members worked towards group goals. But when they were allowed to work towards both group *and* individual goals, there was a 31% improvement.

These findings show that the links between intra-group dynamics and performance are complex and not yet fully understood.

GET ACTIVE Testing social facilitation

Have a go at this experiment with some other students. Each student should perform a simple task (e.g. completing an online Tetris game). They should do this twice – once in front of an audience and once on their own.

You could repeat the same procedure with a more complex task (e.g. tinyurl.com/yknhpyk3).

1. *How can you carry this out without introducing extraneous variables (see page 000), e.g. how do you make sure the experience is the same for everyone?*
2. *What can you do about practice effects if all participants do the task in front of an audience first (see counterbalancing on page 000)?*
3. *Did the presence of an audience affect performance?*
4. *If you tried a complex task, did the type of task make any difference to your results?*
5. *How can you explain your results in terms of social facilitation?*

Work groups should include someone willing to play the role of the devil and argue against everyone else.

Exam-style questions

Students at a sixth-form college are asked for ideas to improve the college environment. A group of eight interested students meet together every week. They are very enthusiastic about the task and are all committed to finding ways to make the college a better place. The group members quickly realise that they like each other and enjoy their meetings.

1. Explain what is meant by 'intra-group dynamics'. (2 marks)
2. Give **two** examples from the scenario above that could illustrate intra-group dynamics. (2 marks)
3. Explain **one** example of intra-group dynamics from any everyday scenario other than the one above. (2 marks)
4. Pieter is very supportive of the other students in the group. He always likes to hear everyone's ideas and praises their positive contributions. Ursula is always urging the group to come up with more ideas. Ayla is the group leader and she is very good at making sure the meetings are useful.

   Describe **one** example of roles within this student group. (2 marks)
5. Explain what is meant by 'groupthink'. (2 marks)
6. The group members always support each other's ideas. They feel there is no need to expand the group because everyone is already doing a great job.

   Briefly describe how the group's behaviour illustrates the concept of groupthink. (3 marks)
7. Explain **one** limitation of intra-group dynamics as an explanation of human behaviour. (3 marks)
8. Discuss intra-group dynamics. In your answer you should consider **at least two** of the following:
   - group cohesion
   - roles
   - common goals
   - groupthink
   - social facilitation. (9 marks)

An issue to consider

Which is the best type of group – a highly cohesive one or one with no cohesion at all? Or is there another type? What would be the features of such a group?

Specification content

A2 Social approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Intra-group dynamics including group cohesion, roles, common goals, groupthink

Content area A2: Social approach

Key concept 5: Influences of others

Who do you think you are?

This spread is about your sense of self – who you think you are. Psychologists call this your self-concept.

There is a deceptively simple way to find out who you think you are. It's called the *Twenty Statements Test* (Kuhn and McPartland 1954). All you have to do is complete this statement:

I am _____.

You can put anything you want, with as many words as you like. But you should do it 20 times (with a different response each time). OK, you don't have to do it 20 times, but as many as you can. Don't worry about logic or anything sensible like that.

Did you find out anything about yourself?

Specification terms

Self-concept How a person perceives and thinks about themselves (self-image) and evaluates themselves and their attributes (self-esteem).

Self-efficacy A person's confidence in their ability to achieve success.

Self-esteem How a person values themselves and the extent to which they accept and like themselves.

Self-image A person's awareness of their mental and physical characteristics, based on positive and negative beliefs about themselves.

Smug self-concept.

Self-concept

Your *self-concept* is about how you see yourself. It's the answer to the question, 'Who am I?'. For example, you might see yourself as a friendly person.

Your self-concept is strongly influenced by other people, especially by how they evaluate you and the feedback they provide. In this sense other people are 'mirrors' in which we perceive their judgements of ourselves (the 'looking-glass self', Cooley 1902).

There are two key components to your self-concept: *self-esteem* and *self-image*.

Influences of others on self-esteem

Self-esteem concerns the extent to which we accept and like ourselves. People with high self-esteem have a positive self-image (see below), they accept themselves and have confidence in their own abilities (see section on self-efficacy below). High self-esteem has been strongly linked with psychological well-being.

Self-esteem is based on the things that you do. For example, if you do well on a test or create something special this increases your self-esteem. But self-esteem also comes from our interactions with others (Argyle 1973):

- **Others react to us** We develop high self-esteem if others respond to us in ways that make us feel good, for instance they agree with us, make positive comments, etc.
- **We compare ourselves to others** We may develop low self-esteem if we constantly compare ourselves to people who are more beautiful, wealthy and successful than ourselves (e.g. social media influencers). High self-esteem arises when we compare ourselves with people whose qualities are less desirable than our own.
- **We play social roles** Some social roles are widely admired (e.g. nurse, parent), leading to high self-esteem. Other roles carry social stigma (e.g. ex-prisoner, drug user) and are linked with low self-esteem.

Influences of others on self-image

Self-image is your awareness of your mental and physical characteristics. It is based on your beliefs about yourself acquired from life experiences, e.g. how others respond to your successes and failures. Someone with a positive self-image may be satisfied with their body shape/size and perceive themselves as helpful and kind.

Your self-image is also based on feedback from other people, especially important people such as parents, teachers and peers. A positive self-image tends to develop from positive feedback. However, self-image is more complex than this because people do not always interpret feedback accurately. For instance, someone may reassure you that you are successful or likeable, but you interpret this as 'they're only being polite'.

Self-efficacy

Self-efficacy is the extent to which we are confident we can achieve a successful outcome (e.g. in performing a task). It is linked to self-image and self-esteem. For example, someone with high self-efficacy is confident they have the ability and skills to get a high grade in an exam or score a goal in a football match. This makes them feel better about themselves (self-esteem) and contributes to a more positive view of themselves (self-image).

Influences of others on self-efficacy

Albert Bandura (1997) suggests two main ways that other people influence self-efficacy:

- **Social modelling** When you observe another person achieving success on a task, it increases your belief that you are capable of doing the same (especially if you perceive them to be similar to yourself). These other people are called *role models* (see page 000).
- **Social persuasion** Using positive verbal feedback (encouragement) can increase a person's self-efficacy. This overcomes self-doubt and persuades a person that they are capable of achieving success, e.g. telling a student they are capable of achieving a top grade because they have great skills (of course, discouragement lowers self-efficacy).

Evaluation

Research support

One strength is research evidence that other people influence our self-esteem.

Michelle Harris and Ulrich Orth (2020) reviewed findings from 52 studies. They concluded that our self-esteem is increased when our relationships with others are fulfilling and supportive. Our high self-esteem in turn improves the quality of our relationships, and so on in a positive feedback loop. Of course, if our relationships are poor this lowers our self-esteem and creates a negative feedback loop. This is true across all ages, genders and ethnic groups.

This shows that there is a reciprocal (two-way) link in which self-esteem and other people influence each other.

Practical applications

Another strength is that understanding the self-concept can lead to positive practical outcomes.

Denis Lawrence (2006) ran workshops with British and Australian children who were underperforming at school. He found the key factor in improving academic achievement and reducing behavioural issues was increasing their self-esteem. Children who had counselling only or ordinary class teaching only didn't show the same improvements as those with self-esteem enhancement.

This suggests that self-esteem is an important factor in well-being and academic achievement.

Vague concepts

One weakness is that the different aspects of self explored on this spread are poorly defined.

For example, some psychologists define self-concept as 'beliefs' about the self, whereas others include 'feelings' (i.e. the value you put on your self-concept). Many concepts overlap with each other, for example self-image and self-esteem are so closely correlated that they may be more or less the same thing. This field of research is a good illustration of the *jangle fallacy*, referring to the assumption that two identical things are different because we have given them different names.

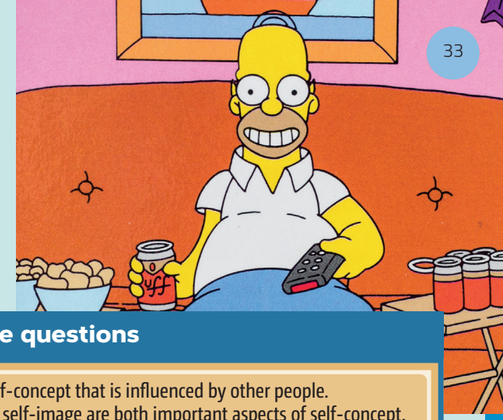
This vagueness limits our understanding of ideas such as self-efficacy and self-esteem and the practical benefits we can derive from them.

ACTIVE Measuring your self-concept

There are lots of ways to measure the concepts on this spread – understandably they are all based on self-report. After all, the most direct way to understand someone's self-concept is to ask them about it.

You may have had a go at the *Twenty Statements Test* described on the facing page. A different kind of self-report measure is the *Rosenberg Self-Esteem Scale* (Rosenberg 1965), which you can find here: tinyurl.com/3ebsbns5

1. ***What do you think of the test? Did it reveal anything that surprised you?***
2. ***Can you think of any limitations of the test as a measure of self-concept?***
3. ***What are the advantages and disadvantages of measuring the self in this way as opposed to using the Twenty Statements Test?***



Homer Simpson, the master of creating low self-efficacy: 'Bart, you tried your best and you failed miserably. The lesson is, never try.'

Exam-style questions

We all have a self-concept that is influenced by other people. Self-esteem and self-image are both important aspects of self-concept.

1. Explain what is meant by 'self-esteem'. Refer to the influence of others in your answer. (2 marks)
2. Ling and Mei are twins. Ling is confident in most situations, happy with how she looks and doesn't care much what other people think of her. Mei is not very confident, hates her own body and is really anxious about other people's opinions of her.

   Referring to Ling and/or Mei, give **one** example that could illustrate the influence of others on self-esteem. (1 mark)
3. Describe **one** example from the scenario in question 2 that could illustrate the influence of others on self-image. (2 marks)
4. Explain what is meant by 'self-concept'. Refer to the influence of others in your answer. (2 marks)
5. Ling started revising four months before her first exam after watching someone on a YouTube video making a detailed plan. She's confident she'll do well. Mei only started revising two weeks before her first exam because her teachers were nagging her to get on with it. But she still thinks she'll do badly.

   Briefly describe how the behaviour of Ling and/or Mei illustrates the influence of others on self-efficacy. (3 marks)
6. Explain **one** example of the influence of others on self-efficacy from any everyday scenario other than the one given in question 5. (2 marks)
7. Explain **one** possible reason for the difference in Ling and Mei's behaviour. (2 marks)
8. Briefly evaluate self-concept as an explanation of human behaviour. (3 marks)
9. Discuss influences of others on the self. In your answer you should consider **at least two** of the following:
   - self-esteem
   - self-image
   - self-efficacy. (9 marks)

An issue to consider

Which of the 'self' concepts on this spread do you think is most important? Explain your choice.

Specification content

A2 Social approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Influences of others on self-concept (self-esteem, self-image), self-efficacy.

Key concept 3: Motivation

Still going strong

At the age of 91 (in 2021), Margaret Sherlock is a Lancashire Legend – she is Britain's oldest hairdresser.

She opened her first salon in Chorley, in her living room, 65 years ago.

In an interview with *BBC North West Today*, Margaret said she has loved every minute of her career and fully intends to keep going as long as she physically can. She became a hairdresser and opened her salon at a time when it was very unusual for women to set up their own businesses.

What motivated Margaret to do this? At the start her motivation was money – an *extrinsic* motivation. In 1952, she emigrated from Ireland (her country of birth), because she felt there were no opportunities for women like her. But then she needed an income in England and turned to hairdressing.

Today she is less in need of money and her motivation to keep going is *intrinsic*. As she says, 'I still like the idea of going to work because it gives you a sense of purpose.'

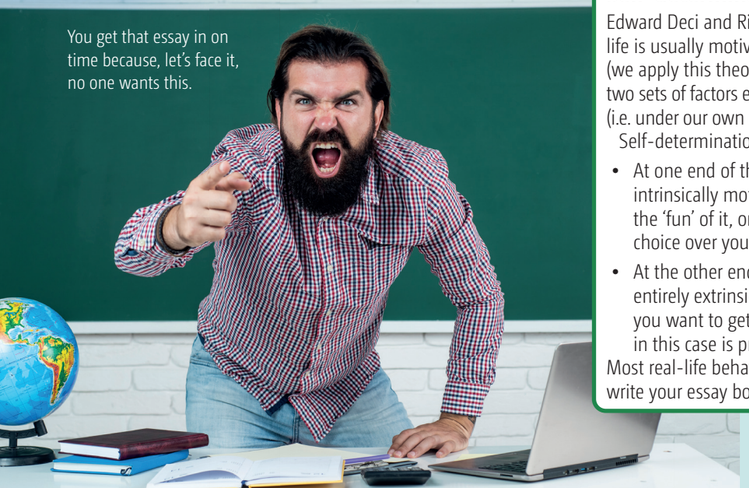
These are Margaret's motivations. What motivated you to take psychology?

Specification terms

Extrinsic motivation Engaging in a behaviour to gain an external reward (e.g. praise, money) or avoid external punishment (e.g. being told off).

Intrinsic motivation Engaging in a behaviour for an internal reward, such as personal pleasure, enjoyment, challenge or interest.

Motivation The drive to behave in a way that achieves a goal or satisfies a need.



Extrinsic motivation

Psychologists are interested in the sources of *motivation*, i.e. where it comes from. 'Extrinsic' means external, so *extrinsic motivation* is driven by sources in our environment, usually other people such as parents, teachers, friends, etc.

We often behave as we do in order to achieve some reward or avoid a punishment. According to the behaviourist approach, gaining a reward or avoiding a punishment makes a behaviour more likely to happen again. Examples include: writing an essay to gain a high grade (reward) or avoid being told off (punishment).

We can also be extrinsically motivated through *social learning*, by observing other people being rewarded for their behaviour. For example, seeing someone else being praised for getting a high grade (reward) or seeing someone else told off for getting a low grade (punishment). In each case the reward or punishment comes from someone else, i.e. is external or extrinsic.

Intrinsic motivation

'Intrinsic' means internal, so *intrinsic motivation* is driven by sources within yourself, such as your own enjoyment, pleasure, interest, sense of challenge, etc. You do something for its own sake rather than in response to extrinsic rewards, so the activity is rewarding in itself. Examples include: pursuing a hobby for the challenge, volunteering for a charity because you believe in the cause, doing a certain degree because you find it interesting.

Intrinsic motivation is highly desirable because achieving goals without external pressures is more fulfilling and raises self-esteem.

Relationship between extrinsic and intrinsic motivation

Extrinsic undermines intrinsic

Someone who is extrinsically rewarded for doing a task they already enjoy may become less intrinsically motivated. For example, a child may do schoolwork because they simply enjoy it. At school the child receives rewards for good schoolwork (good grades) and this takes over as the motivator. You may experience that now – it is your grades that matter more than your own intrinsic pleasure.

One exception appears to be certain kinds of praise. Although it is an extrinsic motivator, praising someone's effort (not their outcome) on a task they find intrinsically rewarding is usually quite motivating.

Self-determination theory

Edward Deci and Richard Ryan (2000) explained how behaviour in everyday life is usually motivated by a combination of intrinsic and extrinsic factors (we apply this theory in more detail to sport in our Book 2). Combining these two sets of factors expresses the extent to which our behaviour is self-determined (i.e. under our own control).

Self-determination exists on a continuum (a line):

- At one end of the continuum, self-determined behaviour is entirely intrinsically motivated. For example, you might write an essay purely for the 'fun' of it, or just because you are interested in the topic. The degree of choice over your behaviour is extremely high.
- At the other end of the continuum, non-self-determined behaviour is entirely extrinsically motivated. For example, you write the essay because you want to get a good grade and avoid being told off. Your degree of choice in this case is pretty much non-existent.

Most real-life behaviours are somewhere between these two extremes, so you write your essay both to get a high grade and because you enjoy the challenge.

Evaluation

Research support from neuropsychology

One strength is evidence for intrinsic motivation from studies of the brain.

Stefano Di Domenico and Richard Ryan (2017) reviewed studies in this area. They found that there is a link between intrinsic motivation and areas of the brain that are influenced by a chemical called *dopamine*. Dopamine is a *neurotransmitter* that allows communication between nerve cells. It is an important part of the brain's own 'reward system'. This makes sense because intrinsic motivation arises from internal rewards rather than externally provided ones.

This research suggests that intrinsic motivation has a biological basis in the brain.

Practical applications

Another strength is that intrinsic and extrinsic motivation can explain real-world behaviours.

One example is in education. A main goal of schooling should be to develop greater self-determination in students. Extrinsic motivation (e.g. rewards and punishments from teachers) has an important role in academic achievement. But success is more likely to grow from developing intrinsic motivation, for example by encouraging students to set their own targets.

This shows that self-determination theory can be useful in highlighting several ways to increase extrinsic and intrinsic motivation in a variety of situations.

A simplistic approach

One weakness is that the focus on intrinsic and extrinsic motivation alone is simplistic.

There are many different types of motivation. For instance, Steven Reiss (2012) argues there are 16 sources of motivation that cannot be neatly divided into just the two categories of extrinsic and intrinsic. These include a person's need for achievement or their need for food. This broader approach is more useful in practical terms, e.g. each source offers a different intervention to increase students' educational achievement.

This suggests that focusing on just two forms of motivation does not give a complete picture of a complex area of behaviour.

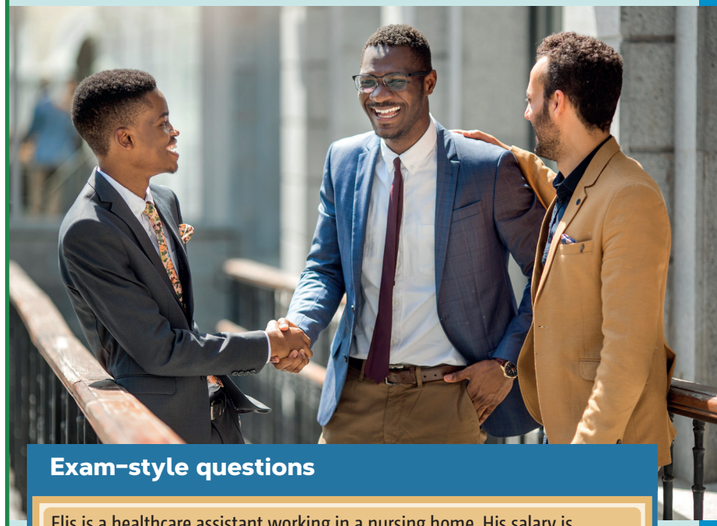
GET ACTIVE Measure your motivation

It takes a great deal of motivation to persist with a two-year BTEC course (or a three-year degree). Lessons, deadlines, assignments, homework, mock exams, actual exams… The list goes on. How do you think you're doing so far? Psychologists have devised various ways to measure motivation, so it would be interesting to have a go at one of these to see what it reveals about you.

You can find a questionnaire here: tinyurl.com/m4ke5wzc

1. *Think about the individual items on the questionnaire. Were you surprised at any of your responses? Identify one of these and try to explain what surprised you.*
2. *Can you think of any ways you could use what you have learned to improve your intrinsic motivation?*

Most of us respond well to praise. But predictable and undeserved praise can be demotivating.



Exam-style questions

Elis is a healthcare assistant working in a nursing home. His salary is minimum wage but he gets paid 150% of his hourly rate for any overtime he does. He will also get a higher rate if he achieves an advanced qualification. Elis's manager is always very critical of him if he makes any kind of error, even a small one.

1. Briefly describe how this scenario illustrates extrinsic motivation. (3 marks)
2. Identify **one** possible example of extrinsic motivation not mentioned in the scenario above. (1 mark)
3. Elis is obviously pleased he can earn more money through overtime, but he enjoys his job because he gets to meet all sorts of people. He is interested in healthcare and would like to undertake training to learn more about it.

   Explain how Elis's attitudes and behaviour indicate that he is intrinsically motivated. (3 marks)
4. Explain what is meant by 'intrinsic motivation'. (2 marks)
5. Explain what is meant by 'extrinsic motivation'. (2 marks)
6. Explain **one** example of intrinsic motivation from any everyday scenario other than the one in question 3. (2 marks)
7. Explain **one** strength of the concept of extrinsic **and/or** intrinsic motivation. (3 marks)
8. Discuss motivation. In your answer you should consider:
   - extrinsic motivation
   - intrinsic motivation. (9 marks)

An issue to consider

Intrinsic motivation is claimed to be very desirable but it's easy to forget about extrinsic motivation. How important are extrinsic factors in motivating you?

Specification content

A3 Behaviourist and social learning approaches

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Motivation – extrinsic and intrinsic.

Key concept 1: Influence of biology on behaviour and traits

The Knowledge

On this spread we look at the many ways in which our biology affects our behaviour. But what is perhaps more surprising is that our behaviour can influence our biology.

Drivers of famous 'black cabs' in London don't use Sat Navs. Instead, they have to pass a very difficult exam before they start the job. The test, called 'The Knowledge', assesses drivers' recall of all the streets and landmarks in London and the routes connecting them. Passing The Knowledge takes huge commitment and many hours of study – it's said to be one of the hardest tests you can take.

A study by Eleanor Maguire *et al.* (2000) compared men who had completed The Knowledge with a matched control group of men who were not taxi drivers. Incredibly, the special learning by the taxi drivers affected the structure of an important part of their brains. Brain scans showed that the hippocampus, which is involved in memory, was on average significantly bigger in the taxi drivers.

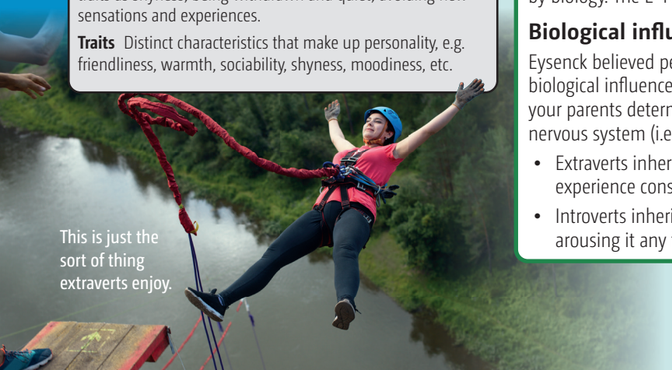
So, the relationship between biology and behaviour is sometimes a two-way street!

Specification terms

Extraversion One end of a personality dimension with introversion at the other end. Extraversion includes such traits as outgoingness, sociability, sensation-seeking.

Introversion One end of a personality dimension with extraversion at the other end. Introversion includes such traits as shyness, being withdrawn and quiet, avoiding new sensations and experiences.

Traits Distinct characteristics that make up personality, e.g. friendliness, warmth, sociability, shyness, moodiness, etc.



This is just the sort of thing extraverts enjoy.

Biology and behaviour

Biological psychologists argue that, as the mind basically 'lives' in the brain, our thoughts, feelings and behaviour have a physical basis (everything psychological is first biological).

There are four main ways in which biology influences behaviour. We will look at them all in more detail on the next few spreads:

- *Genes* are made up of strands of DNA inherited from parents. DNA provides chemical instructions to manufacture proteins in the body. These proteins influence physical and psychological characteristics, e.g. height and personality.
- *Neuroanatomy* refers to the structure of the nervous system, including the brain. Different parts of the structure have different functions, such as one area controls what we see (the visual area) and another area controls movement (the motor area).
- *Neurochemistry* concerns chemical processes within the brain and nervous system. Messages are sent around the brain and body via nerves cells (*neurons*) and chemical messengers (*neurotransmitters*).
- *Evolution* concerns the way animals change over millions of years. At one time the only life on Planet Earth was small one-celled organisms. Over time these organisms have evolved into the species you see around us today. The theory of evolution explains how this happened through *natural selection*.

Influence of biology on traits

What are traits?

Traits are characteristics that make up a personality. For example, when we ask the question 'What's her personality like?', we usually answer with a list of traits: 'She's cheerful, friendly, intelligent, kind...'. Traits do not change much from one situation to another (i.e. they are stable), or within a situation (they are consistent) or as we get older (they are enduring).

Extraversion and introversion

Extraversion and *introversion* are two aspects of personality that feature in a theory by Hans Eysenck (1947):

- Extraverts are outgoing, sociable, loud, friendly and they constantly seek new experiences and sensations.
- Introverts are mostly the opposite – withdrawn, shy, quiet and uncomfortable with new sensations.

Most people are not pure extraverts or pure introverts. Extraversion–introversion is a dimension of personality. Each of us is located somewhere on a continuum stretching from extreme extraversion to extreme introversion (E–I).

Furthermore, Eysenck described another dimension which he argued is as important as extraversion–introversion (E–I). This is neuroticism–emotional stability (N–ES). Neurotic people are jumpy, anxious and 'highly strung'. This is also thought to be partly determined by biology. The E–I and N–ES dimensions together make up your personality type.

Biological influences on extraversion/introversion

Eysenck believed personality has an innate, biological basis. He argued there are two main biological influences specifically on E–I: genes and neurochemistry. Genes inherited from your parents determine your degree of E–I. They do this by influencing the activity of your nervous system (i.e. your neurochemistry).

- Extraverts inherit an underactive nervous system, so in order to arouse it they have to experience constant excitement, e.g. by engaging in risky behaviours.
- Introverts inherit an overactive nervous system, so they avoid the discomfort of arousing it any further by withdrawing and keeping away from exciting activities.

Evaluation

Research support

One strength is research into the genetics of personality traits.

Sandra Sanchez-Roige *et al.* (2017) reviewed twin studies of extraversion–introversion. The researchers were able to calculate a 'heritability estimate', a figure which indicates the degree to which a physical or psychological characteristic is genetically determined. The figure for extraversion and introversion may be as much as 57%.

This evidence supports the view that extraversion–introversion is fairly strongly influenced by genes and is mostly inherited.

Practical applications

One useful application has been to produce better approaches to reducing criminal behaviour.

Criminals are often extraverts – they are sensation-seekers who crave the excitement provided by new experiences and taking risks, experienced when committing crimes. Extraverts tend not to learn through rewards and punishments, so they are not deterred from antisocial behaviour by being punished (e.g. with imprisonment).

Therefore, criminal behaviour may be better dealt with using other methods, such as drugs to increase the activity of their nervous system.

Role of non-biological factors

One weakness of biological influences is that they are often less important than other factors.

For instance, genes may make it more likely that a person will become an extravert or introvert. But this is not inevitable. Non-biological factors such as learning experiences may be more important, such as the influences from the social environment in which a person is raised.

Therefore, there is a risk of exaggerating biological influences and gaining an oversimplified view of the causes of behaviour.

The intensity and excitement of a paramedic's work may not suit an introvert.

GET ACTIVE What are you?

You can complete a questionnaire to measure your degree of extraversion–introversion here: tinyurl.com/44zyahrd. This works best if you try to avoid giving answers 'in the middle' as much as possible.

This questionnaire measures two other personality dimensions that Eysenck considered important: neuroticism–emotional stability and psychoticism–socialisation. There are explanations on the webpage.

Bear in mind that this is just a bit of fun and not a serious analysis of your personality.

1. *How does your score match up with your own opinion of yourself? Are you like your parents in any of these ways?*
2. *Is self-report a good way of assessing personality?*
3. *What do you think of the questionnaire itself? Do the questions really measure what they are supposed to?*

Exam-style questions

Everybody has a personality, which some psychologists argue is made up of what they call 'traits'. Some traits are seen as characteristics of extraversion, whereas other traits are seen as characteristics of introversion.

1. Explain what is meant by 'trait'. (2 marks)
2. Zara became a paramedic because she wanted a job working with people and helping them. Zara finds being a paramedic is exciting because, as she tells her friends, 'You never know what's going to happen next.' Zara's mum is a firefighter and her dad is a hospital nurse.

   Identify **two** of Zara's traits that indicate she is an extravert. (2 marks)
3. With reference to the scenario in question 2, explain **one** way in which biology may have influenced Zara's traits. (3 marks)
4. Explain what is meant by 'introversion'. (2 marks)
5. Krystof is a landscape architect and runs a garden design business with his friend/partner. He loves working on his own, designing and drawing, and likes the fact that his day-to-day work is quite predictable. As he feels uncomfortable dealing with clients, he leaves his partner to discuss and present their plans to the clients.

   Identify **two** of Krystof's traits that indicate he is an introvert. (2 marks)
6. Explain **one** way in which biology may have influenced Krystof's traits. (3 marks)
7. Describe **one** example of introversion from any everyday scenario other than the one in question 5. (2 marks)
8. Explain **one** weakness of the view that biology influences behaviour **and/or** traits. (3 marks)
9. Discuss biological influences on behaviour **and/or** traits. In your answer you should consider:
   - extraversion
   - introversion. (9 marks)

An issue to consider

How much do you think your personality is affected by biology compared with social, cultural and psychological factors?

Specification content

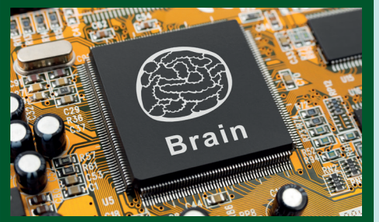
A4 Biological approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- The influence of biology on behaviour and traits, including introversion and extraversion.

Content area A4: Biological approach

Key concept 4: Organisation of the central nervous system



Your own personal internet

What's the most complicated 'system' in the world? Is it the internet perhaps? There are certainly some mind-blowing statistics involved. In a typical minute in 2020:

- 212 million emails were sent worldwide.
- 175 thousand apps were downloaded.
- 210 thousand people participated in Zoom meetings.
- 3 million Facebook videos were viewed.

That's pretty impressive. But perhaps even more impressive is what's going on in your own nervous system. It is made up of nerve cells called *neurons* which send messages around your body at up to 7 kilometres a second!

There are about 100 billion neurons in your brain alone, each connecting to about 1000 other neurons – that's 100 trillion connections. Each neuron fires (or sends a message) at around 200 times a second. That's 20 million billion bits of information sent around your brain every second.

And all this activity is controlled by the nervous system – your body's own version of the internet which works on super, super, superfast broadband!

Specification terms

Autonomic branch (autonomic nervous system, ANS) Transmits signals to and from internal body organs. It is 'autonomic' as the system operates involuntarily (i.e. automatically). It has two main divisions: sympathetic and parasympathetic.

Central nervous system (CNS) Consists of the brain and the spinal cord and is the origin of all complex commands and decisions.

Motor branch The part of the somatic nervous system that sends signals from the CNS to voluntary muscles.

Parasympathetic division The part of the ANS responsible for reducing physiological (body) arousal, e.g. the rest and digest response.

Sympathetic division The part of the ANS responsible for physiological arousal, e.g. the fight or flight response.

Nervous system

The nervous system is a complex network of cells in the human body. It is our main internal communication system and uses both electrical and chemical signals. The two main functions of the nervous system are to:

- Collect, process and respond to information in the environment.
- Coordinate the working of different organs and cells in the body.

The diagram at the bottom of this page illustrates the link between the different components of the nervous system.

Central nervous system

The *central nervous system* (CNS) is made up of the brain and the spinal cord.

The brain

The brain is the centre of our conscious awareness and where decision-making takes place. It is divided into two halves called *hemispheres*. The right hemisphere controls the left side of the body and the left hemisphere controls the right side. This is called *contralateral control*. The two hemispheres are connected by several structures (e.g. the corpus callosum).

The brain is covered by an outer layer (a bit like an orange is covered by its peel) called the *cerebral cortex* (or just *cortex*). This is about 3 mm thick and highly developed in humans. It is where 'higher' mental processes such as problem-solving and thinking take place.

At the base of the brain is the *brain stem*, which controls basic functions such as sleep and breathing. The brain stem connects the brain with the spinal cord.

The spinal cord

The spinal cord is a tube-like extension of the brain (like a cable) which runs down the middle of the spine. It controls reflex actions such as pulling your hand away from a hot plate. It also passes signals back and forth between the brain and the rest of the body via the peripheral nervous system.

Peripheral nervous system

The peripheral nervous system (PNS) is a collection of nerves that run from the spinal cord to many parts of the body. It is divided into two subsystems: the *somatic branch* and the *autonomic branch*.

Somatic branch (aka somatic nervous system)

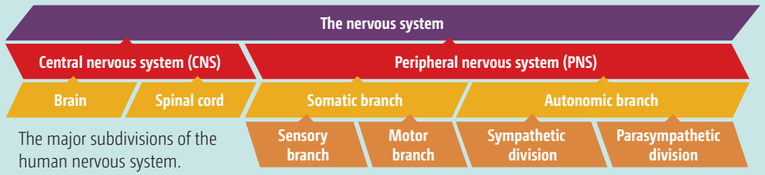
The somatic nervous system (SNS) is divided into two branches. The *sensory branch* delivers messages to the brain from the sense organs (e.g. eyes, ears, nose). The *motor branch* sends signals from the CNS to control voluntary movements of muscles (i.e. when we deliberately move parts of the body).

Autonomic branch (aka autonomic nervous system)

The autonomic nervous system (ANS) sends and receives signals to and from body organs. It is 'autonomic' because it operates involuntarily (i.e. automatically). It controls functions that are vital for survival and do not require our conscious attention, such as breathing and heart rate. It plays a key role in the body's response to stress.

The ANS has two parts, which work in opposition to keep the body in balance:

- *Sympathetic division* – activates physiological (body) arousal, e.g. increases heart rate, prepares the body for *fight or flight* to cope with stress.
- *Parasympathetic division* – activates the *rest and digest* response to bring the body back to its normal resting state after stress has passed, e.g. reduces heart and breathing rates.



The major subdivisions of the human nervous system.

Evaluation

Research support

One strength is that the organisation of the nervous system is supported by research.

Researchers study people who have experienced damage to parts of their nervous system. For example, damage to the spinal cord often results in body paralysis. Damage to different parts of the somatic nervous system can cause problems with sensory organs (e.g. blindness). Researchers also look at the consequences of deliberate damage to the nervous system of non-human animals. For example, a researcher removes or destroys a part of the animal's nervous system to see what effect it has on its behaviour.

Therefore, researchers over time have built up a 'map' of the nervous system, how it is organised and the functions of the various components.

Practical applications

Another strength is that understanding how the nervous system functions has some useful real-world applications.

For instance, arousal ('fight or flight') is the body's main response to stress. The associated hormones (e.g. *adrenaline*) make an animal ready to fight or flee, which is important for survival but can be unhelpful at certain times. For example, musicians often have problems with anxiety before performing – the anxiety comes from activation of the sympathetic division and the consequent release of adrenaline. Understanding this has led to the use of drugs which reduce anxiety by decreasing the activity of the sympathetic division and reducing the production of adrenaline.

This shows that understanding the function of the ANS has led to effective treatments to help reduce stress and improve quality of life.

Other systems are involved

One weakness is that the nervous system does not operate on its own.

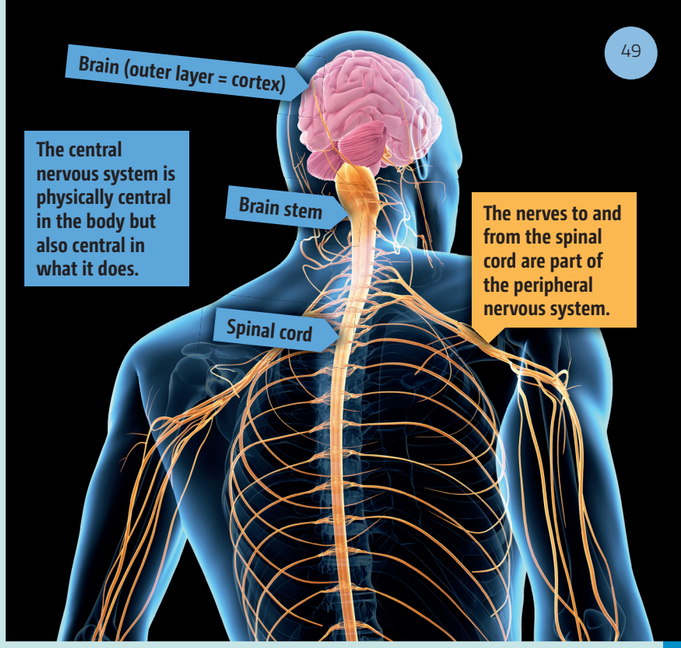
In many behaviours, the nervous system works in tandem with the *endocrine system*. This is the collection of glands in the body that produce hormones (see page 000). The fight or flight response is again a good example. The response begins in the brain (nervous system) with the perception of danger. A signal is sent to the endocrine system which activates endocrine glands such as the adrenal glands which in turn produce adrenaline.

This means that our understanding of the role of the nervous system is incomplete without considering the endocrine system.

GET ACTIVE Sympathetic or parasympathetic?

Find out more about the two divisions of the ANS. Use your favourite search engine to answer the questions below.

1. *What are the main signs of physiological arousal in the fight or flight response? Here's one example: pupils dilate. Make a table to summarise what you find out.*
2. *Search for this mnemonic: SLUDD. What does it mean and what is the role of the parasympathetic division? Again, summarise your findings in a table.*



Exam-style questions

Lachlan and Jameela are watching a horror film on TV. It is very tense because the characters are walking around very carefully and the background music is saying 'be frightened'. Lachlan is expecting something scary to happen at any moment. Suddenly, without warning, Jameela leans over and shouts 'Boo!'

1. Identify the part of the nervous system that controls what happens next to Lachlan. (1 mark)
2. Lachlan is so annoyed he turns the TV off, but after a short while he calms down and is back to normal.
   Explain how the nervous system controls Lachlan's response. (2 marks)
3. Briefly describe the organisation of the central nervous system. (3 marks)
4. Outline the organisation of the autonomic nervous system. (3 marks)
5. Explain **one** strength of the organisation of the nervous system. (3 marks)
6. Discuss the organisation of the nervous system. In your answer you should consider the:
   - central nervous system
   - sympathetic and parasympathetic divisions of the ANS. (9 marks)

An issue to consider

Some of our knowledge of how the nervous system is organised has come from studies of animals. What are the practical and ethical issues involved in such research studies?

Specification content

A4 Biological approach

Learners should be able to understand and apply knowledge of key concepts to explain aspects of human behaviour, including:

- Organisation of the central nervous system, including the motor and autonomic branches and sympathetic and parasympathetic divisions of the ANS.

Content area B3: Application of psychology to explain gender

Cognitive approach to explaining gender

Livvy James

John Anyon/Worcester News

Livvy was born Samuel and raised as a boy. But for as long as she could remember, she felt strongly that she was really a girl. She preferred dresses to trousers, she liked playing with dolls and she viewed herself as a girl. Livvy's sense of her own gender was being a girl. But when she went to school she did so as a boy.

The conflict between her assigned and expressed gender was causing Livvy distress (which psychologists call *gender dysphoria*).

Gender is usefully seen on a spectrum along which people vary from one another and even throughout their lives ('gender fluid'). It is a spectrum rather than a binary construct in which you are either a boy/man or a girl/woman. Some non-binary people may identify as androgynous (having both masculine and feminine characteristics) rather than as exclusively a man or a woman.

Livvy now identifies and lives as a woman, and works to support transgender people.

Specification terms

Alpha bias The tendency to exaggerate differences between groups, e.g. between women and men, binary and non-binary people, etc.

Androgyny Displaying a balance of masculine and feminine characteristics in one's personality (andro = male, gyny = female).

Beta bias The tendency to minimise or ignore differences between groups, e.g. between women and men, binary and non-binary people, etc.

Binary Describes a choice of two states, for example something can be either on or off, or a person can only be a woman or a man.

Confirmation bias We pay more attention to (and recall more easily) information that supports our existing beliefs. We may seek it out and ignore contradictory information.

Femininity Traits and behaviours considered appropriate for girls/women in a particular culture, distinct from female biological sex.

Gender The psychological, social and cultural differences between boys/men and girls/women including attitudes, behaviours and social roles, as distinct from biological sex. (We use the terms 'man/woman' when discussing gender but 'male/female' for discussions of biological influences.)

Gender dysphoria Describes the discomfort or distress arising from a mismatch between a person's sex assigned at birth and their gender identity. This is also the clinical diagnosis for someone who doesn't feel comfortable with the sex they were assigned at birth.

Gender fluid Having different gender identities at different times, including single-gender and non-binary.

(continued on facing page)

The role of biases

The way we think about ourselves and others is affected by our often unconscious *biases*, i.e. our predisposition to think in particular ways. Psychologists have identified two extreme biases: *alpha* and *beta bias*. These can both lead to inequality, prejudice and discrimination.

- **Alpha bias** is a very *binary* perspective which encourages women and men to identify more closely with their *gender*. It usually devalues women in relation to men (and *non-binary* people in relation to binary, etc.). Alpha bias also creates a sense of abnormality – people who do not conform to traditional gender categories are seen as 'disordered' and needing treatment.
- **Beta bias** misrepresents women's and men's behaviour because it suggests there are no differences whereas research shows there are some real differences. This also applies to *transgender* women, who are not men – they are women and this difference is denied by beta bias (the same is true of trans men of course). Like alpha bias, beta bias is potentially discriminatory and prejudicial because it fails to acknowledge the different needs of men and women (and of non-binary and *gender-fluid* people). Beta-bias prevents change because it creates the assumption that everyone is the same so everyone should be able to fit in with, for example, male-oriented society.

There is another bias that is important when trying to explain gender – *confirmation bias* (see definition and discussion on page 000). If a person holds stereotyped views of men, women, *androgynous* and gender-fluid people that are negative then they only notice information that confirms these views. If we ignore contrary information that challenges our stereotypes, then it is much easier to accept the existing inequalities that penalise women and trans people.

The role of schema (gender schema theory)

We looked at the concept of schema on page 000. The *gender schema* contains our knowledge related to gender. Carol Martin and Charles Halverson (1981) suggested that the gender schema has an important effect on memory – information consistent with gender schema is more likely to be stored and recalled than inconsistent information.

For instance, a girl who believes that engineering is 'for men' and nursing is 'for women' will seek out information about nursing, adding it to her gender schema. She will ignore information about engineering and recall more about nursing. Her recall of gender-inconsistent information may be distorted to fit her gender schema (e.g. incorrectly recalling a male nurse as a woman). This misremembering confirms her existing schema.

The role of cognitive priming

How sex-role stereotypes prime gender behaviour

The term *sex-role stereotypes* refers to the fixed views people have of men's and women's roles. Such stereotypes are often based on 'traditional' views of gender behaviour (e.g. women are caring and men are aggressive).

Stereotypes make you more ready to see the world in a way that fits your preconceived views – this is called 'priming'.

The gender stereotypes that you believe in prime you to expect particular gender-related behaviours. For example, if you are asked to draw a picture of a nurse, you might be more likely to draw a woman than a man because your stereotype of a nurse is a woman. Even names on a job application form can prime a sex-role stereotype, e.g. that an applicant with a 'man's name' will be better at maths.

How gender roles prime gender behaviour

The roles that women and men are seen performing also prime gender-typical behaviour. This can include roles in both the real world and in the media. For example, if a girl sees women/girls portrayed in TV adverts as passive when interacting with adults, this may lead them to take on a similar role when interacting with adults themselves.

Evaluation

Research support for priming

One strength is evidence to support the role of *gender priming* in influencing behaviour.

Stephanie Fowler *et al.* (2011) primed gender-related schema in their participants by asking them to write about times when they behaved in stereotypically *masculine*, *feminine* or gender-neutral ways. They all then experienced the cold pressor test, in which the person plunges an arm into freezing water for as long as they can bear it. Men who were primed by writing about feminine-typical behaviours reported less pain and anxiety from the test than other groups.

This finding shows that priming *gender roles* can have some effect on even involuntary behaviours such as the experience of pain.

Practical application of biases

Another strength is that there are practical uses of our knowledge of biases.

In our everyday interactions, we should be neither alpha- nor beta-biased as both are inaccurate ways of understanding gender, which is too complex to be fully explained by focusing on just similarities or differences. Instead, we should acknowledge both forms of bias and accept that there are some important similarities and differences between *gender identities* of all kinds.

Therefore, both forms of bias are equally misleading and we should avoid favouring one over the other.

Neglects key non-cognitive factors

One weakness of the cognitive approach to gender is that it exaggerates the role of cognitive factors and underplays the importance of social context.

It is very likely that social factors are crucial in the early years during which gender develops. For instance, the gender-related behaviour of parents and the rewards and punishments they hand out to children are key influences that are perhaps more important than schema and much better explained by social learning theory (see page 000).

This failure to address how social and cognitive factors interact means the cognitive approach is an incomplete explanation.

Specification terms

Gender identity A person's sense of their own gender, e.g. man, woman or something else. This may or may not correspond to sex assigned at birth.

Gender priming A form of cognitive priming in which reminding someone of their gender identity triggers gender-related behaviours.

Gender roles Distinct behaviours and attitudes taken on by women and men and usually thought to be 'appropriate' to one gender or another.

Gender schema An organised set of beliefs and expectations related to gender that are derived from experience. Such schemas guide a person's understanding of their own gender and gender-typical behaviour in general.

Masculinity Traits and behaviours considered appropriate for boys/men in a particular culture, distinct from male biological sex.

Non-binary A term that suggests gender (or any concept) cannot be divided into two distinct categories, e.g. gender is not a question of being a man or a woman.

Sex Biological differences between males and females including anatomy, hormones and chromosomes, assigned at birth and distinct from gender.

Sex-role stereotypes A set of beliefs and preconceived views about what is expected or appropriate for women and men in a given society or social group.

Transgender Relating to a person whose gender does not correspond with their birth sex (see page 000).

A child's gender schema might mislead them into recalling the person in this image as a man.

Exam-style questions

There is some debate about definitions of gender. Many people argue that there are important differences between gender and sex.

1. Briefly describe what psychologists mean by the term 'gender'. (2 marks)
2. Explain **one** difference between 'sex' and 'gender'. (2 marks)
3. Marvin works for a company that allows employees to take time off occasionally to attend to 'childcare issues'. Marvin is a father of two young children and he asks the head of human resources if he could arrive late to work the following day because he needs to take his children to nursery. The head of HR refuses the request and when Marvin asks why she says, 'It's company policy because the owner believes childcare is women's responsibility.'

   Identify **one** form of bias and explain its role in the company's policy. (3 marks)
4. Explain the effects of your chosen bias in your answer to question 3 on equality, discrimination and prejudice. (3 marks)
5. The owner of the company also has two children, Leo and Maria. Leo loves pretending to be a superhero, running around the house shouting and waving a sword. Maria enjoys playing quietly with dolls, changing their outfits, talking to them and helping them do household chores.

   Explain the possible role of cognitive priming in Leo's and Maria's behaviour. (3 marks)
6. Some time after watching a TV programme about hospitals, Leo said, 'I liked it when that man did that operation.' Maria replied, 'But that wasn't a man, it was a woman.'

   Explain how the cognitive approach to gender might account for Leo's comments. Use the concept of gender schema in your answer. (3 marks)
7. Explain **one** strength **or one** weakness of the cognitive approach to explaining gender. (3 marks)
8. Discuss the view that gender is mainly due to cognitive factors. In your answer you should consider **at least two** of the following:
   - the role of biases
   - gender schema
   - cognitive priming. (9 marks)

An issue to consider

There is obviously more to gender than how we think about it. But what are the other factors and how important are cognitive influences in comparison?

Specification content

B3 Application of psychology to explain gender

Learners should understand key terms associated with gender, including binary, non-binary, gender fluid, androgyny, transgender, masculinity, femininity, gender dysphoria.

Learners should understand and apply knowledge of how psychological approaches and concepts can be used to understand the typical and atypical gender of individuals in society, including the influence of the following on gender:

- Cognitive – role of biases (alpha, beta and confirmation bias), influence on gender identity, effects on equality, discrimination and prejudice; schema in gender (gender schema theory).
- Cognitive priming – sex-role stereotypes, gender roles, gender priming.