

# 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.

### SENSORI-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 decentrate (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).



## 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).



## 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.

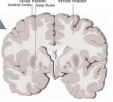
**Adolescence (from 13-19)** -

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.



## 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 & concrete operational stages.

#### 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?"

#### FINDINGS & CONCLUSION

- Children at the beginning of 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.

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 qu. twice so some answered based thinking it was wrong the 1st time.



## NURTURE

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

#### AIM

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

#### Investigation 2

#### SAMPLE

373 NY students

#### RESEARCH METHOD/ DESIGN

Correlation study Field experiment

#### PROCEDURE

Students in 7th grade

were given a maths test & a

motivation

questionnaire

(measuring

fixed and

growth

mindset).

a) 7th grade students

given motivation

questionnaire

b) Students had either

8-week growth mindset

intervention or control.

c) 3 weeks after

intervention - given

questionnaire again.

Teacher reports &

maths grades also used.



#### Investigation 2

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.

**Growth mindset (GM)**

**group had more a**

**growth mindset**

**after the intervention,**

**& were reported**

**by teachers to be**

**more motivated & got**

**better maths grades.**



## 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 the 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.

