

## **GCSE Psychology**



## **Development Knowledge Organiser**

Name:

Form:

Teacher:

Class:

# DEVELOPMENT

## KEY DEBATES

- NATURE (innate development) vs. NURTURE (learned/society)
- REDUCTIONISM (Piaget - all stages universal & invariant)
- FIELD EXPERIMENT (Blackwell) & NATURAL EXPERIMENT (Piaget)

## PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

The theory suggests that children progress through **universal** (same for all across the world) and **invariant** (occur in the same order) stages of cognitive development.

### SENSORY-MOTOR STAGE (0-2 YEARS)

Explore the environment using **senses**, develop **motor movement**. Towards the end of this stage they develop **object permanence** (the ability to understand that objects exist even when not visually present).

### PRE-OPERATIONAL STAGE (2-7 YEARS)

Develop language skills & mental representation of objects & events. Is egocentric (only see the world from their point of view). Also show animism (treating inanimate objects as if they too are alive) & lack of reversibility (unable to work backwards in their thinking).

### CONCRETE-OPERATIONAL STAGE (7-11 YEARS)

Develop the ability to decenter (multiple aspects, e.g. looking at multiple letters to read a word) and conserve (the ability to understand that properties of objects remain the same even when changed in appearance), develop linguistic humour but cannot imagine the world abstractly.

### FORMAL OPERATIONAL STAGE (11+ YEARS)

Children are capable of forming and testing hypothesis, understand rules of formal logic and can solve abstract problems.

#### LIMITATIONS

- Too reductionist - all children go through the same stages based on maturation (ignores role of environment - parents, teachers, peers etc.)
- Saying stages are universal & invariant is over simplistic (e.g. in some countries children learn to conserve much earlier due to survival).

## NATURE

### PIAGET'S (1952) STUDY INTO THE CONSERVATION OF NUMBER

#### AIM

To see the stage of development when children are able to conserve.

#### SAMPLE

- Swiss children in the pre-operational stage (3-4 years) = more in stretched row.
- Children at the end of the pre-operational stage (5-6 years) = both the same, couldn't say why.
- Children in the concrete operational stage (7+) = both rows the same & could explain why.

#### RESEARCH METHOD

Natural experiment and cross-sectional study

#### PROCEDURE

- Each child was presented with two identical, parallel lines of counter.

Was asked "Is there the same number of counters in each row?"

- Then watched as one of the lines was spread out (no more counters were added).

- Was then asked for 2nd time "Is there the same number of counters in each row?"

Children in the concrete operational stage were able to conserve.

#### LIMITATIONS OF STUDY

- Sample too small & culturally biased (Swiss, own children) - cannot be generalised.
- Design is invalid - asked same question twice so some answered based on thinking it was wrong the 1st time.

## DWECK & WILLINGHAM'S LEARNING THEORIES

Dweck's learning theory states that **mindset** relates to the way that we think in relation to where our talents come from and whether these are changeable.

### GROWTH & FIXED MINDSET

**Growth mindset** - believe intelligence can be developed through experiences and if we work hard and learn skills then our abilities and therefore our intelligence will improve.

**Fixed mindset** - believe that intelligence is predefined and we are born with certain abilities. Fear failure as it reflects badly on their innate talents.

### PRaise FOR EFFORT

Teachers & parents play an important part in the development of different mindsets through giving praise for the amount of effort made.

**Willingham's learning theory** states that there is no evidence to support the view that individuals have preferences about how to learn - learning styles don't exist.

### LEARNING OCCURS THROUGH MEANING, NOT STYLES

Students are different in their abilities, interests and prior knowledge, but not in their learning styles. He argues for the importance of **meaning for learning**. When in class, most of the information that you are required to learn is not visual or auditory, it is meaning based - most learning takes place through understanding the meaning.

#### LIMITATIONS

- Dweck's theory can be criticised for focusing too much on the importance of nurture in that achievement is dependent on effort/praise (ignores biological learning difficulties & disabilities).
- Willingham ignores innate factors in development (e.g. hearing or sight loss).

## NURTURE

### BLACKWELL ET AL.'S (2007) STUDY INTO FIXED & GROWTH MINDSET

#### AIM

To see impact of growth mindset on maths ability, achievement and motivation.

#### SAMPLE

- 373 NY students
- 99 NY students
- Correlation study
- Field experiment

#### PROCEDURE

- 7th grade students given motivation questionnaire
- Students had either 8-week growth mindset intervention or control.
- 3 weeks after intervention - given questionnaire again.
- Teacher reports & maths grades also used.

#### FINDINGS & CONCLUSION

- Start of 7th grade = no correlation between mindset & maths. End of 7th grade = fixed/growth mindset a predictor of maths results.
- Growth mindset (GM) is related to maths ability & teaching GM has a positive impact on maths achievement.

#### LIMITATIONS OF STUDY

- Sample culturally biased (can't be generalised).
- Study too reductionist - only focuses on student mindset not influence of others.

## KEY CONCEPTS

### DEVELOPMENT

How we change & mature across our lifetime.

### STAGES OF BRAIN DEVELOPMENT

**Pre-natal (from conception to birth)** - develop neural tube, cerebral cortex, neurons and simple synapses.

**Childhood (from birth to 12)** - develop more neural connections, more dense synapses in the prefrontal cortex, understand cause & effect as connections strengthen.

**Adolescence (from 13-19)** - grey matter reaches maximum density, maturation of limbic system, pre-frontal cortex and frontal lobes.

**Adulthood (20+)** - fully matured pre-frontal cortex. Neurodegenerative diseases can be developed.

**INTELLIGENCE QUOTIENT TESTS (IQ)** - Measuring how we learn, think & problem-solve.

## APPLICATIONS OF RESEARCH

### READINESS FOR QUESTIONING

**How?** Ensuring that teachers ask students questions in a way that mirrors their development stages. **Why?** Piaget claimed that children need to have learning experiences based on their developmental stage (i.e. sensori motor, pre-operational, concrete operational, formal operational) in order to confidently tackle & learn from the question.

### READINESS FOR KEY STAGES

**How?** Key stages are age related stages of development used to organise the education of children. **Why?** Piaget's stages are linked to different key stages in education. *For example, when children are developing through the concrete operational stage, children may learn to cook to help develop skills such as measurements and pouring ingredients into containers.*

### GROWTH MINDSET - PRAISE FOR EFFORT

Teachers set small but doable tasks to make progress & praise for effort rather than attainment/intelligence so they develop a love of learning & seek to improve & try new things.

### MEANING NOT LEARNING STYLES

Teachers support students to think about meaning of information and linking to prior experiences etc.

## Key Terminology

### Reminder of Assessment Objectives

**AO1** – Learners must demonstrate knowledge and understanding of psychological ideas, processes and procedures

**AO2** – Learners must apply knowledge and understanding of psychological ideas, processes and procedures

**AO3** – Learners must analyse and evaluate psychological information, ideas, processes and procedures to make judgements and draw conclusions

Key term	Definition
<b>Animism</b>	The belief that objects that are inanimate (not living) have feelings, thoughts, and have the mental characteristics and qualities of living things.
<b>Accommodation</b>	Radically changing a current schema and/or by forming a new one.
<b>Assimilation</b>	Adding new information to our existing schema.
<b>Conservation</b>	Understanding that quantity can remain the same, despite appearance changing.
<b>Decentration</b>	Ability to <b>understand more than one feature of an object</b>
<b>Egocentrism</b>	Assuming everyone else views the world in the same way to you.
<b>Fixed Mindsets</b>	People believe their basic qualities, like their intelligence or talent, are simply fixed traits.
<b>Growth Mindsets</b>	People believe that their most basic abilities can be developed through dedication and hard work.
<b>Hypothetical thinking</b>	Involves imagining possibilities and exploring their consequences through a process of mental simulation
<b>Intelligence</b>	The capacity to acquire and apply knowledge.
<b>Limbic System</b>	Regulates emotions.
<b>Neuron</b>	Nerve cells.
<b>Object permanence</b>	The understanding that objects continue to exist even when they cannot be observed.
<b>Pre-frontal cortex</b>	Regulates decision making and social behaviour.
<b>Pruning</b>	When we get rid of the neural connections that are not used.
<b>Readiness</b>	Idea that children are not ready to learn in certain ways until they have reached the relevant developmental stages.
<b>Reversibility</b>	Being able to think about things in reverse order
<b>Schema</b>	Mental representation about an
<b>Seriation</b>	Put things in rank order
<b>Synapse</b>	Gap between neurons. Neurotransmitters diffuse across this.

QR code for past papers and other useful resources

<https://www.ocr.org.uk/qualifications/gcse/psychology-j203-from-2017/assessment/>



## Brain Basics

Watch the following video:

<https://www.youtube.com/watch?v=6qS83wD29PY>



The brain and nervous system is made up of many nerve cells, known as **neurons**. Parts of the brain uses these to communicate with other parts of the brain, as well as across our whole body. We need to understand how they communicate:

Each neuron has many of the features that all cells have, including some specialised features.

The neuron has a cell body, containing a nucleus.

The cell body is covered in **dendrites**, little branches which pick up signals from other neurons, and transmit this information via an electrical signal to the cell body.

When this electrical signal is created, it travels down the **axon**.

This triggers the release of chemical messengers known as **neurotransmitters** from the **axon terminals**.

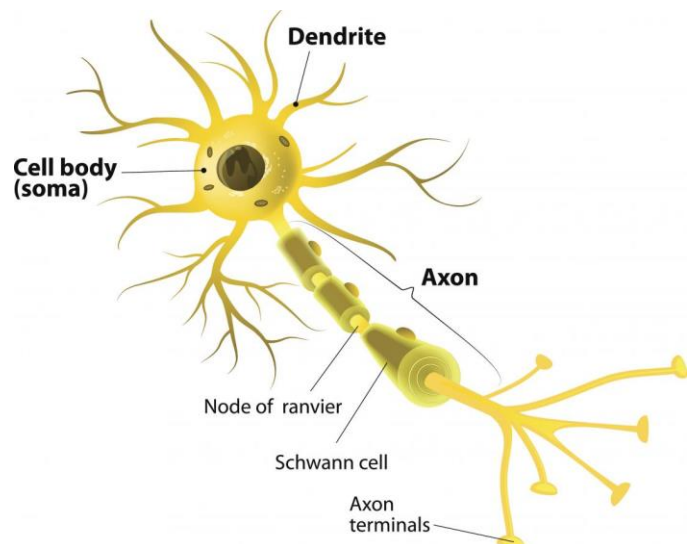
Between each neuron there is a gap, known as a **synapse**.

When the neurotransmitters are released, they will **diffuse** across the synapse.

They will then reach the dendrites of the next neuron, and bind with specialised **receptor sites**. Each neurotransmitter will only bind with certain types of receptor site which are specially designed to receive that information, like a key going into a lock.

These will then create another electrical signal and the process continues...

This is how neurons are able to communicate, and we are able to sense things, think and control our behaviour.



## Unit Summary

<p><b>Key Concepts</b></p> <p><i>Stages of development</i></p> <p><i>How the brain develops during these stages</i></p> <p><i>IQ as a test of intelligence</i></p>	<p><b>Stages of development</b></p> <ul style="list-style-type: none"> <li>• Pre-natal (conception – birth)</li> <li>• Childhood (Infancy-12 years)</li> <li>• Adolescence (13-19 years)</li> <li>• Adulthood (20 years – death)</li> </ul> <p><b>How the brain develops during stages of development</b></p> <p><b>Pre-natal</b></p> <ul style="list-style-type: none"> <li>• 16 days – embryo develops a neural tube (becomes brain and spinal cord).</li> <li>• 8-29 Weeks – cells follow a process called ‘migration’ where they move to their correct location in the brain and become neurons (this begins the formation of the nervous system).</li> <li>• 20 weeks – neurons start to develop, including axon and dendrites.</li> <li>• 2 Months – neural tube separates into brain cells and nerve cells.</li> <li>• 4-6 Months – Brain becomes fully developed, but not full size.</li> <li>• By the end of the second trimester, the nervous system is developed enough to respond to loud noises outside the womb.</li> <li>• In the third trimester, the brain continues to grow</li> </ul> <p><b>Childhood</b></p> <ul style="list-style-type: none"> <li>• After birth the brain develops many new neural connections (approximately 1,000 a second).</li> <li>• Age 3 – Pre-frontal cortex is developed meaning the child can use past experiences to understand the present and understand cause and effect.</li> <li>• During childhood, the density of synapses in the pre-frontal cortex is at its peak.</li> <li>• Later in childhood some of these many neural connections are ‘pruned’ meaning that we get rid of the neural connections that are not used.</li> </ul> <p><b>Adolescence</b></p> <p>They grey matter (cells on the surface of the brain) reaches maximum density.</p> <ul style="list-style-type: none"> <li>• The limbic system is the first to mature. This regulates emotions and helps us form new memories.</li> <li>• The pre-frontal cortex is the last to mature – this regulates decision making and social behaviour.</li> </ul> <p>As a result, their actions are guided more by the emotional and reactive limbic system and less by the thoughtful, logical pre-frontal cortex.</p> <p><b>Adulthood</b></p> <ul style="list-style-type: none"> <li>• In our early 20’s our brains will be fully developed and will be performing at an optimal level. Finally, the brain reaches its peak power around age 22 and lasts for around 5 more years at this level of performance</li> <li>• At the age of 25, the pre-frontal cortex, the ‘rational’ part of the brain finally matures. This allows people to make rational choices and be able to focus on the long-term consequences of actions. This makes adults less impulsive than an adolescent.</li> <li>• As we get into older age brain cells start to deplete in areas such as the hippocampus which can have a negative impact on our memories.</li> </ul>
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- In older adulthood the brain can develop neurodegenerative diseases where neurons die, these get worse over time like Alzhiemers disease and Parkinson's disease.

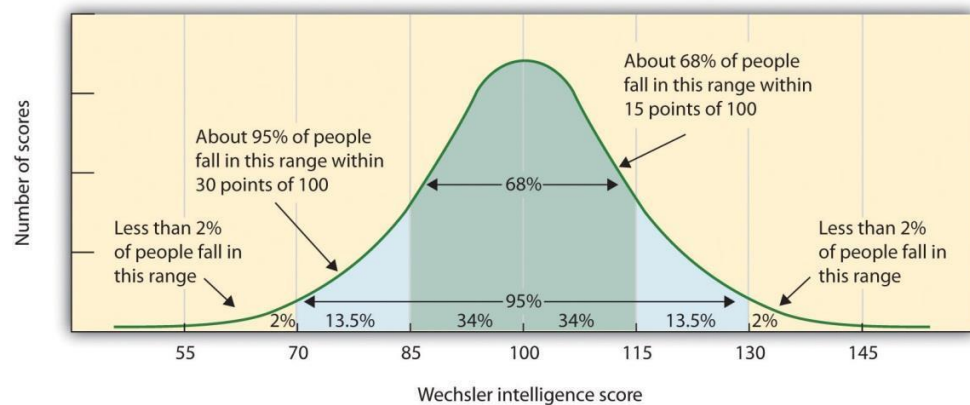
### IQ tests as a measure of intelligence

IQ (Intelligence Quotient) tests are designed to measure peoples' intelligence. They test memory, attention and problem-solving skills which are good indicators of intelligence.

The average IQ score is around 100.

IQ scores generally follow a 'normal distribution': Therefore, the modal IQ score is 100. As you get further away from 100, fewer people get these scores.

That's why only 2% of people score over 130 in the IQ test (high intelligence), and 2% of people score less than 70 (low intelligence).



Some people argue that communicating someone's intellect to a single score is too simplistic.

Howard Gardner's theory of multiple intelligences suggest that intelligence is not a single general ability, but is made up of eight abilities: musical-rhythmic, visual-spatial, verbal-linguistic, logical-mathematical, bodily-kinaesthetic, interpersonal, intrapersonal, and naturalistic, which can all be tested for.

### Key Theory 1

#### *Piaget's theory of cognitive development*

#### **Piaget's stage theory (1936)**

Piaget argued that children's cognitive development takes place over 4 stages.

These stages are **invariant** – they do not change, each child goes through them in the same order.

They are also **universal** – they are the same for all children.

Order	Stage	Age (years)
1	Sensori-motor	0-2
2	Pre-operational	2-7
3	Concrete operational	7-11
4	Formal operational	11+

#### **Sensori-motor stage**

At this stage, infants learn about the world in two ways:

- Through their senses (e.g. by touching, tasting, hearing, seeing and smelling)

- Moving their bodies, moving around their environment and seeing how they can influence the world around them (e.g. by pushing something over)

At this stage, children begin to understand '**object permanence**', which is the understanding that something continues to exist, even when you can't see it



### **Pre-operational stage**

At this stage, children's understanding is based on what things looked like. They are **not** logical thinkers. Characteristics of the stage:

- **Animism** – believe inanimate objects have thoughts and feelings
- **Egocentrism** - assume everyone views the world in the same way to them

### **Concrete operational stage**

They start to become logical thinkers.

They 'decentre': **Decentration** is the ability to understand more than one feature of an object such as it being tall and thin. They can also look at more than one aspect of a situation

- **Seriation** – put things in rank order (e.g. highest value coins to lowest value).
- **Reversibility** - This is being able to think about things in reverse order.
- **Conservation** - This is where a child is able to tell that something stays the same in quantity even though its appearance changes; such as the amount liquid in a tall thin glass and in a small wide glass.

### **Formal operational stage**

Characterised by the ability to **think in abstract and hypothetical ways** and to successfully solve problems.

Importantly, they can **mentally manipulate ideas in their heads** – without it having to be physically in front of them. They can engage in **hypothetical thinking**.

### **Piaget's schema theory**

Piaget viewed children as 'little scientists'. He noticed they tend to acquire new information and understanding by constructing 'experiments'. They then use the information they gather from their studies to draw conclusions and learn.

**Schemas** are mental representations we have about an object or situation.

Our schemas get more complex as we get older.

This occurs through two processes: assimilation and accommodation. **Assimilation** takes place when we understand a new experiences and by adding new information to our existing schema. **Accommodation** takes place in response to dramatically new experiences. The child adjusts by radically changing a current schema and/or by forming a new one.

### **Criticisms**

- Reductionist: takes the really complex process of cognitive development and explains it using the very simple process of maturation (children getting older

and naturally progressing through stages). He ignores other important factors like the role of culture and teachers.

- Nature/nurture: He suggests children progress through these stages due to biological maturation (getting older). He is ignoring important 'nurture' factors which would also affect cognitive development, such as quality of education, economic background, teachers, upbringing
- May have got the ages wrong. He says object permanence is developed between 8-12 months. Bower and Wishart argue that children have this understanding by 4 months and Baillargeon suggests children are born with this understanding. Critics have suggested that the later age is the result of Piaget's methodology: Piaget hid a toy under a blanket, while the child was watching, and observed whether or not the child searched for the hidden toy. Searching for the hidden toy was evidence of object permanence. However, some critics argue that the infants didn't search for the toy because they lacked the physical co-ordination to do so or because they lost interest.
- Biased sample: theory was based on his research of his children and their friends, all from middle class, Austrian families. His study may be culturally biased as children in different cultures likely learn differently and will be taught different skills from an earlier age (e.g. hunting.)
- Not everyone completes the stages: studies show that only half of adults reach the final stage, with many incapable of abstract thinking. This suggests that Piaget's suggestion that his stages are invariant and universal is wrong.

## Core Study 1

### Piaget's (1952) study into conservation of number

Details on a following page

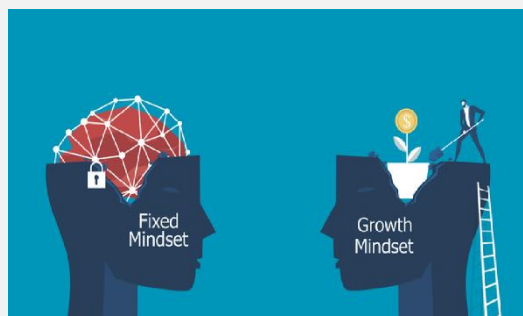
## Key Theory 2

### Dweck – growth and fixed mindsets and praise for effort

#### Learning Theories of Development

Dweck suggests that people have one of two **mindsets**:

<b>Fixed mindset</b>	They think their intelligence and ability is innate (they are born with it) and therefore cannot be changed. They tend to avoid new challenges, preferring to remain within the confines of their comfort zone.
<b>Growth mindset</b>	Believe intelligence can be developed through experiences and if we work hard and learn skills then our abilities and therefore our intelligence will improve. They will seek new challenges as an opportunity for growth.



Dweck suggests that almost all successful people have a growth mindset, as they see failure as an opportunity to learn and improve, they are resilient enough to cope with setbacks and have a positive attitude towards working hard and practicing their craft.

#### Praise for Effort

Teachers and parents play an important part in the development of different mindsets through the type of **praise** that they give. If children are given feedback

such as “*good job, you are very smart*” a fixed mindset is likely to develop as these comments highlight the child’s innate ability and reinforces the idea that their success is due to how naturally smart they are.

On the other hand if they receive praise such as “*good job, you worked very hard*”, this reinforces the idea that success is the result of hard work and effort. A growth mindset is likely to develop because this implies that high performance is due to the amount of effort made.

Therefore, Dweck suggests that teachers should praise (express approval) for the effort students put in.

### Willingham – myth of learning styles, importance of meaning



Willingham argues that students may prefer certain ways of learning, however, this doesn’t mean they actually learn better this way. Willingham thinks that the influence of learning styles has been exaggerated and they actually don’t exist – they are a myth!

- Willingham suggests that students may prefer to learn in a certain way as they enjoy it more – this doesn’t mean they actually learn better this way.
- A person’s ability, background knowledge and interest in a subject have a more important influence on learning.
- He argues that teachers should focus on which style of learning best suits the content

By this he means that students should understand the **meaning** of what they are being taught, rather than just being drilled information and being given a series of facts to memorise. The idea is that students will think about the information more deeply and it will therefore be more likely to go into, and remain in their long term memory. Whereas, ‘drilling’ information will be boring and not require deeper thought into the subject, so is less likely to remain in long term memory.

### Criticisms

#### Both:

- Nature vs Nurture. Both ignore the idea that biological factors may also be important, especially natural intelligence the individual has, suggesting academic success is all down to the teacher.

#### Dweck

- Contradictory research: 30 UK children were given an intervention where they were taught to have a growth mindset. Results showed that there was no significant difference in their maths and English attainment, compared to a control group.
- Kohn (2012) argues that praise for effort carries negative connotations and suggests the child isn’t good at what they’re doing. If a child is applauded for their effort, this may suggest to them that they worked hard but it didn’t go well.
- Ignores other factors: The theory places failure in the hands of the students – if they fail it is due to them having a fixed mindset or not trying hard enough. However, there are other factors which can also affect a student’s

	<p>achievements, for example, personal circumstances like bullying, which may affect how well they do in school.</p> <p><b>Willingham</b></p> <ul style="list-style-type: none"> <li>• Willingham suggests that students shouldn't just be made to learn a list of facts ('drilled') and should instead learn the meaning of information. However, some concepts may be better learned through drilling. An example could be times tables</li> <li>• He ignores the fact that some children may genuinely be kinaesthetic learners as this is how they were taught from a young age when they were at pre-school/in early years. It is reasonable to expect that some children may have been brought up learning in this way, and therefore will learn best in a 'kinaesthetic' way.</li> </ul>
<b>Core Study 2</b>	<p><b>BLACKWELL, L. S., TRZESNIEWSKI, K. H. and DWECK, C. S. (2007) Implicit Theories of intelligence Predict Achievement across Adolescent Transition: A Longitudinal Study and an Intervention.</b></p> <p><i>Details on a following page</i></p>
<b>Practical applications</b>	<p><b>How the theories into the development are used in education</b></p> <p><b>Piaget</b></p> <ul style="list-style-type: none"> <li>• Intelligence: He argued that a child's intelligence matures as they pass through the four stages of cognitive development, therefore, teachers should consider what developmental stages their students are in when deciding how to teach them.</li> <li>• Readiness: Piaget's theory suggests that children are not <b>ready</b> to learn in certain ways until they have reached the relevant developmental stages. Therefore, teachers should only ask students to do tasks which are within their developmental stage, or they will not be able to do them. This led to the development of 'key stages</li> <li>• Active learning: Piaget suggests that children need to be active learners, like 'little scientists'. This idea is used in the classroom today and is called 'discovery learning'. Within the classroom learning should be student-centred and accomplished through active discovery learning. The role of the teacher is to facilitate learning, rather than direct teaching.</li> </ul> <p><b>Dweck</b></p> <ul style="list-style-type: none"> <li>• Teachers shouldn't focus on a child's intelligence, but acknowledge that through hard work they can do well.</li> <li>• Teachers should set small but doable tasks for students so they feel like they are making progress.</li> <li>• Praise students for effort, not intelligence – helping to develop a growth mindset.</li> </ul> <p><b>Willingham</b></p> <ul style="list-style-type: none"> <li>• No longer using learning styles – teachers shouldn't try to 'differentiate' lessons to suit different students' learning styles, instead focus on strategies that benefit all students – e.g. explaining the meaning of content, rather than drilling it.</li> </ul>

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|  | <ul style="list-style-type: none"><li>• Teachers should refrain from ‘drilling’ information, instead focusing on the meaning of what they are learning.</li></ul> |
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## Core Studies

### Piaget (1952)- a study into the conservation of number

#### Aim

To investigate whether children in the pre-operational stage of development would demonstrate conservation, but children in the pre-operational stage would not.

#### Procedure

- **IV**-the age of the children
- **DV**-whether they could conserve number or not.
- A cross-sectional study (**natural experiment**) where Swiss children aged 2-11 years were shown, one at a time, two identical and parallel rows of counters.
- The researcher then stretched out one row without removing or adding any counters. The children were asked on both occasions which of the two rows had more counters.

#### Results

- Children in the pre-operational stage (2-7 years) said that the stretched row had more counters because it was longer.
- However a few children towards the end of **pre-operational stage** (5-6) said they were the same but couldn't explain why.
- Mostly, they were not able to conserve. Children in the **concrete operational stage** (7-11years) said that the rows had the same number of counters.
- They can conserve as they have learned that appearances can be deceiving.

#### Conclusion

Piaget concluded that children cannot conserve in the pre-operational stage of cognitive development.

#### Evaluation-criticisms

- Piaget is criticised for how he questioned the children. In normal situations a child is only asked twice if their first answer was incorrect. When the experiment was repeated with only one question being asked, more children got it right.
- Piaget is criticised for the artificial nature of the task. The task did not have any meaning for children. When ‘naughty teddy’ was used to stretch the line 60% of pre-operational children then got it right because it was more child friendly.
- Piaget used a small sample of children, which is therefore unrepresentative of all children.

- Also, there was a cultural bias which means you cannot generalise to all countries. Different countries have different education and upbringing. This is very important because Piaget claimed that his stages of development were universal, but how can he be sure of this with such a small sample?

### **Blackwell, Trzesniewski, and Dweck (2007)- Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study**

#### **Aim**

To examine the relationship between theory of intelligence and achievement and to test the impact of an academic intervention on this relationship.

(To do this, Blackwell et al. conducted two studies).

#### **Study 1 Procedure**

- A **correlational field study** using **373** students from New York City. Students in 7th grade (Yr. 8 in UK) completed a **motivational questionnaire**.
- Results from a standardised Maths test was compared with the questionnaire results.

#### **Results**

- The theory of intelligence and other motivational variables measured at the beginning of seventh grade did not correlate significantly with maths test scores.
- Students with **growth mindsets** showed greater improvements in maths test scores than students with fixed mindsets.

#### **Study 2 Procedure**

- In a different school 99 7th graders completed a motivational questionnaire.
- Split into 2 groups – 1 (control) had a workshop on memory and the other (experimental) had a workshop on mindsets and how they are malleable (can be changed).
- The questionnaire was re-done and the Maths teacher wrote down any changes they saw in the students. **Participants in the experimental group had more positive mindsets** whereas participants in the control group did not change.
- Participants in the experimental group gained better grades in maths than those in the control group in the autumn and spring tests.

#### **Conclusions**

A **growth mindset** boosts achievement (in mathematics) more than a **fixed mindset**. Teaching a theory of intelligence enhances students' motivation and achievements (in mathematics).

### Evaluation-criticisms

- The study is **culturally biased**. The results are not representative of the whole of America so therefore **cannot be generalised**. The study was only done in New York which might have a different education system to other schools in America. The study would need to be replicated in many states to be generalisable.
- Because study 2 used **independent groups**, the difference between the effort and achievement of the students could be down to individual differences.
- The study may be viewed as unethical as only half of participants received an intervention that aided their academic achievement. It can be argued that the study is putting some students at a disadvantage over others.
- Blackwell's study lacks construct validity. In this case, the researchers are testing the effect of mindset on academic performance based on mathematic ability. However, some would argue this is oversimplified, as someone's mathematics scores won't accurately show their overall academic performance.

### Example Exam Section (2019)

#### Section A

#### Development

Answer **all** questions in this section.

**1 (a)** Identify which of the following is a feature of the sensori-motor stage of cognitive development.

- A** animism
- B** conservation
- C** decentration
- D** object permanence

Your answer

[1]

(b) Identify what Piaget meant when he stated that the stages of development are invariant.

- A the stages are not universal
- B the stages can be reversed
- C the stages can occur in any order
- D the stages occur in a fixed order

Your answer ☐

[1]

(c) Identify which of the following is a criticism of Piaget's Theory of Cognitive Development.

- A focuses too much on children as individuals
- B ignores the role of nature in development
- C is overly holistic when explaining how the mind develops
- D is too reductionist by over-simplifying the cause of development

Your answer ☐

[1]

2

A teacher is working with a group of children aged 7 to 11 years. She notices that they have developed several skills. For example, Abi can focus on more than one aspect of a situation and Marco can place things in rank order. Lucinda now understands that although the appearance of something changes, the quantity does not. The teacher believes this is because of the stage of cognitive development they are in.

Using the source:

(a) Identify the stage of cognitive development the children are in according to Piaget's theory.

..... [1]

(b) Identify the child that is showing the ability to conserve.

..... [1]

3 Choose **two** of the following and place them in the correct order to show the stages of development.

ADOLESCENCE PRE-NATAL OLD AGE

..... childhood ..... adulthood [2]

- 4 Outline how the brain develops and changes in **either** childhood **or** adolescence. In your answer you should make reference to brain development and how these changes can affect behaviour.

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..... [3]

- 5 From Blackwell et al.'s (2007) research study into fixed and growth mindsets:

(a) (i) Describe how fixed or growth mindsets were measured in Study 1.

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..... [2]

(ii) There were 198 males and 175 female participants in Study 1.

Calculate the percentage of the sample that were female, expressed to one decimal place. Show your workings.

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..... [3]

(b) Describe **one** finding from the Blackwell et al. (2007) research study into fixed and growth mindsets.

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..... [2]

Karen has just qualified as a teacher. One of her students is having difficulties with her studies. The student believes that she is not clever enough to study at A level. Karen is working with her to help her to achieve in her studies.

Using the source:

Explain why it is important that Karen knows about fixed and growth mindsets if she is going to help the student.

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..... [3]

7 Willingham criticised the theory that students have different ways of learning. Outline **one** way in which Willingham criticised learning styles.

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..... [2]

8 Outline how Willingham's theory favours nurture over nature.

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..... [2]

### Mark Scheme

<b>1</b>	(a)	D - Object permanence	<b>1</b>	
	(b)	D - the stages occur in a fixed order	<b>1</b>	
	(c)	D – is too reductionist by over-simplifying the cause of development	<b>1</b>	
<b>2</b>	(a)	Concrete operational	<b>1</b>	Do not credit the word ‘concrete’ alone.
	(b)	Lucinda	<b>1</b>	
<b>3</b>		Pre-natal as the first stage Adolescence as the third stage	<b>2</b>	
<b>4</b>		<p>1 mark for identifying a relevant part of the brain.</p> <p>For example:</p> <p>Childhood - prefrontal cortex or neural connections such as in the visual cortex.</p> <p>Adolescence - the limbic system, pre-frontal cortex or frontal lobes.</p> <p>1 mark for how this part of the brain changes</p>	<b>3</b>	<p>If candidate does not name the stage then full credit be given if it is obvious that their response focuses on a valid stage.</p> <p>If candidate names one stage but describes the other then full credit can still be given for the description.</p> <p>If stages are muddled in the description then give credit for the stage which is best described.</p> <p>‘Behaviour’ can be interpreted broadly to include any psychological effect.</p>

		<p>For example:</p> <p>Childhood – neural connections significantly pruned</p> <p>Adolescence – pre-frontal cortex is remodelled, limbic system is used for decision making</p> <p>1 mark for applying this knowledge and understanding to how these can affect behaviour.</p> <p>For example:</p> <p>Childhood - Changes in the prefrontal cortex allows the child to start to use their past experiences to understand the present. They also start to understand cause and effect.</p> <p>Adolescence - Development in the limbic system regulates emotion and helps in formation of new memories. Changes in the prefrontal cortex regulates decision making and moderates social behaviour.</p>		<p>Do mark the response holistically, looking for the best answer where more than one part of the brain has been identified.</p>
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<b>5</b>	<b>(a)</b>	<b>(i)</b>	<p>1 mark for recognising that fixed or growth mindset was measured using a questionnaire</p> <p>1 mark for an elaborated response describing an additional feature of the questionnaire (by Likert scale) <b>or</b> by measurement of theory of intelligence / learning goals / effort beliefs or helpless responses to failure.</p>	<b>2</b>	<p>The response does not have make specific reference to a detail of the study for both marks e.g. just referring to closed questions would be enough for a second mark.</p>
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		(ii)	<p>1 mark for correctly calculating the percentage of the sample that were female to 1 decimal place. Plus 1 mark for partial workings or 2 marks for full workings.</p> <p>For example: <math>198+175 = 373</math>  <math>175/373 = 0.46917</math>  <math>0.46917 \times 100 = 46.917</math> (%)  <math>= 46.9\%</math></p>	<b>3</b>	<p>If a candidate works out the percentage to be 53.1% by taking <math>198/373</math> then this can be credited all 3 marks as well using the mark scheme in the same way.</p> <p>Evidence of partially correct calculation without correct answer can still be given 1 mark  e.g. <math>198 + 175 = 373</math> but the rest of the answer is then incorrect.</p>
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	(b)		<p>1 mark for a brief statement of a finding.  1 mark for a developed statement of a finding .</p> <p>For example: 'Mindset became a significant predictor of maths achievement [1] as those students with a growth mindset made more <i>progress</i> than those with a fixed mindset [1]'</p>	<b>2</b>	<p>A conclusion can be included as a finding.</p> <p>NB Findings can come from Study 1 or Study 2.</p>
<b>6</b>			<p>1 mark for recognising that the student has a fixed mindset (which can be implied).</p> <p>Further marks for how Karen can develop a growth mindset in her student. This could be one way where the effect on the student is also explained, or two distinct ways (e.g. praise for effort, explaining the theory of mindset, etc).</p>	<b>3</b>	<p>NB The effect on the student should explicitly refer to features of growth mindset e.g. taking on challenges/risks, accepting failure, belief ability can change. Do not credit simple statements like 'the student believes she can work harder/do better/take on A-Levels'.</p>

<b>7</b>		<p>1 mark for a brief or basic criticism of learning styles. 2 marks for a more developed criticism of learning styles.</p> <p>Likely criticisms include the need to focus on meaning/objectives instead, the importance of ability/background knowledge/interest on learning, preferred learning styles versus actual learning style.</p> <p>Example answer: 'Willingham criticised learning styles for being too stereotyped as they over-categorise learners [1] when it is more important for each individual to understand the meaning of what they are learning regardless of learning style [1].'</p>	<b>2</b>	<p>NB Do not credit a re-writing of the question e.g. 'Willingham thinks learning styles are a myth'. The candidate needs to explain why.</p>
<b>8</b>		<p>1 mark for a clear link to between nurture and the theory. 1 mark for a clear link to between the theory and its stance against nature.</p>	<b>2</b>	<p>For both marks, the response needs to be in the context of learning and teaching.</p>

## HOMEWORKS

Homework	Pages	Due Date
<b>IQ Tests:</b> Complete comprehension tasks on IQ. Note: this CAN be asked about in the exam	<b>23-25</b>	
<b>Essay:</b> Complete the essay question. The plan is optional.	<b>26-28</b>	
<b>Design a study:</b> Complete all the 'design a study' questions. You will need to use research methods resources to help with this.	<b>29-30</b>	
<b>Essay:</b> Complete the essay question. The plan is optional.	<b>31-33</b>	

### Homework 1: IQ tests

**IQ (Intelligence Quotient) tests** are designed to measure peoples' intelligence. They test memory, attention and problem-solving skills which are good indicators of intelligence.

Today, IQ tests are used to test children for high or low intelligence. For children with low intelligence they can be given extra support. For children with very high intelligences they can join 'Mensa', this is an organisation that helps to stretch and challenge them and schools can use this information to ensure they receive their full potential through 'gifted and talented' projects.

IQ tests commonly used today include:

- Stanford-Binet intelligence scales
- Wechsler Intelligence Scale for Children

Sometimes these are used as part of a range of various tests, e.g. to see if children have dyslexia, dyscalculia or attention-deficit hyperactivity disorder (ADHD).

The average IQ score is around 100. In order to become a member of the high IQ society 'Mensa' you must score 130 or higher, which is in the top 2% of the population.



**What are IQ tests?**

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**What is the purpose of IQ tests?**

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IQ scores generally follow a 'normal distribution':

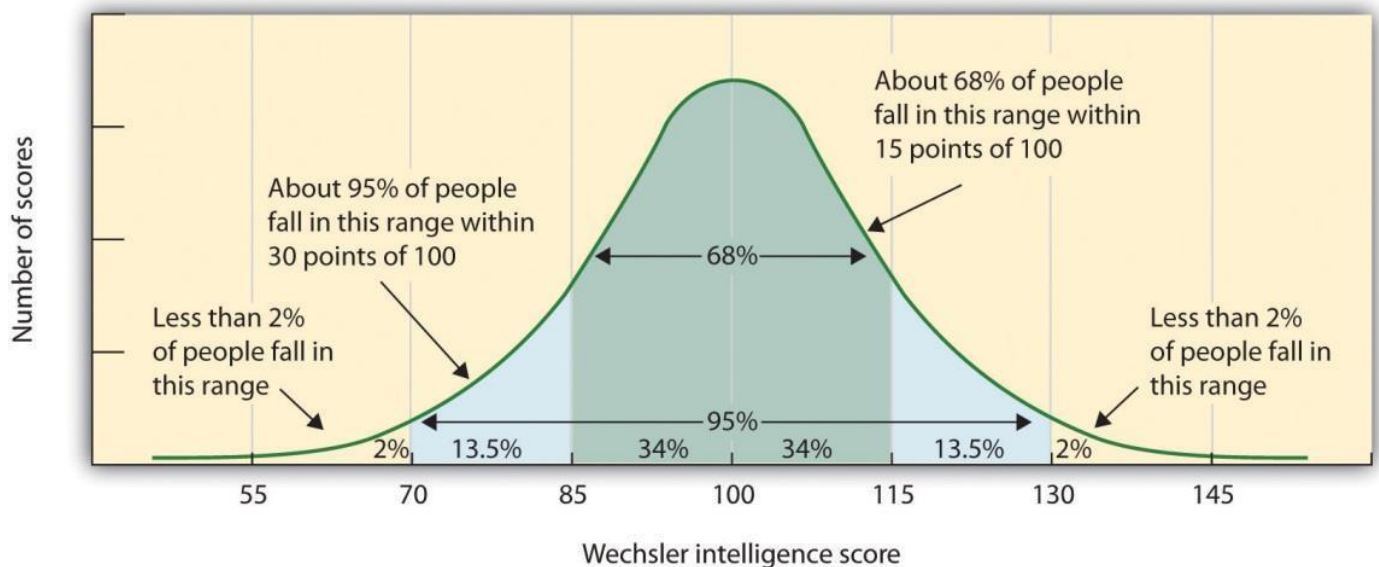
A symmetrical bell-shaped curve in which most people occupy the middle area and the mean, median and mode are all at the same central point. Many characteristics in a population, for example, height, weight and IQ are normally distributed

- The majority of people occupy the middle ground
- This means the mode will be in the middle of the graph
- It is generally symmetrical, as the extremes are less frequent, this creates a 'bell curve'

Therefore, the modal IQ score is 100.

As you get further away from 100, fewer people get these scores.

That's why only 2% of people score over 130 in the IQ test (high intelligence), and 2% of people score less than 70 (low intelligence).



**Using the graph:**

**What percentage of people score between IQ scores of:**

- a) 130 and 145 \_\_\_\_\_
- b) 100 and 115 \_\_\_\_\_
- c) 85 and 115 \_\_\_\_\_
- d) 70 and 85 \_\_\_\_\_

**What is the average IQ score?**

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**What does it mean to say 'IQ scores follow a normal distribution'?**

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## A 'single' intelligence?

Some people argue that communicating someone's intellect to a single score is too simplistic.

Howard Gardner's theory of multiple intelligences suggest that intelligence is not a single general ability, but is made up of eight abilities: musical-rhythmic, visual-spatial, verbal-linguistic, logical-mathematical, bodily-kinaesthetic, interpersonal, intrapersonal, and naturalistic, which can all be tested for.



Which of Gardner's multiple intelligences do you think is your strongest? Explain why.

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## Homework 2: Essay

Use your knowledge and understanding from across the psychology course to explain how far you agree with the following statement:

“Psychological explanations can often be criticised for being reductionist.”

In your answer, you should refer to Piaget’s theory of cognitive development and at least one other area of psychology you have studied. [13]

<b>AO1:</b> Outline of the debate/issue being discussed	
<b>AO1:</b> Description of Theory/research study named in the question	
<b>AO3:</b> Evaluation Point Explain in context Therefore/this means... (link back to the question)	
<b>AO1:</b> Description of Theory/research study from a different area of psychology	
<b>AO3:</b> Evaluation Point Explain in context Therefore/this means... (link back to the question)	
<b>Conclusion:</b> Make a reasoned judgement based on the arguments you have presented in your answer. Refer back to the question.	

“Psychological explanations can often be criticised for being reductionist.”

[illegible]

[illegible]

### Homework 3: Design a study

You have been asked to carry out an observation to see whether 10 year old children show 'animism' (giving thoughts and feelings to inanimate objects.)

Plan your investigation here:

- 1) Describe the type of observation you will use.

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[2]

- 2) Explain one strength and one weakness of your choice.

Strength

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[2]

Weakness

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[2]

- 3) Give one behavioural category you will use in your study.

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[1]

4) Outline the procedure you will use in your study

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4) Outline **one** way you would deal with ethical issues in your study

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5) Outline **one** way you would avoid gender bias in your investigation.

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6) Outline **one** way you would try to ensure your investigation is reliable.

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## Homework 4: Essay

Use your knowledge and understanding from across the psychology course to explain how far you agree with the following statement:

“The sample used in studies often weaken their usefulness to our understanding of behaviour.”

In your answer, you should refer to Blackwell et al.’s into growth and fixed mindset and at least one other area of psychology you have studied. [13]

<b>AO1:</b> Outline of the debate/issue being discussed	
<b>AO1:</b> Description of Theory/research study named in the question	
<b>AO3:</b> Evaluation Point Explain in context Therefore/this means... (link back to the question)	
<b>AO1:</b> Description of Theory/research study from a different area of psychology	
<b>AO3:</b> Evaluation Point Explain in context Therefore/this means... (link back to the question)	
<b>Conclusion:</b> Make a reasoned judgement based on the arguments you have presented in your answer. Refer back to the question.	

“The sample used in studies often weaken their usefulness to our understanding of behaviour.”

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