Chapter 1: Variations in Psychological Attributes

Review Questions — Review Questions

Q1 How do psychologists characterise and define intelligence?

Intelligence is the global capacity to understand the world, think rationally and use available resources effectively when faced with challenges. People differ in their ability to understand complex ideas, adapt to the environment, learn from experience, reason and overcome obstacles. Psychologists have defined it in different ways. Alfred Binet saw it as the ability to judge well, understand well and reason well. Wechsler stressed adaptation and defined it as the global and aggregate capacity of an individual to think rationally, act purposefully and deal effectively with the environment. Gardner and Sternberg went further: an intelligent person not only adapts to the environment but also actively modifies, shapes and selects it. Sternberg defines intelligence as the ability to adapt, to shape and select the environment to accomplish one's goals and those of one's society and culture. The psychological notion is thus broader than the commonsense idea of mental alertness or quick learning.

Q2 To what extent is our intelligence the result of heredity (nature) and environment (nurture)? Discuss.

Psychologists agree that intelligence is a product of the complex interaction of heredity (nature) and environment (nurture). Evidence for heredity comes from twin and adoption studies. The intelligence of identical twins reared together correlates almost 0.90; identical twins reared apart correlate 0.72; fraternal twins reared together about 0.60; brothers and sisters reared together about 0.50; and siblings reared apart about 0.25. Adopted children's intelligence is more similar to that of their biological than adoptive parents. Evidence for environment: as adopted children grow older, their intelligence moves closer to that of their adoptive parents, and children from disadvantaged homes adopted into higher socio-economic families show a large rise in scores. Environmental deprivation lowers intelligence, while rich nutrition, a good family background and quality schooling raise it. Heredity sets a range within which development is shaped by the support and opportunities the environment offers.

Q3 Explain briefly the multiple intelligences identified by Gardner.

Howard Gardner proposed that intelligence is not a single entity but consists of distinct, mutually independent types that interact to solve problems. He described eight types. (1) Linguistic: using language fluently and flexibly; poets and writers. (2) Logical-Mathematical: logical, critical thinking and abstract reasoning; scientists. (3) Spatial: forming and transforming mental images; pilots, sailors, painters, architects, surgeons. (4) Musical: producing and manipulating musical rhythms and patterns; sensitivity to sounds. (5) Bodily-Kinaesthetic: flexible, creative use of the whole body or its parts; athletes, dancers, actors, surgeons. (6) Interpersonal: understanding others' motives, feelings and behaviour; counsellors, politicians, social workers. (7) Intrapersonal: understanding one's own feelings, strengths and limitations; philosophers and spiritual leaders. (8) Naturalistic: identifying and discriminating features of the natural world; farmers, botanists, zoologists, bird watchers.

Q4 How does the triarchic theory help us to understand intelligence?

Robert Sternberg's triarchic theory views intelligence as the ability to adapt to, shape and select the environment to accomplish one's goals and those of one's society and culture. It helps us see that intelligence has three basic forms. Componential (analytical) intelligence is the analysis of information to solve problems; it has knowledge-acquisition, meta (planning) and performance components, and it brings success in school. Experiential (creative) intelligence is the creative use of past experience to solve novel problems; such persons integrate experiences in original ways, make discoveries and quickly spot crucial information. Contextual (practical) intelligence is the ability to deal with everyday environmental demands, often called street smartness or business sense; such persons adapt to, select or modify their environment and succeed in life. The theory shows that academic scores capture only one part of intelligence, and it represents the information-processing approach.

Q5 "Any intellectual activity involves the independent functioning of three neurological systems". Explain with reference to PASS model.

The PASS (Planning, Attention-arousal, Simultaneous-successive) model of J.P. Das, Naglieri and Kirby holds that intellectual activity involves the interdependent functioning of three neurological systems called functional units of the brain, responsible for arousal/attention, coding (processing) and planning. (1) Arousal/Attention: arousal is basic to behaviour and lets us attend to stimuli; an optimal level focuses attention on the relevant aspects of a problem, while too much or too little interferes. For instance, news of a test arouses a student to attend to specific chapters. (2) Simultaneous and successive processing: simultaneous processing integrates information by perceiving relations among concepts, as in Raven's Progressive Matrices; successive processing remembers information serially, as in learning digits, alphabets or tables. (3) Planning: thinking of possible courses of action, implementing them, evaluating them and modifying the plan if it fails, for example making a study schedule. These processes work on a knowledge base, are interactive and dynamic, yet each has distinctive functions. Das and Naglieri devised the Cognitive Assessment System (CAS) to measure them.

Q6 Are there cultural differences in the conceptualisation of intelligence?

Yes. Culture provides the context in which intelligence develops. Vygotsky argued that elementary mental functions such as crying or walking are universal, but higher functions like problem solving and thinking are largely culture-produced. Technologically advanced societies foster generalisation, abstraction, speed, analysis and achievement orientation, called technological intelligence; western intelligence tests look for exactly these skills. Many Asian and African societies value it less. They emphasise social and emotional skills, self-reflection and a collectivistic orientation over personal achievement. The Indian tradition views intelligence as integral intelligence, stressing connectivity with the social and world environment and a holistic balance of cognitive and non-cognitive processes. The Sanskrit concept of buddhi includes mental effort, determined action, feelings and opinions along with knowledge and discrimination. Its facets are cognitive capacity, social competence, emotional competence and entrepreneurial competence. Sternberg's contextual intelligence also treats intelligence as a product of culture.

Q7 What is IQ? How do psychologists classify people on the basis of their IQ scores?

The Intelligence Quotient (IQ), devised by William Stern in 1912, is mental age divided by chronological age, multiplied by 100: IQ = (MA / CA) x 100. When MA equals CA, IQ is 100; if MA exceeds CA, IQ is above 100; if MA is lower, IQ is below 100. For example, a 10-year-old with MA 12 has IQ 120. IQ scores follow a bell-shaped normal curve with a mean of 100. Classification (per cent of population): above 130 very superior (2.2); 120-130 superior (6.7); 110-119 high average (16.1); 90-109 average (50.0); 80-89 low average (16.1); 70-79 borderline (6.7); below 70 intellectually disabled (2.2). Those above 130 are considered intellectually gifted, and those below 70 are suspected to have intellectual disability.

Q8 How can you differentiate between verbal and performance tests of intelligence?

Verbal tests require verbal responses, given orally or in writing, so they can be used only with literate people and are more likely to carry a cultural bias. Performance tests require the subject to manipulate objects and materials to perform a task; written language is not needed. For example, Kohs' Block Design Test asks the subject to arrange wooden blocks within a time limit to produce a given design. A major advantage of performance tests is that they can be easily administered to people from different cultures, which helps reduce cultural bias. Non-verbal tests, such as Raven's Progressive Matrices, use pictures or illustrations as items. A test may be fully verbal, fully non-verbal, fully performance-based, or a mixture of these.

Q9 All persons do not have the same intellectual capacity. How do individuals vary in their intellectual ability? Explain.

IQ scores are distributed on a normal curve: most people fall in the middle range, and only a few have very high or very low scores. About 50 per cent have average intelligence (IQ 90-109). At the extremes are the intellectually gifted (IQ above 130, about 2 per cent) and the intellectually disabled (IQ below 70, about 2 per cent). Intellectual disability means significantly sub-average intellectual functioning, deficits in adaptive behaviour, and onset during the developmental period (0-18 years). Levels are mild (IQ 55 to about 70), moderate (35-40 to about 50-55), severe (20-25 to about 35-40) and profound (below 20-25). Those with mild disability can function quite independently, while those with severe and profound disability need lifelong care. Gifted children show high ability, creativity and commitment, advanced logical thinking, fast information processing, strong intrinsic motivation and independent thinking. Talent is narrower than giftedness and means remarkable ability in a specific field.

Q10 Which of the two, IQ or EQ, do you think would be more related to success in life and why?

EQ appears more related to overall success in life, although IQ still matters. IQ reflects general cognitive competence and helps in school-related achievement. However, a good IQ and scholastic record is not enough to succeed in life: many academically talented people face problems in family, workplace and interpersonal relationships, possibly because they lack emotional intelligence. Emotional intelligence, introduced by Salovey and Mayer, is the ability to monitor one's own and others' emotions, discriminate among them and use the information to guide thinking and action. It includes perceiving emotions, relating them to thoughts, regulating them, motivating oneself, restraining impulses and handling relationships. Programmes that improve EQ raise academic achievement, encourage cooperation and reduce antisocial behaviour, preparing students for life's challenges. Success is therefore best served by a balance, with EQ as the stronger complement in handling real-life situations.

Q11 How is 'aptitude' different from 'interest' and 'intelligence'? How is aptitude measured?

Aptitude is a special ability in a particular field: a combination of characteristics indicating the capacity to acquire a specific knowledge or skill after training. Interest is a preference for a particular activity; aptitude is the potentiality to perform it. A person may be interested but lack aptitude, or have aptitude without interest, and in both cases the outcome is unsatisfactory. Success needs both, for example high mechanical aptitude plus strong interest in engineering. Intelligence is a general mental ability assessed by intelligence tests, whereas aptitude is specific. People of similar intelligence often differ widely in acquiring particular skills. Aptitude is measured with aptitude tests, either independent (specialised) tests such as clerical, mechanical, numerical and typing aptitude, or multiple (generalised) test batteries such as the Differential Aptitude Tests (DAT), the General Aptitude Test Battery (GATB) and the Armed Services Vocational Aptitude Battery (ASVAB). DAT has eight subtests, including verbal, numerical, abstract and mechanical reasoning, space relations, spelling and language usage.

Q12 How is creativity related to intelligence?

The relationship is positive, but intelligence alone does not ensure creativity. Every creative act needs some minimum ability to acquire knowledge and to comprehend, retain and retrieve it. A writer needs facility with language and a scientist needs reasoning. So a certain level of intelligence is required, but beyond that level intelligence does not correlate well with creativity. Terman found that people with high IQ were not necessarily creative, and creative ideas can come from people without very high IQ. High and low creativity are found in both highly intelligent and average children. Intelligence tests involve convergent thinking, finding the one right answer, while creativity tests are open-ended and assess divergent thinking, such as producing a variety of original ideas. A person can be both intelligent and creative, but intelligent persons need not be creative. Sunita, an excellent but unoriginal student, and Rita, an average but inventive one, illustrate this.