Learn these by heart before the exam. 考试前把这些内容背熟。

Research Methods and Statistics

Only a true experiment shows cause. It needs random assignment, an independent variable the researcher manipulates, and a dependent variable that is measured.

Confounding variable 混淆变量: an uncontrolled difference between groups that could explain the result instead of the IV

Non-experimental designs: correlational (measures a relationship, never cause), naturalistic observation, case study, survey, meta-analysis.

$-1 \le r \le +1$ the sign gives direction, the size gives strength; $r = 0$ means no linear relationship 相关系数

Random SAMPLING makes a sample representative. Random ASSIGNMENT makes groups equivalent. They do different jobs; do not swap them.

Controls against bias: placebo, single-blind, double-blind, operational definitions, counterbalancing.

Statistical significance 统计显著性: the result is unlikely to be chance alone; a small p-value, conventionally below 0.05

Distributions: normal (mean = median = mode), positively skewed (tail right, mean pulled up), negatively skewed (tail left). Mean is dragged by outliers; median is not.

Ethics: informed consent, protection from harm, confidentiality, deception only when justified, debriefing afterwards, IRB approval.

Biological Bases of Behavior

Neuron: dendrites receive, soma integrates, axon carries the action potential, terminals release neurotransmitter across the synapse. Myelin speeds conduction.

All-or-none law 全或无定律: a neuron fires at full strength or not at all once threshold is reached; intensity is coded by rate, not size

Key neurotransmitters: dopamine (reward, movement), serotonin (mood, sleep), acetylcholine (muscle, memory), GABA (main inhibitory), glutamate (main excitatory), endorphins (pain relief), norepinephrine (arousal).

Agonists mimic or increase a neurotransmitter; antagonists block it. Reuptake inhibitors leave more in the synapse.

Brain: hindbrain (medulla breathing, cerebellum balance and procedural memory), limbic system (amygdala fear, hippocampus new memories, hypothalamus drives), cortex lobes (frontal planning, parietal touch, temporal hearing, occipital vision).

Broca's area damage impairs SPEAKING; Wernicke's area damage impairs UNDERSTANDING. Split-brain work shows lateralisation.

Nervous system: central versus peripheral; within peripheral, somatic (voluntary) versus autonomic. Sympathetic arouses, parasympathetic calms.

Sleep cycles through NREM stages into REM about every 90 minutes. REM carries vivid dreaming with muscle paralysis; deep NREM consolidates memory.

Sensory adaptation 感觉适应: reduced sensitivity to an unchanging stimulus; different from habituation, which is a learned drop in attention

Cognition, Memory and Intelligence

Bottom-up processing builds from the raw sensation; top-down processing uses expectation and schema. Perceptual set and context effects are top-down.

Gestalt grouping: figure-ground, proximity, similarity, closure, continuity. Depth cues: binocular (retinal disparity, convergence) versus monocular (relative size, interposition, texture gradient, linear perspective).

Memory model: encoding then storage then retrieval, across sensory, short-term or working, and long-term memory.

Working memory 工作记忆: Baddeley's active store: phonological loop, visuospatial sketchpad, central executive, episodic buffer

Long-term memory splits into explicit or declarative (episodic, semantic) and implicit (procedural, conditioned responses).

Better encoding: chunking, mnemonics, elaborative rehearsal, spacing effect, self-reference effect. Massed cramming loses to distributed practice.

Forgetting: encoding failure, decay, proactive interference (old blocks new), retroactive interference (new blocks old), retrieval failure, motivated forgetting.

Serial position effect gives primacy (rehearsed into LTM) plus recency (still in STM). Loss of the middle is the classic curve.

Thinking errors: confirmation bias, availability heuristic, representativeness heuristic, anchoring, framing, functional fixedness, hindsight bias, overconfidence.

Intelligence tests must be standardised, reliable (consistent) and valid (measures what it claims). Flynn effect is the generational rise in scores; stereotype threat depresses performance.

Development and Learning

Piaget: sensorimotor (object permanence), preoperational (egocentrism, no conservation), concrete operational (conservation, logic on real things), formal operational (abstract reasoning).

Vygotsky stresses the social route: the zone of proximal development plus scaffolding by a more skilled partner.

Erikson's crises run trust versus mistrust through to integrity versus despair; adolescence is identity versus role confusion.

Attachment (Ainsworth Strange Situation): secure, avoidant, anxious or ambivalent, disorganised. Harlow's monkeys showed contact comfort beats feeding.

Parenting styles: authoritative (warm and firm, best outcomes), authoritarian, permissive, neglectful.

Classical conditioning 经典条件作用: a neutral stimulus paired with a UCS becomes a CS producing a CR; Pavlov, and Watson's Little Albert

Classical terms: acquisition, extinction, spontaneous recovery, generalisation, discrimination, higher-order conditioning, taste aversion (one trial, biologically prepared).

Operant conditioning 操作性条件作用: behaviour is shaped by its consequence; Thorndike's law of effect, Skinner's boxes

Reinforcement INCREASES behaviour, punishment DECREASES it; positive means add, negative means remove. Negative reinforcement is not punishment.

Schedules: variable-ratio resists extinction best; fixed-interval gives the scalloped pattern. Shaping reinforces successive approximations.

Observational learning (Bandura's Bobo doll) needs attention, retention, reproduction and motivation. Latent learning shows learning without performance.

Social Psychology and Personality

Fundamental attribution error 基本归因错误: over-weighting disposition and under-weighting situation when explaining ANOTHER person's behaviour

Self-serving bias credits success to ourselves and failure to circumstances. Actor-observer bias flips attribution between self and other.

Attitude change: cognitive dissonance (Festinger) drives attitude to follow behaviour, especially with low external justification. Foot-in-the-door and central versus peripheral routes to persuasion.

Conformity (Asch lines) rises with group size, unanimity and ambiguity. Obedience (Milgram) rises with authority, proximity of the authority and distance from the victim.

Group effects: social facilitation (easy tasks improve), social loafing, deindividuation, group polarisation, groupthink, bystander effect through diffusion of responsibility.

Personality theories: psychodynamic (unconscious, defence mechanisms), humanistic (Rogers' unconditional positive regard, Maslow's hierarchy), trait (Big Five: openness, conscientiousness, extraversion, agreeableness, neuroticism), social-cognitive (Bandura's reciprocal determinism, self-efficacy).

Locus of control: internal means outcomes feel self-determined; external means they feel driven by luck or others.

Mental and Physical Health

Disorders are classified by the DSM. The bar is distress, dysfunction, deviance and danger, not unusual behaviour alone.

Biopsychosocial model 生物心理社会模型: biological, psychological and sociocultural causes act together; the default explanation frame in this unit

Anxiety-related: generalised anxiety, panic, specific phobia, agoraphobia; obsessive-compulsive and post-traumatic stress are their own categories.

Depressive and bipolar disorders; schizophrenia with positive symptoms (hallucinations, delusions, disorganised speech) and negative symptoms (flat affect, avolition).

Therapies match theory: psychodynamic (insight), humanistic (client-centred), behavioural (exposure, systematic desensitisation, token economy), cognitive and CBT (restructure thoughts), biomedical (drugs, ECT).

Stress: Selye's general adaptation syndrome runs alarm, resistance, exhaustion. Problem-focused coping targets the stressor; emotion-focused targets the feeling.

Exam technique

Answer the AAQ and EBQ in full sentences and in order. Each part is scored separately, so label your parts and never bundle two answers into one paragraph.

APPLY means link the concept to the scenario's own details by name. Defining the term alone earns nothing.

For the EBQ, take a clear position first, then use the sources by number as evidence and explain HOW each supports the claim.

Never write that a correlational study shows a cause. Say it shows a relationship, then name a possible third variable.

Use the technical term, not the everyday word: negative reinforcement, not punishment; encoding

failure, not forgetting.