

Psychology Units 3 & 4

Chapter 5 — Approaches to understand learning

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Chapter 5 Approaches to understand learning — 5A Classical conditioning

Theory

Learning is a relatively permanent change in behaviour or knowledge that results from experience. **Behaviourist approaches** explain learning through the association between environmental events and observable behaviour, without reference to internal mental processes. **Classical conditioning** is a behaviourist form of learning in which a person or animal comes to produce an existing **reflexive (involuntary) response** to a new stimulus, because that new stimulus has been repeatedly associated with a stimulus that already triggers the response.

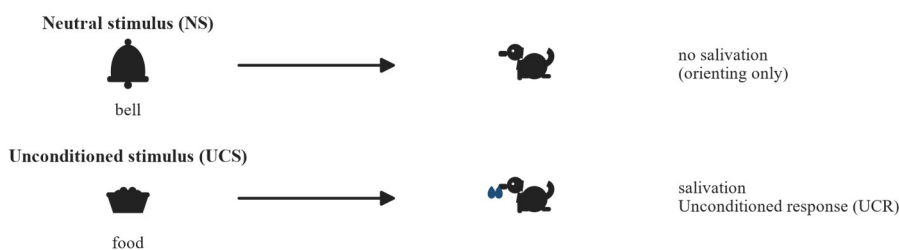
The five elements. Classical conditioning is described using five terms:

- **Unconditioned stimulus (UCS)** — a stimulus that consistently produces a reflexive response *without any learning* (e.g. food).
- **Unconditioned response (UCR)** — the reflexive, involuntary response produced by the UCS (e.g. salivation to food).
- **Neutral stimulus (NS)** — a stimulus that, before conditioning, does *not* produce the response of interest (e.g. a bell before it is associated with food).
- **Conditioned stimulus (CS)** — what the NS *becomes* after it is repeatedly paired with the UCS: it now produces the response on its own.
- **Conditioned response (CR)** — the learned response produced by the CS alone. It is the *same kind of* response as the UCR (and usually a little weaker).

The three-phase process. Classical conditioning is analysed as three phases:

1. **Before conditioning.** The UCS already produces the UCR (food → salivation). The NS produces no relevant response — at most an orienting reflex (the bell → the dog looks around, but does not salivate).
2. **During conditioning (acquisition).** The NS is presented *together with* the UCS, repeatedly. For the association to form, the NS should be presented *just before* the UCS (correct order and close timing), and the pairing usually needs to be **repeated** several times.
3. **After conditioning.** The NS has become a **conditioned stimulus (CS)**: presented on its own, it now produces the **conditioned response (CR)** (bell alone → salivation).

Before conditioning



During conditioning (acquisition)



After conditioning



Key features to keep straight.

- The learned response is **involuntary** — classical conditioning acts on **reflexive** responses (salivation, an eyeblink, nausea, a startle or fear response), not on voluntary actions.
- The **NS and the CS are the same stimulus** (the bell) at different stages — it is called the NS before learning and the CS after learning. Likewise the **UCR and the CR are the same behaviour** (salivation), named by which stimulus produced it.
- Learning is shown by the appearance of the CR to the CS **alone**, with the UCS no longer present.
- The classic demonstration is **Ivan Pavlov's** research with dogs (food = UCS, salivation = UCR, a bell = NS → CS), but the same three-phase analysis applies to any reflexive response, including emotional responses such as fear.

How to analyse a scenario. (1) Find the **reflexive response** and the stimulus that *naturally* causes it — that stimulus is the **UCS** and the response is the **UCR**. (2) Find the stimulus that starts out neutral and is paired with the UCS — that is the **NS**. (3) After repeated pairing, name that same stimulus the **CS** and the learned response the **CR**.

Worked examples

Example 1 — scaffolded

In a laboratory task, a soft tone is sounded and then a harmless puff of air is directed at a participant's eye, making them blink. After many repetitions, the participant blinks as soon as the tone sounds, before any air puff. Identify the UCS, UCR, NS, CS and CR, and state what happens in each of the three phases.

Working	Comment
The air puff naturally makes the eye blink with no learning → UCS = air puff, UCR = eyeblink .	Start with the reflexive response and its natural trigger.
Before conditioning the tone produces no eyeblink → NS = tone .	The NS does not yet produce the response of interest.
During conditioning the tone is sounded just before the air puff, repeatedly.	The NS is paired with the UCS, in the correct order and repeated.
After conditioning the tone alone produces a blink → CS = tone, CR = eyeblink .	The NS has become the CS; the learned response is the CR.

Example 2 — scaffolded

A dog begins to drool whenever it hears the cupboard where its treats are stored being opened, because the sound of that cupboard has come to signal food. Set out the three-phase process for this example.

Working	Comment
Before: food (UCS) → salivation (UCR); the cupboard sound (NS) → no salivation (orienting only).	Identify the pre-existing reflex and confirm the NS is neutral for salivation.
During: the cupboard sound (NS) is repeatedly heard just before the dog is given food (UCS), producing salivation (UCR).	The NS precedes the UCS across repeated pairings.
After: the cupboard sound is now a CS and produces salivation as a CR , even when no food follows.	Learning is shown by the CR to the CS alone.

Example 3 — unscaffolded

After eating prawns at a restaurant and becoming ill with food poisoning that night, a person now feels nauseous at the mere *smell* of prawns. Using classical conditioning, explain how this response was learned.

The toxin in the contaminated prawns is the **UCS**; the **nausea** it caused is the **UCR**. The **smell** of prawns was a **neutral stimulus** — before the illness it did not cause nausea. Because the smell was present just before the person became ill, the smell (NS) was associated with the toxin (UCS). The smell has now become a **conditioned stimulus**, and the nausea it produces on its own is the **conditioned response**. Notably, this association formed after only **one**

pairing, which is common for conditioned taste aversions. ∴ the smell of prawns now triggers nausea as a learned, involuntary conditioned response.

Example 4 — unscaffolded

A student claims, “The dog *chose* to salivate at the bell, so this is a voluntary behaviour.” Evaluate this claim with reference to the features of classical conditioning.

The claim is **incorrect**. In classical conditioning the response is **reflexive and involuntary** — salivation is an automatic bodily response that the dog does not decide to produce. The dog did not choose to associate the bell with food; the association formed automatically through repeated pairing of the bell (NS) with food (UCS). Because the conditioned response (salivation to the bell) is the same involuntary reflex as the unconditioned response (salivation to food), it is not a chosen, voluntary action. ∴ the behaviour is an involuntary conditioned response, not a voluntary choice.

Practice questions

Scaffolded

- Q1.** Define each of the following in the context of classical conditioning: (a) unconditioned stimulus; (b) neutral stimulus; (c) conditioned response.
- Q2.** A baby cries (a reflexive fear response) at a sudden loud bang. A researcher repeatedly shows the baby a white toy rabbit just before making the loud bang. Eventually the baby cries at the sight of the rabbit alone. (a) Identify the UCS and the UCR. (b) Identify the NS. (c) Identify the CS and the CR.
- Q3.** For the scenario in **Q2**, describe what happens in each of the three phases (before, during and after conditioning).
- Q4.** Explain why the neutral stimulus and the conditioned stimulus in a classical-conditioning scenario are described as “the same stimulus at different stages”.
- Q5.** A perfume worn by someone at a happy celebration later triggers feelings of happiness whenever it is smelled. (a) Identify the conditioned stimulus. (b) Identify the conditioned response. (c) Explain why this is classified as classical conditioning rather than a voluntary behaviour.
- Q6.** During acquisition, explain the importance of (a) the *order* in which the NS and UCS are presented, and (b) *repetition* of the pairing.

Unscaffolded

- Q7.** Distinguish between an unconditioned response and a conditioned response. (2 marks)
- Q8.** At Rina’s school a chime sounds two minutes before the lunch break each day. After a few weeks, Rina notices that her mouth waters as soon as the chime sounds, and that she then packs up her books and walks to the canteen. Identify the NS/CS and the UCS, and explain which of Rina’s two responses classical conditioning can account for and which it cannot. (3 marks)
- Q9.** Explain why classical conditioning is described as a *behaviourist* approach to learning. (2 marks)
- Q10.** While gardening, a person hears a wasp buzzing around them for several seconds and is then stung by it (UCS), producing pain and fear (UCR). They now feel anxious whenever they hear buzzing near them. Using the three-phase process, explain how the fear of buzzing was learned. (4 marks)
- Q11.** Identify the element of classical conditioning that is *reflexive and present before any learning takes place*, and give an example.
- Q12.** Explain why the conditioned response is usually similar to, but not always identical with, the unconditioned response. (2 marks)
- Q13.** A student writes: “In Pavlov’s study the bell was the conditioned stimulus from the very beginning of the experiment.” Identify and correct the error in this statement. (2 marks)

Q14. A researcher pairs a flash of light with a mild electric shock to a rat's foot; the shock produces freezing (an involuntary fear response). After conditioning, the light alone produces freezing. (a) State what the light is *before* conditioning and what it becomes *after* conditioning; and name the shock, the freezing produced by the shock, and the freezing produced by the light, using the correct classical-conditioning terms. (b) State how the researcher would know that learning had occurred. (6 marks)

Q15. Explain why classical conditioning can only be used to explain the learning of *involuntary* responses, not voluntary behaviours such as a child tidying their room for pocket money. (2 marks)

Q16. Research scenario. A psychologist tests whether a neutral musical jingle can come to trigger thirst. Sixty adult volunteers are randomly allocated to two groups of thirty. Across ten trials, each participant in Group A eats a very salty cracker (which reliably makes people feel thirsty) while the jingle plays; each participant in Group B eats a plain, unsalted cracker (which does not make people thirsty) while the same jingle plays. The next day, every participant hears the jingle on its own and rates their thirst from 0 (not at all thirsty) to 10 (extremely thirsty). (a) Identify the UCS and the UCR for Group A. (b) Identify the conditioned stimulus and the conditioned response for Group A. (c) Identify the independent variable and the dependent variable in this investigation. (6 marks)

Q17. Compare the *before* and *after* conditioning phases in terms of which stimulus produces the response and whether the response is learned or innate. (3 marks)

Q18. Research scenario. A researcher investigates whether the number of pairings affects how strongly a conditioned response is learned. Sixty adult volunteers are randomly allocated to two groups. On each trial a blue square appears on a screen and is immediately followed by a brief burst of loud (but harmless) static through headphones, which reliably produces a startle response. Group A receives 5 pairings and Group B receives 20. Every participant is then shown the blue square on its own, and the strength of their startle response is rated from 0 (none) to 10 (very strong).

Group	Number of pairings	Mean startle rating to the square alone	Standard deviation
Group A	5	2.6	1.1
Group B	20	6.9	1.3

- Write a directional (one-tailed) hypothesis for this investigation that includes both levels of the independent variable and a directional dependent variable.
- With reference to the data, state which group showed the stronger conditioned response and explain the difference using the three-phase process.
- Name one ethical guideline the researcher must follow, given that participants are exposed to sudden loud noise, and state what it requires. (5 marks)

Q19. Extended response. "Classical conditioning explains how everyday emotional reactions can be learned." Using a classical-conditioning example of your own, explain the three-phase process and, with reference to the five elements, justify why the reaction is an involuntary conditioned response. (6 marks)

Answers

Q1. (a) A stimulus that reflexively produces a response with no prior learning. (b) A stimulus that does not produce the response of interest before conditioning. (c) The learned response produced by the CS alone. **Q2.** (a) UCS = loud bang; UCR = crying/fear. (b) NS = white toy rabbit. (c) CS = white toy rabbit; CR = crying/fear. **Q3.** Before: bang → crying; rabbit → no crying. During: rabbit shown just before the bang, repeatedly. After: rabbit alone → crying. **Q4.** They are the *same* physical stimulus (e.g. the rabbit); it is called the NS before it produces the response and the CS after learning has occurred. **Q5.** (a) CS = the perfume. (b) CR = feelings of happiness. (c) The emotional response is reflexive and involuntary and was learned by association, not chosen. **Q6.** (a) The NS must come *just before* the UCS so it can act as a signal for it. (b) Repetition strengthens the association so the NS reliably produces the response. **Q7.** A UCR is innate/reflexive and produced by the UCS; a CR is learned and produced by the CS. **Q8.** NS/CS = the chime; UCS = the food eaten at lunch. Classical conditioning explains the mouth watering (an involuntary CR to the chime); it cannot explain packing up and walking to the canteen, which is a voluntary action controlled by its consequences (operant conditioning). **Q9.** It explains learning through the association between observable stimuli and responses, without reference to internal mental processes. **Q10.** Before: wasp sting → pain/fear; buzzing → no fear. During: the buzzing is heard just before the sting. After: buzzing (CS) → anxiety/fear (CR). **Q11.** The unconditioned response — the reflexive response produced by the UCS with no prior learning, e.g. salivation to food. **Q12.** The CR is the same type of response but is often weaker than the UCR because it is produced by a signal (the CS) rather than the original biologically significant stimulus. **Q13.** Error: the bell was the *neutral stimulus* at the start; it only became the conditioned stimulus after repeated pairing with food. **Q14.** (a) light = NS (before) / CS (after); shock = UCS; freezing to shock = UCR; freezing to light = CR. (b) The light alone produces freezing. **Q15.** Because it acts only on automatic, reflexive responses; tidying for pocket money is a voluntary action controlled by its consequences (operant conditioning), not a reflex. **Q16.** (a) UCS = the salty cracker; UCR = thirst. (b) CS = the jingle; CR = the thirst produced by the jingle alone. (c) IV = whether the cracker eaten while the jingle played was salty or plain (i.e. whether the jingle was paired with a thirst-producing UCS); DV = the thirst rating (0–10) given to the jingle alone. **Q17.** Before: the UCS produces the response and it is innate; after: the CS produces the response and it is learned. **Q18.** (a) e.g. “It was hypothesised that adult volunteers who received 20 pairings of the blue square and the static would give a higher startle rating to the square alone than those who received 5 pairings.” (b) Group B (mean 6.9 versus 2.6); more pairings during conditioning build a stronger NS–UCS association, so the CS produces a stronger CR. (c) e.g. informed consent — participants must be told what the study involves, including the bursts of loud noise, before agreeing to take part. **Q19.** Model response given in the solutions.

Fully-worked solutions

Q1. (a) An **unconditioned stimulus** is a stimulus that consistently produces a particular reflexive response *without any learning* — for example, food producing salivation. (b) A **neutral stimulus** is a stimulus that, before conditioning, does not produce the response of interest (only, at most, an orienting reflex). (c) A **conditioned response** is the learned, involuntary response produced by the conditioned stimulus on its own.

Q2. (a) The **UCS** is the loud bang and the **UCR** is the crying/fear reaction it reflexively produces. (b) The **NS** is the white toy rabbit, which does not initially cause crying. (c) After repeated pairing, the rabbit is the **CS** and the crying/fear it now produces is the **CR**.

Q3. *Before conditioning:* the loud bang (UCS) produces crying (UCR); the rabbit (NS) produces no crying. *During conditioning:* the rabbit (NS) is presented just before the loud bang (UCS), repeatedly, each time producing crying. *After conditioning:* the rabbit alone (now the CS) produces crying (CR).

Q4. The neutral stimulus and the conditioned stimulus are literally the **same physical stimulus** (here, the toy rabbit). The label depends on the stage of learning: it is the **NS** before conditioning (when it does not produce the response) and the **CS** after conditioning (when, through association with the UCS, it does produce the response). The name changes; the stimulus does not.

Q5. (a) The **CS** is the perfume. (b) The **CR** is the feeling of happiness triggered by the perfume. (c) The happiness is an **involuntary emotional response** that was **learned by association** between the perfume (originally an NS) and the happy celebration (which naturally produced happiness). Because the response is reflexive and was not deliberately chosen, it is classical conditioning rather than a voluntary behaviour.

Q6. (a) The **order** matters because the NS must act as a **signal** that the UCS is coming; if the NS is presented *after* the UCS, it cannot reliably predict it and the association is weak or does not form. (b) **Repetition** is important because each pairing strengthens the association between the NS and the UCS, so that the NS (becoming the CS) more reliably produces the response.

Q7. An **unconditioned response** is *innate/reflexive* and is produced by the **unconditioned stimulus** with no learning (e.g. salivation to food). A **conditioned response** is *learned* and is produced by the **conditioned stimulus** (e.g. salivation to a bell). Both may be the same kind of behaviour, but they differ in whether the response is innate or learned and in which stimulus triggers it.

Q8. The NS/CS is the chime and the UCS is the food eaten at lunch, which reflexively produces salivation (the UCR). Because the chime has repeatedly sounded just before eating, it has become a **conditioned stimulus**, and the mouth watering it now produces on its own is the **conditioned response** — an automatic, **involuntary** reflex. Classical conditioning therefore accounts for the mouth watering. It does **not** account for packing up and walking to the canteen: that is a **voluntary**, goal-directed action, and classical conditioning acts only on reflexive responses. A voluntary behaviour performed because of the consequence that follows it (getting lunch) is explained by **operant** conditioning instead.

Q9. Classical conditioning is a **behaviourist** approach because it explains learning purely in terms of the **association between observable environmental stimuli and observable responses**, without appealing to internal mental processes such as thoughts or expectations.

Q10. *Before:* the wasp sting (UCS) produces pain and fear (UCR); the buzzing (NS) produces no fear. *During:* the buzzing is heard *just before* the sting, so the two become associated. *After:* the buzzing is now a **conditioned stimulus** and produces anxiety/fear as a **conditioned response**, even with no wasp present. The response is involuntary, so classical conditioning explains it.

Q11. The element present before any learning is the **unconditioned response** (produced by the **unconditioned stimulus**) — for example, **salivation** produced reflexively by **food**.

Q12. The conditioned response is the **same type** of reflexive response as the unconditioned response, but it is often **weaker**. This is because it is produced by a *signal* (the CS) that predicts the biologically significant stimulus, rather than by the original UCS itself.

Q13. The statement is **incorrect**. At the start of the experiment the bell was the **neutral stimulus** — it did not cause salivation. It only became the **conditioned stimulus** *after* it had been repeatedly paired with food (the UCS).

Q14. (a) light = NS (before) / CS (after); shock = UCS; freezing to the shock = UCR; freezing to the light = CR. (b) Learning has occurred when the **light alone** (without any shock) produces freezing — i.e. the CR appears in response to the CS on its own.

Q15. Classical conditioning works by attaching an existing **reflexive** response to a new stimulus, so it can only explain **involuntary** responses (salivation, fear, nausea, an eyeblink). Tidying a room for pocket money is a **voluntary** action that is strengthened by its **consequence** (the reward), which is *operant* conditioning, not classical conditioning.

Q16. (a) The UCS is the salty cracker and the UCR is the thirst it reliably produces without any learning. (b) For Group A the jingle began as a neutral stimulus and was repeatedly paired with the salty cracker, so it has become the CS; the CR is the thirst it produces when it is played on its own. (c) The **independent variable** is the type of cracker eaten while the jingle played — **salty** (Group A) or **plain** (Group B) — that is, whether the jingle was paired with a thirst-producing UCS. The **dependent variable** is the participants' **rated thirst (0–10)** when the jingle is played alone. Group B is the control condition: those participants hear the jingle just as often but never with a UCS, so if Group A rates its thirst higher, the difference can be attributed to the pairing rather than to hearing the jingle.

Q17. *Before conditioning*, the response is produced by the UCS and is **innate** (unlearned). *After conditioning*, the same response is produced by the CS and is **learned**. In both phases the observable behaviour is similar, but the triggering stimulus and the innate-versus-learned status differ.

Q18. (a) *Directional hypothesis:* "It was hypothesised that **adult volunteers who received 20 pairings** of the blue square and the burst of static would give a **higher** startle rating to the square alone than **adult volunteers who**

received 5 pairings.” (Both levels of the IV are named, and the DV is stated with a direction.) (b) **Group B** showed the stronger conditioned response, with a mean startle rating of **6.9** compared with **2.6** for Group A. *Before conditioning*, the static (UCS) produced a startle (UCR) while the blue square (NS) produced none. *During conditioning*, the square was presented just before the static, and each pairing strengthens the association — so Group B’s twenty pairings built a stronger association than Group A’s five. *After conditioning*, the square is a **CS** and the startle it produces on its own is the **CR**, which is stronger in Group B. The small standard deviations (1.1 and 1.3) show the ratings were fairly consistent within each group. (c) e.g. **Informed consent** — before agreeing to take part, volunteers must be given a clear explanation of what the study involves, including that they will hear sudden bursts of loud noise, so that their agreement is genuinely informed. (**Withdrawal rights** — participants may stop at any time without penalty — is equally acceptable.)

Q19. Model response (6 marks). A worked example is a person who becomes anxious at the smell of a dentist’s surgery. **Before conditioning**, the pain of dental drilling (UCS) reflexively produces anxiety and tension (UCR), while the antiseptic smell of the surgery (NS) produces no anxiety. **During conditioning**, the antiseptic smell is present just before and during the painful drilling, repeatedly across several visits, so the smell is associated with the pain. **After conditioning**, the antiseptic smell has become a **conditioned stimulus (CS)** and produces anxiety on its own — the **conditioned response (CR)** — even before any treatment begins. The reaction is an **involuntary conditioned response** because anxiety is a reflexive emotional and physiological response that the person does not choose to produce; it was learned automatically through the repeated association of the smell (NS → CS) with the pain (UCS), and the CR (anxiety to the smell) is the same involuntary response as the UCR (anxiety to the drilling). (*Full marks require: correct three-phase structure; correct use of all five elements; and an explicit justification that the response is involuntary/reflexive and learned by association.*)

Theory

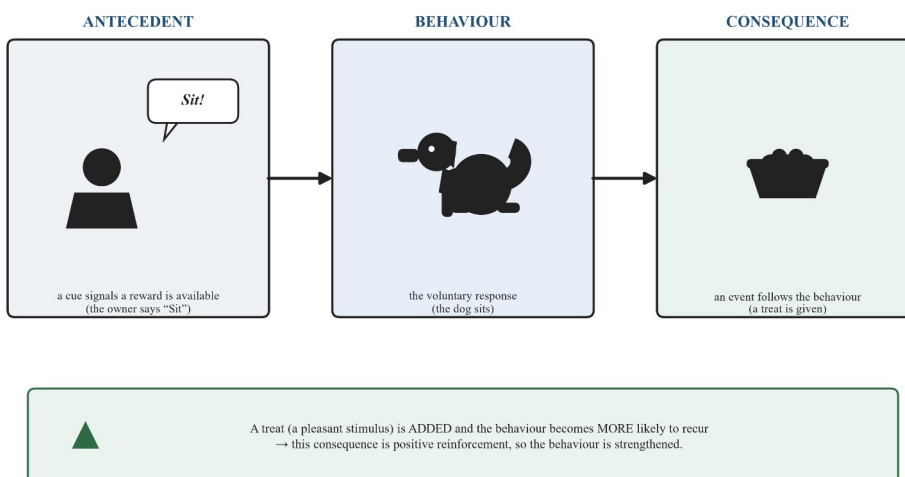
Operant conditioning is a form of learning in which the **consequences** of a **voluntary behaviour** determine the likelihood that the behaviour will be repeated. It was developed from Edward Thorndike's **law of effect** — behaviours followed by satisfying consequences tend to be repeated, while behaviours followed by unpleasant consequences tend not to be — and was later formalised by B. F. Skinner, who named the key processes of reinforcement and punishment.

A behaviourist approach. Operant conditioning is one of the two **behaviourist approaches to learning**. Behaviourist approaches explain learning entirely through the relationship between **observable behaviour** and **observable events in the environment**, without appealing to internal mental processes such as thoughts, expectations or mental representations. Operant conditioning is behaviourist because it explains a change in behaviour purely by what the environment does *after* that behaviour: a consequence that can be seen and measured either strengthens or weakens it. **Classical conditioning** is the other behaviourist approach, explaining learning through the association between observable stimuli.

Voluntary, not reflexive. The behaviour in operant conditioning is **voluntary**: it is *emitted* by the person or animal (they choose to perform it) and it “operates” on the environment to produce an effect. This is the key contrast with **classical conditioning**, which acts on **involuntary, reflexive** responses (salivation, an eyeblink, fear) that are automatically *elicited* by a stimulus. Another difference is *when* the important event occurs: in classical conditioning the key stimulus comes **before** the response and learning is by the association of stimuli; in operant conditioning the key event (the consequence) comes **after** the behaviour and determines whether it recurs.

The three-phase (three-term) process. Operant conditioning is analysed as **antecedent** → **behaviour** → **consequence** (often called the **ABC model**):

1. **Antecedent** — the stimulus, cue or situation present *before* the behaviour, which signals the likely consequences of acting (for example, a green traffic light, a teacher's question, or a parent being in the room).
2. **Behaviour** — the **voluntary response** the person or animal then performs (for example, pressing the accelerator, answering the question, or tidying up).
3. **Consequence** — the environmental event that *follows* the behaviour and either **increases** or **decreases** how likely the behaviour is to occur again.



The four types of consequence. Consequences are classified along two independent dimensions, giving a 2×2 table:

- **Reinforcement** always **increases** the future likelihood of the behaviour; **punishment** always **decreases** it.
- **Positive** means a stimulus is **ADDED**; **negative** means a stimulus is **REMOVED**. The words positive and negative refer *only* to adding or removing a stimulus — **not** to “good” or “bad”.

Combining the two dimensions gives the four consequences:

- **Positive reinforcement** — a **pleasant** stimulus is **added** after the behaviour, so the behaviour increases (for example, praise or a reward is given).
- **Negative reinforcement** — an **aversive** stimulus is **removed** after the behaviour, so the behaviour increases (for example, an annoying alarm stops).
- **Positive punishment** — an **aversive** stimulus is **added** after the behaviour, so the behaviour decreases (for example, extra chores are assigned).
- **Negative punishment** (also called **response cost**) — a **pleasant** stimulus is **removed** after the behaviour, so the behaviour decreases (for example, screen time is taken away).



Key features to keep straight.

- **Reinforcement (of either kind) always increases behaviour; punishment (of either kind) always decreases it.** Do not let the word “negative” trick you: **negative reinforcement is not punishment** — it *removes* something aversive and the behaviour goes *up*.
- The most common labelling error is confusing **positive** and **negative reinforcement**. Ask two questions in order: *Did the behaviour increase or decrease?* (reinforcement vs punishment), then *Was a stimulus added or removed?* (positive vs negative).
- Operant conditioning explains **voluntary** actions strengthened or weakened by their consequences (studying for a reward, a dog sitting for a treat); classical conditioning explains **involuntary** reflexes learned by association (salivating to a bell).

How to analyse a scenario. (1) Set out the **antecedent, behaviour and consequence**. (2) Ask whether the behaviour **increases** (reinforcement) or **decreases** (punishment). (3) Ask whether a stimulus is **added** (positive) or **removed** (negative). (4) Combine the two answers to name the consequence, and check the label against the effect on the behaviour.

Worked examples

Example 1 — scaffolded

During class discussion, a teacher hands a student a merit stamp each time the student contributes an idea. Over the following fortnight, students contribute ideas far more often. Identify the antecedent, behaviour and consequence, and name the type of consequence.

Working

Comment

Antecedent = the class discussion — the situation that

The antecedent is the cue present *before* the behaviour.

Working	Comment
signals contributing may be rewarded.	
Behaviour = a student contributes an idea (a voluntary action).	Operant behaviour is voluntary/emitted, not a reflex.
Consequence = a merit stamp is given — a pleasant stimulus is ADDED .	Identify what follows the behaviour and whether it is added or removed.
The behaviour increases → reinforcement; a stimulus was added → positive. So the consequence is positive reinforcement .	Increase = reinforcement; added = positive. Combine the two.

Example 2 — scaffolded

Whenever Mara has a pounding headache, she takes a paracetamol tablet and the pain goes away. She now reaches for paracetamol sooner and sooner at the first sign of a headache. Set out the ABC and name the type of consequence.

Working	Comment
Antecedent = the onset of a headache.	The antecedent is the situation present before the behaviour.
Behaviour = Mara takes a paracetamol tablet (a voluntary action).	A voluntary, emitted behaviour — operant, not reflexive.
Consequence = the pain (an aversive stimulus) is REMOVED .	Identify what follows and whether it is added or removed.
The behaviour increases → reinforcement; an aversive stimulus was removed → negative. So it is negative reinforcement — not punishment, because punishment would make the behaviour <i>decrease</i> .	Removed + increase = negative reinforcement. Pre-empt the punishment confusion.

Example 3 — unscaffolded

Explain how operant conditioning differs from classical conditioning with respect to the *type of behaviour* involved and *when* the key environmental event occurs. Use an original example of each.

In **operant conditioning** the behaviour is **voluntary** and is controlled by the **consequence that follows it** — for example, a child who is given praise for putting their toys away (a pleasant stimulus added after the behaviour) puts them away more often. In **classical conditioning** the response is **involuntary and reflexive** and is controlled by a **stimulus that comes before it** — for example, a child who was frightened by a loud clap of thunder comes to flinch automatically at a flash of lightning that reliably precedes it. So the two forms of learning differ in the *type of response* (voluntary and emitted vs involuntary and elicited) and in *when* the key event occurs (the consequence comes **after** the behaviour in operant conditioning, whereas the key stimulus comes **before** the response in classical conditioning). ∴ operant conditioning explains learned voluntary actions, while classical conditioning explains learned reflexive responses.

Example 4 — unscaffolded

A factory worker puts on ear-protectors and the painful roar of the machinery is blocked out; they now put the ear-protectors on the moment they arrive. A second worker is given a \$50 bonus each week they reach their production target, and they now reach the target more often. Name the consequence operating in each case and explain your reasoning.

For the **first worker**, an **aversive** stimulus (the painful noise) is **removed** after they put on the ear-protectors, and the behaviour **increases** — a stimulus is REMOVED and the behaviour INCREASES, so this is **negative reinforcement**. For the **second worker**, a **pleasant** stimulus (the \$50 bonus) is **added** after they reach the target, and the behaviour **increases** — a stimulus is ADDED and the behaviour INCREASES, so this is **positive reinforcement**. Both consequences *strengthen* the behaviour (both are reinforcement); they differ only in whether a stimulus was removed (negative) or added (positive). ∴ the first case is negative reinforcement and the second is positive reinforcement.

Practice questions

Scaffolded

- Q1.** Define each of the following in the context of operant conditioning: (a) reinforcement; (b) punishment; (c) what the terms “positive” and “negative” refer to.
- Q2.** Each time a puppy sits when its trainer says “Sit”, the trainer immediately gives it a small piece of chicken. The puppy now sits when asked far more often. For this scenario, identify the: (a) antecedent; (b) behaviour; (c) consequence.
- Q3.** For the scenario in **Q2**: (a) state whether the behaviour increases or decreases; (b) state whether a stimulus is added or removed; (c) name the type of consequence.
- Q4.** Explain what “positive” and “negative” mean in operant conditioning, and explain why they do **not** mean “good” and “bad”.
- Q5.** A parent nags their teenager to clean their room, and the nagging stops only once the room is clean. The teenager now cleans their room sooner to make the nagging stop. (a) Identify the aversive stimulus that is removed. (b) State whether the behaviour increases or decreases. (c) Name the type of consequence.
- Q6.** (a) State whether operant conditioning acts on voluntary or involuntary behaviour. (b) Using an example, explain how this differs from classical conditioning. (c) State whether the key environmental event (the consequence) occurs *before* or *after* the behaviour in operant conditioning.

Unscaffolded

- Q7.** Distinguish between reinforcement and punishment in operant conditioning. (2 marks)
- Q8.** A café stamps a customer’s loyalty card each time they buy a coffee, and ten stamps earn a free drink. The customer now buys coffee from that café more often. Identify the antecedent, behaviour and consequence, and name the type of consequence, justifying your answer. (6 marks)
- Q9.** Every time Devi puts on insect repellent before gardening, the mosquitoes stop biting her. She now applies repellent every single time she gardens. Name the type of consequence controlling Devi’s behaviour and justify your choice. (3 marks)
- Q10.** At swimming squad, any swimmer who talks while the coach is giving instructions is made to swim two extra laps. Talking during instructions quickly becomes rare. Name the type of consequence and justify your answer. (3 marks)
- Q11.** A teenager who is caught lying about where they have been has their weekend gaming time taken away. The lying becomes less frequent. Name the type of consequence and justify your answer. (3 marks)
- Q12.** A student writes: “When a soccer player is given an official warning (a yellow card) after a dangerous tackle, and then makes fewer dangerous tackles, the yellow card is negative reinforcement, because a card is something the player does not want.” Identify and correct the error in this statement. (3 marks)
- Q13.** Distinguish between negative reinforcement and negative punishment. (2 marks)
- Q14.** Each time Harper taps her pen loudly during study group, the other members make a loud shushing noise at her; Harper now taps her pen far less often. When Tova’s bike-helmet strap rubs painfully on her chin, she adjusts the strap and the rubbing stops; she now adjusts the strap as soon as she puts the helmet on. For **each** person, name the type of consequence and explain the reasoning by stating what happened to the *stimulus* and to the *behaviour*. (6 marks)
- Q15.** Explain the role of the **antecedent** in the three-phase process of operant conditioning, and explain why it is the *consequence*, not the antecedent, that determines whether the behaviour is repeated. Use an original example in your answer. (4 marks)
- Q16.** Evaluate the use of punishment as a method for decreasing an unwanted behaviour in a classroom. (4 marks)
- Q17. Research scenario.** A psychologist investigates whether praising primary-school children for reading increases the time they spend reading. In one class of 25 children, a teacher praises each child every time they are seen reading;

in another class of 25 children, no praise is given. After two weeks, the average daily reading time of each class is compared. (a) Identify the independent variable and the dependent variable. (b) Identify the sample and the population in this investigation. (c) Write a directional hypothesis that names both levels of the independent variable and the expected direction of the dependent variable. (7 marks)

Q18. Research scenario. Researchers test a way to reduce phone use during study. Group A loses five minutes of break time each time a student picks up their phone; Group B has no consequence. The table shows the mean phone use per hour of study.

Group	Consequence	Mean phone use (min/hour)	SD
A	5 min of break lost per pick-up	4.2	1.1
B	none	11.8	2.0

- Name the type of consequence used with Group A.
- Using the data, state whether the consequence reduced phone use, and give one reason to be cautious before concluding that the consequence *caused* the difference.
- Name one ethical consideration the researchers must address. (4 marks)

Q19. Explain why operant conditioning is described as a *behaviourist* approach to learning. (2 marks)

Q20. Extended response. A netball coach wants players to (i) call for the ball more often and (ii) stop stepping (a rule violation) during games. Using operant conditioning, explain how the coach could change **each** behaviour. In your answer, refer to the three-phase (antecedent–behaviour– consequence) process, and name and describe the effect of the type of consequence you would use for each behaviour. (6 marks)

Answers

Q1. (a) A consequence that increases the likelihood a behaviour recurs. (b) A consequence that decreases the likelihood a behaviour recurs. (c) Positive = a stimulus is added; negative = a stimulus is removed (not good/bad). **Q2.** (a) Antecedent = the trainer saying “Sit”. (b) Behaviour = the puppy sits. (c) Consequence = a piece of chicken is given. **Q3.** (a) Increases. (b) Added. (c) Positive reinforcement. **Q4.** Positive = a stimulus is added, negative = a stimulus is removed; they describe adding vs removing a stimulus, not whether the outcome is desirable. **Q5.** (a) The nagging. (b) Increases. (c) Negative reinforcement. **Q6.** (a) Voluntary. (b) Classical conditioning acts on involuntary/reflexive responses (e.g. salivation to a bell). (c) After. **Q7.** Reinforcement increases the likelihood of a behaviour; punishment decreases it. **Q8.** A = being at the café (holding the loyalty card) — the cue present before the behaviour; B = buying a coffee; C = a stamp is added, moving toward a free drink → positive reinforcement. **Q9.** Negative reinforcement — an aversive stimulus (mosquito bites) is removed and the behaviour increases. **Q10.** Positive punishment — an aversive stimulus (two extra laps) is added and the behaviour decreases. **Q11.** Negative punishment (response cost) — a pleasant stimulus (gaming time) is removed and the behaviour decreases. **Q12.** Error: it is positive punishment, not negative reinforcement; the aversive yellow card is added (positive) and dangerous tackles decrease (punishment). **Q13.** Both remove a stimulus; negative reinforcement removes an aversive stimulus and behaviour increases, negative punishment removes a pleasant stimulus and behaviour decreases. **Q14.** Harper = positive punishment (aversive shushing added, behaviour decreases); Tova = negative reinforcement (aversive rubbing removed, behaviour increases). **Q15.** The antecedent is the cue or situation before the behaviour that signals the likely consequence, so it sets the occasion for the behaviour; the consequence follows the behaviour and is what increases or decreases its future likelihood. **Q16.** Strength: can rapidly suppress an unwanted behaviour. Limitation: does not teach a desirable alternative and may cause fear/resentment. Judgement: use sparingly and pair with reinforcement of a desired behaviour. **Q17.** (a) IV = whether praise is given; DV = daily reading time. (b) Sample = the 50 children; population = primary-school children. (c) “It is hypothesised that primary-school children who are praised each time they are seen reading will spend more time reading per day than primary-school children who are not praised.” **Q18.** (a) Negative punishment (response cost). (b) Yes — 4.2 vs 11.8 min/hour; but we are not told that students were randomly allocated or that other variables were controlled, so cause is not certain. (c) e.g. informed consent. **Q19.** It explains learning only through observable behaviour and the observable environmental consequences that follow it, without reference to internal mental processes. **Q20.** Model response given in the solutions.

Fully-worked solutions

Q1. (a) **Reinforcement** is any consequence that **increases** the likelihood that a behaviour will be repeated. (b) **Punishment** is any consequence that **decreases** the likelihood that a behaviour will be repeated. (c) **Positive** means a stimulus is **added** after the behaviour and **negative** means a stimulus is **removed** after the behaviour; the terms describe adding versus removing a stimulus, not whether the stimulus is “good” or “bad”.

Q2. (a) The **antecedent** is the trainer giving the cue “Sit” (the situation that signals a treat is available). (b) The **behaviour** is the puppy sitting — a voluntary action. (c) The **consequence** is the piece of chicken that is given immediately afterwards.

Q3. (a) The behaviour **increases** (the puppy sits more often). (b) A stimulus (the chicken) is **added**. (c) An increase produced by adding a pleasant stimulus is **positive reinforcement**.

Q4. In operant conditioning, **positive** means a stimulus is **added** after the behaviour and **negative** means a stimulus is **removed** after the behaviour. They do **not** mean “good” and “bad”: for example, in *negative reinforcement* something unpleasant (an aversive stimulus) is taken away, and in *positive punishment* something unpleasant is added. The plus/minus labels refer only to whether a stimulus is presented or taken away, while whether the behaviour goes up or down is determined separately by whether the consequence is reinforcement or punishment.

Q5. (a) The aversive stimulus that is removed is the **parent’s nagging**. (b) The behaviour (cleaning the room) **increases** — the teenager cleans up sooner. (c) Because an aversive stimulus is **removed** and the behaviour **increases**, this is **negative reinforcement**. (Note it is not punishment: the behaviour goes up, not down.)

Q6. (a) Operant conditioning acts on **voluntary** behaviour — actions the person or animal chooses to emit. (b) This differs from **classical conditioning**, which acts on **involuntary, reflexive** responses that are automatically elicited by a stimulus — for example, salivating to a bell that has been paired with food, or flinching at a sound associated with

pain. (c) In operant conditioning the key environmental event — the **consequence** — occurs **after** the behaviour and determines whether it is repeated.

Q7. Reinforcement is a consequence that **increases** the future likelihood of the behaviour it follows, whereas **punishment** is a consequence that **decreases** the future likelihood of the behaviour it follows. Both can involve either adding or removing a stimulus; they are distinguished by their **effect on the behaviour** — reinforcement strengthens it, punishment weakens it.

Q8. The **antecedent** is being at the café — the cue or situation present *before* the behaviour (for example, seeing the café or holding the loyalty card); the **behaviour** is the customer **buying a coffee** (a voluntary action); the **consequence** is a **stamp being added** to the loyalty card, bringing a free drink closer. Because a **pleasant stimulus is added** and the behaviour (buying coffee there) **increases**, this is **positive reinforcement**.

Q9. This is **negative reinforcement**. When Devi applies repellent, the **aversive** stimulus (being bitten by mosquitoes) is **removed**, and as a result the behaviour of applying repellent **increases** (she now does it every time). A stimulus is **removed** and the behaviour **increases**, which is the definition of negative reinforcement. It is not punishment, because the behaviour goes up, not down.

Q10. This is **positive punishment**. After a swimmer talks during instructions, an **aversive** stimulus (two extra laps) is **added**, and as a result the behaviour of talking **decreases**. A stimulus is **added** and the behaviour **decreases**, which is positive punishment.

Q11. This is **negative punishment** (also called **response cost**). After the teenager lies, a **pleasant** stimulus (their weekend gaming time) is **removed**, and as a result the behaviour of lying **decreases**. A stimulus is **removed** and the behaviour **decreases**, which is negative punishment.

Q12. The statement is **incorrect**. The yellow card is **positive punishment**, not negative reinforcement. The reasoning: the card is an **aversive** stimulus that is **added** after the tackle, and “positive” refers only to a stimulus being **added** — not to the consequence being pleasant — so this consequence is *positive*, not negative. The player then makes **fewer** dangerous tackles, so the behaviour **decreases**, which makes the consequence **punishment**, not reinforcement (reinforcement always makes a behaviour **increase**). The student has made two errors at once: using “negative” to mean “unpleasant”, and calling a consequence “reinforcement” when it weakens the behaviour.

Q13. Both **negative reinforcement** and **negative punishment** involve **removing a stimulus**. They differ in *which* kind of stimulus is removed and in their *effect on the behaviour*: in **negative reinforcement** an **aversive** stimulus is removed and the behaviour **increases**; in **negative punishment** a **pleasant** stimulus is removed (a response cost) and the behaviour **decreases**.

Q14. Harper: an **aversive** stimulus (the loud shushing) is **added** after she taps her pen, and the behaviour **decreases** (she now taps far less often) — a stimulus is ADDED and the behaviour DECREASES, so this is **positive punishment**. **Tova:** an **aversive** stimulus (the painful rubbing of the strap) is **removed** after she adjusts it, and the behaviour **increases** (she now adjusts the strap as soon as she puts the helmet on) — a stimulus is REMOVED and the behaviour INCREASES, so this is **negative reinforcement**. Both cases involve an **aversive** stimulus, so neither can be labelled from the stimulus alone: they differ in whether that stimulus is added (Harper) or removed (Tova), and therefore in whether the behaviour goes down (punishment) or up (reinforcement).

Q15. The **antecedent** is the stimulus, cue or situation that is present *before* the behaviour and that **signals what consequence is likely** if the behaviour is performed; it therefore **sets the occasion** for the behaviour rather than strengthening or weakening it. For example, a “Staff wanted” sign in a shop window is an **antecedent**: it signals that asking about work (the **behaviour**) may pay off, so a student is far more likely to go in and ask when the sign is displayed than when it is not. The **consequence** is the event that *follows* the behaviour — here, the manager taking the student’s details and offering a trial shift, a **pleasant stimulus added**, so asking about work **increases** (positive reinforcement). It is this consequence that changes the future likelihood of the behaviour, because operant learning is driven by what the environment does *after* the behaviour. The antecedent only tells the learner **when** the behaviour is likely to produce that consequence: if the manager had instead turned the student away, the same sign would soon stop prompting the behaviour.

Q16. Strength: punishment can **rapidly reduce or suppress** an unwanted classroom behaviour, which may be important if the behaviour is disruptive or unsafe. **Limitation:** punishment only **suppresses** the behaviour and does **not**

teach or strengthen a desirable alternative; it can also produce **fear, anxiety or resentment** toward the teacher, and the behaviour often returns once the punisher is absent. *Judgement*: therefore punishment should be used **sparingly** and is most effective when **combined with reinforcement of a desirable alternative behaviour**, so the student learns what to do instead rather than only what to avoid.

Q17. (a) The **independent variable** is whether the children are praised for reading (praise vs no praise); the **dependent variable** is the **daily time spent reading**. (b) The **sample** is the 50 children who took part; the **population** is primary-school children (the wider group the researcher wants to draw a conclusion about). (c) *Directional hypothesis*: “It is hypothesised that primary-school children who are **praised** each time they are seen reading will spend **more** time reading per day than primary-school children who are **not praised**.” (This names both levels of the IV — praise and no praise — and gives the expected direction of the DV — more reading.)

Q18. (a) Group A experiences **negative punishment** (response cost): a pleasant stimulus (break time) is removed each time they pick up the phone. (b) **Yes**, the consequence appears to have reduced phone use: Group A used their phone for only **4.2 min/hour** on average, compared with **11.8 min/hour** for Group B, a large difference relative to the standard deviations. However, we should be **cautious** about concluding the consequence *caused* the difference, because we are not told that students were **randomly allocated** to the groups or that other variables (such as motivation or study difficulty) were controlled — a confounding variable could explain some of the difference. (c) The researchers must address an ethical consideration such as obtaining **informed consent** (and, for school students, consent from parents/guardians), or ensuring **confidentiality** of each student’s data.

Q19. Operant conditioning is a **behaviourist** approach because it explains learning entirely in terms of **observable behaviour** and the **observable events in the environment** that follow it: a consequence that can be seen and measured either increases or decreases the future likelihood of the behaviour. It makes no appeal to **internal mental processes** such as thoughts, expectations or mental representations — everything the explanation needs is contained in the observable antecedent, behaviour and consequence.

Q20. *Model response (6 marks).* Operant conditioning changes a **voluntary** behaviour through its **consequences**, analysed as **antecedent** → **behaviour** → **consequence**. (i) **To increase calling for the ball**: the **antecedent** is a game or training situation in which a player becomes free; the **behaviour** is the player calling for the ball; the coach then delivers a **consequence** by **praising** the player (and awarding a point toward a team reward). Because a **pleasant stimulus is added** and the behaviour **increases**, this is **positive reinforcement**, so calling for the ball becomes more frequent. (ii) **To decrease stepping**: the **antecedent** is a game situation with the ball; the **behaviour** is the player stepping (the rule violation); the coach then delivers a **consequence** by **removing** the player from the court for two minutes, taking away desirable playing time. Because a **pleasant stimulus is removed** and the behaviour **decreases**, this is **negative punishment** (a response cost), so stepping becomes less frequent. In both cases the **antecedent** sets the occasion for the behaviour, and it is the **consequence** delivered afterwards that changes how often the behaviour occurs. (*Full marks require: the three-phase structure applied to each behaviour; one correctly named and justified reinforcement that increases the target behaviour; and one correctly named and justified punishment that decreases the unwanted behaviour.*)

Chapter 5 Approaches to understand learning — 5C The social-cognitive approach: observational learning

Theory

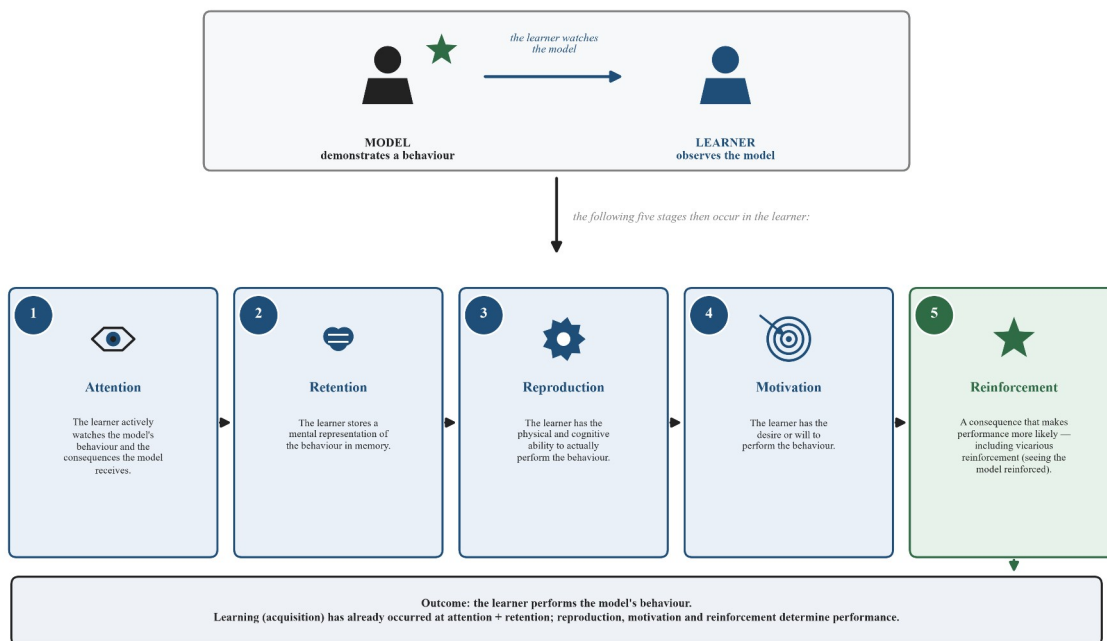
Learning is a relatively permanent change in behaviour or knowledge that results from experience. The **social-cognitive approach** explains learning as an interaction between a person's thinking (cognition) and their social environment: people learn not only from their own direct experience but also by watching other people. Its central process is **observational learning**.

Observational learning (also called **vicarious learning**) is learning that occurs by **watching a model** perform a behaviour, and observing the **consequences the model receives**, and then imitating that behaviour. Because the learner can acquire a behaviour without personally performing it or being directly rewarded, observational learning is *vicarious* — the learner benefits from the model's experience. A **model** is the person (or character) whose behaviour is observed; models may be **live** (a parent, teacher, coach, peer) or **symbolic** (a person on screen or in a story).

The five stages (conditions). For a behaviour to be both learned and later performed through observation, **all five** of the following conditions must be met. They are listed in the order in which they usually occur, and it is best to work through them in that order — but a later condition can be satisfied while an earlier one is not (a learner can be highly motivated, for example, and still lack the ability to reproduce the behaviour):

1. **Attention.** The learner must **actively watch and focus on** the model's behaviour **and the consequences the model receives** for it. If the learner is distracted and does not notice the relevant features of the behaviour, nothing is acquired.
2. **Retention.** The learner must **make and store a mental representation** of the observed behaviour in memory, so that it can be retrieved later. Without retention, the behaviour cannot be reproduced at a later time, even if it was attended to.
3. **Reproduction.** The learner must have the **physical and mental (cognitive) ability to actually perform** the behaviour. A learner may have attended and retained, yet still be unable to reproduce a behaviour that is beyond their current physical maturation or skill.
4. **Motivation.** The learner must have the **desire or incentive (the will) to perform** the behaviour. A learner may be fully able to reproduce a behaviour but choose not to unless there is a reason to.
5. **Reinforcement.** A **consequence that increases the likelihood** that the behaviour will be performed. Reinforcement provides the motivation to perform and can take three forms:
 - **external reinforcement** — the *learner* is directly reinforced for performing the behaviour;
 - **vicarious reinforcement** — the learner *observes the model being reinforced*, which makes the learner more likely to imitate the behaviour (and, conversely, seeing the model punished — **vicarious punishment** — makes imitation *less* likely);
 - **self-reinforcement** — the learner *reinforces themselves* (e.g. a feeling of pride) for performing the behaviour to a standard they set for themselves.

Observational learning (the social-cognitive approach)



All five conditions are needed for a behaviour to be both **learned and performed**. If any one condition is not met, the behaviour may not be acquired, or (more often) may be acquired but not demonstrated.

Learning versus performance. A key idea of the social-cognitive approach is that **learning (acquisition) and performance are not the same thing**. A learner **acquires** a behaviour once they have **attended** to it and **retained** a mental representation of it — the behaviour has been learned even if the learner never carries it out. Whether the learned behaviour is actually **performed** then depends on the learner being **able to reproduce** it, being **motivated** to do so, and there being **reinforcement** to make performance likely. This is why a person can *know how* to do something (they have learned it) yet not do it — for example, because they lack the incentive. Observational learning therefore separates the **acquisition** of a behaviour from its later **performance**.

Key features to keep straight.

- The learner does **not** have to perform the behaviour, and does **not** have to be **directly reinforced**, in order to learn it — watching the model, and the **consequences the model receives**, is enough. This distinguishes observational learning from operant conditioning, where the learner's *own* behaviour is shaped by its *own* consequences through trial and error.
- Vicarious reinforcement** works on the *learner* through the *model's* consequences: the learner is more likely to imitate a behaviour they have seen rewarded in someone else, and less likely to imitate one they have seen punished.
- Motivation and reinforcement are related but distinct.** Motivation is the learner's internal desire to perform; reinforcement is the **consequence** that *produces or raises* that motivation.
- A learner is more likely to **attend to** and **imitate** a model who is admired, of high status, rewarded, or **similar to themselves**.
- Two wordings examiners insist on.** When describing **Attention**, say the learner attends to the model's behaviour **and the consequences the model receives** — naming the behaviour alone is marked as incomplete. When describing **Retention**, say the learner stores a **mental representation** of the behaviour — "mental image" or "visual representation" is not accepted in its place.
- The social-cognitive approach is most closely associated with **Bandura**. In a well-known demonstration, children who watched an adult behave in a particular way toward a toy later imitated that behaviour — and did so more when they had seen the adult **rewarded** rather than punished, illustrating **vicarious reinforcement**.

How to analyse a scenario. (1) Identify the **model** (who is watched) and the **learner** (who watches). (2) Check each of the five stages **in order** — did the learner *attend*, *retain*, have the *ability to reproduce*, feel *motivated*, and was

there *reinforcement* (external, vicarious or self)? (3) If the behaviour was not performed, name the **stage that failed** — and remember that the stages *after* it can still have been met, so state which conditions **were** satisfied as well. (4) Keep **learning** (attention + retention) separate from **performance** (which also needs reproduction, motivation and reinforcement).

Worked examples

Example 1 — scaffolded

A younger netball player, Priya, watches her older teammate Talia repeatedly sink a long shot in training, and hears the coach praise Talia each time. Priya watches closely, goes over the technique in her mind afterwards, has the strength and coordination to attempt it, wants to be praised too, and later tries the shot in her own game. Identify each of the five stages of observational learning in this scenario.

Working	Comment
Priya watches Talia closely as she shoots and hears the coach praise her → Attention .	Attention covers both the model's behaviour <i>and</i> the consequences it brings — noticing the praise is part of attending.
Afterwards Priya goes over the technique in her mind , storing it in memory → Retention .	The learner stores a mental representation of the behaviour so it can be retrieved later.
Priya has the strength and coordination to attempt the shot → Reproduction .	The learner must be physically and mentally able to perform it.
Priya wants to be praised too , so she is willing to try → Motivation .	The desire/incentive to perform the behaviour.
Priya saw Talia praised by the coach, making her more likely to imitate → Reinforcement (vicarious) .	The consequence the <i>model</i> received raises the <i>learner's</i> likelihood of performing.

Example 2 — scaffolded

Liam watches a short online video showing how to fold a paper crane. He is looking at his phone at the same time and misses several of the folds. When he tries the craft later he cannot complete it. Using the five stages, explain why Liam did not learn to fold the crane, and identify the stage that failed.

Working	Comment
Liam was looking at his phone and missed several folds → Attention was not met .	Check the stages in order; find the <i>first</i> one that failed.
Because he did not attend to all the steps, he could not form a complete mental representation → Retention is incomplete as a <i>result</i> .	Retention depends on attention; a gap in attention leaves a gap in the stored representation.
Folding paper is within his physical ability and he was willing to try → Reproduction and Motivation were <i>not</i> the problem.	Rule the later stages in or out to isolate the true cause.
Conclusion: the behaviour was not acquired because Attention failed at the first stage.	Name the single condition that was not met, linked to the scenario.

Example 3 — unscaffolded

Explain the difference between *learning* and *performance* in observational learning, and give an example of a behaviour that has been learned but is not performed.

In observational learning, a behaviour is **learned (acquired)** once the learner has **attended** to the model and **retained** a mental representation of the behaviour — it is stored and could be produced. A behaviour is **performed** only when the learner also has the **ability to reproduce** it, is **motivated**, and there is **reinforcement** making performance likely. Because acquisition and performance are separate, a learner can know how to do something without doing it. For example, a student who has watched a classmate correctly set out a lab report has **learned** the format (attended and retained it), but does not **perform** it in their own work because they see no incentive to — the learning is present, but

the motivation to perform is absent. ∴ learning refers to the *acquisition* of a behaviour, while performance refers to actually *carrying it out*, and the two do not always occur together.

Example 4 — unscaffolded

A student claims: “Observational learning is really just operant conditioning, because both depend on reinforcement.” Evaluate this claim.

The claim has **some basis but is incorrect overall**. It is true that **reinforcement** features in both: in operant conditioning the learner’s *own* behaviour is strengthened by its *own* consequence, and in observational learning reinforcement (external, vicarious or self) affects whether an observed behaviour is performed. However, the two differ in a crucial way. In **operant conditioning** the learner must **perform the behaviour themselves** and experience its consequence, learning gradually through **trial and error**. In **observational learning** the learner can **acquire the behaviour by watching a model**, *without performing it first and without being directly reinforced* — the **consequences the model receives** (vicarious reinforcement) can be enough. Observational learning also relies on internal **cognitive** processes (attention and retention), which the behaviourist operant account does not emphasise. ∴ although both involve reinforcement, observational learning is not simply operant conditioning, because learning can occur by observing a model rather than through the learner’s own reinforced actions.

Practice questions

Scaffolded

Q1. Define each of the following in the context of the social-cognitive approach: (a) observational learning; (b) a model; (c) vicarious reinforcement.

Q2. A child, Noah, watches his older sister say “please” and “thank you” at dinner and sees their parent smile warmly at her each time. For each description below, name the stage of observational learning it illustrates: (a) Noah watches his sister closely as she speaks politely. (b) Noah forms and stores a memory of the polite words she used. (c) Noah sees his sister receive a warm smile, making him more likely to copy her.

Q3. A trainee barista, Mia, learns to make a coffee by watching an experienced colleague. She watches carefully, remembers the steps, has the manual skill to do it, wants to keep her new job, and is praised by her manager the first time she succeeds. (a) Identify the stage shown when Mia “has the manual skill to do it”. (b) Identify the stage shown when Mia “wants to keep her new job”. (c) State whether the praise from her manager is external, vicarious or self-reinforcement, and justify your choice.

Q4. Observational learning separates learning from performance. (a) State which two stages are sufficient for a behaviour to be *learned* (acquired). (b) State the three further stages needed for the learned behaviour to be *performed*. (c) Explain how a behaviour can be learned but not performed.

Q5. Reinforcement in observational learning can take three forms. (a) Describe external reinforcement, with an example. (b) Describe vicarious reinforcement, with an example. (c) Describe self-reinforcement, with an example.

Q6. Jordan watches a video of a skateboarder land a difficult trick and is determined to copy it. Jordan pays close attention, clearly remembers the movements, and is highly motivated, but is a complete beginner and physically cannot yet perform the trick, so falls each time. (a) State which stages Jordan has met. (b) Identify the single stage that has *not* been met. (c) Suggest one change that would allow Jordan to eventually perform the trick.

Unscaffolded

Q7. A road-safety campaign wants young drivers to imitate the safe driving behaviour shown by a person in a short film. Identify **two** characteristics of that person, as a model, that would make young drivers more likely to attend to and imitate them. (2 marks)

Q8. For each of the following, name the stage of observational learning that is being described. (a) A learner stores a mental representation of the steps so they can recall them next week. (b) A learner focuses closely on exactly how the model grips the tool. (c) A learner has the incentive and desire to carry out the behaviour. (d) A learner is physically

and mentally capable of carrying out the behaviour. (e) A learner is more likely to imitate a behaviour after seeing the model rewarded for it. (5 marks)

Q9. Distinguish between vicarious reinforcement and self-reinforcement, giving an example of each. (4 marks)

Q10. A new employee, Sam, learns the correct way to greet customers by watching a senior colleague, Ava, who is thanked by the manager for her friendly manner. Sam watches Ava closely, remembers her approach, is able to greet customers in the same way, wants the manager's approval, and later greets customers exactly as Ava did. Using all five stages, explain how Sam learned and performed this behaviour through observation. (5 marks)

Q11. During a cooking class, Ella watches the teacher knead dough, remembers the technique, and is physically able to do it, but sees no reason to bother and does not attempt it at home. Identify the stage of observational learning that was **not** met, and justify your answer with reference to the scenario. (3 marks)

Q12. A student watches a peer confidently answer a question in class and be praised by the teacher. The student was watching closely at the time, is able to speak up in class, and would like the same praise — but when the teacher asks a similar question a week later, the student cannot recall how the peer had structured their answer, and so says nothing. Identify the stage that failed **on this occasion**, and explain why the other stages were not the problem. (3 marks)

Q13. Explain why, in observational learning, a learner does **not** have to perform a behaviour or be **directly** reinforced in order to learn it. (3 marks)

Q14. Contrast observational learning with operant conditioning as explanations of how a new behaviour is acquired. (4 marks)

Q15. Explain how the **consequences a model receives** can influence whether a learner performs an observed behaviour. In your answer, refer to both vicarious reinforcement and vicarious punishment. (4 marks)

Q16. Research scenario. A psychologist investigates whether the consequence a model receives affects imitation in children. Ninety primary-school children each watch a short film of an adult stacking blocks in an unusual pattern. Half the children (Group A) see the adult praised at the end of the film; the other half (Group B) see the adult scolded. Each child is then observed alone with the blocks, and the number of times they copy the unusual pattern is recorded. (a) Identify the independent variable and the dependent variable. (b) Identify the population of interest. (c) Name one ethical consideration the psychologist must address, given that the participants are children. (4 marks)

Q17. Research scenario (continued). The results of the investigation in **Q16** are shown below.

Group (model's consequence)	Mean number of imitations	Standard deviation
Group A (model praised)	6.8	1.4
Group B (model scolded)	2.1	1.2

- (a) State which group imitated the behaviour more.
- (b) With reference to vicarious reinforcement, explain the difference between the two groups.
- (c) Write a directional (one-tailed) hypothesis for this investigation that includes both levels of the independent variable and a directional dependent variable. (5 marks)

Q18. A gymnast, Ruby, sets herself the goal of holding a handstand for ten seconds after watching an online tutorial. When she finally succeeds, she feels a rush of pride and is more likely to keep practising. Identify the type of reinforcement involved and explain how it fits the definition. (3 marks)

Q19. A student writes: "Because the toddler watched an adult use a spoon, the toddler has definitely learned *and* will definitely perform that behaviour." Identify **two** reasons this statement is too strong, with reference to the five stages. (2 marks)

Q20. Extended response. Using an example of your own, explain the five stages of observational learning in order, and use your example to distinguish between learning and performance. Identify which stages relate to each. (6 marks)

Answers

Q1. (a) Learning that occurs by watching a model perform a behaviour and observing its consequences, then imitating it. (b) The person (or character) whose behaviour is observed and may be imitated. (c) When a learner becomes more likely to imitate a behaviour after observing the *model* being reinforced for it. **Q2.** (a) Attention. (b) Retention. (c) Reinforcement (vicarious). **Q3.** (a) Reproduction. (b) Motivation. (c) External reinforcement — Mia (the learner) is directly reinforced (praised) for her own behaviour. **Q4.** (a) Attention and retention. (b) Reproduction, motivation and reinforcement. (c) The behaviour is acquired (attended to and retained) but not carried out because the learner is unable to reproduce it, is not motivated, and/or there is no reinforcement to prompt performance. **Q5.** (a) The learner is directly reinforced for performing (e.g. praised for tidying up). (b) The learner sees the model reinforced and becomes more likely to imitate (e.g. seeing a sibling praised for tidying). (c) The learner reinforces themselves for meeting their own standard (e.g. feeling proud after tidying). **Q6.** (a) Attention, retention and motivation. (b) Reproduction. (c) Practise / build the physical skill and strength over time so he becomes able to reproduce the trick. **Q7.** Any two of: the model is **similar to** the young drivers (e.g. a driver of about their own age); the model is **admired** or of **high status**; the model is seen being **rewarded** for the behaviour. **Q8.** (a) Retention. (b) Attention. (c) Motivation. (d) Reproduction. (e) Reinforcement (vicarious). **Q9.** Vicarious reinforcement: the learner imitates more after seeing the *model* reinforced (e.g. seeing a classmate praised). Self-reinforcement: the learner reinforces *themselves* for meeting their own standard (e.g. pride after succeeding). They differ in the *source* of the reinforcement (the model's consequence vs the learner's own internal reward). **Q10.** Attention (watches Ava closely and notices the manager thanking her); Retention (remembers her approach); Reproduction (able to greet the same way); Motivation (wants the manager's approval); Reinforcement (vicarious — seeing Ava thanked makes Sam more likely to imitate, and he then greets customers the same way). **Q11.** Motivation was not met — Ella attended, retained and could reproduce the behaviour, but had no desire/incentive to perform it, so she did not. **Q12.** Retention failed on this occasion — a week later the student could not recall how the peer had structured their answer. Attention, reproduction and motivation were all present (they watched closely, could speak up, and wanted the praise), so the only condition not met this time was retention. **Q13.** Because observed behaviour is acquired through attention and retention (watching the model and storing it in memory); the learner can be influenced by the consequences the *model* receives (vicarious reinforcement), so the learner's own performance and own direct reinforcement are not required for learning. **Q14.** In operant conditioning the learner performs the behaviour themselves and it is shaped by its own consequences through trial and error; in observational learning the learner acquires the behaviour by watching a model, without performing it first or being directly reinforced, and relies on cognitive processes (attention, retention). **Q15.** Seeing the model reinforced (vicarious reinforcement) makes the learner *more* likely to perform the behaviour; seeing the model punished (vicarious punishment) makes the learner *less* likely to perform it — the model's consequence supplies the learner's motivation. **Q16.** (a) IV = the consequence the model receives (praised vs scolded); DV = the number of times the child imitates the unusual pattern. (b) Primary-school children. (c) Informed consent from parents/ guardians (also acceptable: protection from harm/distress, confidentiality, right to withdraw). **Q17.** (a) Group A (model praised). (b) Group A saw the model reinforced (vicarious reinforcement), so they were more motivated to imitate; Group B saw the model scolded (vicarious punishment), reducing imitation. (c) "It was hypothesised that primary-school children who saw the adult model *praised* would imitate the unusual pattern *more times* than children who saw the adult model *scolded*." **Q18.** Self-reinforcement — Ruby's own feeling of pride (an internal reward she gives herself for meeting her own goal) makes her more likely to keep performing the behaviour. **Q19.** (1) Watching alone (attention) does not guarantee the behaviour was **retained**, so it is not certain it was even learned (learning needs attention *and* retention). (2) Even if learned, it may not be *performed* — performance also needs the ability to reproduce it, motivation and reinforcement; learning does not guarantee performance. **Q20.** Model response given in the solutions.

Fully-worked solutions

Q1. (a) **Observational learning** (vicarious learning) is learning that occurs by **watching a model** perform a behaviour and observing the **consequences** the model receives, and then imitating it — without the learner needing to perform the behaviour first or be directly reinforced. (b) A **model** is the **person or character whose behaviour is observed** and may be imitated (e.g. a parent, coach, peer or on-screen character). (c) **Vicarious reinforcement** occurs when a learner becomes **more likely to imitate** a behaviour after **observing the model being reinforced** for it.

Q2. (a) Attention — Noah actively watches his sister's behaviour, and the warm smile she receives for it; attending covers the modelled behaviour *and* its consequences. (b) **Retention** — Noah forms and stores a **mental representation** of the polite words. (c) **Reinforcement (vicarious)** — Noah observes his sister being reinforced (the warm smile), which makes him more likely to imitate her.

Q3. (a) Reproduction — having the manual (physical/mental) skill to actually perform the behaviour. (b) **Motivation** — the desire/incentive to perform (wanting to keep her job). (c) The praise is **external reinforcement**: it is given **directly to Mia** (the learner) for **her own** successful behaviour, rather than being a consequence she observed happening to a model (which would be vicarious) or a reward she gave herself (which would be self-reinforcement).

Q4. (a) A behaviour is **learned (acquired)** once the learner has **attended** to it and **retained** a mental representation of it — these two stages are sufficient for learning. (b) For the learned behaviour to be **performed**, three further stages are needed: **reproduction** (the ability to perform it), **motivation** (the desire to perform it) and **reinforcement** (a consequence that makes performance likely). (c) A behaviour can be **learned but not performed** when the learner has attended to and retained it (so it is acquired and *could* be produced) but does **not carry it out** — for example because they are unable to reproduce it, or are not motivated, or there is no reinforcement to prompt performance. Learning is the acquisition of the behaviour; performance is actually doing it.

Q5. (a) External reinforcement — the **learner is directly reinforced** for performing the behaviour, e.g. a child is praised by a parent for tidying their room. (b) **Vicarious reinforcement** — the learner **observes the model being reinforced** and becomes more likely to imitate the behaviour, e.g. a child sees their sibling praised for tidying up and is then more likely to tidy up too. (c) **Self-reinforcement** — the learner **reinforces themselves** for performing the behaviour to a personal standard, e.g. a child feels a sense of pride and satisfaction after tidying their room, which makes them more likely to do it again.

Q6. (a) Jordan has met **Attention** (pays close attention), **Retention** (clearly remembers the movements) and **Motivation** (is highly motivated/determined). (b) The stage **not met** is **Reproduction** — as a complete beginner he does not yet have the **physical ability** to perform the trick. (c) With **practice over time** Jordan can develop the balance, strength and coordination needed, so that he becomes **able to reproduce** the trick — meeting the reproduction stage.

Q7. Any two of the following. **Similarity** — young drivers are more likely to attend to and imitate a model they see as **like themselves** (a driver of about their own age, in a familiar setting), because the modelled behaviour appears relevant and achievable for them. **Status or admiration** — a model who is **admired or of high status** (for example a respected sportsperson) attracts more attention and is more likely to be imitated. **Being rewarded** — a model shown **receiving a positive consequence** for driving safely supplies **vicarious reinforcement**, raising the learner's motivation to perform the same behaviour. (Also acceptable: the model is competent at the behaviour, or is warm/likeable.)

Q8. (a) Retention — storing a **mental representation** to recall later. (b) **Attention** — focusing closely on the model's behaviour (attending also covers the consequences the model receives). (c) **Motivation** — the incentive/desire to perform. (d) **Reproduction** — being physically and mentally capable of performing. (e) **Reinforcement (vicarious)** — imitation increases after seeing the model rewarded.

Q9. Vicarious reinforcement and **self-reinforcement** both increase the likelihood that a learner performs an observed behaviour, but they differ in the **source** of the reinforcement. In **vicarious reinforcement** the reinforcement is observed happening to the **model**: the learner sees the model rewarded (e.g. a classmate praised for volunteering an answer) and becomes more likely to imitate. In **self-reinforcement** the learner provides the reinforcement to **themselves**: they experience an internal reward (e.g. pride or satisfaction) for meeting a standard they set themselves. So vicarious reinforcement comes from the *model's* consequence, whereas self-reinforcement comes from the *learner's own* internal reward.

Q10. Attention: Sam **watches Ava closely** as she greets customers, **and notices the manager thanking her** for her friendly manner — he attends to both the behaviour and its consequence. **Retention:** Sam **remembers** Ava's friendly approach, storing a mental representation of it. **Reproduction:** Sam **is able to** greet customers in the same way (he has the physical and cognitive ability). **Motivation:** Sam **wants the manager's approval**, giving him the incentive to perform the behaviour. **Reinforcement:** Sam saw Ava **thanked by the manager (vicarious reinforcement)**, making

him more likely to imitate her, and he then greets customers exactly as she did. Because all five stages are met, Sam has both **learned** and **performed** the greeting through observation.

Q11. The stage that was **not** met is **Motivation**. Ella **attended** to the teacher, **retained** the kneading technique, and was **physically able to reproduce** it, so the first three stages were satisfied. However, she “saw no reason to bother”, meaning she lacked the **desire or incentive** to perform the behaviour — so she did not attempt it. The behaviour was **learned** but not **performed** because motivation was absent.

Q12. The stage that failed **on this occasion** is **Retention** — a week later the student “cannot recall how the peer had structured their answer”, so they had not stored a usable mental representation of the modelled behaviour. The other stages were **not** the problem: the student **attended** (they “was watching closely at the time”), was **able to reproduce** speaking up in class, and **was motivated** (they “would like the same praise”). Because retention failed, the student could not reproduce the behaviour even though the other conditions were met.

Q13. In observational learning, a behaviour is **acquired** through **attention** (watching the model) and **retention** (storing a mental representation in memory). Neither of these requires the learner to **perform** the behaviour. The learner can also be influenced by the **consequences the model receives**: through **vicarious reinforcement**, seeing the *model* rewarded increases the learner’s likelihood of imitating, so the learner does not need to receive **direct** reinforcement themselves. Learning therefore depends on observing and remembering the model, not on the learner’s own performance or own direct reward.

Q14. In **operant conditioning**, the learner must **perform the behaviour themselves**, and the behaviour is strengthened or weakened by its **own consequences** (reinforcement or punishment) through **trial and error**; learning is shown by a change in the learner’s *own* reinforced behaviour. In **observational learning**, the learner **acquires the behaviour by watching a model** and observing the **consequences the model receives**, **without** having to perform it first or be **directly** reinforced; it also depends on internal **cognitive** processes (attention and retention). So the two differ in whether the learner learns from their *own* reinforced actions (operant) or from *observing a model* (observational).

Q15. The **consequence a model receives** supplies the learner’s **motivation** to perform an observed behaviour. Through **vicarious reinforcement**, when the learner sees the **model rewarded** for a behaviour, the learner becomes **more likely** to perform that behaviour themselves (e.g. seeing a colleague praised for a method makes a learner more likely to use it). Through **vicarious punishment**, when the learner sees the **model punished**, the learner becomes **less likely** to perform the behaviour (e.g. seeing a colleague reprimanded for a shortcut makes a learner avoid it). In both cases the learner has still *learned* the behaviour by observing it; the model’s consequence affects whether it is *performed*.

Q16. (a) The **independent variable** is the **consequence the model receives** — whether the adult is **praised or scolded**. The **dependent variable** is the **number of times each child imitates** the unusual block-stacking pattern. (b) The **population of interest** is **primary-school children** (the group the researcher wishes to draw a conclusion about). (c) Because the participants are children, the psychologist must obtain **informed consent from the children’s parents or guardians** before they take part. (Other acceptable answers: protecting participants from harm or distress; confidentiality of results; the right to withdraw.)

Q17. (a) **Group A** (the group who saw the model **praised**) imitated the behaviour more, with a mean of **6.8** compared with **2.1** for Group B. (b) Group A observed the model being **reinforced (vicarious reinforcement)**, which increased their **motivation** to imitate the behaviour, so they copied it more often. Group B observed the model being **scolded (vicarious punishment)**, which reduced their likelihood of imitating, so they copied it far less. The lower standard deviations (1.4 and 1.2) show the scores were fairly consistent within each group. (c) *Directional hypothesis*: “It was hypothesised that **primary-school children who saw the adult model praised** would **imitate the unusual block-stacking pattern more times** than **primary-school children who saw the adult model scolded**.” (This states both levels of the IV — praised vs scolded — and a directional DV — *more* imitations.)

Q18. The reinforcement is **self-reinforcement**. Ruby set **her own standard** (holding a handstand for ten seconds) and, on succeeding, experienced an **internal reward** — a **rush of pride** — that she provided to **herself**. Because this self-generated reward makes her **more likely to keep performing** the behaviour (to keep practising), it fits the definition of self-reinforcement: reinforcing oneself for meeting a personal standard.

Q19. The statement is too strong for **two** reasons. **First**, simply **watching** the adult (attention) does **not** guarantee the toddler **retained** a usable mental representation — so it is not certain the behaviour was even **learned** (learning requires **attention and retention**). **Second**, even if the behaviour is learned, **learning does not guarantee performance**: performance also requires the toddler to be **able to reproduce** the action, to be **motivated**, and for there to be **reinforcement** — so the toddler may **not perform** it. Learning and performance are separate, so “definitely learned *and* definitely performed” overstates what observation alone establishes.

Q20. Model response (6 marks). My example is a child, Ava, learning to tie shoelaces by watching an older sibling. **Attention:** Ava must **actively watch** her sibling’s hands as the laces are tied **and notice the consequences her sibling receives** (their parent praising the neat bow); if she is distracted, she will not take in the steps. **Retention:** Ava must **store a mental representation** of the sequence of movements in memory, so she can recall it when she next has shoes to tie. **Reproduction:** Ava must have the **physical and cognitive ability** — the fine motor control — to actually carry out the movements; a much younger child might attend and retain yet still be unable to reproduce them. **Motivation:** Ava must have the **desire to perform** the behaviour — for example, wanting to tie her own shoes like her older sibling. **Reinforcement:** a consequence that makes performance more likely — here, **vicarious reinforcement** (seeing her sibling praised for tying their laces) and **external reinforcement** (being praised herself when she succeeds) both encourage her to keep doing it. **Distinguishing learning from performance:** Ava has **learned** the behaviour once she has **attended** to and **retained** it — she now *could* tie her laces even if she has not yet done so. She only **performs** the behaviour when she is also **able to reproduce** it, is **motivated**, and there is **reinforcement**. So **attention and retention** produce the **learning (acquisition)**, while **reproduction, motivation and reinforcement** determine the **performance**. (*Full marks require: the five stages named in order and correctly explained against one consistent example; and an explicit learning-versus-performance distinction that maps attention + retention to learning and reproduction + motivation + reinforcement to performance.*)

Chapter 5 Approaches to understand learning — 5D Aboriginal and Torres Strait Islander ways of knowing

Theory

A **way of knowing** is the way a people understands, holds and passes on knowledge — how learning happens, what counts as knowledge, and who it belongs to. For **Aboriginal and Torres Strait Islander peoples**, learning is understood as a **lifelong, relational process**: it is not a single event that takes place inside one individual, but something that happens *within a web of relationships* and *on and from Country*. This is one of the approaches to learning in this chapter, alongside the behaviourist approaches (classical and operant conditioning, 5A–5B) and the social-cognitive approach (5C). It is a **distinct and equally valid** way of understanding how people learn — a difference in worldview, not a ranking of one approach above another.

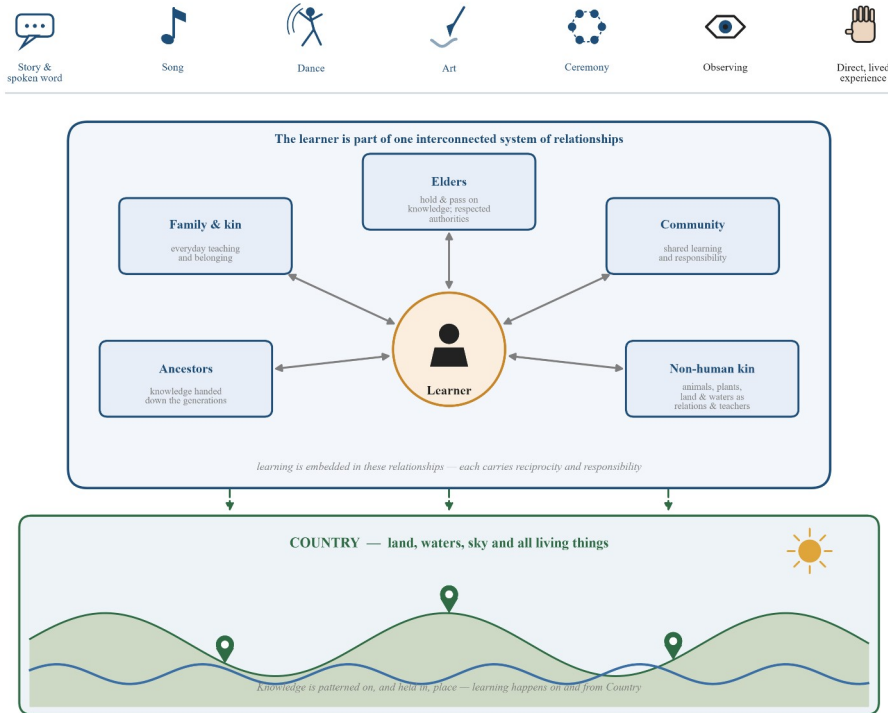
The study design describes this way of knowing as one where **learning is embedded in relationships** and where **the learner is part of a multimodal system of knowledge patterned on Country**. Four connected ideas unpack this.

1. Learning is embedded in relationships (relational). The learner is not an isolated individual receiving information, but **part of a system of relationships** — with **Elders**, family and kin, community, ancestors, and with **Country** itself (including non-human relations such as animals, plants, land and waterways). Knowledge is shared *through* these relationships. Learning also carries **reciprocity and responsibility**: as a person learns, they take on responsibilities to the knowledge, to the people who shared it, and to Country. **Elders** in particular are respected holders of knowledge who guide *what* is learned, *when*, and *by whom*.

2. Knowledge is multimodal and holistic. Knowledge is shared and held through **many modes at the same time** — through **story** and the spoken word, **song, dance, art, ceremony, observation**, and **direct, lived experience**. Because several modes work together, learning engages the whole person and many senses at once. The knowledge is **holistic**: it is not divided into separate, unrelated “subjects” but connects people, place, living things and story into one integrated whole.

3. Knowledge is patterned on Country. **Country** — the land, waterways, sky and all living things, together with the community and kinship connected to them — is central. Knowledge is **connected to, and organised (patterned) by, Country**: it is held in place and mapped onto place, so that particular places carry particular knowledge. Country is itself a **teacher**, and much learning happens **on and from Country** — for example, by observing seasonal change, the behaviour of animals, or the state of the land and waters. Because knowledge is patterned on Country, this way of knowing is **place-based** rather than abstract and placeless.

4. The learner is part of the system. Putting these ideas together, the learner sits **inside** an interconnected, multimodal system of knowledge, rather than standing outside it as a lone individual. Learning is **lifelong** — it continues across the whole of life, with different knowledge shared at different life stages — and it is **enduring**: these are sophisticated, living knowledge systems that have supported Aboriginal and Torres Strait Islander peoples for tens of thousands of years and continue today.

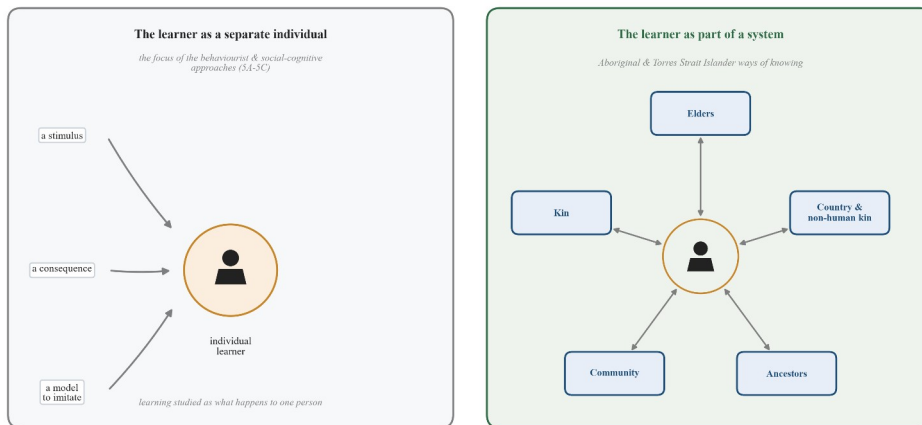


How this contrasts with the Western approaches (5A–5C). The behaviourist and social-cognitive approaches typically study learning as something that happens **to, or within, a single individual**:

- In **classical conditioning (5A)**, learning is an **involuntary association** formed in one individual between a neutral stimulus and an unconditioned stimulus (a stimulus comes to trigger a response).
- In **operant conditioning (5B)**, learning is a change in an individual's **voluntary behaviour** brought about by its **consequences** (reinforcement and punishment).
- In the **social-cognitive approach (5C)**, learning occurs when an individual **observes a model** and the five conditions of observational learning are met — **attention** and **retention** (the learner's own cognitive processes), **reproduction** (the ability to perform the behaviour), **motivation**, and **reinforcement** (the consequence that follows, whether external, vicarious or self-administered).

By contrast, in **Aboriginal and Torres Strait Islander ways of knowing** learning is:

- **relational** — embedded in a whole system of relationships (Elders, kin, community, Country), not centred on one individual reacting to a stimulus, a consequence or a single model;
- **multimodal and holistic** — carried through many modes at once (story, song, dance, art, ceremony, observation, experience), not a single stimulus–response link or one modelled behaviour;
- **patterned on Country / place-based** — knowledge is connected to and organised by Country, not abstracted from place;
- **lifelong** — a continuous process across the whole of life, rather than a single episode of conditioning or observation.



Different ways of knowing, of equal standing — a difference, not a ranking.

These are **different ways of understanding learning, of equal standing** — the contrast highlights different worldviews and does not rank one above another.

A note on respectful, accurate language. Use **Aboriginal and Torres Strait Islander peoples** (plural “peoples”, recognising many distinct nations and language groups) or **First Nations peoples**; capitalise **Country** and **Elders**. Present these knowledge systems as **sophisticated, valid and enduring** — never as historical, primitive or “just a belief”. Answers should describe the way of knowing in **general** terms grounded in the study design; they should not invent, or attribute, specific stories, songs, ceremonies or practices to particular communities.

Worked examples

Example 1 — scaffolded

A family and their wider community gather regularly across the year. At these gatherings the youngest children are present while older members give spoken accounts of the places nearby; song, dance and painting are part of the same occasion; and everyone takes part in the work being done. As people grow older they are given more of this knowledge, and more responsibility for it. Identify the features of this description that show learning is **relational, multimodal, patterned on Country** and **lifelong**.

Working

Relational: the learner is among **Elders, family, kin and the wider community**, and knowledge is shared *through* those relationships; being “given more responsibility for it” shows the **reciprocity and responsibility** that learning carries.

Multimodal: spoken accounts, song, dance and painting, together with **observing and taking part in the work**, all happen **at the one occasion** — many modes at once, not a single channel. Because the modes work together, the knowledge is also **holistic**.

Patterned on Country: the accounts are **of the places nearby**, so the knowledge is **connected to and organised by Country** and is **held in place** — particular places carry particular knowledge.

Lifelong: the gatherings continue **across the year and across life stages**, with more knowledge shared as people grow older.

Comment

Name the relationships *and* the reciprocity — a list of people on its own does not show that learning is embedded in relationships.

Quote the modes from the description. “Multimodal” needs *several* modes working together, not just one.

Link the knowledge to place; that is exactly what “patterned on Country” means.

Learning is a continuous process across the whole of life, not a single event.

Example 2 — scaffolded

A draft page for a school newsletter reads: “Year 9 students learned about the traditional beliefs of the local Aboriginal tribe, and how they used to learn from nature.” Identify what is inaccurate or disrespectful in this sentence, and rewrite it.

Working	Comment
“beliefs” → “knowledge” or “ways of knowing”. “Belief” frames the knowledge as unverified opinion; these are sophisticated, valid knowledge systems built on tens of thousands of years of observation and experience.	The word “belief” is the single most common marker of a disrespectful answer.
“tribe” → “community”, “peoples” or “Traditional Owners”. Use Aboriginal and Torres Strait Islander peoples (plural) or First Nations peoples , recognising many distinct nations and language groups.	The plural “peoples” is the wording to reach for; “tribe” is not used.
“used to learn” → the present tense . These are living, enduring knowledge systems still practised today; the past tense wrongly confines them to history.	“Enduring”, never “historical” — this is a mark-worthy distinction.
“nature” → Country (capitalised). Country is the land, waterways, sky and all living things <i>together with</i> the community and kinship connected to them, and it is itself a teacher — not scenery in the background.	Capitalise Country and Elders . Country is far more than “the environment”.
Rewrite: “Year 9 students learned about the knowledge and ways of knowing of the local Aboriginal community, and about how learning happens on and from Country.”	“Rewrite it” means produce the corrected sentence — a list of corrections alone does not answer the question.

Example 3 — unscaffolded

A student writes: “The behaviourist and social-cognitive approaches are scientific, so they explain learning better than Aboriginal and Torres Strait Islander ways of knowing.” Explain why this claim should not be accepted.

The claim is **not appropriate**, for two reasons. First, it **ranks** approaches that are presented as **different ways of understanding learning, of equal standing**. The behaviourist and social-cognitive approaches and Aboriginal and Torres Strait Islander ways of knowing answer the question “how do people learn?” from **different worldviews**: the first locate learning in what happens to, or within, a single individual, while the second locates it in a **system of relationships patterned on Country**. A difference in worldview is not a difference in quality. Second, describing only the Western approaches as “scientific” is **inaccurate**. Aboriginal and Torres Strait Islander ways of knowing are **sophisticated, valid and enduring** knowledge systems built on tens of thousands of years of **systematic observation** of Country — of seasonal change, of the behaviour of animals, and of the state of land and waters — tested and refined across generations, and still in use today. ∴ the two accounts should be compared as **different, equally valid** approaches to learning, not ranked one above the other.

Example 4 — unscaffolded

In the behaviourist and social-cognitive approaches, where is what has been learned held? Contrast this with Aboriginal and Torres Strait Islander ways of knowing.

In the **behaviourist and social-cognitive approaches**, what has been learned is held **within the individual learner**. In classical conditioning it is an **association** between two stimuli that now produces a reflexive response in that one person or animal; in operant conditioning it is a **change in how likely that individual’s voluntary behaviour is** to be repeated; and in the social-cognitive approach it is a **mental representation** of an observed behaviour, stored in that learner’s own memory. In each case the learning travels with the individual. In **Aboriginal and Torres Strait Islander ways of knowing**, knowledge is held **in the system**, not only in one person. It is held **through relationships** — by Elders, family and kin, community and ancestors, who share it and guide **what** is learned, **when** and **by whom** — and it is **held in place**, because knowledge is **patterned on Country**, so that particular places carry particular

knowledge. Learning also carries **reciprocity and responsibility**: as a person learns, they take on responsibilities to the knowledge, to the people who shared it and to Country. ∴ the Western approaches locate what is learned **inside one individual**, whereas Aboriginal and Torres Strait Islander ways of knowing locate it **in a system of relationships and in Country**.

Practice questions

Scaffolded

Q1. Define each of the following as used in Aboriginal and Torres Strait Islander ways of knowing: (a) Country; (b) multimodal; (c) a way of knowing.

Q2. In this way of knowing, the learner is described as “part of a system”. (a) Name three relationships the learner is part of in this system. (b) Explain what is meant by saying that learning is “embedded in relationships”. (c) Explain why Elders are important in this system.

Q3. Knowledge in this way of knowing is described as multimodal and holistic. (a) List four modes through which knowledge may be shared. (b) Explain what “holistic” means in this context. (c) Explain why the way of knowing is described as “multimodal”.

Q4. “Knowledge is patterned on Country.” (a) State what “Country” includes. (b) Explain what it means to say knowledge is “patterned on” Country. (c) Give one general example of learning that happens on and from Country.

Q5. Consider how learning is understood across a person’s life in this way of knowing. (a) Identify whether learning here is best described as a single event or a lifelong process. (b) Explain your answer to (a). (c) Explain why the knowledge system should be described as “enduring” rather than “historical”.

Q6. Compare, in general terms, the learner in operant conditioning (5B) with the learner in Aboriginal and Torres Strait Islander ways of knowing. (a) In operant conditioning, what changes the learner’s behaviour? (b) In this way of knowing, what is the learner part of? (c) State one key difference between the two.

Unscaffolded

Q7. Describe what is meant by “Aboriginal and Torres Strait Islander ways of knowing”. (2 marks)

Q8. Explain what it means to say that, in this way of knowing, “the learner is part of a multimodal system of knowledge patterned on Country”. (3 marks)

Q9. Distinguish between classical conditioning (5A) and Aboriginal and Torres Strait Islander ways of knowing as approaches to learning. (4 marks)

Q10. Distinguish between operant conditioning (5B) and Aboriginal and Torres Strait Islander ways of knowing as approaches to learning. (4 marks)

Q11. Distinguish between the social-cognitive approach (5C) and Aboriginal and Torres Strait Islander ways of knowing as approaches to learning. (4 marks)

Q12. Explain the role of Elders and community in Aboriginal and Torres Strait Islander ways of knowing. (2 marks)

Q13. Explain why Aboriginal and Torres Strait Islander ways of knowing are described as “holistic” and “multimodal”. (3 marks)

Q14. Explain what is meant by learning being “patterned on Country”, and why this makes the way of knowing place-based. (3 marks)

Q15. Respectful stimulus. On Country, an Elder walks with younger members of the community and, over many seasons, shares knowledge about how changes in the plants, animals and weather signal the right times to care for and gather particular resources. This knowledge is shared through spoken explanation, through song, and by observing and doing together. (a) Identify two modes through which knowledge is being shared in this scenario. (2 marks) (b) Explain how this scenario shows that the learner is “part of a multimodal system of knowledge patterned on Country”. (4 marks)

Q16. Research scenario. A Victorian secondary school runs a year-long learning programme that is designed and led by Elders and educators from the local Aboriginal community, in which Year 9 students learn both in the classroom and on Country. With the community's agreement, a psychologist evaluates the programme: the 120 Year 9 students who took part, and 120 Year 9 students at the same school who did not, each complete a questionnaire measuring how strongly they feel connected to the local place, scored out of 50. (a) Identify the independent variable and the dependent variable. (b) Identify the population of interest. (c) Name one ethical consideration the psychologist must address that arises because the programme is built on knowledge held by the local Aboriginal community. (4 marks)

Q17. Explain why it is important to describe Aboriginal and Torres Strait Islander ways of knowing as “valid and enduring” rather than as “primitive” or “historical”. (2 marks)

Q18. Research scenario (continued from Q16). The results of the evaluation are shown below.

Group	Mean connection-to-place score (out of 50)	Standard deviation
Took part in the programme	38.6	5.2
Did not take part	29.4	6.1

- State which group reported the stronger connection to the local place.
- Give one reason the psychologist should be cautious about concluding that the programme *caused* the difference.
- State whether the results can be generalised to all Victorian Year 9 students, and justify your answer. (3 marks)

Q19. Explain why learning in this way of knowing is described as **lifelong**, and how this differs from the way learning is described in the behaviourist and social-cognitive approaches. (3 marks)

Q20. Extended response. Describe Aboriginal and Torres Strait Islander ways of knowing, and explain how they differ from the behaviourist and social-cognitive approaches to learning covered earlier in this chapter. In your response, refer to the ideas that learning is embedded in relationships, is multimodal, and is patterned on Country. (6 marks)

Answers

Q1. (a) The land, waterways, sky and all living things, together with the community and kinship connected to them. (b) Shared and held through many modes at once (e.g. story, song, dance, art, ceremony, observation, experience). (c) The way a people understands, holds and passes on knowledge. **Q2.** (a) Any three of: Elders; family and kin; community; ancestors; Country / non-human kin. (b) Knowledge is shared through, and learning takes place within, a system of relationships, rather than inside an isolated individual. (c) Elders are respected holders of knowledge who guide what is learned, when and by whom. **Q3.** (a) Any four of: story/spoken word; song; dance; art; ceremony; observation; direct experience. (b) Knowledge is one integrated whole connecting people, place, living things and story — not divided into separate subjects. (c) Because knowledge is shared and held through many modes at the same time. **Q4.** (a) Land, waterways, sky and all living things (with community and kinship connected to them). (b) Knowledge is connected to and organised by Country, and is held in and mapped onto place. (c) e.g. observing seasonal change or animal behaviour on Country to know when to care for or gather a resource. **Q5.** (a) A lifelong process. (b) Learning continues across the whole of life, with different knowledge shared at different life stages. (c) Because it is a living system still practised today, not something confined to the past. **Q6.** (a) The consequences of the behaviour (reinforcement or punishment). (b) An interconnected system of relationships (Elders, kin, community, Country) patterned on Country. (c) Operant conditioning centres on an individual's behaviour and its consequences; this way of knowing centres on the learner within a relational, Country-patterned system. **Q7.** The ways Aboriginal and Torres Strait Islander peoples understand, hold and pass on knowledge: learning is a lifelong, relational process in which the learner is part of a multimodal system of knowledge patterned on Country. **Q8.** The learner is inside a system of relationships (Elders, kin, community, Country); knowledge is shared through many modes at once (multimodal); and it is connected to and organised by Country (patterned on Country). **Q9.** Classical conditioning = an individual involuntarily associates a neutral stimulus with an unconditioned stimulus; this way of knowing = relational, multimodal, lifelong learning patterned on Country, with the learner part of a system. **Q10.** Operant conditioning = an individual's voluntary behaviour is changed by its consequences; this way of knowing = the learner is part of a relational, multimodal system of knowledge patterned on Country, not an individual shaped by consequences. **Q11.** Social-cognitive = an individual observes a model and imitates it once the five conditions are met (attention, retention, reproduction, motivation, reinforcement); this way of knowing = learning through a whole system of relationships and many modes at once, patterned on Country and lifelong, not centred on one model. **Q12.** Elders are respected holders of knowledge who guide what is learned, when and by whom; the community shares learning and responsibility, so knowledge belongs to and is passed through the group. **Q13.** "Multimodal" because knowledge is shared through many modes at once (story, song, dance, art, ceremony, observation, experience); "holistic" because these connect people, place, living things and story into one integrated whole. **Q14.** Knowledge is connected to and organised by Country and held in place, so it is place-based: particular places carry particular knowledge, and learning happens on and from Country. **Q15.** (a) Any two of: spoken explanation/story; song; observation; doing/experience. (b) The learner is within relationships (Elder, community), learns through several modes at once, and the knowledge is about and organised by Country (seasons, plants, animals) — a multimodal system patterned on Country. **Q16.** (a) IV = whether the student took part in the on-Country programme (took part vs did not take part); DV = the student's score out of 50 on the connection-to-place questionnaire. (b) Year 9 students (the 240 who completed the questionnaire are the sample). (c) The research must be conducted with the free and informed agreement of the local Aboriginal community, with Elders and community representatives leading decisions about what is investigated, how the findings are described and how they are used (respect). **Q17.** Because these are sophisticated, living knowledge systems still practised today; calling them "primitive" or "historical" is inaccurate and disrespectful, wrongly implying they are inferior or belong only to the past. **Q18.** (a) The group who took part in the programme (38.6 vs 29.4). (b) Students were not randomly allocated — those who chose the programme may already have felt more connected, so a participant difference could explain the result. (c) No — the sample came from one school and was not randomly selected, so it is unlikely to be representative of all Victorian Year 9 students. **Q19.** Lifelong because learning continues across the whole of life, with different knowledge at different stages; the behaviourist and social-cognitive approaches instead describe learning as discrete episodes (an association formed by pairing, a voluntary behaviour changed by its consequences, or a behaviour acquired from a model). **Q20.** Model response given in the solutions.

Fully-worked solutions

Q1. (a) **Country** is the land, waterways and sky and all living things, together with the community and kinship connected to them; it is central to this way of knowing. (b) **Multimodal** means that knowledge is shared and held through **many modes at the same time** — for example story, song, dance, art, ceremony, observation and direct experience. (c) A **way of knowing** is the way a people understands, holds and passes on knowledge — how learning happens, what counts as knowledge, and to whom it belongs.

Q2. (a) Any three of: **Elders; family and kin; community; ancestors; Country / non-human kin** (animals, plants, land and waters). (b) Saying that learning is **embedded in relationships** means the learner is **not an isolated individual**: knowledge is shared *through* a system of relationships, and learning takes place *within* that system rather than inside one person on their own. (c) **Elders** are **respected holders of knowledge** who **guide** what is learned, when and by whom, so they are central to how knowledge is passed on responsibly.

Q3. (a) Any four of: **story / spoken word; song; dance; art; ceremony; observation; direct experience**. (b) **Holistic** means the knowledge is one **integrated whole** that connects people, place, living things and story — it is **not divided into separate, unrelated subjects**. (c) The way of knowing is **multimodal** because knowledge is shared and held through **many modes at the same time**, so that several modes (for example story, song and observation) work together rather than a single channel.

Q4. (a) **Country** includes the **land, waterways and sky and all living things** (with the community and kinship connected to them). (b) Saying knowledge is **patterned on Country** means it is **connected to and organised by Country**: it is **held in place and mapped onto place**, so particular places carry particular knowledge. (c) A general example: an Elder and younger community members **observe seasonal change or the behaviour of animals on Country** to know the right time to care for or gather a resource. (Kept general — no specific practice is attributed to any community.)

Q5. (a) A **lifelong process**. (b) Learning is not a single event; it **continues across the whole of life**, with **different knowledge shared at different life stages** and responsibilities that grow as a person learns. (c) The system should be called **enduring** because it is a **living way of knowing still practised today**; “historical” would wrongly imply it belongs only to the past.

Q6. (a) In **operant conditioning**, the learner’s **voluntary behaviour is changed by its consequences** — reinforcement makes a behaviour more likely and punishment makes it less likely. (b) In this way of knowing, the learner is **part of an interconnected system of relationships** (Elders, kin, community and Country) that is **patterned on Country**. (c) A key difference: operant conditioning focuses on **one individual’s behaviour and its consequences**, whereas this way of knowing focuses on the **learner within a relational, multimodal system patterned on Country** — learning is relational and lifelong, not a change in a single behaviour.

Q7. **Aboriginal and Torres Strait Islander ways of knowing** are the ways First Nations peoples **understand, hold and pass on knowledge**. Learning is a **lifelong, relational process** in which the **learner is part of a multimodal system of knowledge patterned on Country** — knowledge is shared through relationships and through many modes at once, and is connected to and organised by Country.

Q8. This statement has three parts. “**Part of a system**”: the learner is **not an isolated individual** but sits **inside a network of relationships** — with Elders, family and kin, community, ancestors and Country. “**Multimodal**”: knowledge is shared and held through **many modes at the same time** (story, song, dance, art, ceremony, observation and experience), so learning is holistic. “**Patterned on Country**”: the knowledge is **connected to and organised by Country** (land, waters, sky and living things) and is held in place. Together, the learner is embedded within a multimodal system of knowledge that Country patterns and holds.

Q9. In **classical conditioning**, learning is described as an **individual** coming to make an **involuntary association** between a neutral stimulus and an unconditioned stimulus, so that a stimulus eventually triggers a reflexive response; the focus is on **one person’s stimulus–response learning**. In **Aboriginal and Torres Strait Islander ways of knowing**, learning is **relational** (the learner is part of a system of relationships with Elders, kin, community and Country), **multimodal and holistic** (shared through many modes at once) and **patterned on Country** (place-based), and it is **lifelong**. Both are valid approaches to learning, but classical conditioning locates learning in an **individual’s involuntary association**, whereas this way of knowing locates it in a **relational, Country-patterned system**.

Q10. In **operant conditioning**, learning is described as a change in an **individual's voluntary behaviour** brought about by its **consequences** (reinforcement strengthens a behaviour; punishment weakens it); the focus is on **one person's behaviour and its consequences**. In **Aboriginal and Torres Strait Islander ways of knowing**, the learner is **part of an interconnected system of relationships** patterned on Country, and knowledge is shared in a **multimodal, holistic** way across the **whole of life**. So operant conditioning centres on **consequences shaping an individual's behaviour**, whereas this way of knowing centres on the **learner embedded in a relational system patterned on Country** — a difference of equal-standing worldviews, not a ranking.

Q11. In the **social-cognitive approach**, learning is described as an **individual observing a model** and imitating that model once the five conditions are met — **attention** and **retention** (the learner's own cognitive processes), **reproduction** (the physical and mental ability to perform the behaviour), **motivation**, and **reinforcement** (the consequence that follows, whether external, vicarious or self-administered); the focus is on **one learner and a specific model**. In **Aboriginal and Torres Strait Islander ways of knowing**, learning happens through a **whole system of relationships** (Elders, kin, community and Country) and through **many modes at once** (story, song, dance, art, ceremony, observation and experience), and is **patterned on Country** and **lifelong**. While both value learning from others, the social-cognitive approach centres on an **individual imitating a model**, whereas this way of knowing is **relational, multimodal, Country-patterned and lifelong** and cannot be reduced to a single observed model.

Q12. Elders are **respected holders of knowledge** who **guide** what knowledge is learned, when and by whom, so learning is passed on responsibly and appropriately. The **community** is the group within which learning is **shared** and to which knowledge **belongs**, carrying shared responsibility for it. Together, Elders and community mean the learner learns **within relationships**, not alone.

Q13. The way of knowing is **multimodal** because knowledge is **shared and held through many modes at the same time** — for example story, song, dance, art, ceremony, observation and direct experience — rather than through a single channel. It is **holistic** because these modes, and the knowledge they carry, **connect people, place, living things and story into one integrated whole**, rather than dividing knowledge into separate, unrelated subjects. So learning engages the whole person and many senses at once, within one connected system.

Q14. Learning being **patterned on Country** means the knowledge is **connected to, and organised by, Country** — the land, waterways, sky and living things — and is **held in, and mapped onto, place**. This makes the way of knowing **place-based** because **particular places carry particular knowledge**, and much learning happens **on and from Country** (for example, observing seasonal or environmental change). The knowledge is therefore tied to place rather than being abstract and placeless.

Q15. (a) Any two of: **spoken explanation / story; song; observation; doing / direct experience**. (b) The scenario shows a **multimodal system of knowledge patterned on Country** because: the learner is **within relationships** — a younger community member learning alongside an **Elder** and the **community** (relational, not an isolated individual); the knowledge is shared through **several modes at once** — spoken explanation, song, and observing and doing together (**multimodal**); and the knowledge itself is **about, and organised by, Country** — the plants, animals, weather and seasons that signal when to care for and gather resources (**patterned on Country**), with the learning taking place **on Country** and **across many seasons** (lifelong). The learner is thus part of a multimodal system of knowledge that Country patterns.

Q16. (a) The **independent variable** is **whether or not the student took part in the on-Country learning programme** — the two levels are *took part* and *did not take part*. The **dependent variable** is **how strongly the student reports feeling connected to the local place**, measured as their score out of 50 on the questionnaire. (b) The **population of interest** is **Year 9 students** — the wider group the psychologist wants to draw a conclusion about; the **240 students** who completed the questionnaire are the **sample**. (c) Because the programme is built on **knowledge held by the local Aboriginal community**, the psychologist must have the **community's free and informed agreement** to the research, and **Elders and community representatives must lead** the decisions about what is investigated, how the findings are described, and how they are used. This is what the ethical concept of **respect** requires; it also serves **justice**, since the community whose knowledge is studied should share in the benefits of the research. (The considerations that apply to any student participants also apply here: informed consent from parents or guardians, voluntary participation, the right to withdraw, and confidentiality of each student's results.)

Q17. It is important to describe these ways of knowing as **valid and enduring** because they are **sophisticated, living knowledge systems** developed over tens of thousands of years and **still practised today**. Calling them “**primitive**”

wrongly implies they are inferior to Western approaches, and “**historical**” wrongly implies they belong only to the past; both are **inaccurate and disrespectful**, and misrepresent the way of knowing as an equal-standing approach to learning.

Q18. (a) The students who **took part in the programme** reported the stronger connection to the local place, with a mean of **38.6** compared with **29.4** for those who did not. (b) The students were **not randomly allocated** to the two groups — they (or their families) chose whether to take part — so the two groups may have **differed before the programme began**. Students who chose the programme may already have felt more strongly connected to the local place, and this **participant difference**, rather than the programme itself, could explain some or all of the 9.2-point gap. (c) **No**. All 240 students came from **one school** and were **not randomly selected**, so the sample is unlikely to be **representative** of all Victorian Year 9 students. The result can reasonably be applied to students at this school, but generalising it beyond them is not justified.

Q19. Learning in this way of knowing is described as **lifelong** because it **continues across the whole of a person’s life**: it is not a single event, and **different knowledge is shared at different life stages**, with the learner taking on more knowledge and responsibility over time. This differs from the **behaviourist and social-cognitive approaches**, which describe learning as **discrete episodes** — an association formed by pairing a neutral stimulus with an unconditioned stimulus (classical), a voluntary behaviour strengthened or weakened by its consequences (operant), or a specific behaviour acquired by observing a model (social-cognitive). So this way of knowing frames learning as a **continuous, lifelong process**, whereas the Western approaches frame it as **particular instances of acquisition**.

Q20. Model response (6 marks). **Aboriginal and Torres Strait Islander ways of knowing** are the ways First Nations peoples **understand, hold and pass on knowledge**, in which learning is a **lifelong, relational process** and the **learner is part of a multimodal system of knowledge patterned on Country**. **Learning is embedded in relationships**: the learner is not an isolated individual but part of a system of relationships — with **Elders** (respected holders of knowledge who guide what is learned, when and by whom), family and kin, community, ancestors and Country — through which knowledge is shared, and which carries reciprocity and responsibility. Knowledge is **multimodal and holistic**: it is shared and held through **many modes at once** — story, song, dance, art, ceremony, observation and direct experience — that connect people, place, living things and story into one integrated whole. And knowledge is **patterned on Country**: it is connected to and organised by Country (land, waters, sky and all living things), held in and mapped onto place, so that learning is **place-based** and happens on and from Country. This **differs** from the **behaviourist** and **social-cognitive** approaches, which study learning as something that happens **within a single individual**: classical conditioning as an individual’s **involuntary association** between stimuli (5A); operant conditioning as a change in an individual’s **voluntary behaviour** driven by its **consequences** (5B); and the social-cognitive approach as an individual **observing a model** and imitating it once the five conditions of observational learning are met (5C). By contrast, this way of knowing is **relational** (a whole system, not one individual), **multimodal and holistic** (many modes at once, not a single stimulus–response link or one modelled behaviour), **patterned on Country** (place-based, not abstract) and **lifelong** (a continuous process, not a discrete episode). These are **different ways of understanding learning of equal standing** — a difference in worldview, not a ranking. *(Full marks require: an accurate, respectful description of the way of knowing using all three ideas — relationships, multimodal, Country; and a clear contrast with the behaviourist and social-cognitive approaches.)*