DIXONS SIXTH FORM BRADFORD

SUMMER WORK

BTEC APPLIED PSYCHOLOGY

2026

STUDENT NAME:

Applied Psychology: Summer Work

Contents

Welcome to Applied Psychology

Whether you are aiming for university, a career in psychology, or just want to understand what makes people tick, this course is designed to give you real-world, practical insights into human behaviour. Psychology is the scientific study of minds and behaviour. As such, it is a part of our everyday lives. An understanding of human behaviour is fundamental to many jobs in society and the study of psychology at degree level and beyond remains a very popular choice. You don't need to have studied psychology before. As long as you have your Level 2 foundations (including GCSE Science), you have everything you need to get started.

The Course at a Glance

This qualification is an Extended Certificate, which is equivalent in size to one full A-Level. It runs alongside your other subjects, but because it is a BTEC *Applied* qualification, you will focus on how psychological theories are used in everyday life, healthcare, and the legal system.

Over the two years, you will tackle four units in total: three mandatory topics and one specialist option.

Year 1: The Foundations & Exams

In your first year, you will jump straight into the core theories of psychology and sit your two external exams.

- Unit 1: Applications of Psychological Approaches
    - *What it is:* You will explore the four key psychological perspectives (Behavioural, Cognitive, Biological, and Social) and learn how they explain everyday behaviours, aggression, and gender.
    - *Assessment:* An **external exam** set and marked by the exam board. (January 2027)
- Unit 3: Health Psychology (Mandatory)
    - *What it is:* You will look at how psychological factors influence lifestyle choices, stress, and addiction. You will explore why people struggle to stick to medical advice and how to design campaigns that encourage healthy behaviours.
    - *Assessment:* An **external exam** set and marked by the exam board. (June 2027)

⚠️ Important Progression Rule: Because these two units form the bedrock of the course, the college requires you to achieve at least a Merit grade in both Year 1 components to smoothly progress. If you miss this benchmark, you will be required to resit the exam to ensure you are on track for your final qualification.

Year 2: Coursework & Specialism

Once your exams are under your belt, Year 2 shifts focus on practical application and your chosen specialist area.

- Unit 2: Conducting Psychological Research (Mandatory)
    - *What it is:* Psychology is a science. You will learn how researchers gather data, design experiments, and analyse results. You will even get to plan and carry out your own pilot research project.
    - *Assessment:* An internally assessed coursework unit.
- Unit 4: Criminal and Forensic Psychology (Our Optional Specialist Unit)

- *What it is:* Our chosen specialist pathway dives into the criminal mind. You will investigate different psychological theories of offending, how profiles are built, and how the justice system treats offenders.
- *Assessment:* An internally assessed coursework unit.

How You Are Graded

Unlike traditional A-Levels where everything hangs on the final summer exams, your BTEC grade builds over time. You will earn points for every unit based on your performance:

- Pass (P) – Equivalent to an A-Level grade E
- Merit (M) – Equivalent to an A-Level grade C
- Distinction (D) – Equivalent to an A-Level grade A
- Distinction* (D*) – Equivalent to an A-Level grade A*

Your final qualification grade will be calculated by combining the points from your Year 1 exams and your Year 2 coursework assignments.

Careers and Higher Education

Career

- **Clinical Psychologist**: Working primarily in the NHS or private practice, you will diagnose and treat patients experiencing complex mental or physical health conditions, such as clinical depression, anxiety, or psychosis. Average Salary: Newly qualified psychologists in the NHS typically start at Band 7, earning between £43,700 and £55,000, while experienced consultants can earn up to £90,000+.
- **Forensic Psychologist**: Linked closely to criminology and justice, you will work in prisons, probation services, or secure hospitals to evaluate criminal behaviour, assess risk, and design rehabilitation programs for offenders. Average Salary: Early-career professionals typically earn £35,000 to £48,000, rising to £50,000 to £75,000+ for highly experienced or senior forensic specialists.
- **Educational Psychologist**: Working with schools and local authorities, you will support children and young people who are experiencing learning, emotional, or behavioural difficulties. Average Salary: Once fully qualified, standard scale salaries begin around £42,400 and progress up to £61,800, with senior/principal educational psychologists reaching £74,000+.
- **Occupational Psychologist**: Operating in the corporate world, you will apply psychological principles to the workplace to improve employee wellbeing, optimize team productivity, and advise companies on effective recruitment and training strategies. Average Salary: Early-career salaries range from £40,000 to £55,000, but because of strong private-sector demand, experienced or senior corporate consultants can reach £70,000 to £100,000+.

- **Human Resources (HR) Officer**: An incredibly common route for psychology graduates; you will use your understanding of human interaction and motivation to manage employee relations, resolve workplace conflicts, and lead staff recruitment. Average Graduate Salary: Entry-level graduate HR roles typically start between £24,000 and £28,000, with HR Managers easily progressing to £45,000+.
- **Market Research Analyst**: Utilizing the data handling, consumer behaviour knowledge, and scientific research methods learned during your degree, you will analyse consumer trends and advise companies on how to market their products effectively. Average Graduate Salary: Starting graduate salaries typically range from £25,000 to £30,000, increasing significantly with corporate experience.

- **Mental Health Wellbeing Practitioner / Psychological Wellbeing Practitioner (PWP)**: An excellent baseline healthcare role where you will work within NHS Talking Therapies teams to deliver low-intensity, evidence-based interventions (like Cognitive Behavioural Therapy) for people experiencing mild to moderate anxiety or depression. Average Graduate Salary: Trainee positions start around NHS Band 4 (~£27,500), rising to Band 5 (£29,900 to £36,000) upon full qualification.
- **Data Analyst**: Because a psychology degree teaches heavy statistical analysis, quantitative research methods, and software-based data parsing, graduates are highly sought after by tech, retail, and finance firms to interpret complex data trends. Average Graduate Salary: Entry-level graduate positions start between £28,000 and £33,000, with rapid salary progression available in the tech and corporate sectors.

Higher Education

- **BSc (Hons) Psychology** *(University of Liverpool | 120 – 128 points):* This degree provides an in-depth scientific study of human thought, development, and biological behaviour required to gain British Psychological Society (BPS) accreditation.
- **BSc (Hons) Criminology & Psychology** *(Sheffield Hallam University | 112 points):* This course explores the social and psychological motivations behind criminal activity alongside how society and the justice system respond to offenders.
- **BSc (Hons) Forensic Psychology** *(Manchester Metropolitan University | 112 – 120 points):* This specialized degree focuses directly on the application of psychological theory within legal frameworks, courtrooms, and offender rehabilitation settings.
- **BSc (Hons) Health & Wellbeing** *(University of Huddersfield | 104 – 112 points):* This pathway examines how physiological lifestyle choices, stress, and addiction shape public health, preparing students to design behavioural change campaigns.
- **BSc (Hons) Psychology with Counselling** *(University of Salford | 104 – 112 points):* This qualification combines essential psychological theories with practical communication and therapeutic skills used in mental health and counselling support services.

- **BSc (Hons) Sports Psychology** *(Leeds Beckett University | 112 points):* This course applies cognitive and behavioural principles directly to athletes to optimize competitive performance, team dynamics, and injury recovery.
- **BA (Hons) Primary Education with QTS** *(Edge Hill University | 112 – 120 points):* This professional teaching degree blends child development and learning theories with practical classroom placement training to qualify graduates for primary school teaching.
- **BSc (Hons) Marketing & Consumer Psychology** *(Bangor University | 112 – 120 points):* This program investigates how psychological factors influence purchasing habits, brand perception, and corporate advertising strategies.

Summer work: Complete all the work in the booklet, using a black pen, pencil and ruler where required.

Approaches and assumptions: Psychology aims to understand and explain minds and behaviour, but it does this in different ways. Each way of looking at minds and behaviour is called an approach (also known as perspective). You will begin by looking at four approaches, each of which assumes that behaviour is influenced by a particular aspect of a person's psychology.

1. Cognitive Approach: The cognitive approach looks at how the mind deals with information. This includes the cognitive processes of language, thought, attention, memory and perception. It assumes that behaviour is influenced by how you process information from the world around you.

- **Assumption 1:** The mind is an **information processor** with features that are similar to a computer (also known as the computer analogy – see Figure 1.1). Computers have data input, for example through the keyboard. This data is processed and stored and can be brought back as a form of output, for example printing a document. Similarly, your mind takes in data from your senses (sight, touch, taste, sound, smell, and so on), processes the information (for example converts to words and stores it as memory), and this then affects how you behave (output).

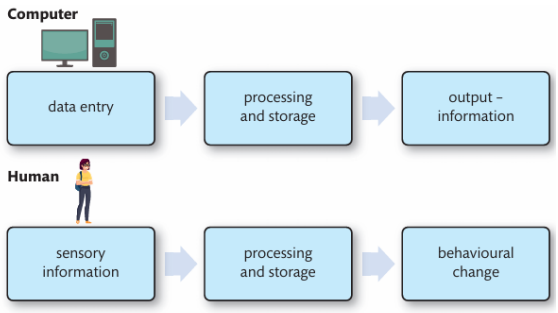

Figure 1.1: The computer analogy

- **Assumption 2:** Taking this assumption further, you can see how all your behaviour is therefore a product of how you process information. Human processing is influenced by **schemas,** a packet of information made up from past experiences that help us process sensory information. Schemas help us process the world more efficiently, such as filtering out the everyday/expected sensory information whilst allowing us to focus on the new, unfamiliar. Schemas can **prime** us to interpret the information in

a specific way (positive or negative). Therefore, the way you think about something will determine how you feel about it, which will then affect how you behave towards it.

Key study: Loftus and Palmer (1974) Reconstruction of automobile destruction

Elizabeth Loftus has spent many years studying how memory can be distorted and changed as a result of misinformation. She has applied her expertise to many court cases, helping judges and juries understand issues with witness memory. One of her best-known studies is a test of the effect of misinformation in the form of leading questions.

Aim: To test whether the way a question is worded will affect recall of the circumstances of a car crash.

Procedure: This was a laboratory experiment where 45 student participants were divided into five groups (conditions). Each student watched short films of several car crashes. They were then asked to recall what they had seen and were given a questionnaire with a critical question: 'how fast were the cars going when they ... each other?'. Each group was given a different verb describing the crash: contacted; hit; bumped; collided or smashed. So, in one of the five conditions the critical question was 'how fast were the cars going when they hit each other?'. The participants had to report their estimate of the speed in miles per hour and their answers were compared across the various conditions.

Findings: Mean estimates of speeds of cars in each condition: Smashed 40.8 mph / Collided 39.3 mph / Hit 38.1 mph / Bumped 34 mph / Contacted 31.8 mph.

Conclusions: As the intensity of the verb increased, so too did the measure of speed. This may be because the verb activated a schema which affected the recall of the car's speed. For example, 'smash' indicates high speed so the participant remembered the car as travelling faster.

Activity:

1. Explain how the findings from Loftus and Palmer's study demonstrate the key assumptions regarding the cognitive approach. In your answer you must reference information processing, schemas and priming.

2. Loftus and Palmer's study is described as a laboratory experiment. Write a definition of a laboratory experiment.

3. Displaying data. On the gride below, draw an appropriate bar chart to represent the results from Loftus and Palmer's study.

Bar chart checklist:

☑ Appropriate title to display results

☑ Spaces between bars (if the bar touch you have drawn a histogram)

☑ X-axis and Y-axis labelled correctly

Here's a video of Elizabeth Loftus being interviewed about her most famous study.

2. Social Approach: This approach assumes that behaviour occurs in a social context. Therefore, your behaviour is influenced by what is going on within the situation in which you find yourself. Humans are often described as social animals. Part of the success of the human species is due to people having the ability to cooperate in groups to form societies. As such, people are sensitive to information from, and about, other people.

- **Assumption 1:** This approach assumes that behaviour is affected by the real or imagined presence of other people. There is a tendency to do what seems right in order to fit in with other people in the situation.

- **Assumption 2:** Behaviour is affected by the norms and culture in which it is situated. From birth, you are socialised to learn the rules of behaviour for your culture and your society. These help you to exist in a group: the world would be chaotic if everyone just did what they wanted without regard for the rules, customs or traditions of the groups.

Some of these rules are formal and have become laws in society as a whole, for example you do not take other people's property without their permission. Other rules are informal and often apply to smaller groups or cultures. These are social or cultural norms, which are the unwritten rules of behaviour that affect how people

act. Different cultures and societies have different norms, therefore behaviour changes according to the culture and society in which it is displayed.

Key Study: Asch (1951) Experimental investigation of conformity to the majority

Asch was an influential social psychologist; much of his work was done in the mid twentieth century in the USA. He said that 'most social acts have to be understood in their setting and lose meaning if isolated'. His research is therefore focused on the social setting in which behaviour occurs and his most famous research is his investigation into conformity.

Aim: To investigate whether participants would conform to the obviously wrong judgement of a majority.

Procedure: Asch used a sample of 123 male university students. Each participant took part on their own, but were led to believe they were part of a bigger group of eight participants. The other seven were confederates (people that look like other participants but have been given a specific role to play). The task given to the participants was to judge which line matched the standard line.

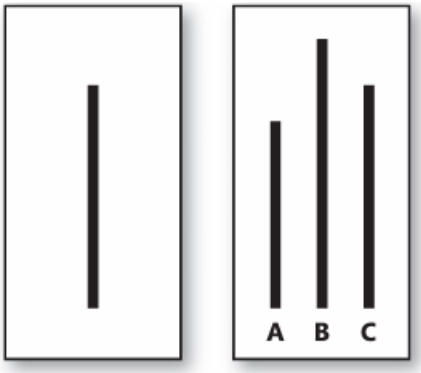

Figure 1.3: Each person in the room had to state aloud which comparison line (A, B or C) was most like the standard line

By manipulating the appointment time for the true participant to arrive he made it so that they had to sit in a certain place, so were second from last to give their judgement. Each participant took part in 18 trials where they were asked to match the line to the standard. The correct answer was always obvious, and pre-testing on a control group showed that the vast majority of people were able to do this task quickly, easily and accurately. There were 12 critical trials where the confederates were instructed to all give the same wrong response; the data gathered on these trials was used to measure conformity.

Findings: 25 per cent of the participants never conformed; 75 per cent did (at least once). Overall, the total level of conformity on the critical trials was 36.8 per cent. Participants were interviewed after the study and asked about their decisions. The dissenters (those that did not conform) said that they felt uncomfortable going against the group but had enough confidence to do so. Those that yielded (agreed with the group) lacked this confidence even though many suspected that people in the group were deliberately giving the wrong answers so went along with the group so as not to stand out against them.

Conclusions: Normative social influence affected many participants as they did not want to stand out as a dissenter. Even the ones who did dissent felt socially uncomfortable in doing so. Some dissenters also showed informational social influence as they conformed because of the desire to be right.

1. Use the internet to write a definition of the following terms, explaining how Asch's participants demonstrate the types of social influence:

a. Normative Social Influence:

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b. Informational Social Influence:

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2. Read the two scenarios below and apply your knowledge of social influence to each scenario.

Scenario A: Taylor goes to a brand-new, high-tech college building for an induction day. When the fire alarm goes off, Taylor has no idea which exit doors are actual fire exits. Taylor notices a group of second-year students confidently running down a specific side corridor, so Taylor follows them because they look like they know the correct way out.

- ***Type of Influence:*** _____
- ***Why? (Link to Asch's study)***

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Scenario B: Jordan is sitting with a new group of friends at lunch. The group starts talking about a popular reality TV show, and everyone agrees that the main contestant is "absolutely awful." Jordan actually really likes that contestant and thinks they are great, but when asked for an opinion, Jordan nods along and says, "Yeah, I can't stand them either," just to avoid looking weird or getting left out of the conversation.

- ***Type of Influence:*** _____
- ***Why? (Link to Asch's study)***

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3. Behavioural Approach: This approach forms the nurture part of the nature vs. nurture debate, which examines whether you are born with behavioural characteristics (nature) or whether you learn them (nurture).

- **Assumption 1:** All behaviour results from direct environmental experience. All animals (including humans) are conditioned by their environment to behave in specific ways. So, if you experience something bad in a specific environmental situation, you will learn that the situation is to be avoided in the future.

- **Assumption 2:** You also learn behaviour from observing and imitating other people. Humans (and some animals) do not always need direct experience in order to learn behaviour; they learn from observing what happens to others when they do something. Babies show an early preference for watching people in the environment rather than objects. Even with young children, much of their attention is directed to other people's actions. This is called social learning where you watch what someone does to see what happens to them, and then in the future you imitate what they did.

Key study: Pavlov's Classical Conditioning (1927)

Pavlov discovered classical conditioning by accident when investigating the role of saliva in digestion. He unexpectedly found that the dogs began to salivate before food was presented to them and theorised that they had learned to associate the noises caused by producing and delivering the food with the food itself.

Initially the noise would not cause any response in the dog as it was a neutral stimulus, whereas food always caused the response of salivation. This is because the natural response to the smell of food is to salivate, this prepares their body to start digesting food in their mouths, and the food smell causes a reflex response. This is called an unconditioned stimulus (UCS). The salivation is the unconditioned response (UCR) to the food, because they have not had to learn this. Eventually, even without the food, the dogs salivate to the noise. This response has been learned so the sound of the bell becomes the conditioned stimulus (CS) and the salivation is a conditioned response (CR).

Pavlov demonstrated this in a very famous study, as seen in Figure 1.4.

1	UCS (food)	= UCR (salivation)
2	NS (bell)	= no response
3	NS (bell) + UCS (food)	= UCR (salivation)
4	CS (bell alone)	= CR (salivation)

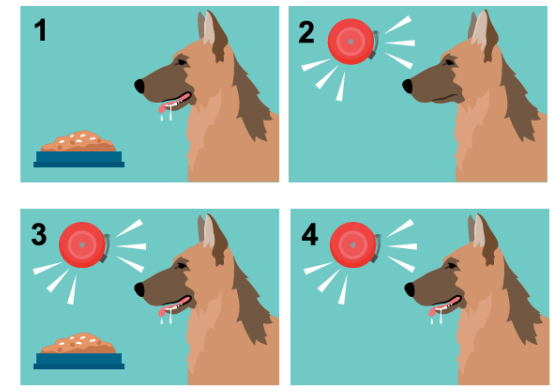
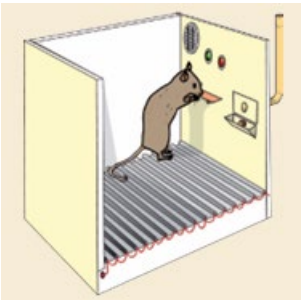


Figure 1.4: Pavlov's dogs

Key study: Skinner's Operant Conditioning (1937)



The theory of operant conditioning was developed by Skinner who thought that classical conditioning was too simple to explain all aspects of learning. He believed that learning was a more active process than suggested by classical conditioning, and that the best way to understand learning was to look for the causes of action. Specifically, he proposed that people learn as a direct result of experiencing the consequences of your actions. You are constantly acting (or operating) on your environment and the effect this has on you determines whether or not you are likely to repeat a behaviour or not. Consequences can be nice, neutral or nasty. Neutral consequences do not affect learning but nice consequences will increase the chances that the behaviour will be repeated; these are known as reinforcers. There are two types of reinforcement: positive reinforcement and negative reinforcement. A positive reinforcer is rewarding (like a child receiving a sweet for good behaviour), whilst a negative reinforcer is the removal of an unpleasant state (such as eating food whilst hungry). A nasty

consequence will prevent you from repeating a behaviour again, by giving something unpleasant as a consequence of your action (punishment).

↑ Skinner developed a special cage (called a 'Skinner box') in order to investigate operant conditioning in rats. The rat moves around the cage, and when it accidentally presses the lever, a food pellet (the reinforcer) falls into the cage. In no time at all the hungry rat begins pressing the lever in order to obtain food.

Classical and operant conditioning together make up the behaviourist approach to explaining behaviour. This is sometimes referred to as stimulus response learning. It ignores what happens inside the mind between the experience of the stimulus and the behavioural response.

1. Briefly explain what is meant by 'classical' and 'operant conditioning'.

2. Outline the main findings of Pavlov's research.

3. Explain what is meant by 'positive' and 'negative reinforcement' in operant conditioning.

4. Outline the main findings of Skinner's research.

Social Learning Theory: A further development in learning theories was proposed by Bandura. Although he agreed that conditioning was certainly part of the process of learning, he believed that there was more to it than that. Social learning theory works on the basis that most behaviours are learned through the observation and imitation of other people's actions. Although this is still learning from the environment and is consistent with the nurture view of the behaviourists, it adds cognitive processing to learning. It provides an explanation of what goes on in the mind between the stimulus and the behavioural response. This theory says that you pay more attention to certain people in your environment and they become models for you. Models tend to be those who are important to you, similar in some way and often of higher status. You observe what they do and what happens to them when they do it. Sometimes you retain this information and use it in the future to perform similar actions but only if you know that you can replicate it successfully. You do this in order to identify with the model and because you and/or they are reinforced for doing so. The behavioural processes involved in this are observation, modelling, imitation, and reinforcement. Reinforcement can be both direct, which is when you are reinforced for the imitation of the model, or indirect where the model is reinforced. This is called vicarious reinforcement.

The cognitive processes involved in this are attention, retention, replication and motivation. You choose who is to be your model and what to watch, you store information about their actions as memory, you decide whether you can actually physically do what they do, and you copy them when you are motivated to do so. This cognitive component to the theory means that you do not automatically just copy everything you see other people doing, and it explains why you do not need direct reinforcement from the environment in order to change your behaviour.

Key study: Bandura (1961) Transmission of aggression through imitation of aggressive models

Albert Bandura was interested in explaining aggression in young people. He felt that the traditional conditioning explanation was not sufficient to be able to do this so he proposed adding a cognitive and social element to learning. Learning in humans mostly occurs in a social context. You learn from observing and imitating other people, but this also involves cognition – how you process the information you observe is an important element which determines whether or not you repeat the behaviour you see. Bandura tested young children to see if he could make them more or less aggressive by exposing them to an aggressive model of either the same sex as them, or a different sex.

Aim: To demonstrate that if children witness a real-life aggressive model, they would imitate the aggressive behaviour if given the opportunity.

Procedure: 72 children, 36 males and 36 females, between the ages of 3–5 years, recruited from Stanford University Crèche took part. The participants were divided into eight experimental conditions (of six children each) and a control group (24 children). All of the children were matched for physical and verbal aggression before the experiment, based on the ratings of the experimenter and nursery teacher. This meant that equally aggressive children were distributed into each of the conditions to make sure that all the aggressive ones did not end up in the same condition. The experimental conditions were whether the children watched aggressive or non aggressive models of the same or different gender to the child (see Figure 1.5 for the allocation to each condition).

The children were tested individually. They were taken into a corner of a room and shown how to design a picture. The adult model was taken to an opposite corner and to their 'play area' which contained a table, chair, mallet, tinker toy (construction set) and a bobo doll (large inflatable doll with weights in the bottom that automatically stands up when knocked over). In the aggressive condition, the model played with the tinker toy for a minute and then began to act aggressively towards the bobo doll. In the non-aggressive condition, the model continued to play with the toy. Ten minutes later the child was taken to another room and given toys to play with, which the experimenter then took away to cause frustration. The child was then taken to an experimental room containing aggressive and non-aggressive toys (including the bobo doll). The child was left to play there for 20 minutes while their behaviour was observed through a one-way mirror. The observer counted acts of imitated aggression (a direct copy of what the adult did) and non-imitated aggression (aggression not modelled by the adult).

Findings: Children exposed to the aggressive model showed significantly more acts of aggression (including all aggressive acts, not just those displayed by the model) than the children exposed to the non-aggressive model and those in the control group. More than 50 per cent of the total acts of aggression (both verbal and physical) was done by the 24 children in the aggressive model condition. Aggression was more pronounced in boys than girls, particularly when they had been observing a model of the same sex. Male children showed more aggression in every condition.

Conclusions: If a child is exposed to an aggressive model, they are likely to imitate the aggressive acts they see, especially if the model is in some way similar to them. Furthermore, just seeing a model behaving aggressively is likely to increase the amount of aggression shown even when the aggression being demonstrated by the witness is not the same as the aggression demonstrated by the model.

1. Explain the concept of vicarious reinforcement and how this differs from the earlier behavioural approaches developed by Pavlov and Skinner.

Aggression in video games:

Konijn (2007) randomly assigned Dutch teenage boys to play a violent or nonviolent video game for 20 minutes and then play a competitive game with another study participant. The winner got the privilege of blasting the loser with noise at a volume of their choosing, ranging from a tolerable 60 decibels to a potentially hearing-damaging 105 decibels. The adolescents who played the violent video game chose potentially harmful noise levels more often.

2. What do the findings from Konijn suggest about social learning and video games?

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3. Using your knowledge of Operant Conditioning and Vicarious Reinforcement, why might video games like Grand Theft Auto be harmful for society?

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4. Biological Approach: This approach takes the nature side of the nature vs. nurture debate and assumes that most of our behaviour is innate, meaning that it occurs without learning.

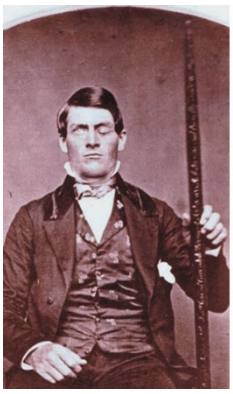
- **Assumption 1:** Much of your behaviour is influenced by physical aspects of yourself including your central nervous system (CNS), genes and neurochemistry. You inherit your genes and they shape the structure and chemistry of your CNS (which is made up of the brain and the spinal cord). The brain controls our behaviour so behaviour is directly influenced by how the brain is structured.

- **Assumption 2:** Your genetic makeup (and therefore your physiological makeup) is a product of evolution. Evolution is a slow process of genetic change in response to environmental pressures. Genes that program the brain to make some behaviour or trait more likely will be passed onto the next generation if that behaviour made the person more successful (that is, they are able to live longer, attract more mates and produce more offspring). The genetic difference created an adaptive advantage for that person with it. They then survived better than those without this genetic difference so their genes are more likely to be passed on. As genes change slowly over generations, modern humans still have genes suited to the environment that were successful in prehistoric times. This is called genome lag.

Key study: Harlow, J. M. (1868) Passage of an iron rod through the head – the case study of Phineas Gage

The brain does not seem to have any obvious structures that can be clearly linked to function. Until relatively recently, the only way to investigate where functions happened in the brain was through cases of brain damage. One of the first recorded cases of research into brain injury was conducted by Phineas Gage's physician. It lacks a lot of detail that would be necessary in modern cases of this type but does show a 'before and after' effect of traumatic brain injury on behaviour.

Aim: To investigate the effect of traumatic brain injury to the brain's left frontal lobe.



Procedure: Phineas was a railway foreman when, at the age of 25, he suffered massive head trauma as the result of an accident in which a metal rod used for putting dynamite in holes drilled in rocks in order to blow them up, passed through his left eye emerging through the top of his skull, damaging his left frontal lobe. Amazingly, Phineas did not die. Before the accident Phineas was described as possessing considerable 'energy of character' and 'temperate habits' (he was disciplined and had self-control). He was regarded as a favourite foreman among his men at work. Phineas' physician documented his recovery in a letter written to the Boston Medical and Surgical Journal, where he describes a day-by-day account of Phineas's behaviour. Though blinded in his left eye, Phineas seemed to be able to carry on working as normal. Neither his speech nor his movements had been affected.

Findings: As a result of damage to the left frontal lobe, Phineas's behaviour appeared to change dramatically. A month after his accident, although his memory and intellectual abilities appeared unaffected, his temperament had changed. He was described as acting childishly and irritably, he refused to follow instructions and would leave the hospital regularly despite being told not to. Later, his behaviour would be described as unreliable, that he was partial to swearing and often made inappropriate remarks. His friends said he was 'no longer Gage'. He lived for 12 years after the accident and although some of these changes persisted, he did show some improvement in his social functioning, for example managing to hold down a job driving coaches.

Conclusions: Damage to the brain can have an effect on behaviour and personality. The case study not only prompts theories that favour localisation of function, but also that it is possible for some people to recover from severe brain injury. This would suggest that the brain is adaptable to some degree.

1. Phineas Gage is an example of a case study in psychological research. Use the internet to write a definition of a case study.

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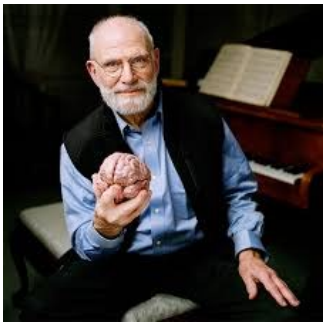
2. What do the findings from Phineas Gage suggest about the role of the frontal lobes of the brain?

3. Can you identify one limitation of using a case study like Phineas Gage to make a conclusion regarding areas of the brain and their functions?

Optional Stretch: *The following is a chapter taken from Dr. Oliver Sack's "The Man Who Mistook His Wife for a Hat". Dr. Sacks was a British neurologist who worked with patients who displayed the most bizarre behaviours, often behaviours that had no clinical diagnosis. This chapter refers to a man suffering from a condition known as prosopagnosia, where objects and items are misunderstood or misidentified by an individual. This book is one of the most widely cited psychology books that appears on university reading lists, and one that Russell Group universities will want students to reference in their personal statements.*



The Man Who Mistook His Wie or a Hat Dr P. was a musician of distinction, well known for many years as a singer, and then, at the local School of Music, as a teacher. It was here, in relation to his students, that certain strange problems were first observed. Sometimes a student would present himself, and Dr P. would not recognise him; or, specifically, would not recognise his face. The moment the student spoke, he would be recognised by his voice. Such incidents multiplied, causing embarrassment, perplexity, fear – and, sometimes, comedy. For not only did Dr P. increasingly fail to see faces, but he saw faces when there were no faces to see: genially, Magoo-like, when in the street, he might pat the heads of water-hydrants and parking-meters, taking these to be the heads of children; he would amiably address carved knobs on the furniture, and be astounded when they did not reply. At first these odd mistakes were laughed off as jokes, not least by Dr P. himself. Had he not always had a quirky sense of humour, and been given to en like paradoxes and jests? His musical powers were as dazzling as ever; he did not feel ill – he had never felt better; and the mistakes were so ludicrous – and so ingenious – that they could hardly be serious or betoken anything serious. The notion of there being 'something the matter' did not emerge until some three years later, when diabetes developed. Well aware that diabetes could affect his eyes, Dr P. consulted an ophthalmologist, who took a careful history, and examined his eyes closely. 'There's nothing the matter with your eyes,' the doctor concluded. 'But there is trouble with the visual parts of your brain. You don't need my help, you must see a neurologist.' And so, as a result of this referral, Dr P. came to me. It was obvious within a few seconds of meeting him that there was no trace of dementia in the ordinary sense. He was a man of great cultivation and charm, who talked well and fluently, with imagination and humour. I couldn't think why he had been referred to our clinic. And yet there was something a bit odd. He faced me as he spoke, was oriented towards me, and yet there was something the

matter it was difficult to formulate. He faced me with his ears, I came to think, but not with his eyes. These, instead of looking, gazing, at me, 'taking me in', in the normal way, made sudden strange fixations on my nose, on my right ear, down to my chin, up to my right eye as if noting (even studying) these individual features, but not seeing my whole face, its changing expressions, 'me', as a whole. I am not sure that I fully realised this at the time – there was just a teasing strangeness, some failure in the normal interplay of gaze and expression. He saw me, he scanned me, and yet . . . 'What seems to be the matter?' I asked him at length. 'Nothing that I know of,' he replied with a smile, 'but people seem to think there's something wrong with my eyes.' 'But you don't recognise any visual problems?' 'No, not directly, but I occasionally make mistakes.' I left the room briefly, to talk to his wife. When I came back Dr P. was sitting placidly by the window, attentive, listening rather than looking out. 'Traffic,' he said, 'street sounds, distant trains – they make a sort of symphony, do they not? You know Honegger's Paci ic 234?' What a lovely man, I thought to myself. How can there be anything seriously the matter? Would he permit me to examine him? 'Yes, of course, Dr Sacks.' I stilled my disquiet, his perhaps too, in the soothing routine of a neurological exam – muscle strength, co-ordination, reflexes, tone . . . It was while examining his reflexes – a trifle abnormal on the left side – that the first bizarre experience occurred. I had taken off his left shoe and scratched the sole of his foot with a key – a frivolous seeming but essential test of a reflex – and then, excusing myself to screw my ophthalmoscope together, left him to put on the shoe himself. To my surprise, a minute later, he had not done this. 'Can I help?' I asked. 'Help what? Help whom?' 'Help you put on your shoe.' 'Ach,' he said, 'I had forgotten the shoe,' adding, sotto voce, 'The shoe? The shoe?' He seemed baffled. 'Your shoe,' I repeated. 'Perhaps you'd put it on.' He continued to look downwards, though not at the shoe, with an intense but misplaced concentration. Finally his gaze settled on his foot: 'That is my shoe, yes?' Did I mis-hear? Did he mis-see? 'My eyes,' he explained, and put a hand to his foot. 'This is my shoe, no?' 'No, it is not. That is your foot. There is your shoe.' 'Ah! I thought that was my foot.' Was he joking? Was he mad? Was he blind? If this was one of his 'strange mistakes', it was the strangest mistake I had ever come across. I helped him on with his shoe (his foot), to avoid further complication. Dr P. himself seemed untroubled, indifferent, maybe amused. I resumed my examination. His visual acuity was good: he had no difficulty seeing a pin on the floor, though sometimes he missed it if it was placed to his left. He saw all right, but what did he see? I opened out a copy of the National Geographic Magazine, and asked him to describe some pictures in it. His responses here were very curious. His eyes would dart from one thing to another, picking up tiny features, individual features, as they had done with my face. A striking brightness, a colour, a shape would arrest his attention and elicit comment – but in no case did he get the scene-as-a-whole. He failed to see the whole, seeing only details, which he spotted like blips on a radar screen. He never entered into relation with the picture as a whole – never faced, so to speak, its physiognomy. He had no sense whatever of a landscape or scene. I showed him the cover, an unbroken expanse of Sahara dunes. 'What do you see here?' I asked. 'I see a river,' he said. 'And a little guest-house with its terrace on the water. People are dining out on the terrace. I see coloured parasols here and there.' He was looking, if it was 'looking', right off the cover, into mid-air and confabulating non-existent features, as if the absence of features in the actual picture had driven him to imagine the river and the terrace and the coloured parasols. I must have looked aghast, but he seemed to think he had done rather well. There was a hint of a smile on his face. He also appeared to have decided that the examination was over, and started to look round for his hat. He reached out his hand, and took hold of his wife's head, tried to lift it off, to put it on. He had apparently mistaken his wife for a hat! His wife looked as if she was used to such things. I could make no sense of what had occurred, in terms of conventional neurology (or neuropsychology). In some ways he seemed perfectly preserved, and in others absolutely, incomprehensibly devastated. How could he, on the one hand, mistake his wife for a hat and, on the other, function, as apparently he still did, as a teacher at the Music School? I had to think, to see him again – and to see him in his own familiar habitat, at home. A few days later I called on Dr P. and his wife at home, with the score of the Dichterliebe in my briefcase (I knew he liked Schumann), and a variety of odd objects for the testing of perception. Mrs P. showed me into a lofty apartment, which recalled fin-de-

siècle Berlin. A magnificent old Bösendorfer stood in state in the centre of the room, and all round it were music-stands, instruments, scores . . . There were books, there were paintings, but the music was central. Dr P. came in and, distracted, advanced with outstretched hand to the grandfather clock, but, hearing my voice, corrected himself, and shook hands with me. We exchanged greetings, and chatted a little of current concerts and performances. Diffidently, I asked him if he would sing. 'The Dichterliebe!' he exclaimed. 'But I can no longer read music. You will play them, yes?' I said I would try. On that wonderful old piano even my playing sounded right, and Dr P. was an aged, but infinitely mellow Fischer Dieskau, combining a perfect ear and voice with the most incisive musical intelligence. It was clear that the Music School was not keeping him on out of charity. Dr P.'s temporal lobes were obviously intact: he had a wonderful musical cortex. What, I wondered, was going on in his parietal and occipital lobes, especially in those areas where visual processing occurred? I carry the Platonic solids in my neurological kit, and decided to start with these. 'What is this?' I asked, drawing out the first one. 'A cube, of course.' 'Now this?' I asked, brandishing another. He asked if he might examine it, which he did swiftly and systematically: 'A dodecahedron, of course. And don't bother with the others – I'll get the eikosihedron too.' Abstract shapes clearly presented no problems. What about faces? I took out a pack of cards. All of these he identified instantly, including the jacks, queens, kings, and the joker. But these, after all, are stylised designs, and it was impossible to tell whether he saw faces or merely patterns. I decided I would show him a volume of cartoons which I had in my briefcase. Here, again, for the most part, he did well. Churchill's cigar, Schnozzle's nose: as soon as he had picked out a key feature he could identify the face. But cartoons, again, are formal and schematic. It remained to be seen how he would do with real faces, realistically represented. I turned on the television, keeping the sound off, and found an early Bette Davis film. A love scene was in progress. Dr P. failed to identify the actress – but this could have been because she had never entered his world. What was more striking was that he failed to identify the expressions on her face or her partner's, though in the course of a single torrid scene these passed from sultry yearning through passion, surprise, disgust and fury to a melting reconciliation. Dr P. could make nothing of any of this. He was very unclear as to what was going on, or who was who or even what sex they were. His comments on the scene were positively Martian. It was just possible that some of his difficulties were associated with the unreality of a celluloid, Hollywood world; and it occurred to me that he might be more successful in identifying faces from his own life. On the walls of the apartment there were photographs of his family, his colleagues, his pupils, himself. I gathered a pile of these together and, with some misgivings, presented them to him. What had been funny, or farcical, in relation to the movie, was tragic in relation to real life. By and large, he recognised nobody: neither his family, nor his colleagues, nor his pupils, nor himself. He recognised a portrait of Einstein, because he picked up the characteristic hair and moustache; and the same thing happened with one or two other people. 'Ach, Paul!' he said, when shown a portrait of his brother. 'That square jaw, those big teeth, I would know Paul anywhere!' But was it Paul he recognised, or one or two of his features, on the basis of which he could make a reasonable guess as to the subject's identity? In the absence of obvious 'markers', he was utterly lost. But it was not merely the cognition, the gnosis, at fault; there was something radically wrong with the whole way he proceeded. For he approached these faces – even of those near and dear – as if they were abstract puzzles or tests. He did not relate to them, he did not behold. No face was familiar to him, seen as a 'thou', being just identified as a set of features, an 'it'. Thus there was formal, but no trace of personal, gnosis. And with this went his indifference, or blindness, to expression. A face, to us, is a person looking out – we see, as it were, the person through his persona, his face. But for Dr P. there was no persona in this sense – no outward persona, and no person within. I had stopped at a florist on my way to his apartment and bought myself an extravagant red rose for my buttonhole. Now I removed this and handed it to him. He took it like a botanist or morphologist given a specimen, not like a person given a flower. 'About six inches in length,' he commented. 'A convoluted red form with a linear green attachment.' 'Yes,' I said encouragingly, 'and what do you think it is, Dr P.?' 'Not easy to say.' He seemed perplexed. 'It lacks the simple symmetry of the Platonic solids, although it may have a higher symmetry of its own . . .

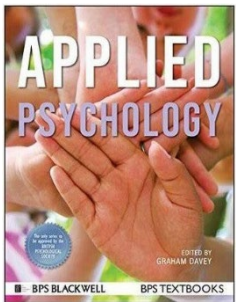
I think this could be an inflorescence or flower.' 'Could be?' I queried. 'Could be,' he confirmed. 'Smell it,' I suggested, and he again looked somewhat puzzled, as if I had asked him to smell a higher symmetry. But he complied courteously, and took it to his nose. Now, suddenly, he came to life. 'Beautiful!' he exclaimed. 'An early rose. What a heavenly smell!' He started to hum 'Die Rose, die Lillie . . .' Reality, it seemed, might be conveyed by smell, not by sight. I tried one final test. It was still a cold day, in early spring, and I had thrown my coat and gloves on the sofa. 'What is this?' I asked, holding up a glove. 'May I examine it?' he asked, and, taking it from me, he proceeded to examine it as he had examined the geometrical shapes. 'A continuous surface,' he announced at last, 'infolded on itself. It appears to have' – he hesitated – 'five outpouchings, if this is the word.' 'Yes,' I said cautiously. 'You have given me a description. Now tell me what it is.' 'A container of some sort?' 'Yes,' I said, 'and what would it contain?' 'It would contain its contents!' said Dr P., with a laugh. 'There are many possibilities. It could be a change-purse, for example, for coins of five sizes. It could . . .' I interrupted the barmy flow. 'Does it not look familiar? Do you think it might contain, might fit, a part of your body?' No light of recognition dawned on his face. 1 No child would have the power to see and speak of 'a continuous surface . . . infolded on itself', but any child, any infant, would immediately know a glove as a glove, see it as familiar, as going with a hand. Dr P. didn't. He saw nothing as familiar. Visually, he was lost in a world of lifeless abstractions. Indeed he did not have a real visual world, as he did not have a real visual self. He could speak about things, but did not see them face-to-face. Hughlings Jackson, discussing patients with aphasia and left-hemisphere lesions, says they have lost 'abstract' and 'prepositional' thought – and compares them with dogs (or, rather, he compares dogs to patients with aphasia). Dr P., on the other hand, functioned precisely as a machine functions. It wasn't merely that he displayed the same indifference to the visual world as a computer but – even more strikingly – he construed the world as a computer construes it, by means of key features and schematic relationships. The scheme might be identified – in an 'identikit' way – without the reality being grasped at all. The testing I had done so far told me nothing about Dr P.'s inner world. Was it possible that his visual memory and imagination were still intact? I asked him to imagine entering one of our local squares from the north side, to walk through it, in imagination or in memory, and tell me the buildings he might pass as he walked. He listed the buildings on his right side, but none of those on his left. I then asked him to imagine entering the square from the south. Again he mentioned only those buildings that were on the right side, although these were the very buildings he had omitted before. Those he had 'seen' internally before were not mentioned now; presumably they were no longer 'seen'. It was evident that his difficulties with leftness, his visual field deficits, were as much internal as external, bisecting his visual memory and imagination. What, at a higher level, of his internal visualisation? Thinking of the almost hallucinatory intensity with which Tolstoy visualises and animates his characters, I questioned Dr P. about Anna Karenina. He could remember incidents without difficulty, had an undiminished grasp of the plot, but completely omitted visual characteristics, visual narrative or scenes. He remembered the words of the characters, but not their faces; and though, when asked, he could quote, with his remarkable and almost verbatim memory, the original visual descriptions, these were, it became apparent, quite empty for him, and lacked sensorial, imaginal, or emotional reality. Thus there was 2 an internal agnosia as well. But this was only the case, it became clear, with certain sorts of visualisation. The visualisation of faces and scenes, of visual narrative and drama – this was profoundly impaired, almost absent. But the visualisation of schemata was preserved, perhaps enhanced. Thus when I engaged him in a game of mental chess, he had no difficulty visualising the chessboard or the moves – indeed, no difficulty in beating me soundly. Luria said of Zazetsky that he had entirely lost his capacity to play games but that his 'vivid imagination' was unimpaired. Zazetsky and Dr P. lived in worlds which were mirror images of each other. But the saddest difference between them was that Zazetsky, as Luria said, 'fought to regain his lost faculties with the indomitable tenacity of the damned', whereas Dr P. was not fighting, did not know what was lost, did not indeed know that anything was lost. But who was more tragic, or who was more damned – the man who knew it, or the man who did not? When the examination was over, Mrs P. called us to the table, where there was coffee and a delicious

spread of little cakes. Hungrily, hummingly, Dr P. started on the cakes. Swiftly, fluently, unthinkingly, melodiously, he pulled the plates towards him, and took this and that, in a great gurgling stream, an edible song of food, until, suddenly, there came an interruption: a loud, peremptory rat-tat-tat at the door. Startled, taken aback, arrested, by the interruption, Dr P. stopped eating, and sat frozen, motionless, at the table, with an indifferent, blind, bewilderment on his face. He saw, but no longer saw, the table; no longer perceived it as a table laden with cakes. His wife poured him some coffee: the smell titillated his nose, and brought him back to reality. The melody of eating resumed. How does he do anything? I wondered to myself. What happens when he's dressing, goes to the lavatory, has a bath? I followed his wife into the kitchen and asked her how, for instance, he managed to dress himself. 'It's just like the eating,' she explained. 'I put his usual clothes out, in all the usual places, and he dresses without difficulty, singing to himself. He does everything singing to himself. But if he is interrupted and loses the thread, he comes to a complete stop, doesn't know his clothes – or his own body. He sings all the time eating songs, dressing songs, bathing songs, everything. He can't do anything unless he makes it a song.' While we were talking my attention was caught by the pictures on the walls. 'Yes,' Mrs P. said, 'he was a gifted painter as well as a singer. The School exhibited his pictures every year.' I strolled past them curiously – they were in chronological order. All his earlier work was naturalistic and realistic, with vivid mood and atmosphere, but finely detailed and concrete. Then, years later, they became less vivid, less concrete, less realistic and naturalistic; but far more abstract, even geometrical and cubist. Finally, in the last paintings, the canvas became nonsense, or nonsense to me – mere chaotic lines and blotches of paint. I commented on this to Mrs P. 'Ach, you doctors, you're such philistines!' she exclaimed. 'Can you not see artistic development – how he renounced the realism of his earlier years, and advanced into abstract, nonrepresentational art?' 'No, that's not it,' I said to myself (but forbore to say it to poor Mrs P.). He had indeed moved from realism to nonrepresentation to the abstract, but this was not the artist, but the pathology, advancing towards a profound visual agnosia, in which all powers of representation and imagery, all sense of the concrete, all sense of reality, were being destroyed. This wall of paintings was a tragic pathological exhibit, which belonged to neurology, not art. And yet, I wondered, was she not partly right? For there is often a struggle, and sometimes, even more interestingly, a collusion, between the powers of pathology and creation. Perhaps, in his cubist period, there might have been both artistic and pathological development, colluding to engender an original form; for as he lost the concrete, so he might have gained in the abstract, developing a greater sensitivity to all the structural elements of line, boundary, contour – an almost Picasso-like power to see, and equally depict, those abstract organisations embedded in, and normally lost in, the concrete . . . Though in the final pictures, I feared, there was only chaos and agnosia. We returned to the great music room, with the Bösendorfer in the centre, and Dr P. humming the last torte. 'Well, Dr Sacks,' he said to me. 'You find me an interesting case, I perceive. Can you tell me what you find wrong, make recommendations?' 'I can't tell you what I find wrong,' I replied, 'but I'll say what I find right. You are a wonderful musician, and music is your life. What I would prescribe, in a case such as yours, is a life which consists entirely of music. Music has been the centre, now make it the whole, of your life.' This was four years ago – I never saw him again, but I often wondered how he apprehended the world, given his strange loss of image, visuality, and the perfect preservation of a great musicality. I think that music, for him, had taken the place of image. He had no body-image, he had body-music: this is why he could move and act as fluently as he did, but came to a total confused stop if the 'inner 3 music' stopped. And equally with the outside, the world . . . In The World as Representation and Will Schopenhauer speaks of music as 'pure will'. How fascinated he would have been by Dr P., a man who had wholly lost the world as representation, but wholly preserved it as music or will. And this, mercifully, held to the end – for despite the gradual advance of his disease (a massive tumour or degenerative process in the visual parts of his brain) Dr P. lived and taught music to the last days of his life. POSTSCRIPT How should one interpret Dr P.'s peculiar inability to interpret, to judge, a glove as a glove? Manifestly, here, he could not make a cognitive judgement, though he was prolific in the production of cognitive hypotheses. A judgement is intuitive, personal, comprehensive, and concrete –

we ‘see’ how things stand, in relation to one another and oneself. It was precisely this seeing, this relating, that Dr P. lacked (though his judging, in all other spheres, was prompt and normal). Was this due to lack of visual information, or faulty processing of visual information? (This would be the explanation given by a classical, schematic neurology.) Or was there something amiss in Dr P.’s attitude, so that he could not relate what he saw to himself? These explanations, or modes of explanation, are not mutually exclusive – being in different modes they could coexist and both be true. And this is acknowledged, implicitly or explicitly, in classical neurology: implicitly, by Macrae, when he finds the explanation of defective schemata, or defective visual processing and integration, inadequate; explicitly, by Goldstein, when he speaks of ‘abstract attitude’. But abstract attitude, which allows ‘categorisation’, also misses the mark with Dr P. – and, perhaps, with the concept of ‘judgement’ in general. For Dr P. had abstract attitude – indeed, nothing else. And it was precisely this, his absurd abstractness of attitude – absurd because unleavened with anything else – which rendered him incapable of perceiving identity, or particulars, rendered him incapable of judgement. Neurology and psychology, curiously, though they talk of everything else, almost never talk of ‘judgement’ – and yet it is precisely the downfall of judgement (whether in specific realms, as with Dr P., or more generally, as in patients with Korsakov’s or frontal-lobe syndromes – see below, Chapters 12 and 13) which constitutes the essence of so many neuropsychological disorders. Judgement and identity may be casualties – but neuropsychology never speaks of them. And yet, whether in a philosophic sense (Kant’s sense) or an empirical and evolutionary sense, judgement is the most important faculty we have. An animal, or a man, may get on very well without ‘abstract attitude’ but will speedily perish if deprived of judgement. Judgement must be the first faculty of higher life or mind – yet it is ignored, or misinterpreted, by classical (computational) neurology. And if we wonder how such an absurdity can arise, we find it in the assumptions, or the evolution, of neurology itself. For classical neurology (like classical physics) has always been mechanical from Hughlings Jackson’s mechanical analogies to the computer analogies of today. Of course, the brain is a machine and a computer – everything in classical neurology is correct. But our mental processes, which constitute our being and life, are not just abstract and mechanical, but personal, as well – and, as such, involve not just classifying and categorising, but continual judging and feeling also. If this is missing, we become computer-like, as Dr P. was. And, by the same token, if we delete feeling and judging, the personal, from the cognitive sciences, we reduce them to something as defective as Dr P. – and we reduce our apprehension of the concrete and real. By a sort of comic and awful analogy, our current cognitive neurology and psychology resembles nothing so much as poor Dr P.! We need the concrete and real, as he did; and we fail to see this, as he failed to see it. Our cognitive sciences are themselves suffering from an agnosia essentially similar to Dr P.’s. Dr P. may therefore serve as a warning and parable – of what happens to a science which eschews the judgemental, the particular, the personal, and becomes entirely abstract and computational. It was always a matter of great regret to me that, owing to circumstances beyond my control, I was not able to follow his case further, either in the sort of observations and investigations described, or in ascertaining the actual disease pathology. * One always fears that a case is ‘unique’, especially if it has such extraordinary features as those of Dr P. It was, therefore, with a sense of great interest and delight, not unmixed with relief, that I found, quite by chance – looking through the periodical Brain for 1956 – a detailed description of an almost comically similar case, similar (indeed identical) neuropsychologically and phenomenologically, though the underlying pathology (an acute head injury) and all personal circumstances were wholly different. The authors speak of their case as ‘unique in the documented history of this disorder’ – and evidently experienced, as I did, amazement at their own findings. 4 The interested reader is referred to the original paper, Macrae and Trolle (1956), of which I here subjoin a brief paraphrase, with quotations from the original. Their patient was a young man of thirty-two, who, following a severe automobile accident, with unconsciousness for three weeks, ‘. . . complained, exclusively, of an inability to recognise faces, even those of his wife and children.’ Not a single face was ‘familiar’ to him, but there were three he could identify; these were workmates: one with an eye-blinking tic, one with a large mole on his cheek, and a third ‘because he was so tall and

thin that no one else was like him'. Each of these, Macrae and Trolle bring out, was 'recognised solely by the single prominent feature mentioned'. In general (like Dr P.) he recognised familiars only by their voices. He had difficulty even recognising himself in a mirror, as Macrae and Trolle describe in detail: 'In the early convalescent phase he frequently, especially when shaving, questioned whether the face gazing at him was really his own, and even though he knew it could physically be none other, on several occasions grimaced or stuck out his tongue "just to make sure". By carefully studying his face in the mirror he slowly began to recognise it, but "not in a flash" as in the past – he relied on the hair and facial outline, and on two small moles on his left cheek.' In general he could not recognise objects 'at a glance', but would have to seek out, and guess from, one or two features – occasionally his guesses were absurdly wrong. In particular, the authors note, there was difficulty with the animate. On the other hand, simple schematic objects – scissors, watch, key, etc. – presented no difficulties. Macrae and Trolle also note that: 'His topographical memory was strange: the seeming paradox existed that he could find his way from home to hospital and around the hospital, but yet could not name streets en route [unlike Dr P., he also had some aphasia] or appear to visualise the topography.' It was also evident that visual memories of people, even from long before the accident, were severely impaired – there was memory of conduct, or perhaps a mannerism, but not of visual appearance or face. Similarly, it appeared, when he was questioned closely, that he no longer had visual images in his dreams. Thus, as with Dr P., it was not just visual perception, but visual imagination and memory, the fundamental powers of visual representation, which were essentially damaged in this patient – at least those powers insofar as they pertained to the personal, the familiar, the concrete. A final, humorous point. Where Dr P. might mistake his wife for a hat, Macrae's patient, also unable to recognise his wife, needed her to identify herself by a visual marker, by '. . . a conspicuous article of clothing, such as a large hat'.

Reading List



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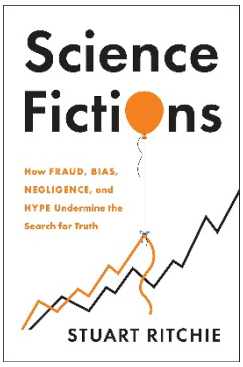

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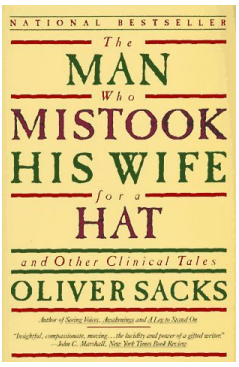

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