Piaget's concepts of assimilation and accommodation

handout number 7.1

Activity type Application

Students are given schemas and their job is to complete the final three columns of the table on the accompanying handout.

In the assimilation column they insert items that are consistent with the schema.

In the accommodation column they insert items that are slightly different in the sense that they share key similarities with the schema but also key differences.

In the final column they state how they would need to change the schema in order to accommodate the new items.

For example, items consistent with the schema 'all animals that have four legs and a tail' that go into the assimilation column would be the different types of dogs (e.g. golden retriever). A cat would go into the accommodation category, as even though it has similar qualities (four legs and a tail) it is also different. Therefore, the schema could be changed by adding a key difference (it makes a meow sound).

Students can fill in the table on their own or use the words at the bottom of the accompanying handout to help them.

Practical use

This activity can be used to assess whether students have understood the concepts of assimilation and accommodation.

Additional notes

This task can be quite challenging so make sure you give clear examples at the start of the activity so that students are clear in what they are doing.

Answers

Schema	Assimilation	Accommodation	New schema
All animals that have four legs and a tail are dogs	Sausage dog Golden retriever Greyhound Jack Russell	Tabby cat	An animal with 4 legs, whiskers and makes a meow sound is a cat.
Anything that you put on your feet are shoes.	High heels Platforms Slip-ons Loafers	Socks	A textile material put on the feet under shoes is a sock.
A vehicle that moves with wheels is a car.	Golf BMW Clio Skoda	Lorry	A big vehicle with a trailer on the back which carries items around in large quantities is a lorry.
Anything with wings is a bird.	Parrot Seagull Robin Puffin	Plane	A metal object with wings that humans travel in to go on holiday is a plane.
Anything that tastes sweet is a pudding.	Chocolate cake Jam roly-poly Eton mess Ice cream	Tomato sauce	A red sauce that tastes sweet that you often put on chips in known as tomato sauce.

Group work on stages

Activity type Idea

Divide students up into four groups and give each group a stage of Piaget's cognitive development.

Get a number of props together: water, plastic counters, rattle, sheet, glasses of different sizes, beads, play dough, plastic mountain, sweets, teddy bears, pendulum, etc.

Each group choose the props they will need from the props table once they have read and discussed their stage with each other.

They then need to produce a demonstration of the research and a presentation which makes it clear what age the child is in when it is in the stage and the key concepts and the studies associated with the stage.

Students should be given an hour to prepare their presentation and demonstration.

Practical use

This is best used as group work. This can be differentiated by giving the formal operational stage to students who need more of a challenge.

Additional notes

Students could also be asked to create an A4 summary of the stage that could be put together as a booklet, which is a summary of the stage that can be printed.

Piaget's stages of cognitive development – evidence table

handout number 7.2a,b

Activity type Consolidation

Give students the table on Handout 7.2a – this will need to be blown up to A3 to allow students to have enough space to fill in the table.

Students fill in the definitions of the key terms in the second column and then outline the supporting studies in the third column.

They then outline the procedures and findings of the counter evidence identified in the fourth column and then explain how it challenges Piaget's conclusions in the fifth column.

Students will need to do some additional research online for the definition of animism and for Donaldson's study. All of these are marked with a * on the table.

Practical use

This is a good consolidation activity once students have learned the different stages, which can be used to help with the discussion of Piaget's research.

Additional notes

This is excellent preparation for the following essay title: Describe and evaluate Piaget's stages of cognitive development. (16 marks)

Answers

See suggested answers on Handout 7.2b

Application to education: The Piagetian classroom

Activity type Idea

Students can create a poster of how Piaget's work can be applied to education. They should consider the role of the child and the role of the teacher with pictures of how their Piagetian classroom would be set out. This needs to be an activity-oriented classroom in which children actively engage in tasks that allow them to construct their own understandings of the curriculum as learning by discovery can take different forms.

Practical use

This could be set as a piece of homework

Additional notes

The types of activities that could be included are:

- Students being given play dough, paper, clay, etc., and told to manipulate it into something of their own choice – the way the play dough is used is then observed by teachers to see how they manipulate it.
- Games in which the children sort items by different categories such as colour, size, texture, etc. A more advanced approach to sorting is how the items are similar. This process promotes critical thinking.
- Board games and card games.
- Finding a solution to a puzzle. Puzzles require a child to consider patterns, orders, and associations.
- Jigsaw puzzles.
- Finding the solution to a scientific problem.

handout number 7.3

Using de Bono's thinking hats to evaluate Vygotsky's theory

Activity type Evaluation

This task uses de Bono's six hats to help students think clearly by directing their thinking and attention in one direction at a time. It helps students with their critical thinking, collaboration, communication and creativity.

Students can be given the sheet after they have been taught Vygotsky's theory and they can fill in the chart considering the questions written in the table. When the chart is fed back to the class, students can add anything in that they have not thought about.

Practical use

Students could do this task independently or in pairs.

Alternatively you could divide the students into six groups and give them a hat each and then each group could feed back and students could add notes into their tables.

Additional notes

You could get six hats of different colours and when the student is feeding back they could wear the hat that corresponds with what they are saying.

Students could further evaluate the theory using the criteria on Handout 0.3 (general handouts).

Answers

Possible answers:

White hat: Roazzi and Bryant support Vygotsky's idea that children can develop additional reasoning abilities when working with a more expert individual.

Conner and Cross (2003) found that the level of help given by the expert partner declines during the process of learning.

Van Keer and Verhaeghe (2005) found that seven year olds tutored by 10 year olds in addition to their whole-class teaching progressed further in reading than controls who just had standard whole-class teaching.

Yellow hat: Vygotsky's ideas have been highly influential in education; children can learn more and faster with appropriate scaffolding. This has influenced social interaction in learning through group work, peer tutoring and individual adult assistance from teachers and teaching assistants.

Black hat: Howe found that what children learn varies considerably between individuals, even in group learning situations but you would expect all children learning together to pick up very similar skills and a very similar mental representation of material.

The focus of Vygotsky on instruction is likely to reduce the child's ability to think independently as it is assumed that parents are supportive but sometimes parents confound a child's ability to understand the world through giving inaccurate answers to questions about death, sex, etc.

Vygotsky also did not consider individual differences and assumed that the processes of learning were the same in all children.

Blue hat: Vygotsky's theory emphasises the importance of interactions with other children and adults rather than self-discovery. It shows that children can be artificially accelerated through the ZPD rather than developing at a certain set age.

Green hat: Contrast to Piaget: Piaget's focus on schemas contrasts to Vygotsky's focus on social interaction. Piaget's focus on active discovery contrasts against Vygotsky's focus on instruction and guidance. It is worth considering alternatives or combinations of Piaget and Vygotsky's theories.

handout number 7.4

Card match Vygotsky vs Piaget

Activity type Consolidation

The cards need to be cut out before being given to students as they are in order on the handout. Students need to match up the similarities and differences between Piaget and Vygotsky.

Practical use

This could be used as a a plenary or as a revision exercise or, alternatively, to check understanding during the lesson.

Additional notes

This card task can be used to consolidate the differences between Piaget's and Vygotsky's theories. This can be used to help plan an essay which focuses on comparison or can be used to help with evaluation and understanding of both theories.

Answers

Piaget	Vygotsky
Cognitive development is driven by a child's inbuilt tendency to adapt to new experiences.	Cognitive development is driven by social interaction and experience within a culture.
Cognitive development is mostly the same universally.	Cognitive development differs from culture to culture and one historical era to the next.
Children learn through active self-discovery.	Children learn through instruction and guidance.
Learners progress through the stages with age, and learn increasingly more complex information and skills as they get the older.	Children learn increasingly more complex information and skills as they get older through the performance of more difficult tasks with the help of a more advanced individual.
Knowledge is acquired through direct experiences.	Knowledge is acquired through the internalisation of the expert's understanding.
Individual egocentric processes and language become more social.	Social processes or interactions with others become individual psychological processes.
A child will learn only when they are ready (readiness).	Cognitive development can be accelerated.
Language develops as a result of cognitive development. Outward monologues are meaningless and egocentric speech is incidental to thought.	The ability to use language is a key to cognitive development. Outward monologues direct thinking and later become internalised as thought.
Understanding occurs through the process of adaptation of schemas.	Understanding occurs through social experiences.
Places emphasis on both nature and nurture: Adaptive processes and maturation of brain and body (nature) combine with children responding to the demands of the environment in ways that meet their own goals (nurture).	Places emphasis on both nature and nurture: believed heredity (nature) and dialogues with more expert members of society (nurture) contribute jointly to development.

DESIGN A LEARNING RESOURCE

Activity type Idea

Students produce a learning resource for students wishing to become early years practitioners. The aim of this would be to highlight how Vygotsky's theory of cognitive development has a role to play in education.

Students would need to produce the document using an ICT format of their choice. It could take the form of a PowerPoint, booklet, etc.

They would need to include:

1. An outline the main principles of Vygotsky's theory.
2. An explanation of how his theory will affect the activities a practitioner might provide for the children. Present two examples of an activity the practitioner might use with children, based on Vygotsky's theory.

Practical use

Students can do this in small groups or individually. This will show their understanding of how Vygotsky applies to education.

Additional notes

This could be used an extension task for the more able or could be set as a piece of homework to produce a booklet.

The zone of proximal development

handout number 7.5

Activity type Application

This activity will strengthen students' understanding of the zone of proximal development and scaffolding through having students draw, sort out and then create specific examples of how scaffolding occurs.

Practical use

This could be set after Vygotsky's theory is taught to check understanding, as a starter or as a homework activity.

Additional notes

As an extension task, students can create their own examples, which they can then try out on their peers.

Answers

Making a sandcastle

1. Parent shows how a sandcastle is made in front of the child.
2. Parent lines up what is needed to make a sandcastle in order – wet sand, spade, bucket and shows them how to hold a spade.
3. Parent points to child what is needed next such as the spade for putting more sand in the bucket.
4. Parent tells child advice such as 'firm the sand in the bucket with the spade' or 'turn it over'.
5. Parent asks the child to do something, 'Now see if you can make a sandcastle on your own'.

Jigsaw puzzle

1. Parent shows how a jigsaw piece of a picture of a dog fits together.
2. Parent picks up next piece and guides child's hand to fit the pieces together.
3. Parent points to the next correct piece of jigsaw puzzle.
4. Parent gives the child advice so it can find the next piece – such as 'can you see the piece with the dogs eyes?'.
5. Parent asks the child to find the next piece of the puzzle.

Shape sorter – Could be something like the following:

1. Parent shows the child how to fit the different shapes into the holes on the plastic toy.
2. Parent gives child a shape and guides their hand to show them the hole to put the shape in.
3. Parent points to the correct hole when the child picks up the shape.
4. Parent gives specific instructions to get child to find correct hole such as 'find a hole that has straight edges' for a triangle.
5. Parent gives verbal prompts – 'find the circle'.

An introduction to Baillargeon's expectation research

Activity type Idea

Students watch the following clip: www.youtube.com/watch?v=3urp_5WaO0E and make notes whilst watching the clip. The clip needs to be shown from 5m 40s so the clip will last 7 minutes all together. It shows violation of expectation research with three-month-old babies and whether they look longer at impossible events. What the research finds is then explained in relation to their knowledge of the physical world.

Each student needs to come up with three questions about the content of the clip from 5m 40s when the video focuses on Baillargeon's research. Students then nominate a person in the class to answer one of their questions. The person who answered the question then picks one of their questions to ask another student. This continues until students have each had a turn.

Practical use

Used to ensure students pay attention to the video and to get students to have a basic understanding of expectation research and how it is carried out in preparation for learning about Baillargeon's theory and how it contrasts to Piaget.

Additional notes

Students devise three questions because if they only devise one then their question may be already asked when it gets to their turn.

How useful is Baillargeon's theory?

handout number 7.6

Activity type Evaluation

Students are asked to identify 2–3 positive and 2–3 negative evaluation points of Baillargeon's theory (they can just use the ones in the textbook or research some others).

They then need to use the evaluation graph on the handout to plot the extent to which the evaluation point is a strength or a limitation. The longer the bar, the more it is a strength or a limitation. Students can then discuss with each other why they think the evaluation is a strength or limitation and compare the length of their bars. Students need to justify verbally to each other why they have drawn it long or short.

Practical use

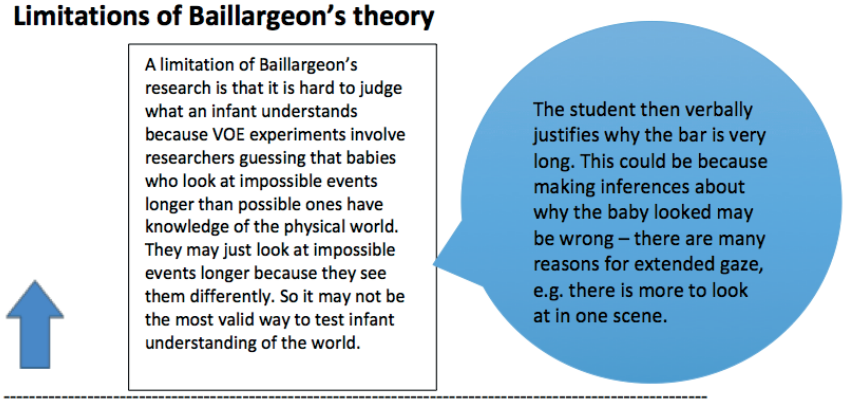
This will encourage students to consolidate the evaluation points through discussion with peers. A few students can then come up and draw their bar on the board and explain why it is a long or a short bar and why it is a strength or limitation of Baillargeon's theory.

Additional notes

The handout would be better enlarged to A3 for this activity so that students have enough room to expand their points and to draw the bars.

Answers

An example would look like this:



WORD SEARCH

handout number 7.7

Activity type Consolidation

This activity could be used as a plenary or a revision exercise or to check understanding before moving on to the next theory

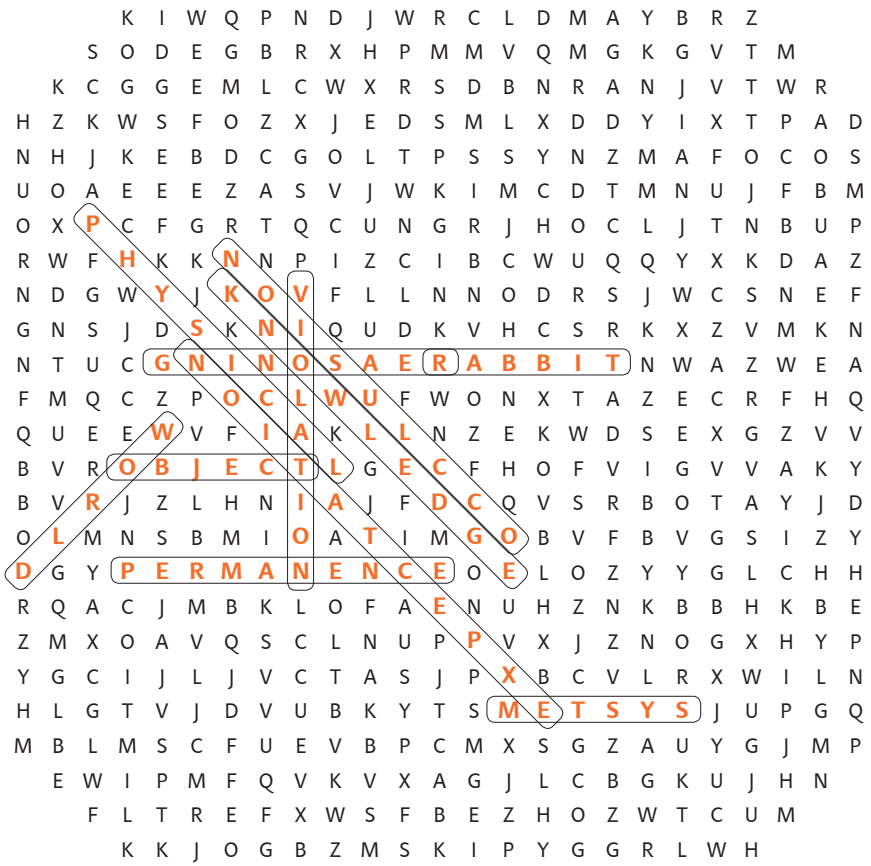
Practical use

This could be an individual activity or could be in small groups. You could put a competitive element to it by getting students to compete against each other for who finishes the word search first.

Additional notes

A more challenging activity would be to make the students create their own word searches and then give them to each other to do.

Answers



1. What is the name of the technique used to test infants' understanding of the physical world? (2 separate words)

   VIOLATION of EXPECTATION ?

2. What short and tall animal was used in the Baillargeon and Graber experiment? (1 word)

   RABBIT

3. Which Piagetian concept does the above study test? (2 words)

   OBJECT PERMANENCE

4. What innate system explains the understanding of the universe in real life? (2 words)

   PHYSICAL REASONING SYSTEM.

5. In the experiment when one object blocked the view of another, what word was used for this? (1 word)

   OCCLUSION

6. What was the name given to earlier research done with infants, which showed the extent of their understanding the concepts of their surroundings? (3 words)

   KNOWLEDGE of the PHYSICAL WORLD.

Selman's levels of perspective taking table

handout number 7.8

Activity type Consolidation

Students use the terms at the bottom of the accompanying handout to fill in the table with the correct information.

Practical use

This could be set as a piece of homework or it could be done as an activity in class. The activity can be made more challenging by having the students fill in the table with their own answers.

Additional notes

This can be used to help with revision as it is a useful summary of the stages.

Students could evaluate the theory using the criteria on Handout 0.3 (general handouts).

Answers

	Stage	Age	Description of behaviour
0	Egocentric or undifferentiated perspective	3–6 years	Children are unaware of any perspective other than their own. They can't distinguish between their own emotions and others.
1	Social-informational role taking	6–8 years	Children recognise that others have perspectives that differ from their own. Recognise others have different perspectives only because they have received other information.
2	Self-reflective role taking	8–10 years	Children know that their own and others' points of view may conflict even when they receive the same information. Cannot consider more than one viewpoint at a time.
3	Mutual role taking	10–12 years	Children can consider their own and another's point of view and the other person can do the same. Child can assume perspective of a disinterested third person and how they will react to the viewpoint of others.
4	Social and conventional role taking	From 12 years	Child can understand another person's perspective through comparing it to the society in which they live. Child expects others to take the viewpoint of most of the people in their social group to keep order.

Which response?

handout number 7.9

Activity type Application

Students can check their understanding of Selman's levels of perspective taking through applying the levels to Selman's 'Holly dilemma'. Selman interviewed children, asking them what they thought Holly should do. The handout has five responses. Students have to match the responses to the five levels and explain their choice.

Practical use

This can be done as an individual activity or the class could be divided into groups and be given a response each and as a group they have to explain at which stage the response would be given and why.

Additional notes

Students can think of their own case studies as an extension task so that they have further practice applying Selman's theory.

Answers

Response A – Stage 1 – Children in this stage understand that other people have different perspectives than their own so understand that the father can have a different perspective about Holly climbing the tree.

Response B – Stage 0 – Children in this stage do not understand that other people can have different perspectives than their own and think that what they believe Holly should do will be what other people will also believe.

Response C – Stage 4 – Children in this stage will now be able to understand other peoples' perspectives by comparing them with society's norms and perspectives, such as the way that animals like the kitten in the tree should be treated well.

Response D – Stage 2 – Children in this stage will understand that even though people can be given the same information, their perspectives can differ. They understand that another person can understand what another person is feeling or what they can see. The child can consider what the father's perspective would be so would consider that the father will understand why she climbed the tree but will also be concerned about her safety. They cannot, however, consider their own and another person's perspective at the same time.

Response E – Stage 3 – Children in this stage can understand different perspectives that people can take at the same time and understand that another person can also consider another person's perspective simultaneously. They can also consider how a third person who is not Holly or her father could respond to the situation.

SELMAN CROSSWORD

handout number 7.10

Activity type Consolidation

The task is to find the words from the clues and put them into the crossword.
All of the words are associated with Selman's theory.

Practical use

This could be done in a number of ways: as a plenary, an individual task for homework, or as a group crossword with teams competing against each other.

Additional notes

You could put students together in a group to do the crossword with teams competing against each other and the first group to finish the crossword gets a prize.

Answers

Across

1. Children aged 6–8 years can usually only focus on one **perspective** at a time. (11)
5. What kind of role-taking is at stage 3? (6) **mutual**
6. Selman states that all stages are dependent on experience and **maturity**. (8)
7. In the Wu and Keysar (2007) study comparing two different nationalities' perspective-taking abilities, which nationality did better at the tasks? (7) **Chinese**
8. How many stages of development are in Selman's theory of social cognitive development? (4) **five**
12. The answer is the number of the stage related to 15 across? (4) **four**
13. Children on the **autistic** spectrum have problems with perspective-taking. (8)
14. Selman described children in stage 0 as being socially **egocentric.** (1)
15. At what age, according to Selman, do young people see that social conventions are needed to keep order? (6) **twelve**

Down

2. The responses in children aged 8–10 years are said to be **self-reflective** role-taking. (4,10)
3. Internal and **external** factors in cognitive reductionism limited Selman's approach. (8)
4. Selman used children of different sexes and ages in perspective scenarios. Positive correlations were found between age and ability. One such scenario included a girl with a **kitten** stuck in a tree. (6)
9. The study of how we *think* about our interactions with other people is called social **cognition**. (9)
10. What kind of correlation was found between age, perspective-taking and coercive behaviour in the toyshop observation by Buijzent and Valkenburg (2008)? (8) **negative**
11. **Bullies** had no difficulty with perspective-taking according to a study by Gasser and Keller (2009). (7)

Draw it: Sally–Anne storyboard

handout number 7.11

Activity type Consolidation

Give students a copy of the storyboard on the handout and students then draw six pictures that show the Baron-Cohen (1985) study using the Sally–Anne task. They need to include the Sally–Anne task, procedure of the study and findings and write underneath a few sentences on each one. Once they have completed the storyboard they can swap with a peer who will peer assess it on the quality of their pictures, description and effort where 5 = good and 1= poor

Practical use

This can be used as a way of getting students to remember research studies as they will remember the pictures that they drew so it will help consolidate their understanding and memory of the Baron-Cohen study and Sally–Anne task.

Additional notes

Students could add up their overall score out of 15 and the student who scored the highest can get a prize.

Students could evaluate the study using the criteria on Handout 0.2 (general handouts).

Theory of mind – video and questions

handout number 7.12

Activity type Consolidation

Students watch the YouTube clips on the handout and answer the questions:

www.youtube.com/watch?v=8hLubgpY2_w&index=1&list=PLMCT9fr4_aaqeOSP3UoFQIShV_mJk144l

This video is about four minutes long. It shows research using false belief tests into different aged children.

www.youtube.com/watch?v=qsEP7QTIVT0

This video is just over nine minutes. It shows Uta Frith (who was one of Baron-Cohen's co-researchers in the 1985 study) explain theory of mind as an explanation for autism and the Sally-Anne study with the dolls used in the research.

Practical use

This could be set as a piece of homework or could be set at the start of the lesson when introducing the theory of mind.

Additional notes

As an extension task, students can think of additional questions to ask surrounding the clip.

Answers

1. At what age does a child understand other minds / what another person believes?
   About 4.
2. Describe the procedure of the crayon false belief test.
   A child is shown a box of crayons and asked what they think is in the box. They are shown that there are candles in the box. They are then asked what they thought was in the box and what another person who had not seen the contents would think was in the box.
3. Describe the responses that a 3, 4 and 5-year-old will give to the crayon experiment.

   3 years – They would say they always thought there were candles in the box. They would also think that others will think there are candles in the box as well. They assume everybody sees the world in the same way – the same as they do.

   4 years – They will say that they thought there would be crayons in the box and found out there were candles in there. They will understand that Snoopy will think there will be crayons in the box because it is a crayon box and so understand that others have different beliefs than their own, even false ones.

   5 years – Will understand things are not always what they seem.

4. What do children who pass the false belief test understand?
They understand that others can have different beliefs even mistaken beliefs and that they may have innate brain circuits specialised for reading other peoples' minds (known as a theory of mind mechanism).

5. Children who pass the false belief test are seen as possibly having an innate brain circuit specialised for doing what?
For reading other peoples' minds (known as a theory of mind mechanism).

6. What did the psychological research into autism in the 1970s fail to explain?
The peculiar difficulties with social communication that children with autism showed.

7. Autism was explained incorrectly as being caused by a difficulty with ____?
language

8. What did Premack and Woodruff's (1978) research identify about chimpanzees and how could this be linked to autism?
Chimpanzees didn't understand intention to deceive. Autistic children were often described as having an inability to lie so this could be linked to autism so therefore the theory of mind could be linked to autism.

9. Describe the Sally–Anne study into false beliefs that Baron-Cohen devised and the different responses that a 'normal' 4 year old and an older autistic child would give.
Sally has a basket and a marble and puts the marble in her basket and covers it with a cloth. Sally wants to play outside so she goes outside for a walk. When Sally is outside Ann takes the marble from Sally's basket and puts it in her box. Sally comes back from her walk and wants to play with the marble when she comes back. When children were asked where Sally will look for her marble: Autistic children will often say she will look in the box, even those with a mental age of 6, 7, 8 or 9. They couldn't predict correctly where Sally would look on the basis of her belief. 4 year olds would understand that Sally will look in her basket as she would not know that Ann had moved her marble.

10. Frith describes a real life example of a lack of theory of mind in a boy with autism; how does the theory of mind explain his tantrums and frustrations?
A boy was taught to point to a box of sweets when he wanted a sweet. He would do this when no one was in the room and would get frustrated and have tantrums. He imagined that everyone would know what he knew. He couldn't understand that other people have different knowledge and mental states than his own.

Theory of mind gap fill

handout number 7.13

Activity type Consolidation

This activity can be used to consolidate understanding of the theory of mind and its evaluation points. Students use the words at the top of the handout to complete the passages below them.

Practical use

This activity can be used as a plenary or can be set as a piece of homework

Additional notes

The activity can be made more challenging by telling the students to fill in the paragraphs without using the words at the top of the sheet to help them. The sheet is a useful summary of the theory once it has been completed which can be used in revision.

Answers

Theory of mind is our personal understanding (theory) of what other people are thinking and feeling. It is sometimes called **mind** reading. There are different ways of studying theory of mind depending on the **age** of the participants that are being studied.

Intentional reasoning research: This is used in toddlers to test whether they understand the **motives** behind human behaviour. Meltzoff arranged for 18-month-old toddlers to observe adults put beads in a jar. The adult was shown either struggling to put the beads in or were shown dropping the beads in **successfully**. Meltzoff found toddlers in both

conditions placed a similar number of beads into the jar so it showed toddlers **imitated** what the adult intended to do demonstrating very young children have a theory of mind.

False belief research: Another way to test theory of mind is by using false belief tasks. These are usually used with children aged **3-4** years. Research shows that theory of mind shifts and becomes more advanced at about 4 years old.

Theory of mind can also be studied in older children and in adults by getting them to judge the emotions in people without providing too much **information**. Researchers use the Eyes Task which involves a more **challenging** way of assessing theory of mind by getting people to read **complex** emotions in pictures of faces where only a small area around the eyes is shown. It was found that adults with a high **functioning** type of autism called Asperger syndrome struggled with the task. A problem of using **static** pairs of eyes which are in isolation, however, means the task is not the same as what we usually do when 'reading' emotions, so this means the research lacks **ecological** validity.

Theory of mind and autism: One explanation for the symptoms of autism (such as impairment in social **imagination**) is because people who have autistic spectrum disorders lack a theory of mind.

This research was led by Baron-Cohen, Leslie and Frith (1985). They wanted to investigate the differences between children with autism, Down's syndrome and children without a diagnosis of any disorder. They were given the Sally-Anne test where they were told a story about two dolls. Sally puts a marble in her basket. When Sally isn't looking Anne moves the marble into her box. The children were then asked where Sally will look for her marble because understanding that Sally doesn't know that Anne has moved the marble requires an understanding of Sally's **false** belief about where it is.

It was found 85% of the children without any disorder (**control** group) and 20% of the children in the autistic spectrum group knew Sally would look inside her **basket** for her marble. This shows that there is a theory of mind deficit in people with autistic spectrum disorders.

There are many evaluation points of the theory of mind including that there are a lot of studies which support the theory of mind through using false belief tasks which strengthens its **validity.**

Some researchers, however, have suggested that research into the theory of mind could also be measuring **perspective**-taking which is an ability to view social situations from **another** person's point of view so may not be measuring theory of mind at all. Also it has been found that children can engage in pretend play but not perform well on false belief tasks. Both of these evaluation points therefore question the validity of the research.

Finally, it is not known how theory of mind develops, it could develop in the same way as other cognitive abilities as **Piaget** suggested or we could internalise theory of mind with interactions with adults as **Vygotsky** suggested so there is a lot more research needed to understand how theory of mind is related to autism.

How sad do I feel watching telly?

handout number 7.14

Activity type Starter

This activity can be used to introduce the concept of mirror neurons. Students are asked to rate the extent to which they share the emotion of sadness in each of the clips shown in this YouTube video (12 minutes long, NB there is some swearing in this video):
www.youtube.com/watch?v=wf1efwYlNXc

This needs to be a rating of the extent to which the student feels they share the sadness of the person/people in each clip. The scale is as follows:

1 – don't share the emotion of sadness at all
↓
10 – very much share the emotion of sadness

Practical use

This activity is best used as a starter activity before introducing the mirror neuron system.

Additional notes

The data collected could also be used for the purposes of statistical analysis as a comparison between males and females. This could be used to investigate whether there is a significant difference in the scores.

Another comparison idea could be to compare the scores of students who take A level Psychology with students who don't study psychology to see whether there is a significant difference between students who study different subjects and their ability to share the emotions of others.

Students could write a hypothesis which suggests that students who study psychology will have a significantly higher rating (so have a more responsive mirror neuron system) than those who do not. This could be why these students study psychology as they share the emotions of others more so are more interested in finding out about human behaviour.

Group presentation – mirror neurons

handout number 7.15

Activity type Consolidation

This can be used as an activity before the topic of mirror neurons is taught to get students to work together on a section to present back to the class.

When students are doing their presentations, notes can be taken or students can write a list of questions to ask the students doing the presentation that they want to be answered after it is over.

Students are divided into one of five groups and each will be given an area to research and then to prepare a presentation. They have web links underneath their task that they can use to help them.

Practical use

This is best used as a group activity. If five groups are used then all areas can be covered.

Additional notes

Group 5 has the most challenging task so this should be given to the most able group of students to attempt.

Card sorting task – The role of mirror neurons

handout number 7.16

Activity type Consolidation

The sheet needs to be put onto card and cut up. The answer cards are put onto the table randomly face up. Question cards are put in a pile on top of one another face down.

Working in pairs, each student takes a question card in turn from the pile and reads it out. The other one of the pair has to find the answer card on the table.

Practical use

This can be used as a plenary or as a revision exercise at the end of learning about mirror neurons.

Additional notes

This can be timed to make it more challenging or it can also be used as a worksheet and individual students can join each question to the answer with a line.

Answers

1.	Why are mirror neurons unique?	They fire in response to personal action as well as in response to the action of others, allowing a person to interpret their intention and emotions.	1 L
2.	Who found out about mirror neurons by accident, in a study which involved monkeys?	Rizzolatti et al. (1992)	2 M
3.	What did Gallese and Goldman (1998) suggest mirror neurons respond to?	Observed actions and also the intentions behind behaviour.	3 E
4.	Who stated that mirror neurons have shaped the development of man as a social species, by understanding intention, emotion and perspective?	Ramachandran (2011)	4 C
5.	Ramachandran and Oberman (2006) talked about the 'broken mirror theory' of autism. What did they mean?	If mirror neurons do not work properly in childhood to understand social behaviour, then in adulthood this could lead to problems in reading others' intentions and emotions.	5 B
6.	Haker *et al*. (2012) were involved in what experiment involving mirror neurons?	Contagious yawning.	6 H
7.	The brain scanning technique fMRI was used to measure brain activity in participants being stimulated. What do these letters stands for?	Functional magnetic resonance imaging.	7 D
8.	Where is the Brodmann's area of the brain?	The right frontal lobe, which is rich in mirror neurons.	8 A
9.	The pars opercularis area in the brain is an area rich in mirror neurons. Which experiment gave evidence that this area was involved in perspective-taking using fMRI?	Mouras (2008) carried out an experiment measuring participants' responses using a pressure sensitive penis ring to films featuring fishing, Mr. Bean and heterosexual pornography.	9 G
10.	What is the weakness of the mirror neuron research that uses fMRI scanning to measure brain activity?	It scanned only whole areas due to ethical reasons preventing electrodes being inserted into the brain to measure individual cells.	10 F
11.	Research looking into a link between autistic spectrum disorders and abnormal mirror neurons has been mixed. What has it shown?	Studies using functional scans have shown lower activity in brain areas associated with mirror neurons in participants with autistic spectrum disorders.	11 K
12.	Who questioned research into mirror neurons because no specific neuron had been identified?	Hickok (2009)	12 J

WHICH THEORY?

handout number 7.17

Activity type Consolidation

The handout presents the key topics covered in this chapter and their key concepts.

Students have to match the topic to key concepts (which are provided on the handout). The concepts can be cut out and stuck in place.

The definitions for each concept are also provided to be matched with the correct concept.

Finally students have to think of another concept associated with the key topic and define this.

Practical use

This can be as a revision activity for the key theories of cognition and development. It can be made more challenging by having the students fill in the table without using the terms at the bottom of the handout.

Additional notes

This could be set as a piece of homework where students have to complete the task and then revise the key concepts for a short test at the beginning of a lesson.

Answers

Theory	Term	Definition
Role of mirror neurons	Mirror neuron	Unique brain cells that fire both in response to personal action and action on the part of others allowing us to interpret their intentions and emotions.
	Broken mirror theory	The idea that neurological deficits including dysfunction of the mirror neuron system prevent a developing child imitating and understanding social behaviour in others which leads to problems in social communication.
Piaget's theory of cognitive development	Conservation	The idea that quantity remains the same despite changing appearance.
	Schema	Units of knowledge that contain our understanding of an object, person or idea. They become increasingly complex during development as we acquire more information about each object or idea.
Baillargeon's explanation of infant abilities	Violation of expectation research	If children understand how the physical world operates then they will expect certain things to happen in particular situations.
	Knowledge of the physical world	The extent to which we understand how the physical world works and expect certain things to happen.
Vygotsky's theory of cognitive development	Scaffolding	This is the process of helping a learner cross the zone of proximal development and advance as much as they can, given their stage of development.
	The zone of proximal development (ZPD)	The gap between a child's current level of development, defined by the cognitive tasks they can perform unaided, and what they can potentially do with the right help from a more expert other, who may be an adult or a more advanced child.
Theory of mind	False belief tasks	A method of testing whether a person can recognise that someone else can hold thoughts different from their own.
	Theory of mind	Our personal understanding of what other people are thinking and feeling.
Selman's levels of perspective-taking	Perspective-taking	Our ability to appreciate a social situation from someone else's point of view. This cognitive ability underlies much of our normal social interaction.
	Socially egocentric	The stage of social cognitive development where the child fails to distinguish between its own emotions and those of other people.