



BUS 2201
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03: Development and Intelligence

Chapter Content:

- Cognitive Development
- Piaget's Theory of Cognitive Development
- Psychosocial Development
- Cognitive Development in Adolescence
- Moral Development
- Intelligences Theory
- Measuring Intelligence



Development

Human development the scientific study of the changes that occur in people as they age from conception until death.

Human development is determined by both heredity (Nature) and environmental (Nurture) factors.

Nature

The influence of our inherited characteristics on our personality, physical growth, intellectual growth, and social interactions.



Development....

Nurture

The influence of the environment on personality, physical growth, intellectual growth, and social interactions.



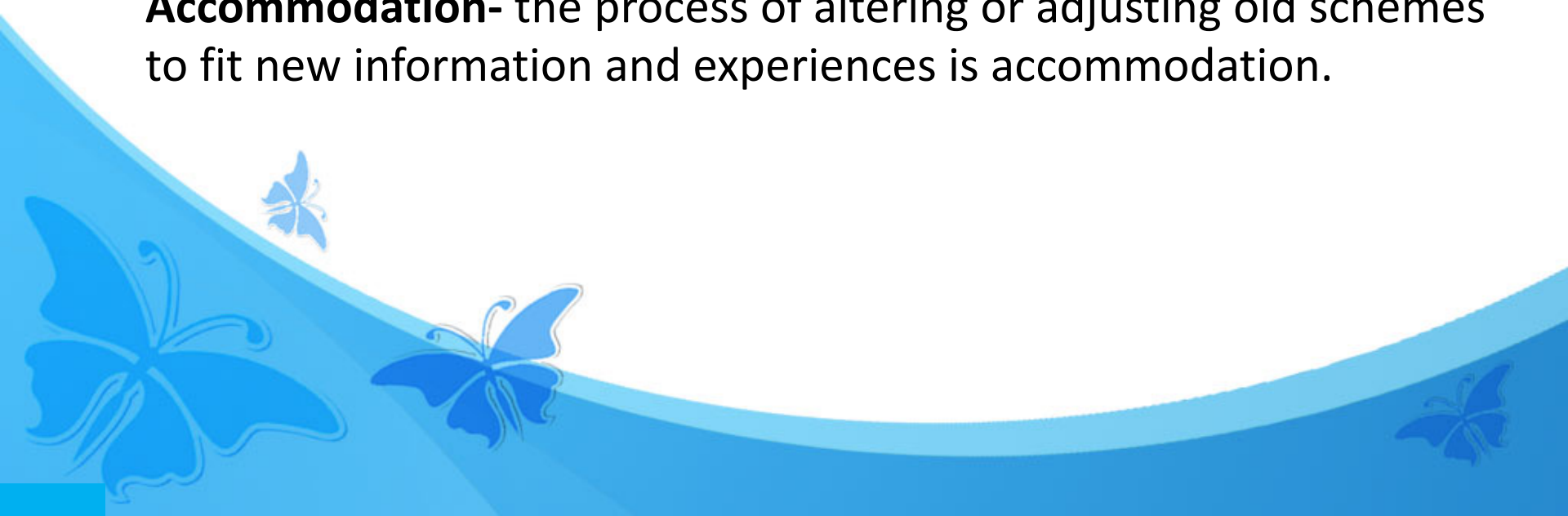
Cognitive Development of infants

Cognitive development is the development of thinking, problem solving, and memory.

Schemes- in this case, a mental concept formed through experiences with objects and events.

Assimilation- children first try to understand new things in terms of schemes they already possess, a process called assimilation.

Accommodation- the process of altering or adjusting old schemes to fit new information and experiences is accommodation.



Piaget's Theory of Cognitive Development

One of the three ways of examining the development of cognition is found in the work of Jean Piaget.

Piaget's theory of cognitive development is a four stage model of development including;

- **Sensorimotor stage**
- **Preoperational stage**
- **Concrete operations stage**
- **Formal operations stage**



Piaget's Theory of Cognitive Development.....

Sensorimotor stage (0-2 years)

Piaget's first stage of cognitive development, in which the infant uses its senses and motor abilities to interact with objects in the environment.

- **Object Permanence**- the knowledge that an object exists even when it is not in sight.

Preoperational stage (0-7 years)

Piaget's second stage of cognitive development, in which the preschool child learns to use language as a means of exploring the world.

- **Animism**- believe that everything is alive and has feelings just like their own
- **Egocentrism**- the inability to see the world through anyone else's eyes but one's own.

Piaget's Theory of Cognitive Development.....

Concrete operations stage (7-12)

Piaget's third stage of cognitive development, in which the school-age child becomes capable of logical thought processes but is not yet capable of abstract thinking.

Formal operations stage (12- Adult)

Piaget's last stage of cognitive development, in which the adolescent becomes capable of abstract thinking

Psychological Development

The psychological and social development of infants and children involves the development of personality, relationships, and a sense of being male or female.

- **Temperament**

Temperament is the long-lasting behavioral and emotional characteristics that make each person different. It is one of the first ways in which infants demonstrate that they have different personalities.



Psychological Development.....

Three basic temperament styles of infants:

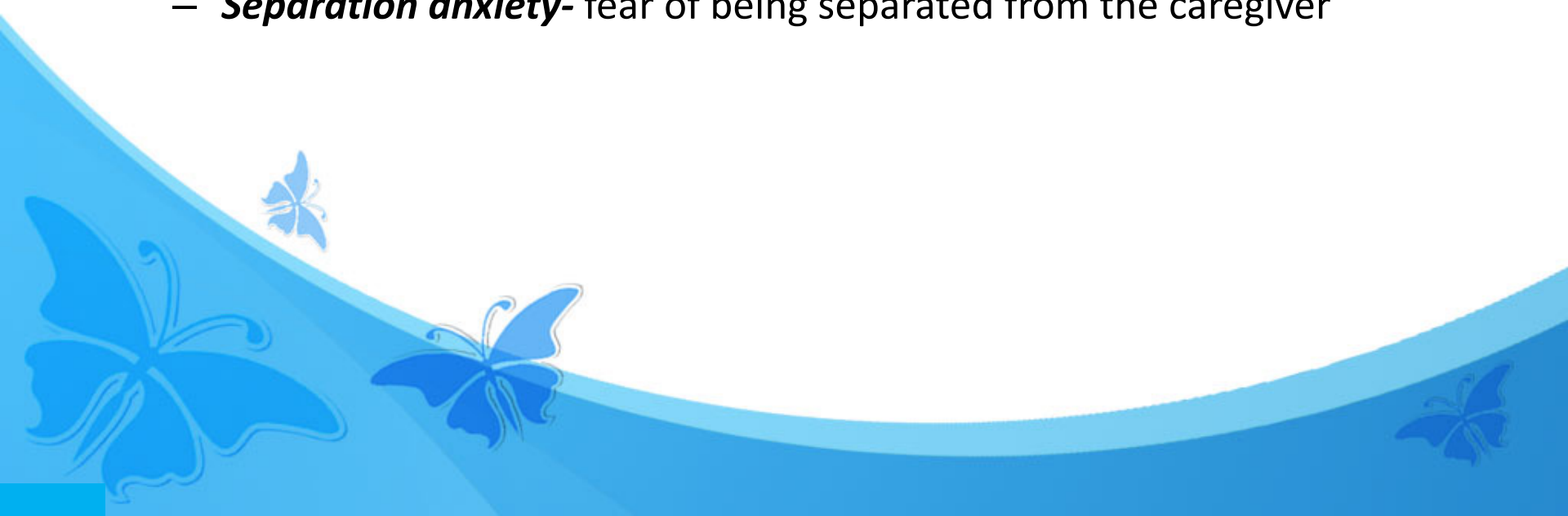
- **Easy:** “Easy” babies are regular in their schedules of waking, sleeping, and eating and are adaptable to change. Easy babies are happy babies and when distressed are easily soothed.
- **Difficult:** “Difficult” babies are almost the opposite of easy ones. Difficult babies tend to be irregular in their schedules and are very unhappy about change of any kind. They are loud, active, and tend to be crabby rather than happy.
- **Slow to warm up:** This kind of temperament is associated with infants who are less grumpy, quieter, and more regular than difficult children but who are slow to adapt to change. If change is introduced gradually, these babies will “warm up” to new people and new situations.

Psychological Development.....

■ Attachment

The emotional bond that forms between an infant and a primary caregiver is called **attachment**. Attachment is an extremely important development in the social and emotional life of the infant, usually forming within the first 6 months.

- ***Stranger anxiety***- wariness of strangers
- ***Separation anxiety***- fear of being separated from the caregiver



Psychological Development.....

Attachment Styles:

- **Secure**
- **Avoidant**
- **Ambivalent**
- **Disorganized–disoriented**



The Development of the Self-Concept

The **self-concept** is the image you have of yourself, and it is based on your interactions with the important people in your life. As infants experience the world around them, they slowly learn to separate “me” from both physical surroundings and the other people in their world.



Cognitive Development in Adolescence

- **Adolescence** is the period of life from about age 13 to the early 20s, during which a young person is no longer physically a child but is not yet an independent, self-supporting adult.
- Adolescence may move into Piaget's final stage of formal operations, in which abstract thinking becomes possible. Teenagers begin to think about hypothetical situations, leading to a picture of what an "ideal" world would be like.
- Two ways in which this adolescent egocentrism emerges are the **personal fable** and the **imaginary audience**

Cognitive Development in Adolescence.....

- **Personal fable-** type of thought common to adolescents in which young people believe themselves to be unique and protected from harm.
- **Imaginary audience-** type of thought common to adolescents in which young people believe that other people are just as concerned about the adolescent's thoughts and characteristics as they themselves are.



Moral Development

Another important aspect in the cognitive advances that occur in adolescence concerns the teenager 's understanding of “right” and “wrong.”

Level of Morality:

- **Pre-conventional morality-** (very young children)
- **Conventional morality-** (older children, adolescents, and most adults)
- **Post-conventional morality-** (about one-fifth of the adult population)

Moral Development.....

Level of Morality....

Table 8.5 Kohlberg's Three Levels of Morality

Level of Morality	How Rules are Understood	Example
Preconventional morality (very young children)	Morality of an action is based on the consequences; actions that get rewarded are right and those that earn punishment are wrong.	A child who takes money from a parent's wallet and does not get caught does not see that action as wrong.
Conventional* morality (older children, adolescents, and most adults)	An action is morally right if it conforms to the rules of the society and wrong if it does not.	A child scolds a parent for littering because there is a sign saying not to do so.
Postconventional morality (about one-fifth of the adult population)	Morality is now determined by the experiences and judgment of the person, even if that judgment disagrees with society's rules.	A husband helps his dying wife commit suicide to end her pain, even though society considers that action to be murder.



Intelligence

The ability to learn from one's experiences, acquire knowledge, and use resources effectively in adapting to new situations or solving problems.

Spearman'S Factors of intelligence

- **G factor**- the ability to reason and solve problems, or general intelligence.
- **S factor** - the ability to excel in certain areas, or specific intelligence.

Gardner's Multiple Intelligences Theory

Gardner believes that they are different aspects of intelligence, along with several other abilities. He originally listed seven different kinds of intelligence but later added an eighth type and then proposed a tentative ninth.



Gardner's Multiple Intelligences Theory...

Nine aspects of intelligence

Table 7.2 Gardner's Nine Intelligences		
Type of Intelligence	Description	Sample Occupation
Verbal/linguistic	Ability to use language	Writers, speakers
Musical	Ability to compose and/or perform music	Musicians, even those who do not read musical notes but can perform and compose
Logical/mathematical	Ability to think logically and to solve mathematical problems	Scientists, engineers
Visual/spatial	Ability to understand how objects are oriented in space	Pilots, astronauts, artists, navigators
Movement	Ability to control one's body motions	Dancers, athletes
Interpersonal	Sensitivity to others and understanding motivation of others	Psychologists, managers
Intrapersonal	Understanding of one's emotions and how they guide actions	Various people-oriented careers
Naturalist	Ability to recognize the patterns found in nature	Farmers, landscapers, biologists, botanists
Existentialist (a candidate intelligence)	Ability to see the "big picture" of the human world by asking questions about life, death, and the ultimate reality of human existence	Various careers, philosophical thinkers

SOURCE: Gardner, 1998, 1999b.

Sternberg's Triarchic Theory

Triarchic theory of intelligence- Sternberg's theory that there are three kinds of intelligence: analytical, creative, and practical.

- **Analytical intelligence-** the ability to break problems down into component parts, or analysis, for problem solving.
- **Creative intelligence-** the ability to deal with new and different concepts and to come up with new ways of solving problems.
- **Practical intelligence-** the ability to use information to get along in life and become successful.



Measuring Intelligence

- **Binet's Mental Ability Test**

A Test that distinguishes between fast and slow learners and also between children of different age groups as well.

Intelligence Quotient, or IQ

A number representing a measure of intelligence, resulting from the division of one's mental age by one's chronological age and then multiplying that quotient by 100.

$$IQ = MA/CA \times 100$$

For example, if a child who is 10 years old takes the test and scores a mental age of 15, the IQ would look like this:

$$IQ = 15/10 \times 100 = 150$$

The Wechsler Tests

David Wechsler was the first to devise a series of tests designed for specific age groups. He developed an IQ test specifically for adults. Wechsler test uses four types of index to determine the IQ of a person;

- **Verbal Comprehension index**
- **Perceptual Reasoning index**
- **Working Memory index**
- **Processing Speed index**



The Wechsler Tests....

Table 7.3 Simulated Sample Items From the Wechsler Adult Intelligence Scale (WAIS-IV)

Simulated Sample Test Items

Verbal Comprehension Index

Similarities	In what way are a circle and a triangle alike? In what way are a saw and a hammer alike?
Vocabulary	What is a hippopotamus? What does “resemble” mean?
Information	What is steam made of? What is pepper? Who wrote <i>Tom Sawyer</i> ?

Perceptual Reasoning Index

Block Design	After looking at a pattern or design, try to arrange small cubes in the same pattern.
Matrix Reasoning	After looking at an incomplete matrix pattern or series, select an option that completes the matrix or series.
Visual Puzzles	Look at a completed puzzle and select three components from a set of options that would recreate the puzzle, all within a specified time limit.

The Wechsler Tests....

Table 7.3 Simulated Sample Items From the Wechsler Adult Intelligence Scale (WAIS-IV)

Simulated Sample Test Items

Working Memory Index

Digit Span	Recall lists of numbers, some lists forward and some lists in reverse order, and recall a mixed list of numbers in correct ascending order.
Arithmetic	Three women divided 18 golf balls equally among themselves. How many golf balls did each person receive? If two buttons cost \$0.15, what will be the cost of a dozen buttons?

Processing Speed Index

Symbol Search	Visually scan a group of symbols to identify specific target symbols, within a specified time limit.
Coding	Learn a different symbol for specific numbers and then fill in the blank under the number with the correct symbol. (This test is timed.)

Simulated items and descriptions similar to those in the *Wechsler Adult Intelligence Scale—Fourth Edition* (2008).

Test Construction: Good Test, Bad Test?

- **Reliability**

The tendency of a test to produce the same scores again and again each time it is given to the same people.

- **Validity**

The degree to which a test actually measures what it's supposed to measure.

- **Deviation IQ scores**

A type of intelligence measure that assumes that IQ is normally distributed around a mean of 100 with a standard deviation of about 15.

IQ Tests and Cultural Bias

- Which one of the five is least like the other four?

DOG—CAR—CAT—BIRD—FISH

- The answer is supposed to be “car,” which is the only one of the five that is not alive.
- But a Japanese child, living in a culture that relies on the sea for so much of its food and culture, might choose “fish,” because none of the others are found in the ocean. That child’s test score would be lower but not because the child is not intelligent.

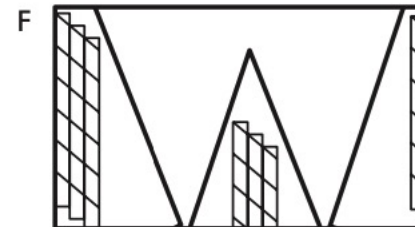
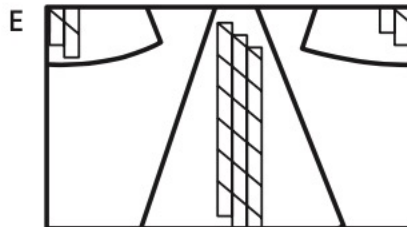
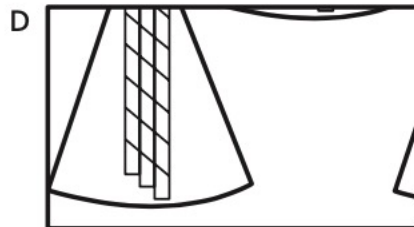
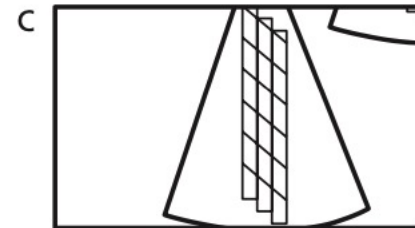
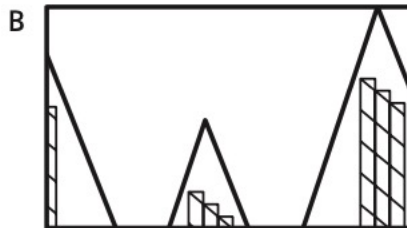
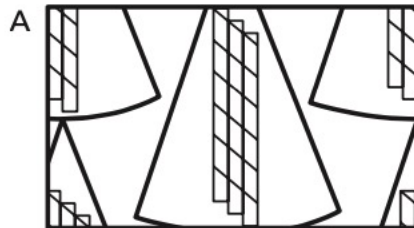
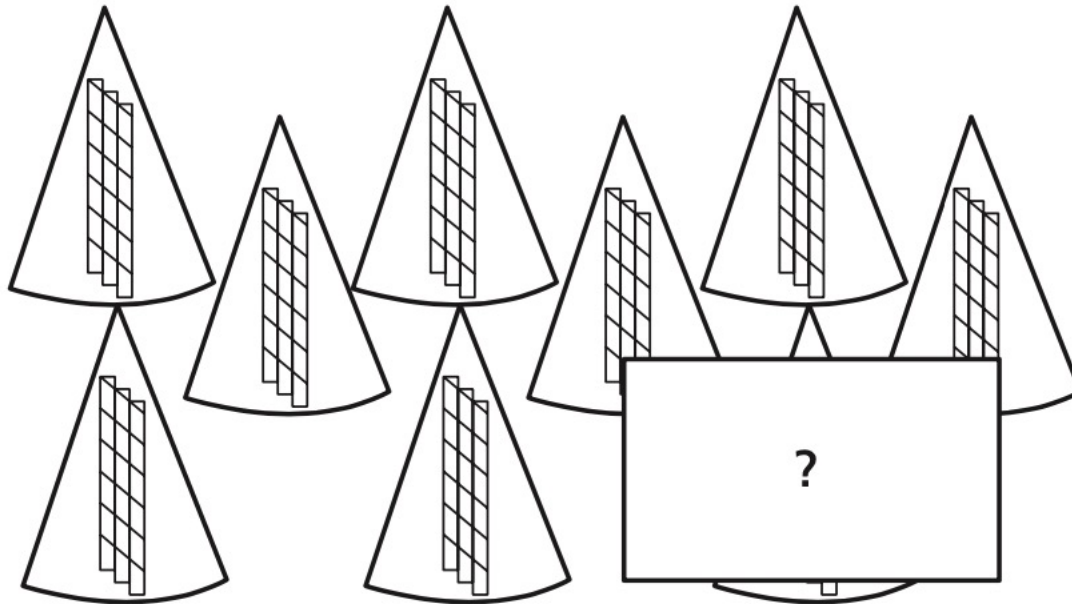


Raven's Progressive Matrices

Raven's Progressive Matrices, a test of abstract reasoning. The test consists of a series of items containing abstract patterns, either in a 2×2 or 2×3 matrix, from which test takers have to identify a missing portion that best completes a pattern.



Raven's Progressive Matrices....



Individual Differences in Intelligence

Intellectual disability (intellectual developmental disorder)

Condition in which a person's behavioral and cognitive skills exist at an earlier developmental stage than the skills of others who are the same chronological age; may also be referred to as developmentally delayed. This condition was formerly known as mental retardation



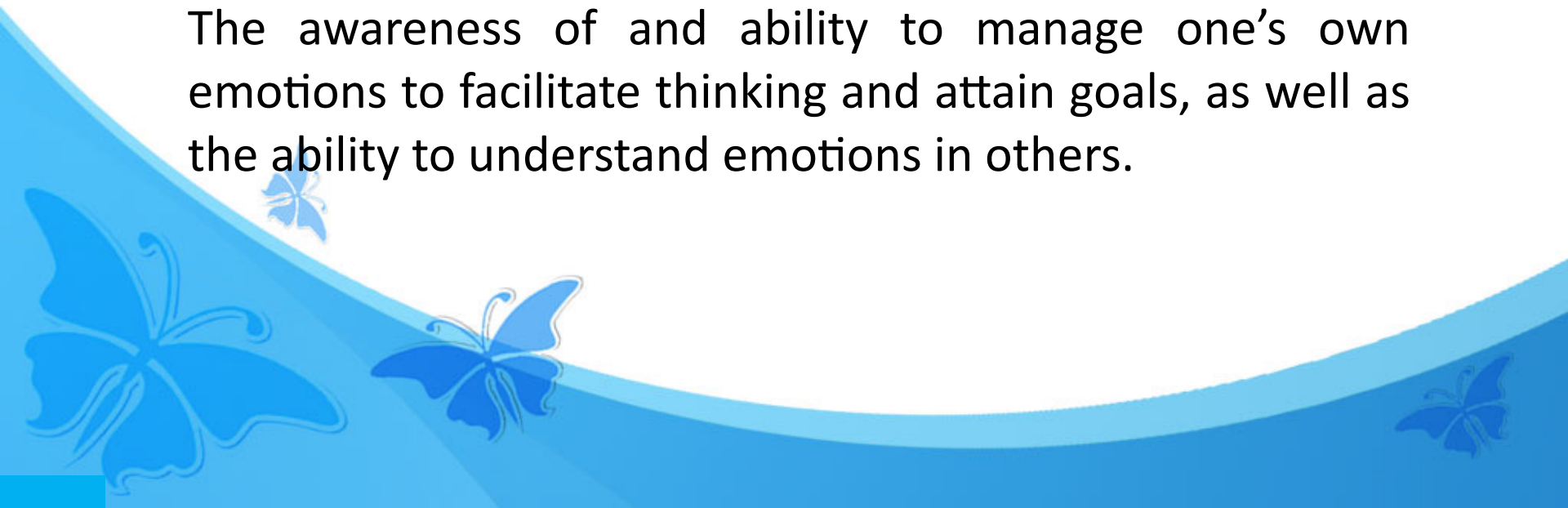
Individual Differences in Intelligence....

Giftedness

The 2 percent of the population falling on the upper end of the normal curve and typically possessing an IQ of 130 or above.

Emotional intelligence

The awareness of and ability to manage one's own emotions to facilitate thinking and attain goals, as well as the ability to understand emotions in others.



End of Topic 03

Next Topic:
04: Perception

