Course Companion

International Baccalaureate · IB Diploma · Psychology · SL

Every topic handout in one volume

全部专题讲义合集

exercises.lol

Contents 目录

1. The three approaches: biological, cognitive and sociocultural (Paper 1 Section A) 2

2. Concepts and contexts (Paper 1 Sections B and C) 10

3. Research methods, class practicals and the research proposal (Paper 2; IA) 19

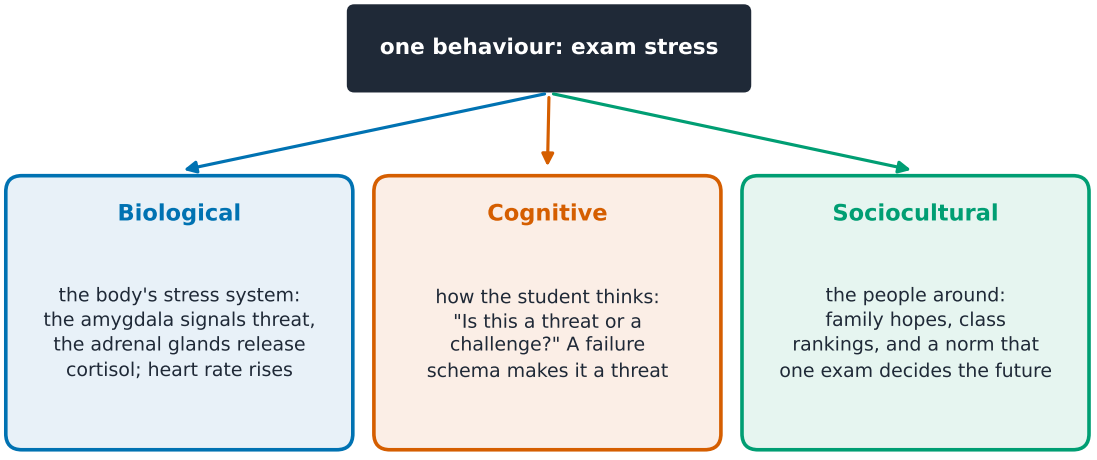
The three approaches: biological, cognitive and sociocultural (Paper 1 Section A)

International Baccalaureate · IB Diploma · Psychology · SL

The three approaches: biological, cognitive and sociocultural

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

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



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

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

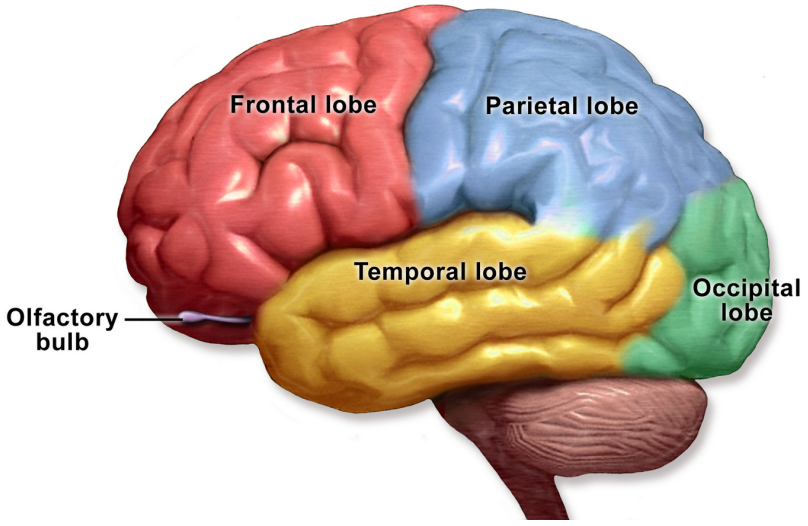
Must-know for this topic:

exercises.lol exercises.com.cn

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

The biological approach

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



The four lobes of the cerebral cortex: the biological approach links behaviour to brain structure and function

The brain and behaviour

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

Neuroplasticity 神经可塑性 is the brain's ability to change its structure with ex-

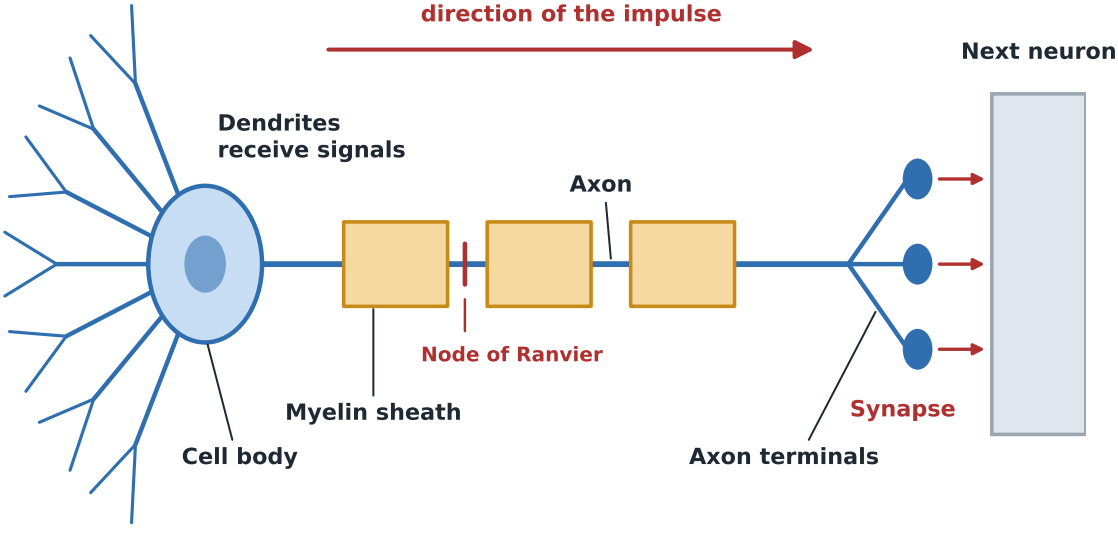
perience. Maguire et al. (2000) scanned the brains of 16 London taxi drivers and 50 other men. The drivers' posterior hippocampus was larger, and it was larger in drivers with more years in the job. This is a correlation, so it cannot show cause by itself. Draganski et al. (2004) solved this with an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

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

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

Chemical messengers

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



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

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

> **Worked example (Paper 1 Section A).** *Describe how one chemical messenger plays a role in one human behaviour.* (4 marks)
>
> Oxytocin is a hormone that may increase trust. Kosfeld et al. (2005) gave

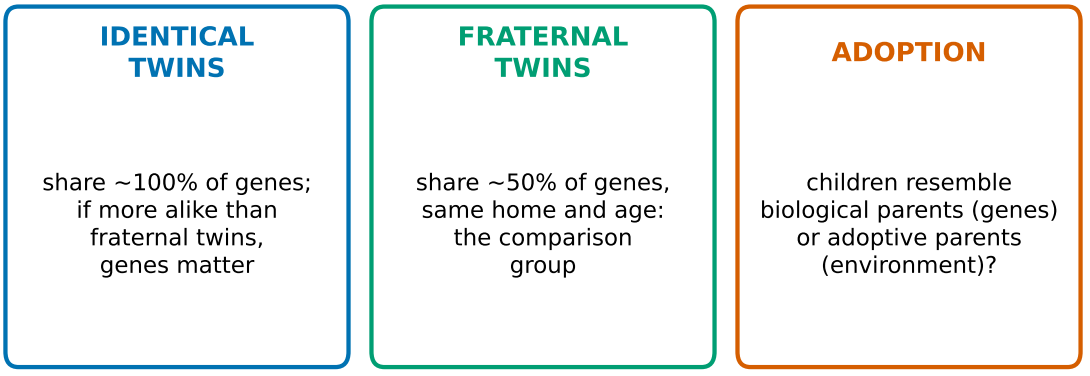
exercises.lol exercises.com.cn

male students a nasal spray of oxytocin or a placebo, then they played a money game as "investors". 45% of the oxytocin group gave all their money to the other player, against 21% of the placebo group. The researchers concluded that oxytocin makes people more willing to accept social risk, so it plays a role in trust.

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

Genes and behaviour

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



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

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

The cognitive approach

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

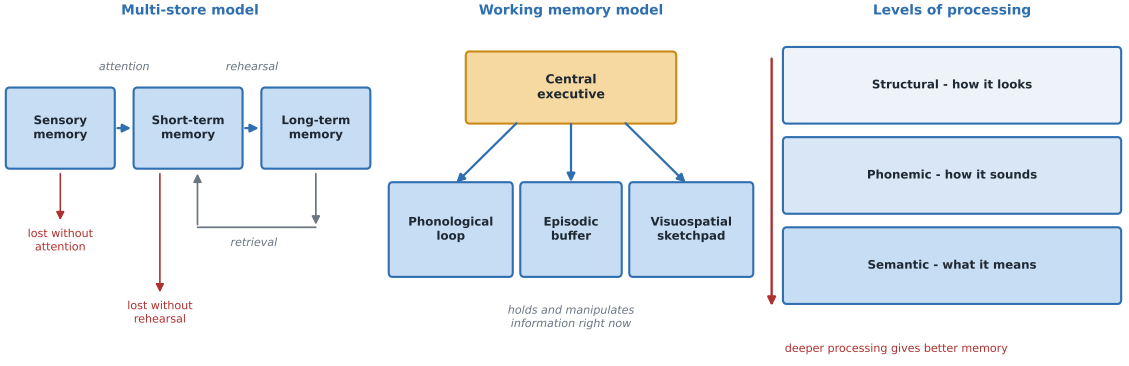


An Ames room: the brain assumes the room is square, so a schema-driven guess makes one person look giant

Models of memory

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

The **working memory model** 工作记忆模型 (Baddeley and Hitch, 1974) splits short-term memory into parts. The phonological loop holds sounds, the visuospatial sketchpad holds pictures, the central executive controls attention, and the episodic buffer (added in 2000) links them. It predicts that two tasks clash only when they use the same part: you cannot easily repeat a word list while you count aloud, but you can while you picture a map.



Three models of memory; each makes different predictions

Schemas

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

Thinking and decision-making

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

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

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

Is memory reliable?

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

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

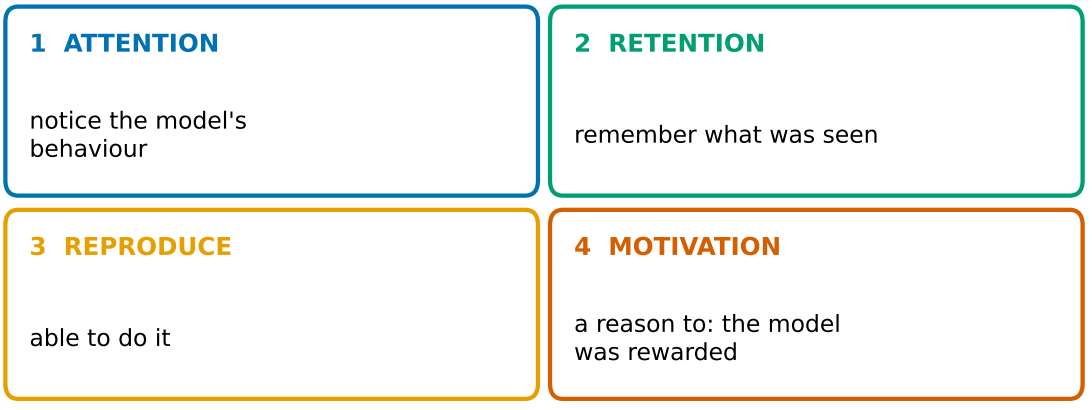
exercises.lol exercises.com.cn

The sociocultural approach

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

Social identity and social learning

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



the Bobo doll study: children copied the aggression they watched an adult model

Bandura's four steps of observational learning

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

> **Worked example (Paper 1 Section B style).** A school wants students to recycle more. *Explain how social learning theory could be used to achieve this goal.*
>
> Choose models students pay attention to, such as popular older students (attention). Show the same short recycling routine every week so it is remembered (retention). Put the bins next to the classroom door so the behaviour is easy to copy (reproduction). Praise the models in front of others, so watching students see the behaviour rewarded (motivation).

Bandura (1961) showed that children copy a model's behaviour closely, so a visible model should increase recycling.

Norms, conformity and culture

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

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

How the approaches work together

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

Checklist

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

exercises.lol exercises.com.cn

Concepts and contexts (Paper 1 Sections B and C)

International Baccalaureate · IB Diploma · Psychology · SL

Concepts and contexts

IB Diploma Programme Psychology SL (the course first assessed in 2027). Topic 1 gave you the content: the three approaches and their studies. This topic adds the other two parts of the course. The six **concepts** 概念 are questions you ask of any study or claim. The four **contexts** 情境 are real-world areas where you use the content: health and well-being, human development, human relationships, and learning and cognition. SL and HL students study all four. Paper 1 tests this topic directly: Section B gives you an unseen situation from one context (two questions, 6 marks each), and Section C asks one concept-based essay (15 marks) from a choice of two, each from a different context.

The World Health Organization estimates that about 280 million people live with **depression** 抑郁症. Is it a brain disease, a way of thinking, or a result of hard lives? Each answer leads to a different treatment: pills, therapy, or changes to work and family life. The concepts help you judge such claims; the contexts give you the cases to judge.

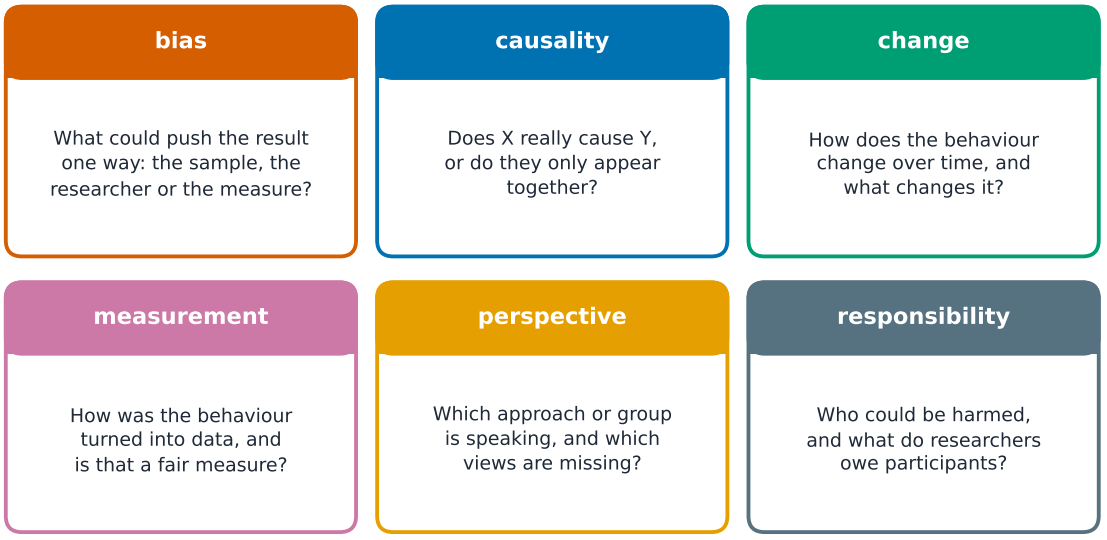
Must-know for this topic:

Part	Key content
concepts	bias, causality, change, measurement, perspective, responsibility
health and well-being	stress and the body; explaining and treating depression; diagnosis
human development	theory of mind and how to measure it; attachment
human relationships	helping (bystanders); obedience and conformity; prejudice and conflict
learning and cognition	conditioning; social learning; testing and spacing; technology

The six concepts

Each concept is a question to ask. In an essay, you use them to evaluate, not just to describe.

exercises.lol exercises.com.cn



The six concepts as six questions to ask of a study or a claim

Concept	What it asks	Example
bias 偏差	What could push a result one way?	Asch tested only male American students.
causality 因果关系	Does X cause Y, or do they only occur together?	Maguire's taxi drivers: a correlation.
change 变化	How and why does behaviour change?	Draganski: the brain grew, then shrank.
measurement 测量	How was behaviour turned into data? Is it fair?	Trust measured as money in a game.
perspective 视角	Which approach or group is speaking?	Depression as genes, thoughts or poverty.
responsibility 责任	Who could be harmed? What do we owe them?	Milgram's participants were very stressed.

Two related words appear in many questions. **Validity** 效度 means a study measures what it claims to measure. **Reliability** 信度 means it gives the same result when repeated.

Context 1: health and well-being

■ Stress and health

Stress is not only a feeling; it changes the body. Kiecolt-Glaser et al. (1995) made a small wound on the arms of 13 women who cared for a relative with dementia and 13

exercises.lol exercises.com.cn

similar women who did not. The carers' wounds took 48.7 days on average to heal, against 39.3 days. Long-term stress, through hormones such as cortisol, weakens the **immune system** 免疫系统.

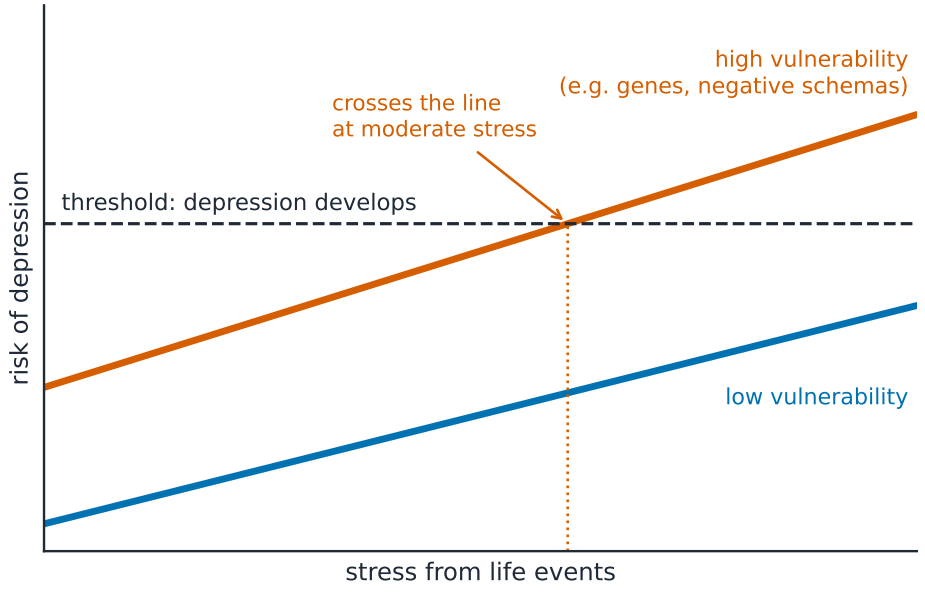
■ Explaining depression

Each approach explains depression in its own way:

Approach	Explanation	Evidence
biological	genes and serotonin	twin heritability about 38% (Kendler, 2006); Caspi's 5-HTT study
cognitive	negative thinking: Beck's **cognitive triad** 认知三联征	depressed people think badly of themselves, the world and the future
sociocultural	hard life conditions and weak social support	Brown and Harris (1978)

Brown and Harris (1978) interviewed working-class women in London. Women became depressed after a serious life event more often if they also had **vulnerability factors** 易感因素: no close person to talk to, three or more children under 14 at home, no job outside the home, or losing their mother before age 11.

The **diathesis–stress model** 素质-压力模型 joins these views. A diathesis is a weakness, such as certain genes or negative schemas. It does not cause depression by itself, but it lowers the amount of stress needed.



Diathesis–stress: the same stress affects a vulnerable person more

exercises.lol exercises.com.cn

Treatment and diagnosis

Treatments follow the explanations. Antidepressants such as SSRIs act on serotonin. **Cognitive behavioural therapy** 认知行为疗法 (CBT) teaches people to notice and test their negative thoughts. Social treatments improve support, for example through community groups. Many patients do best with a combination.

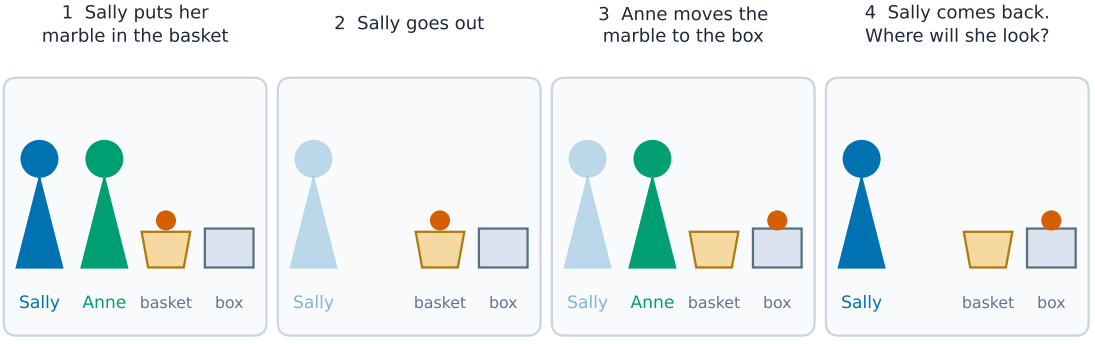
Diagnosis 诊断 uses manuals such as the DSM-5, which list symptoms. This is a measurement problem: in some cultures people describe depression mainly through body pain or tiredness, so a symptom list written in one culture can miss cases in another (bias).

Context 2: human development

Theory of mind

Theory of mind 心理理论 is understanding that other people have beliefs, wishes and knowledge that can differ from your own. Most children show it by about age 4 or 5.

Baron-Cohen, Leslie and Frith (1985) used the Sally–Anne task. Children watched two dolls act out the story below, then were asked where Sally would look for her marble. 85% of typical children (mean age about 4½) and 86% of children with Down syndrome said "the basket". Only 20% of autistic children did, although their mental age was higher. The researchers concluded that autism involves a specific difficulty with theory of mind.



A child with theory of mind answers "the basket": Sally did not see the move, so she believes something false.

The Sally–Anne false-belief task

How should we measure theory of mind? This is a common Section C question, and it is a measurement question:

exercises.lol exercises.com.cn

Strategy	Strength	Limit
verbal false-belief task (Sally–Anne)	simple, standard, easy to compare	needs language and memory, so it may underestimate young children
eye-gaze: where the child looks first (Clements and Perner, 1994)	children look at the right place before they can say it	looking is harder to interpret than an answer
looking time with infants (Onishi and Baillargeon, 2005)	15-month-olds looked longer when an actor searched in the "wrong" place	we must infer surprise; other explanations are possible

The results suggest that the answer depends on the measure: the verbal task says age 4, but non-verbal measures suggest earlier understanding.

Attachment

Attachment 依恋 is the emotional bond between a child and a carer. Ainsworth's **Strange Situation** 陌生情境 observes a one-year-old as the mother leaves and returns, and classifies the child as secure, avoidant or resistant. In her American sample about two thirds were secure. A review of studies from eight countries (van IJzendoorn and Kroonenberg, 1988) found more avoidant children in Germany and more resistant children in Japan. A Japanese baby rarely left alone may be very upset in the test for cultural reasons, not because of insecure attachment, so the measure may carry an American bias.

Context 3: human relationships

Helping others

Darley and Latané (1968) let students talk over an intercom and heard another student have a seizure. When students believed they were the only listener, 85% went for help before the seizure ended; when they believed four others could hear, only 31% did. This is the **bystander effect** 旁观者效应: the more people present, the less each person feels responsible (**diffusion of responsibility** 责任分散).

Obedience and conformity

In Milgram's study (1963), 40 men were told to give a "learner" electric shocks for wrong answers. The shocks were not real, but the men believed they were. 65% continued to the highest level, 450 volts. Obedience fell when the learner was in the same room or when another "teacher" refused first. The study raises the concept of **responsibility**: many participants were in real distress, and today it would not pass

exercises.lol exercises.com.cn

an ethics review in this form.

CONFORMITY — matching a group

rises with group size, up to a point
rises when the group is unanimous
falls sharply with one ally who dissents
rises when the answer is ambiguous

OBEDIENCE — following an authority

rises with the authority's legitimacy
rises with distance from the consequence
falls when someone else refuses first
falls when responsibility is made personal

A dissenter can reduce group pressure. The effect depends on the setting; these conditions do not guarantee a particular response

Conditions that raise or lower conformity and obedience

■ Prejudice and conflict

In Sherif's Robbers Cave study (1954), two groups of 11- and 12-year-old boys at a summer camp competed for prizes and soon became hostile. Simply meeting did not reduce the conflict. It fell when the groups had to work together on **superordinate goals** 共同目标, such as fixing the camp's water supply. Schools use the same idea in cooperative group work.

Context 4: learning and cognition

■ Learning by conditioning and observation

In **classical conditioning** 经典条件反射, a neutral signal is paired with something that already causes a response, until the signal alone causes it (Pavlov's dogs learned to salivate at a sound). In **operant conditioning** 操作性条件反射, behaviour that is followed by a reward becomes more frequent (Skinner). Social learning theory (Topic 1) adds that we also learn by watching others.

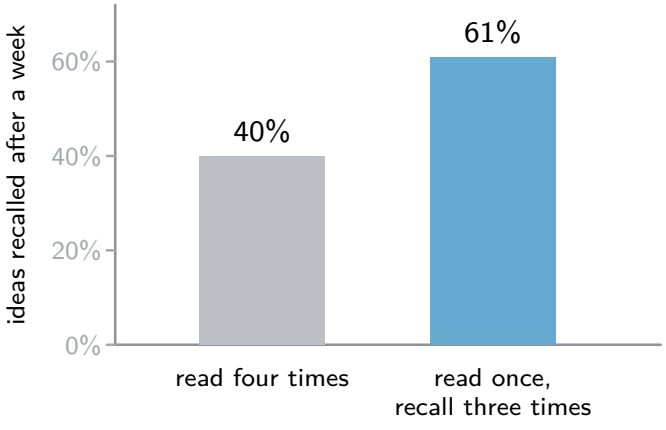
exercises.lol exercises.com.cn



One of Pavlov's dogs, now in the Pavlov Museum: a tube collected its saliva so the conditioned response could be measured

Learning that lasts

Roediger and Karpicke (2006) had students learn short texts. One group read the text four times; another read it once and then tried to recall it three times. After one week, the "testing" group recalled 61% of the ideas and the "re-reading" group only 40%. This is the **testing effect** 测试效应. Spacing study over several days also helps more than one long session.



The testing effect: recall practice beats re-reading.

exercises.lol exercises.com.cn

■ Technology and cognition

Sparrow et al. (2011) found that people remembered less of some new facts when they expected the computer to save them; they remembered instead where the facts were saved. This is often called the "Google effect".



Students on their phones: research asks how constant switching between screens affects attention and memory

Answering Paper 1 Sections B and C

Section B (6 marks). You get a short new situation. Pick the right content, explain it, and use details from the situation. Do not just describe a study; show how it applies.

Section C (15 marks): plan. *"One claim in health and well-being psychology is that one perspective is not enough to explain mental health. Discuss this claim with reference to one biological explanation of one or more disorders."*

1. Define the claim and the concept: perspective = the approach used.
2. Biological explanation: genes, with Kendler (2006): about 38% of the risk comes from genes.
3. So genes alone leave most of the variation unexplained.
4. Caspi (2003): the gene mattered only with stressful life events, so biology and environment work together.
5. A counter-point: SSRIs help many patients, so biology gives a useful treatment.
6. Conclude: the evidence supports the claim; diathesis–stress joins the perspectives.

exercises.lol exercises.com.cn

Checklist

- The six concepts as questions; validity and reliability.
- Health and well-being: stress and the immune system (Kiecolt-Glaser); three explanations of depression (Kendler, Caspi; Beck; Brown and Harris); diathesis–stress; treatments; culture and diagnosis.
- Human development: theory of mind (Baron-Cohen et al.) and three ways to measure it; attachment and the Strange Situation across cultures.
- Human relationships: the bystander effect (Darley and Latané); obedience (Milgram) and conformity; prejudice and superordinate goals (Sherif).
- Learning and cognition: classical and operant conditioning; the testing effect (Roediger and Karpicke); the Google effect (Sparrow).
- Section B: apply to the situation. Section C: use a concept to build an argument, with evidence on both sides and a conclusion.

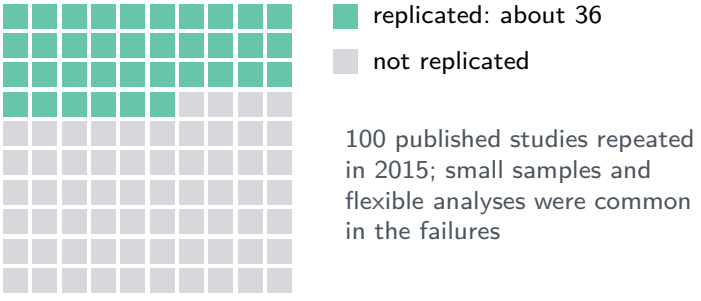
exercises.lol exercises.com.cn

Research methods, class practicals and the research proposal (Paper 2; IA)

International Baccalaureate · IB Diploma · Psychology · SL

Research methods, class practicals and the research proposal

IB Diploma Programme Psychology SL (the course first assessed in 2027). This topic covers how psychologists collect evidence. You need it for three parts of the assessment. In your **class practicals** 课堂实践 you carry out at least four small studies, one with each of four methods: an experiment, an interview or focus group, an observation, and a questionnaire. Paper 2 Section A asks four questions about one of your practicals, and Section B asks you to discuss an unseen study using the concepts. The **internal assessment** 内部评估 is a **research proposal** 研究计划书: you plan a study for a **population of interest** 目标人群 but do not carry it out.



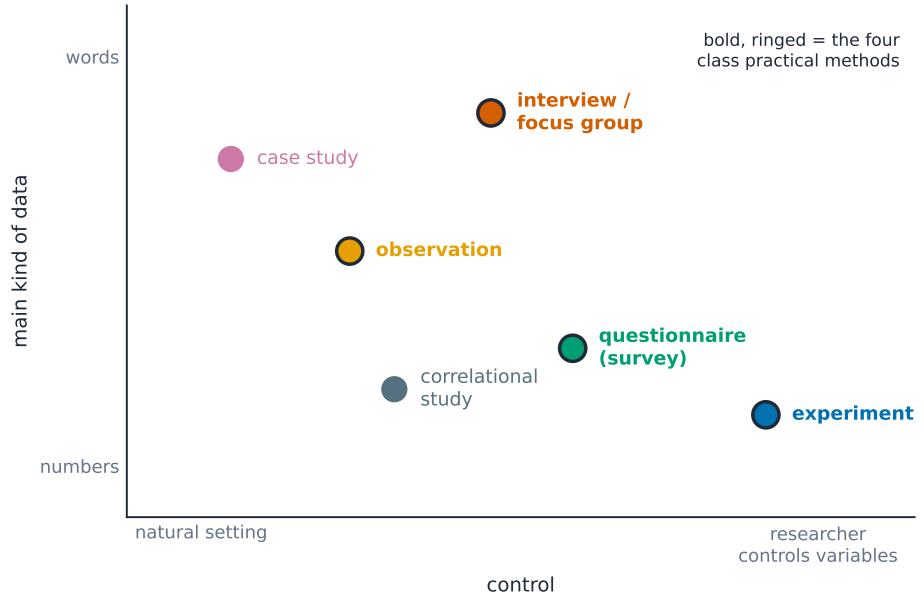
About a third of 100 studies replicated.

In 2015, 270 researchers tried to repeat 100 published psychology studies. Only about a third (36%) found a significant result again. Some of the original studies had small samples, flexible analyses or biased designs. Research methods are not a list to memorise; they decide which findings you can trust.

Must-know for this topic:

Idea	Key content
methods	experiment, questionnaire, interview and focus group, observation; also correlational study and case study
experiments	IV, DV, hypotheses, designs, controls, types of experiment
sampling	random, opportunity, self-selected, purposive, snowball
quality	bias, validity, reliability, credibility, generalisability
ethics	consent, withdrawal, deception, debriefing, harm, confidentiality
assessment	Paper 2 Sections A and B; the research proposal

Six research methods



Six methods placed by control and by kind of data; the four ringed ones are used in class practicals

Method	What it does	Strength	Limit
experiment	changes one variable and measures another	can show cause	often artificial
questionnaire	many people answer the same questions	quick, large samples	people may not answer honestly
interview / focus group	people talk about their experience	rich, detailed data	hard to compare; small samples
observation	records what people actually do	real behaviour	observer bias; no cause
correlational study	measures how two variables move together	shows relationships	no cause
case study	studies one person or group in depth	rare cases, rich detail	may not apply to others

Quantitative data 定量数据 are numbers; **qualitative data** 定性数据 are words, pictures or descriptions. Experiments and questionnaires mostly produce quantitative data; interviews mostly qualitative data.

exercises.lol exercises.com.cn

Experiments

An **experiment** 实验 changes the **independent variable** 自变量 (IV) and measures the effect on the **dependent variable** 因变量 (DV), while keeping other variables the same. A variable that changes with the IV and also affects the DV is a **confounding variable** 混淆变量.



A participant wired for a sleep study: a laboratory gives control over variables, at the cost of a natural setting

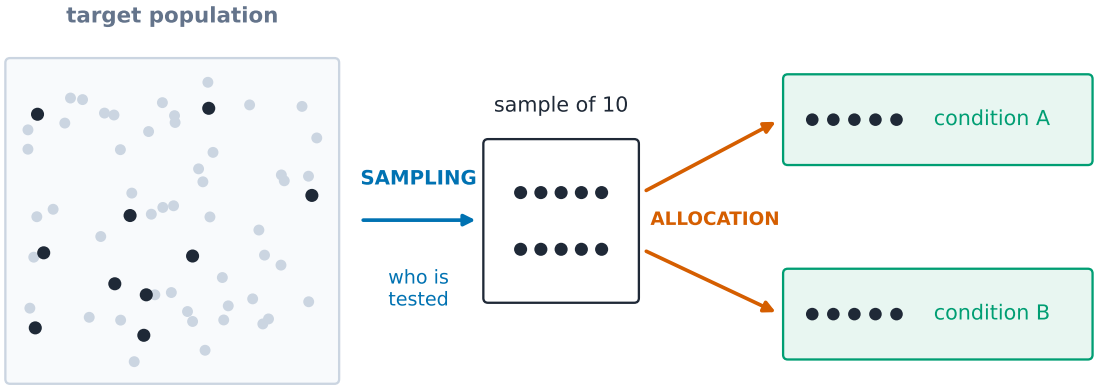
Hypotheses must be precise. For a study on music and memory:

- **Research hypothesis** 研究假设: students who learn 20 words in silence will recall more words than students who learn them with music playing.
- **Null hypothesis** 零假设: there will be no difference in recall, or any difference will be due to chance.

There are three **experimental designs** 实验设计:

Design	Meaning	Strength	Problem and fix
independent samples	different people in each condition	no order effects	group differences; fix: random allocation
repeated measures	the same people do both conditions	no group differences	order effects; fix: **counterbalancing** 平衡抵消
matched pairs	similar people paired, one in each condition	fewer group differences	slow to match

exercises.lol exercises.com.cn



Random sampling makes the sample representative; random allocation makes the groups comparable.

Sampling chooses who takes part; allocation decides which condition each person does

A **laboratory experiment** 实验室实验 has high control but may not feel real (low **ecological validity** 生态效度). A **field experiment** 现场实验 happens in a real setting. In a **natural experiment** 自然实验 the researcher does not choose the IV (for example, a new school timetable), and in a **quasi-experiment** 准实验 the IV is a fixed trait such as age or gender, so participants cannot be randomly allocated.

Sampling

Technique	How	Main problem
random sampling 随机抽样	everyone has an equal chance	needs a full list of the population
opportunity sampling 方便抽样	whoever is available	may not represent the population
self-selected sampling 自愿抽样	volunteers answer an advert	volunteers may be different
purposive sampling 目的抽样	people chosen for a feature	the researcher's choice may be biased
snowball sampling 滚雪球抽样	participants recruit others	people know each other, so they are alike

Purposive and snowball sampling are common for interviews, when the researcher needs people with a special experience.

Questionnaires, interviews and observations

A **questionnaire** 问卷 can use closed questions (yes/no, or a **Likert scale** 李克特量表 from 1 "strongly disagree" to 5 "strongly agree") or open questions. Closed answers are easy to count; open answers give reasons. People may give the answer that sounds good: **social desirability bias** 社会期望偏差. Anonymous questionnaires reduce it.

An **interview** 访谈 can be structured (fixed questions), semi-structured (an interview guide, with follow-up questions) or unstructured. A **focus group** 焦点小组 is an interview with about 6 to 10 people at once, where people's answers spark each other's ideas, but a strong speaker can lead the group. Interviews are recorded, transcribed and analysed by finding themes.

An **observation** 观察 can be naturalistic (a real setting) or controlled, overt (people know) or covert (they do not), and participant or non-participant. Observers use a **behaviour checklist** 行为清单 with clear categories, for example "hits", "shares a toy", "helps". Two observers record the same sessions, and high agreement shows **inter-rater reliability** 评分者间信度.

Judging quality

Issue	Meaning	Example and fix
participant bias 参与者偏差	participants change their behaviour	**demand characteristics** 需求特征: they guess the aim; fix: hide the aim, debrief later
researcher bias 研究者偏差	the researcher's expectations affect results	fix: a **double-blind** 双盲 design or a second coder
generalisability 可推广性	results apply to the population	a random, large sample helps
credibility 可信度	qualitative findings reflect what participants meant	fix: **triangulation** 三角验证 (several methods or researchers)
transferability 可迁移性	qualitative findings apply to other settings	fix: describe the setting in detail

Ethics

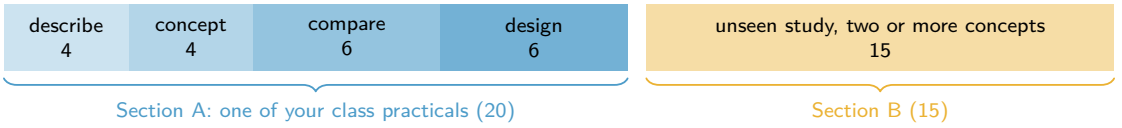
Every study must follow ethical rules. The main ones are **informed consent** 知情同意 (people know what they agree to; parents consent for children under 16), the **right to withdraw** 退出权 at any time, no **deception** 欺骗 unless it is necessary and harmless, **debriefing** 事后说明 (telling participants the true aim afterwards), **protection from harm** 免受伤害 and **confidentiality** 保密 (no names in the report). Responsibility,

exercises.lol exercises.com.cn

one of the six concepts, asks you to apply these rules to a particular study.

Paper 2

Section A asks four questions about one class practical: describe what you did (4 marks), explain a concept in relation to it (4 marks), compare it with another method (6 marks) and design a study with a different method on the same topic (6 marks).



Paper 2: 20 marks on your practical, 15 on an unseen study.

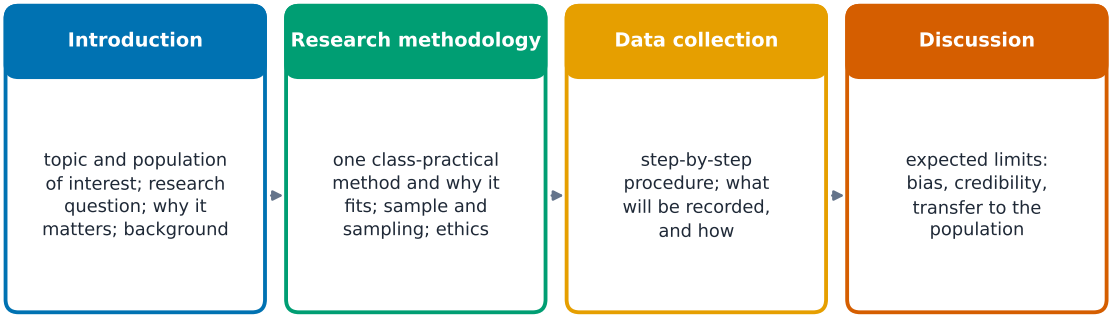
Worked example. *Describe how you used an interview or focus group in your class practical.* (4 marks)

> Our aim was to find out how IB students experience stress before mock exams. We used purposive sampling to choose four DP2 students who had just taken mocks. Each gave informed consent. We ran semi-structured interviews of about 15 minutes with six open questions, such as "What did you do the evening before your first exam?", and recorded them. We transcribed the recordings and coded them, and two themes appeared: lack of sleep and comparing scores with friends.

Section B (15 marks) gives you an unseen study. You discuss it with two or more of four concepts: bias, causality, measurement and responsibility. For each concept: point to a detail in the study, explain its effect on the conclusion, and suggest a better design.

The research proposal (internal assessment)

The internal assessment is a research proposal of 24 marks. You choose a topic and a population of interest (for example, international students in their first year in China), and plan a study with one of the four class-practical methods. You argue for every choice, but you do not collect data.



You plan the study in full and argue for each choice; you do not collect the data.

The four parts of the research proposal

Example plan: *How do first-year international students in Ningbo experience making friends?* Method: semi-structured interviews, because the question is about experience and needs rich data. Sample: purposive sampling of eight students, through the university's international office. Ethics: informed consent, a right to withdraw, no names, and information about counselling services. Discussion: the researcher's own views could shape the questions (bias), so a second researcher codes the transcripts; eight students from one university may not transfer to other cities.

Checklist

- The six methods, with a strength and a limit of each; quantitative and qualitative data.
- IV, DV, confounding variables; research and null hypotheses; the three designs, counterbalancing and random allocation; types of experiment.
- Five sampling techniques with their problems.
- Questionnaires (Likert, social desirability), interviews and focus groups, observations (checklists, inter-rater reliability).
- Participant and researcher bias; generalisability, credibility, transferability, triangulation.
- The ethical rules, and how responsibility applies them.
- Paper 2 Section A (4, 4, 6, 6 marks) and Section B (15 marks, two or more concepts).
- The research proposal: four parts, one class-practical method, planned but not carried out.

exercises.lol exercises.com.cn