PSYCHLINGO

EXPLORING ENGLISH THROUGH PSYCHOLOGY

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Akademia Pedagogiki Specjalnej
im. Marii Grzegorzewskiej
rok założenia 1922

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IN THIS ISSUE

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Letter from the Editor

Dear Readers

What do we see? Is what we see the actual reality? Does everybody see the same way? Initially, these questions were raised by philosophers (and I suppose they still are) and, at some point, by anthropologists. However, with the emergence of psychology, the field also became deeply interested in them. After some time, during the 1960s, a new branch of psychology emerged: cognitive psychology. This field's key focus is exploring how we learn, remember, and perceive. Around the same time, though formally established a bit later, a new discipline emerged. This field focuses on understanding cognition, not just in humans but also in animals and electronic devices, studying how they perceive and recognise the world. Of course, those disciplines are broader than I just described, and this issue delves a bit into those broad fields. I want to thank a person who gave us insight that would be impossible to get otherwise: Łukasz Przybylski, PhD, an expert in cognitive science from Adam Mickiewicz University, who shared his knowledge of how the body and the mind perceive and why they do it the way they do (and much more). I also thank our friend from the University of the National Education Commission, who kindly introduced Kacper Leniartek (cognitive science student), who showed us (and you, as you will see) what cognitive science is about and gave us a peek into it. Last (but not least), I want to thank the whole team for their hard work and effort that they put into this issue.

We hope you find it thought-provoking!

Jan Jolicki

Editor-in-Chief

Cognitive Psychology

A Quick And Not So Deep Dive Into The Subject

By Joanna Łukasiewicz

A quick and not-so-deep dive into the subject

Cognitive psychology offers you useful knowledge involving an explanation of optical illusions, information about paying attention, answers to questions about the reliability of the witnesses and even tips for remembering more when you study. Unfortunately, when you open the textbook, ready to learn and understand, you can get confused quickly. This article is my attempt to make the most basic concepts of it familiar to you.

Duality of the definition of cognition

We shall begin with the meaning of cognition. The problem is that the textbook's explanation of this term has an annoying duality that causes confusion. Please don't listen to Slipknot's way to solve this problem. The wider definition (let's call it *x*) states that cognition is one's capability to gather data from the outside world and process it to control your behaviour and adapt to your environment. The second, shorter definition (*y*, this time) states that cognition means all the processes and mental structures involved in processing the data you gathered. **Information processing** happens when the information is modified or used in any other way, even when you just recall it. Cognition (*x*) means your capability to gather information and then use cognition (*y*) to process the data, control yourself, and adapt. Fortunately, both meanings revolve around the same subject.

What is cognitive psychology?

Cognitive psychology centres on cognition (*y*) and the functioning of the mind and gives us tools to describe how information is processed. Its main goal is to describe information processing and track how it shapes one's behaviour.

Good enough mind

The mind is a complex system working to enable cognition (*y*). It specialises in making information processing possible but has another important task to perform – managing its capacity. An overwhelming amount of information reaches us every day. Processing it all would be completely pointless as you do not need every piece of information to know how to react in a certain situation. In addition, the attempt to handle all the information significantly exceeds our mind's capacity, so your mind chooses **economy** over perfectionism. It doesn't use all of its assets at once to prevent overwhelming. That explains humans' tendency to **oversimplify** their reality, which is visible in stereotypes, heuristics, etc. When you engage in some sort of action, your mind often creates **cognitive structures** that are permanent parts of the mind reusable in multiple situations. Such structures are formed as a result of cognitive processes, but when the structure is developed, it influences future processes. For example, knowledge is a structure resulting from processes of perceiving and remembering, and this knowledge can influence the process of remembering new information. The mechanism of **attention** helps us focus on what's important and it enables **selectiveness**. Even though you probably won't notice the gorilla around people passing the ball, it comes in handy when you need to read a book in your cosy room and neighbours are talking in that flat next door.

Cognitive psychology presents fascinating knowledge about yourself and others around you. You can read about mechanisms your mind performs to read and understand anything anytime at all. Even though some definitions and aspects of this may confuse you, practice makes perfect at the end of the day. *Good luck!*

Glossary

capacity – the ability to contain
cognition – the mental process of acquiring knowledge and understanding through thought, experience, and the senses
cognitive structures – mental organised patterns of knowledge that help individuals understand and interpret the world
exceed – to be greater than a number or amount; to go beyond a permitted limit
heuristics – mental shortcuts or rules of thumb that help people make decisions or solve problems quickly, but they can sometimes lead to errors
recall – to remember something
revolve (around) – to focus on, be about something
track – to follow or watch something

Sources:
Nęcka, E., Orzechowski, J., & Szymura, B. (2006). *Psychologia poznawcza*. Wydawnictwo Naukowe PWN S.A. (Chapter 1, pages 21-56).

Why Do We *Laugh?*

By Daria Fruń

Humour can be found everywhere – at work, at home, and among friends. It appears to be a universal component of human societies, as most people understand humour fairly intuitively – they learn what is considered funny in their environment and the nonverbal clues that someone is joking from childhood. This ability is also often vital in creating positive social connections.

One theory suggests that it's a way for our minds and bodies to let us know that something is no longer a threat. By becoming able to laugh about something, it is deemed acceptable and safe.

This ties into the benign violation theory. The theory proposes that humour occurs when a situation is considered benign and a violation at the same time. However, when the perception tips fully on either side, amusement ceases. For example, play fighting elicits laughter because it involves physical attacks that people regard as harmless, but when the attack stops or becomes too aggressive, it's seen as either fully benign or violating, thus no longer funny.

A completely different take on this issue is the theory of superiority. As the name suggests, it claims that laughter and humour are tied to a sense of superiority over other people or a former version of oneself and serve to devalue them.

According to relief theory, laughter is a release of pent-up energy generated by stress – a natural mechanism facilitating psychological homeostasis. Said stress might be an effect of strong positive and negative emotions, mental tension, or psychological conflicts.

Humour is also considered in the COPE questionnaire as an emotion-focused strategy, meaning some people use humour as a way to deal with negative emotions aroused by stress. A similar approach is taken by the theory of defence mechanisms – here, humour is considered as a tool to keep unwanted, unpleasant feelings away from consciousness.

We still don't know for certain why people laugh, although the prevalence of humour across cultures indicates that its role is quite important. If you are interested in diving deeper into the topic of humour, I recommend taking a look at one of the sources listed next to the article.

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Sources:
https://humorresearchlab.com/benign-violation-theory/ https://plato.stanford.edu/entries/humor/ https://positivepsychology.com/humor-psychology/ https://www.bps.org.uk/psychologist/humour https://journalofethics.ama-assn.org/article/science-comedy-sort/2020-07 https://www.psychologicalscience.org/observer/the-science-of-humor-is-no-laughing-matter https://www.scientificamerican.com/article/whats-so-funny-the-science-of-why-we-laugh/ https://www.theguardian.com/science/2023/apr/30/the-science-of-standup-can-you-train-someone-to-be-funny

Glossary

benign – kind and gentle; not hurting anybody
cease – to stop happening or existing; to stop something from happening or existing
deem – to have a particular opinion about somebody/something
elicit – to get information or a reaction from somebody, often with difficulty
homeostasis – the process by which the body reacts to changes to keep conditions inside the body, for example, temperature, the same
non-verbal – not involving words or speech
pent-up – (of feelings, energy, etc.) that cannot be expressed or released
prevalence – a condition of being widespread
superiority – the state or quality of being better, more powerful, greater, etc. than others
tie into – to be connected or related to something
tip – move in a particular direction

The Ways Of Cognition

By Kacper Leniartek

from the University of the National Education Commission

Photo by julien Tromeur on Unsplash

Cognitive science is a multidisciplinary field that concentrates on combining the neurological aspects of the human brain with its psychological functioning. Its main focus lies on cognition and cognitive processes, their intricacies, and mechanisms. These cognitive processes are studied via disciplines such as the formerly mentioned psychology and neurosciences but also anthropology, which concentrates on the origins of cognitive abilities and their evolution among different cultures, computer science and artificial intelligence that try not only to mimic but fully recreate cognitive processes through algorithms and machines and finally philosophy, dwelling on the nature of knowledge, perceptions, and free will just to name a few.

In recent years, special attention has been placed on creating computational models that simulate human thought processes in order to better understand behaviours like problem-solving and learning in artificial intelligence algorithms. Some of these supposed AI algorithms are already widely used by millions of people every day, the most well-known being ChatGPT, which since its release in 2022 has gone a long way in becoming more and more human-like to the point where it even sporadically passes the Turing's Test.

Albeit, the rate at which it does pass varies, becoming less and less probable with the rise of the complexity of the conversation being had. In the end, GPT-4 was considered human 54% of the time, whereas surprisingly, actual human participants were identified only 67% of the time. This predicament arises an old question in people's attention: do we truly want AI to reach a level where it's no longer possible to distinguish it from an actual human?

But before getting into that discussion, I believe it is important to clarify that current AI isn't really an artificial intelligence. It imitates intelligence very well but does not possess it in the same way that we do. The intelligence it does have is narrow, so to speak, task-oriented, and does not involve the adaptability or the human ability for abstract thinking, which can be seen through understanding complex emotions or creativity. It also lacks a crucial part of intelligence, which is, first of all, consciousness and, second of all, intentionality. When talking about consciousness, what should be mentioned is understanding, which AI does not have; its "understanding" of collected data is purely statistical and algorithmic. When it comes to intentionality, AI lacks subjective experiences or motivations. It follows executive instructions and reacts to inputs, but it does not act with purpose or intent.

What is the Turing's Test?

Proposed by British mathematician and computer scientist Alan Turing in 1950, it's a thought experiment and criterion for determining whether a machine can exhibit intelligent behaviour indistinguishable from that of a human. How does it work? The test involves three participants: two of whom are human, one of them playing the role of an interrogator and the other a respondent, and a machine programmed to send out responses. The interrogator interacts with both the machine and the human, conversing with them through a text-based interface. The point of this is to determine how well the machine can imitate human behaviour as, in the end, the interrogator has to make a decision as to which of the two is the machine. The algorithm is considered to pass the test when it has succeeded in deceiving the interrogator 50% or more of the time.

Human-like AI discussion

First, to even assume the possibility of AI reaching that point, we have to consider what that would even mean. When can we confidently say that AI has become identical to a human? First and foremost, the Turing's Test is good for measuring the behavioural intelligence of the algorithm, determining whether its responses are sufficiently human-like in the given context. However, it does not directly test the understanding, reasoning, and consciousness of the machine; therefore, passing that test does not make the machine identical to a human being, even if it passes 100% of the time. Fundamentally, what we consider to be the distinguishing factor between us and any AI, or even an animal, is our self-awareness and consciousness – the ability to reflect on our existence – that cannot be seen in any other species or algorithm.

The question now is: Could AI gain these traits? Well, there are a few ways to look at it. As it stands now, scientists still don't know where consciousness came from, whether it was created, evolved or was always inside us. The main theories that I believe deserve to be highlighted here are: biological and evolutionary theories, philosophical theories and computational theories, and maybe through these, we can find an answer to this question.

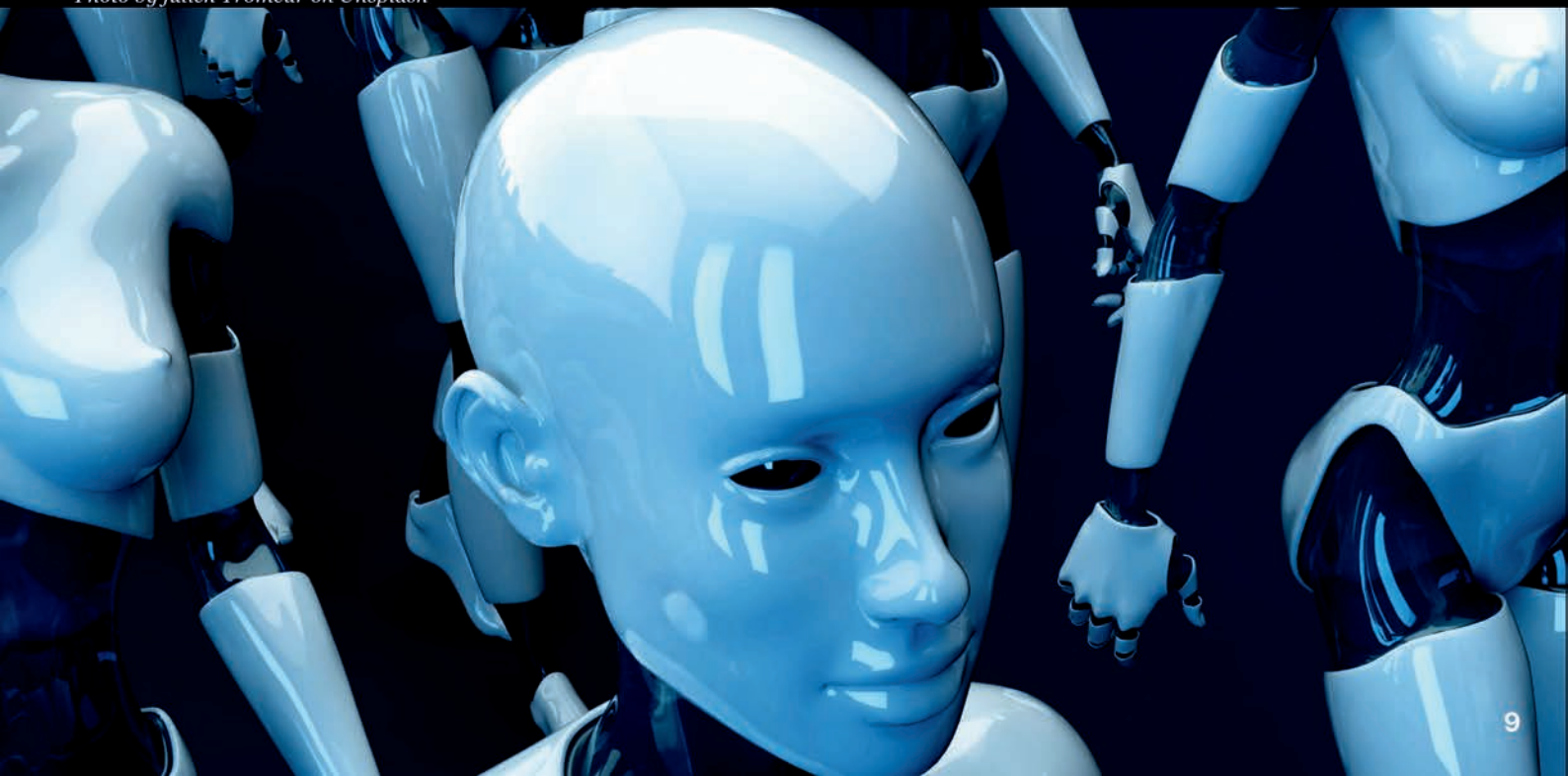
Evolutionary theories, as stated by the name, propose that consciousness has evolved in humans in order to increase the chance of survival. These theories branch out from each other when it comes to the reason for this evolution.

Some of them stated that social interaction was the main cause, and others argued that consciousness was a way to perfect our flexibility further and adapt to the increasingly complex environment. It's hard to determine the probability of either being true, of course. You can find much evidence for and against it, usually focusing on observing animals, mostly primates, how they function in their respective "societies" and how they display fragments of self-awareness. Essentially, these theories suggest that since they exhibit such traits, this means either that it has simply evolved in them through adapting to the environment or that it was drawn out of them through social structures and, to be more precise, the need for understanding others' intentions and emotions.

Philosophical theories, and here is where it gets interesting: philosophers have been trying to deal with the problem of consciousness for centuries, so there are many ways to go about it. Obviously, in ancient times, most civilisations that took on the issue of consciousness gravitated towards theories about the cosmos or the soul, strongly basing their theories on the supernatural or believing in some sort of vital life force like the Egyptians in 3000 BCE or the ancient Greeks with Plato and Aristotle dwelling on something outside the body itself: its form. But the older a civilisation becomes, the more scientific its theories get, which is somewhat obvious, as with the advancing technology, we were able to see and experience more. Yet, it is still impossible to disprove the soul, so it's a constant part of some theories.

Some of the most popular theories include dualism, which posits that consciousness exists as a separate entity from the physical body or brain, arguing that either the mind is completely separate from the physical and responsible for thoughts, experiences, and self-awareness or that consciousness is a non-physical property that emerges from the physical brain but is distinct from its material properties. There is also panpsychism, which might actually be one of the theories that support the possibility of AI consciousness as it states that all matter in the universe has some sort of consciousness, which gradually increases with the complexity of the system it operates in.

Photo by julien Tromeur on Unsplash



And finally, the Computational and AI-Related Theories. Let's start with the basics – the computational theory of mind was first proposed by Warren McCulloch and Walter Pitts in 1943. It states that our minds work on the same basis as a computer, saying that the mind is a computational system and suggesting that it is possible to program it just like we do a computer algorithm. It argues that the only thing that would differentiate an AI brain from ours is the material that makes it up and claims that it doesn't really matter. The brain's functions are modular, just like a computer algorithm, with different areas specialised for particular tasks. Ultimately, every piece of information travels through our brains due to electrical impulses and chemical signals, which can be replicated artificially.

The problem until now was that it was difficult to get the full picture of the brain; therefore, it was nearly impossible to replicate it. But just recently, a huge breakthrough happened – scientists were able to model a complete fly brain. So, maybe in some time, we will see an artificially made fly brain. While this is a huge breakthrough, it still doesn't mean that AI may reach a state of humanity, so to speak. But what if we were able to model a human brain and then make it artificially? Would it be conscious and intelligent or just an empty shell? According to this theory, it would be, but there is no other way to know but to wait and find out.

Creating a true artificial intelligence, while certainly fascinating, may seem rather scary. Already, we live in a world where machines somewhat replace us. One might argue that only a select few professions are regarded as irreplaceable, and most of these are the ones that directly involve "our humanity" – the most obvious example being a psychologist. Modern algorithms have zero understanding of emotions, but by definition, artificial intelligence will.

With its creation also comes another issue, which is AI rights: since it's a sentient and conscious creation, doesn't it deserve to be treated as one? So, do you want AI ever to reach the level where it's no longer possible to distinguish it from a human?

Glossary

branch out – to spread into different areas or develop in different ways
computational theory of mind – a theory that compares the mind to a computer, suggesting that thinking and mental processes work like calculations or instructions
differentiate – to show how things are different from each other
display – to show or make something visible
distinct – clearly different or separate
distinguishing – something that makes one thing different from another
gravitate towards – to be attracted to or drawn to something naturally
indistinguishable – impossible to notice as different or separate
irreplaceable – too special or unique to be replaced with something or someone else

How Do We Solve a Problem?

A Quick Review of the Strategies in Problem-Solving

By Karolina Tomczak

Photo by Sandra Seitamaa on Unsplash

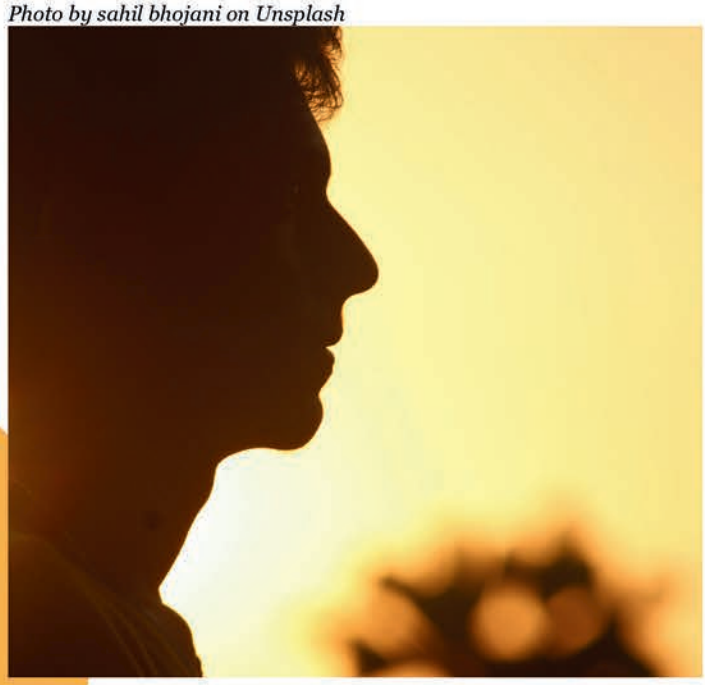
Difference reduction (hill climbing)

This strategy, similar to climbing a hill, is based on reducing the difference between the current and target states. It's trying to manage the problem by achieving the target step by step. Imagine a metaphorical way from the current state to a desired outcome and break it down into smaller problems. This strategy is best for improving skills, learning new things or processes that can be easily measured in small steps. So, try this method while learning to play the guitar or solve a maze.

Working backwards

Alternatively, this strategy can be compared to walking down a hill. You have to imagine the desired outcome and work backwards to the current state. That way, you can easily identify milestones and outline a plan. Working backwards is best for issues in which the goal is clearly defined. Its usage varies from mathematical problems to planning events. It can also be used while travelling in determining how to reach a specific destination.

Photo by sahil bhojani on Unsplash



Means-Ends Analysis

Means-Ends strategy focuses on breaking down the problem into smaller subproblems – each intermediate goal being critical to achieving the desired state. That way, you can easily approach the problem and not feel overwhelmed by its volume. It's a good tactic especially for people that can get consumed by their problems. More practical examples are writing an essay, designing a project or a business plan.

Trial and Error Strategy

The only strategy without a specific plan. It does not require strategic thinking. It's a rather random testing of different solutions. The Trial and Error tactic is a choice for problems that are not consuming and that can be tested quickly, without consequences.

Creative Problem Solving

Like Trial and Error, there is no strict plan. It is more focused on original methods with the goal of finding innovative solutions. It's suitable for situations where traditional methods have failed or where you are looking for specific creative answers, for example, developing designs, campaigns, or unique art or science products.

Glossary

campaign – an organised effort or activity, often for advertising or promoting something, aimed at achieving a specific goal
metaphorical – using symbolic or figurative language to represent something, not meant to be taken literally
milestone – a key point or stage in a process or journey that indicates progress or completion of parts of the overall task
target state – the desired goal or end result that one aims to achieve

Cognition and Psychosis.
ARE WE ALL HALLUCINATING?

By Kazimierz Kwiatek

Imagine a person in psychosis. What you see is probably a person who has visible problems controlling their behaviour regardless of where they are. Maybe in a psychiatric hospital, wearing a straitjacket and laughing like a maniac or being tied to a bed and shouting at the top of their voice. Maybe what you see is a dangerous madman, all in sweat with folly sparkling from their eyes, chasing a defenceless victim. Or maybe someone lost in an unreal world of fantastic shapes and sounds. These pictures originate in pop culture products that, even though gripping, rarely do justice to the truth, especially the truth about mental illnesses.

Psychosis is exhibited by people in a vast number of diseases, such as schizophrenia and bipolar disorder, but also illnesses of older age like Parkinson's and Alzheimer's. In addition, psychosis can be experienced by people who use or abuse substances such as LSD, alcohol, and psilocybin contained in hallucinogenic mushrooms. What is more interesting is that psychosis can be a part of withdrawal syndrome, e.g. in delirium tremens, which occurs when a person addicted to alcohol suddenly stops drinking.

Psychosis is a set of symptoms. Typically, we distinguish hallucinations and delusions. The first of these are false sensory impressions. Hallucinations can involve all senses. The type of hallucination helps in diagnosing its cause. For example, tactile hallucinations (those related to the sense of touch) are often exhibited by people who abuse substances. Olfactory hallucinations (those related to the sense of smell) often indicate an upcoming seizure. The most common type of hallucinations are auditory. They can be simply narrative (e.g. "She's going shopping", "She's making tea"), or they can mock the speaker ("I'll make some tea" – "She'll make some tea"), but they can also be more threatening (e.g. "Nobody loves you", "You deserve nothing", "They hate you") and they unfortunately don't indicate any specific diagnosis.

The second component of psychosis is delusions. They are false beliefs that persist despite the lack of support or despite the evidence to the contrary and are often mixed with paranoia. For example, believing that someone has put a chip in one's brain or that by moving a fork, one can affect international politics. Another example of delusion is called erotomanic delusion. In this state, a person believes that another person, usually of higher status, for example, a politician or a celebrity, is in love with them.

Delusions are widespread among psychological illnesses. For example, depression isn't necessarily associated with psychosis, yet some people experience psychotic episodes in depression, when they feel that the whole world is ending because of them, that they are responsible for all the evil and that people can't stand them.

In contrast to those symptoms, people who exhibit psychosis are often intelligent, eloquent, creative, and well-trained in controlling their behaviour. For example, meeting a person with schizophrenia is a striking experience because they rarely act like the ones from the movies. They can sit calmly, openly and insightfully describing their impossible experiences. They tell stories about meeting powerful people or receiving encrypted messages through television telling them what to do. Normally, nothing shows that they are ill except for the stories they share. To at least mildly understand the mechanisms of psychosis, first we need to understand the mechanisms of a brain in its "normal" state.

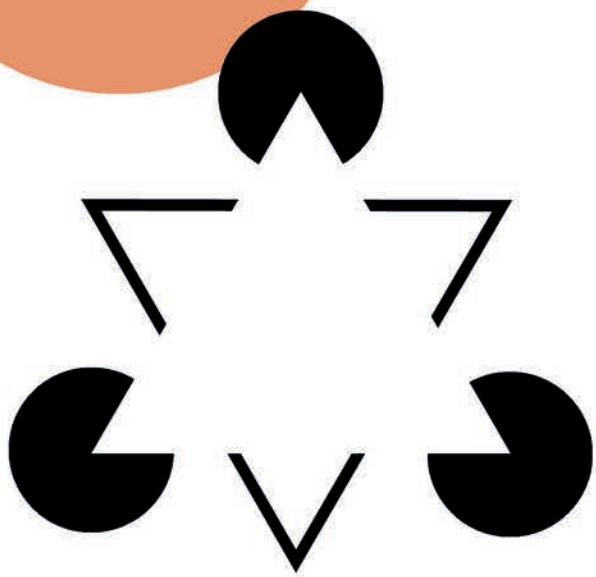
Photo by Howen on Unsplash

Briefly, our brains actively construct the reality we experience. Our senses receive information from the surrounding environment, but processing and interpreting it happens in our head. The methods the brain uses are, for lack of a better word, controversial. Knowing the result, the brain tries to reconstruct the cause. This type of inference is extremely prone to fallacies because one thing can have multiple causes. To minimise the possibility of a mistake, the brain uses all sorts of tricks, such as looking for similarities to things it already knows and seeking objects that could help interpret a stimulus.

Because of that, when we listen to inarticulate singing, what we hear may vary depending on the lyrics we are shown. Another notable example of how the brain can fail to process information from the senses is Kanizsa triangle. Even though there is no white triangle in the middle of the picture, we can still see it. It happens because our brains are taught to actively fill in the gaps to see complete shapes. A psychotic brain does something similar, but unfortunately, it fails much more often and, in the case of psychosis, much more spectacularly than a healthy brain.

The exact mechanisms of such major cognitive distortion remain unknown. Most likely, there will never be a definite answer because of the diverse causes of psychosis. Studies show there is a strong genetic factor, but genetics alone never gives a definite answer. In addition, we can name a few environmental factors that increase the risk of psychosis. There is, of course, substance abuse; in rare cases, people who use narcotics reach a state of psychosis and never get back to a normal, non-psychotic state of mind. Another environmental factor is called Adverse Childhood Experiences. ACEs are traumatic events experienced when the brain is most vulnerable because of its ongoing development. A child who encounters abusive treatment or is exposed early to psychoactive substances is more likely to develop a psychotic disease later in life.

Also, we know that viral infections of a pregnant woman increase the likelihood of her child developing an illness whose symptom is psychosis. It seems that psychosis is exhibited by people genetically predisposed to it, who encounter an environmental trigger along the way.



Kanizsa triangle

Glossary

auditory – related to the sense of hearing
cognitive distortion – thoughts that can distort how a person sees themselves, their life, their situations, their relationships, and other people
delusion – a false belief
encrypt – to put information into a special code, especially to prevent people from looking at it without authority
fallacy – a wrong idea or mistake in thinking or reasoning
folly – a lack of good judgement
gripping – exciting or interesting in a way that keeps your attention
insightfully – in a way that shows a clear and often original understanding of a problem or situation
olfactory – related to the sense of smell
paranoia – a constant feeling of distrust or fear that others want to harm you
prone – likely to suffer from something or to do something bad
psychosis – a mental condition characterised by a loss of touch with reality, involving symptoms such as hallucinations, delusions, disorganised thinking or incoherent speech
straitjacket – a piece of clothing like a jacket with long arms that can be tied together, used to control a person who is violent and thought to be likely to harm themselves or others
tactile – related to the sense of touch, using your sense of touch
trigger – something that causes a strong reaction
viral infection – an infection caused by a virus
vulnerable – easy to hurt or harm
widespread – existing or happening over a large area or among many people

Memory & Intelligence
The Remarkable Relationship

By Martyna Lekan

Memory and intelligence are the two most studied cognitive abilities of our brains that happen to be closely interconnected. Particularly, the relationship between short-term memory (or working memory) and intelligence quotient (IQ) resembles a symbiosis. Well, the sole idea of attempting to understand the human mind only through exploring each cognitive function in isolation seems to be at least vastly missing the point.

Let's begin with defining the exact subject matter: memory is the ability of our brain to retain information and its types are based on the duration or kind of the retention. That being said, sensory memory is responsible for sensory stimuli information, and although it lasts only for milliseconds, it gives our brains enough time to respond to the sensations. Short-term memory is your working memory, which allows you to remember someone's phone number for a few seconds before you can write it down, and episodic memory is where you store memories. Long-term memory, on the other hand, stores information for extended periods and can be divided into two types: explicit and implicit. Explicit memory holds information that can be actively recalled, procedural memory lets you remember how to tie your shoes without visualising step-by-step instructions every time. All that simplified, of course. There is so much more that it could easily warrant a separate article, so to spare you the lengthy details, you can find the rest of the main division on page 18.

How it works is a much more complex subject. There are multiple brain structures involved in the processes of memory's capacity, recall, and consolidation (stabilising the memory trace after acquiring it), some of which are the hippocampus (explicit, episodic), the prefrontal cortex (short-term), the amygdala (fear), and the cerebellum (procedural). We've learned a lot about our brains in recent decades, yet we still don't fully understand memory to a dot. Quoting *HowStuffWorks*, "The search for how the brain organises memories and where those memories are acquired and stored has been a never-ending quest among brain researchers for decades," but this fairly short characterisation should be enough to move forward.

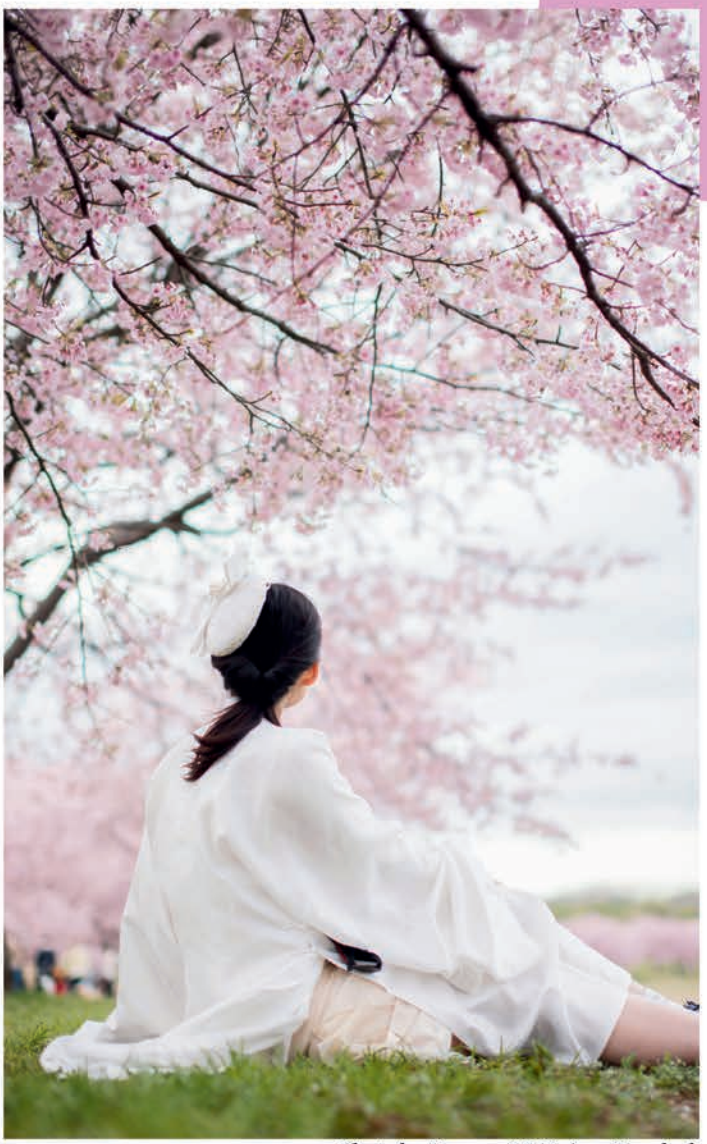


Photo by Nguyen TP Hai on Unsplash

Intelligence, on the other hand, isn't as straightforward to define. Theoretical definitions of intelligence vary widely between different sources. It's still a debated matter of what we should consider intelligence or what it consists of. There are prominent common qualities, though. In an attempt to simplify it for the purpose of this article, here is an averaged-out definition:

> **Intelligence** – the ability to perceive, learn, and retain information to use later to deal with new experiences, adapt, and make judgments based on reason.

It's differentiated into fluid and crystallised intelligence:

> **Fluid intelligence** – flexible ability to think and reason abstractly, learn and solve problems.

> **Crystalised intelligence** – the ability to use accumulated knowledge, skills, information, and expertise.

To understand intelligence from the perspective of psychometrics, we need to conceptualise what the **G-factor** and **IQ** mean. The first concrete attempts to measure intelligence began in the early 20th century. Charles Spearman tried to find out if, somehow, the grades of his students in different subjects were related to each other. He found a positive correlation between grades in English and maths, and later between all studied subjects. This meant that if a student tended to do well in one subject, they would usually do well in the rest, too.

His proposed explanation for this phenomenon was an assumption that every person has some level of **general intelligence** that he called the **G-factor**. This concept accounted for how quickly students were able to learn new material, think critically, and recognise patterns, regardless of the studied subject.

Spearman also recognised that even though all grades were correlated positively, it was not a perfect relationship. To include this in the equation, he added a subject-specific factor (the **S-factor**) on top of the G-factor, which increased or decreased performance in specific subjects. The S-factor could be modified by training, but the G-factor was fixed. This means a student would have a general, similar score in all subjects, with variations based on predispositions, interests, and effort. But what truly interested Spearman was developing a way to measure pure G-factor reliably, our general intelligence, stripped of subject differences.

Alfred Binet and Théodore Simon were other psychologists involved in studying intelligence, aiming to identify and assist kids who needed more support in French schools. They developed the Simone-Binet test that included defining abstract terms, pointing out missing parts of the pictures, and repeating back sentences. The results of each child were compared to those of their peers to assign them a mental age. For instance, if a kid scored much better than an average student of their age group, their mental age would be higher than his biological age, so an **11**-year-old boy with the same score as an average **14**-year-old would be assigned a mental age of 14). Then, that score of **mental age** was divided by the **actual age** and multiplied by 100. In this example:

14/11=1,27 1,27x100=**127**

The result would be one's **intelligence quotient** (**IQ**). This process marked the beginning of IQ testing. Since then, many tools have been developed, but their ultimate goal remained the same as that of Charles Spearman – measuring the G-factor. Instead of school subjects, they accounted for mental abilities, such as numerical, verbal, and spatial skills, as well as memory.

Photo by sk on Unsplash

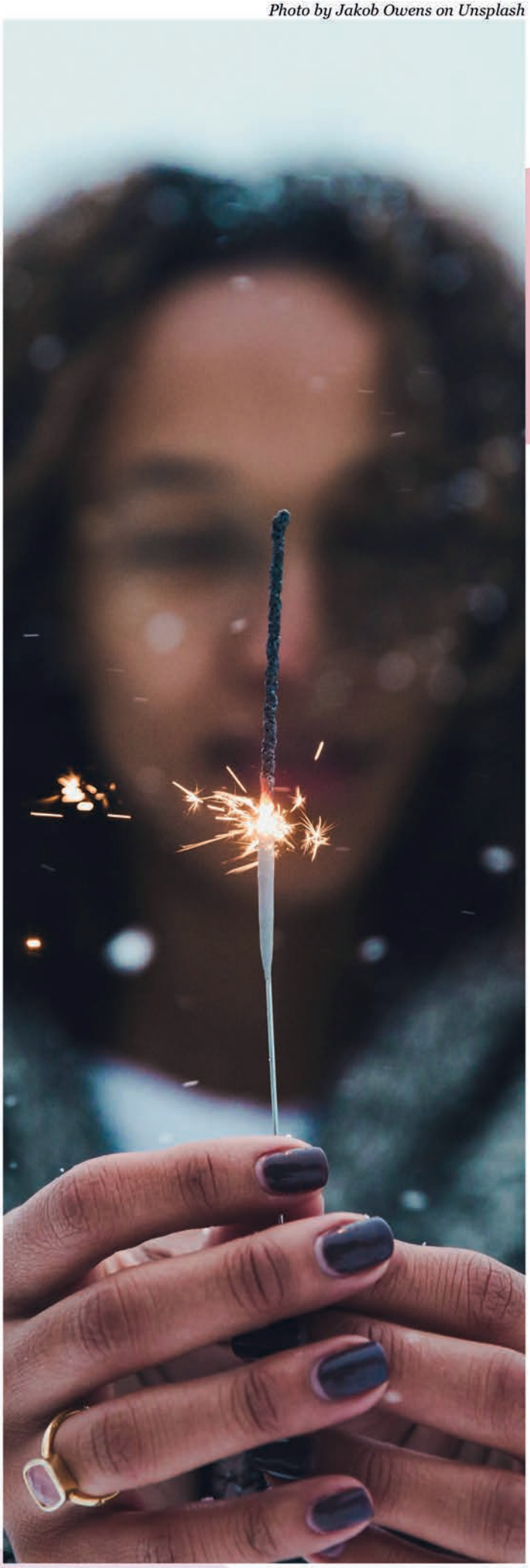
Research shows several predictive connections to our intelligence. Those include areas aligned with expectations and where superior cognitive abilities would produce superior outcomes. For example, academic success and even yearly salary are positively correlated to IQ, but so is our brain size. Obviously, those are only mean numbers that may not necessarily apply to every individual, and there is always space in statistics for deviation. However, most of the time, IQ is a reliable predictor of socioeconomic success. While not significantly better than predictors, such as parental socioeconomic status or grades, both of which are somewhat correlated to IQ, this shows the broad reach of its influences and how everything is interconnected. That's precisely why the holistic approach to anything related to humans is so invaluable.

Furthermore, it turns out that something else is highly correlated to academic success – working memory. Studies explore whether it's just a proxy for IQ or a predictor in its own right, but so far, it seems to be the latter. By now, we can quite confidently conclude that memory and intelligence exist in symbiosis, joining forces to form a general cognitive capability that affects numerous aspects of our lives, including major areas like school performance, job, salary, and more. About that *intelligence.co.uk* says, "Memory and intelligence are almost like two sides of the same coin," and I think this is a very accurate comparison.

Short-term memory significantly affects fluid intelligence scores, such as the ability to quickly retrieve stored information and adequately apply it to solve problems. People with a high working memory capacity can store more, not just any items, but, most importantly, **solution principles**, which ultimately influence their scores on IQ tests like Raven's Advanced Progressive Matrices. Excluding rare exceptions, such as unique brain injuries, diseases, or procedures that cause unusual cognitive impairments, our minds seem to work as a complicated, multifaceted machine where every cog affects the rest and the ultimate performance. Well, maybe that's not the most accurate picture to paint.

Our brains are far more fascinating and adaptable. Because when a cog "goes missing", others learn to adapt to its functions and take over to ensure performance remains relatively undisturbed. In more scientific terms: the brain can recover thanks to neuroplasticity by rearranging neuronal networks around injured regions. Sometimes, one function gets permanently lost, but others stay completely intact. For example, patients affected by anterograde amnesia can easily access their past experiences from before the incident but are unable to form new memories and keep forgetting recent events.

Photo by Jakob Owens on Unsplash



As a bonus for the end, I'd like to share a few techniques called mnemonics or mnemonic devices, useful tools for effective memorisation.

To demonstrate, I will use this sequence of words: *hippo, ladder, tower, crown, apple.*

Loci – also known as the memory journey or memory palace, uses spatial visualisation to associate information with physical locations.

Imagine a path in your house from your room to the bathroom, then to the staircase, going through a wardrobe to end in the kitchen. In your room, you find a giant hippo; you go to the bathroom and see a tall ladder left after changing bulbs. Then you go down the stairs and imagine they belong to an old castle tower. Next, you enter the wardrobe, where you put on your shiny crown and finish in the kitchen to find the ripest, reddest apple.

Acronyms – the first letter of each word is combined into a new word.

Crown, Hippo, Apple, Ladder, Tower – CHALT (with changed order to help pronounce the created word)

Acrostic mnemonics – the first letter of each word is used to form a phrase or sentence.

Helena Listened To Cassie Asking

Image – the information is turned into a picture.

Imagine a picture where a hippo climbs a ladder to reach the top of a tower where the crowned queen gives him an apple.

Connection – new knowledge is connected to knowledge already known.

You may know that some hippos love apples or that towers are, on average, xyz meters tall. This specific sequence is difficult to use here, but it is a great method for other, more complicated, or specialised materials.

Chunking – this method divides information into smaller, manageable pieces, or "chunks".

hippo, ladder, tower + crown, apple

Chain – remembering lists that are based on creating an association between the elements of that list.

A hippo certainly couldn't be supported by a standard human ladder. There are very few ladders you could climb a tower on. Legend says that on top of this tower, there is an ancient crown. Other than crowns, royal insignia often include golden apples.

Not all of these methods will be effective for every type of learning material (as seen in this example). Still, when you use them according to your needs, they become powerful tools for mastering information.

Glossary

aligned (with) – in agreement or consistent with
cog – a part of a machine that works together with other parts to make the machine work
cognitive impairments – problems with thinking, learning, or recall as a result of damage or disease of the brain
consolidation – the process of making memories stronger and long-lasting
deviation – a difference from what is usual or expected
explicit memories – memories that can be consciously recalled or talked about, such as a certain experience or specific facts
holistic – considering something as a whole rather than focusing on individual parts
mnemonics – memory techniques that help you remember information
multifaceted – having many different aspects or features
neuroplasticity – the brain's ability to reorganise and create new connections if the brain is damaged or injured
predictive – able to predict future outcomes or results based on current information
prominent – important, well-known, or easily noticeable
proxy – something that stands in for or represents something else
psychometrics – the science of measuring mental abilities, intelligence, and personality
recall – to remember
retain – to keep or remember information in your mind so that it can be accessed and used later
retrieve – to get or bring back information from memory
store – to keep information
stripped (of) – without something
ultimate – the final or most important
warrant – to justify or require something

Photo by Atul Vinayak on Unsplash

Memory

Sensory

Visual, auditory, gustatory, olfactory, and tactile information is relayed to the brain through the thalamus (except for olfaction, which bypasses it). Sensory memory for this information lasts only milliseconds and operates mostly outside conscious awareness.

Iconic

Visual sensory memory register.

Echoic

Auditory sensory memory register.

Haptic

Tactile sensory memory register.

Short-term

Recall of material immediately after it is presented, it is thought to be limited in its capacity, and undergoes rapid decay, probably lasting less than 30 seconds.

Long-term

It involves the storage and retrieval of information over extended periods, from hours to a lifetime.

Explicit or Declarative

Conscious memory, stores information for intentional recall.

Episodic

Holds memories of everyday events and personal experiences.

Autobiographical

Memory of personal events, such as achievements, graduations, weddings, birthdays, etc.

Flashbulb

Exceptionally detailed 'snapshots' of moments or circumstances wherein you learned not only surprising but also emotionally charged news, such as Notre-Dame fire.

Semantic

Storage of general knowledge about the world, including the meaning of words, objects, places, and people.

Implicit or Non-decarative

Unconscious or automatic memory, stores information that we cannot consciously retrieve.

Procedural

Stores information necessary to perform learned skills.

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Why Do We Make Irrational Decisions?
Cognitive Biases That Shape Our Lives

By Karolina Tomczak

Have you ever bought something because it was discounted, even though the reduced price was still a little too much? Maybe you made up your mind about someone just because of a 10-minute conversation? Are you tired of watching hundreds of similar sad stories on TV? These things are a result of how our brains can sometimes trick us. But how does it happen? Let's dive into the concept of cognitive biases.

Cognitive biases can be explained as mental shortcuts that simplify information entering our minds. Every day, our mind is flooded with millions of pieces of information. All the incoming data needs to be categorised and labelled to maintain its sense. To organise it somehow, the brain uses structures like heuristics that connect to previous experiences. Sometimes, the heuristic isn't enough, and we simply can't apply everything to it. Unfortunately, our brain doesn't always understand this and still incorrectly associates stimuli with heuristics. Cognitive biases are systematic errors caused by reliance on heuristics, emotional association or inability to process information. They can lead to distorted perceptions, irrational decisions, and judgements that differ from logic or evidence. Let me explain to you how these biases work point by point.

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Photo by Ivan Lapyrin on Unsplash

Anchoring bias

Anchoring bias can be explained as the effect of the earliest impression. Our decisions are influenced by the first information we receive. When an original piece of information enters our mind, it can be stuck for a very long time. For example, when you see a piece of clothing that you really like but the pricing is too high for you. Later that month, the shop advertises its seasonal sale, and accidentally, you see that perfect blouse or jeans. Only this time it's recently been placed on sale. The tag says its price has been slightly lowered. Your mind still remembers the original price, so it seems like a fantastic opportunity. Anchoring bias limits our minds' ability to consider different aspects of certain decisions. Even so, we often do it involuntarily, making it hard to control. The best way is to try analysing the situation thoroughly, making sure you include EVERY aspect. Be aware of the anchoring effect. It can prevent you from drawing irrational conclusions based on your previous (and not always reliable) experiences.

Confirmation bias

Confirmation bias happens when we carefully pick and choose information in a way that will validate our previously established beliefs. It can impact your mind in various ways: your memories, interpretations or research. They say that if you look for something, you will probably find it, and I think the saying is the best way to sum up the confirmation bias. When you start your research with a specific thought, you will likely confirm it. It also applies to your memories. "Some experts believe your brain may even store information that agrees with your views more frequently than information that disproves them." When you have specific opinions about an episode or a person in your life, you will easily recall memories that align with your view. For instance, if you had an unpleasant encounter with someone the first time you met them, later you may attribute every behaviour to that characteristic. There isn't a simple solution to help overcome this bias. You just have to be aware of it and maybe give yourself some space for mistakes. Don't always try to prove your thoughts; approach the world with the benefit of the doubt.

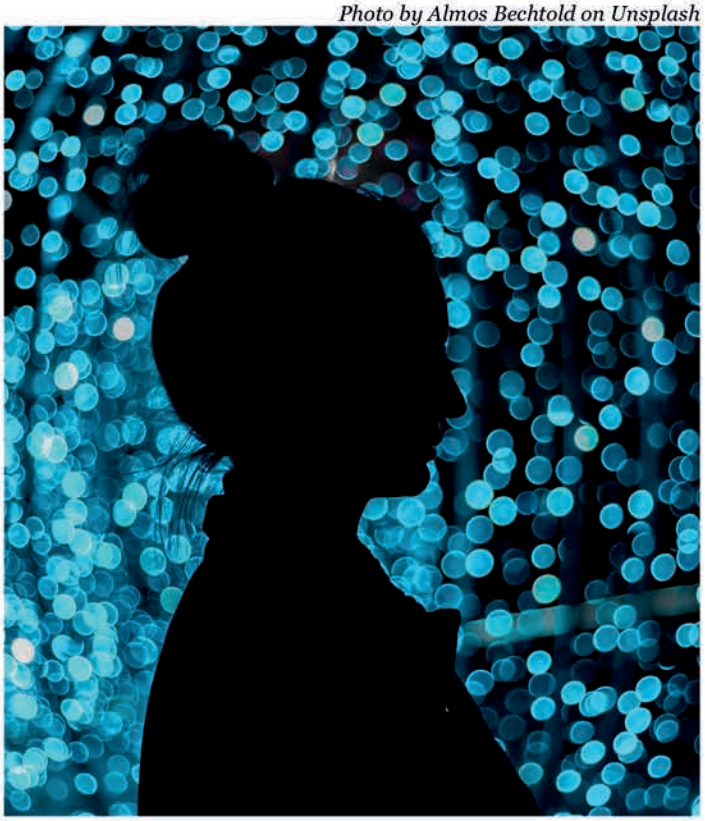
The Ostrich Effect

The name comes from the ostrich's tendency to hide their head in the sand when faced with danger. But how do people behave like ostriches? People also have the need to avoid risk. The Ostrich Effect is a habit of ignoring potentially useful information because it may not be pleasant. *Psychology Today* states, "The Ostrich Effect is the result of the conflict between what our rational mind knows to be important and what our emotional mind anticipates will be painful." For instance, we often tend to postpone medical appointments or examinations because we fear we may receive bad news. We may also delay studying for a hard exam just because we are afraid of the eventual outcome. Avoidance provides temporary relief, even if rationally we know that it's just a delay. After all, we're not avoiding it altogether. We are just worsening the situation in the long term. To help manage these tendencies, we should carefully determine the real consequences of procrastination and avoidance. Make a list and take the time to take care of your chores. Just remember – don't put pressure on yourself! It's a slippery slope, too, delaying and avoiding the stress.

Availability bias

As mentioned before, our mind has limited space and can store information only for so long. That is why we sometimes operate based on the latest stored data. Let me explain through an example. Imagine you're running to catch a bus for class, and you encounter someone extremely intoxicated on your path. The road is narrow, so you have a hard time trying to pass them by. Next, when you're already on the bus, you see someone sleeping in their seat. Your first thought will probably be, "I bet they're drunk. That's why they fell asleep." If the situation were different, you may think the passenger was tired and didn't sleep well. Another example is that more people are afraid of flying than of driving a car. Even if plane crashes are far less frequent, they often appear on the news, making us more susceptible to thinking that flying is dangerous. Millions of people are affected by car crashes yearly, but we still tend to find flying more dangerous. That can be explained by availability bias. This phenomenon can be defined as a mistake in judgment caused by overestimating the likelihood of something. The estimation is based on how easily we can recall similar situations from our memory. We rely on the data that is most available and ready to be recalled, and through that experience, there are lapses in judgment. The solution is similar to confirmation bias. We should acknowledge the tendency to give in to this bias. Then, slow down our decision-making process and look at data. Going back to my example, if people read studies comparing flying and driving, they would not be so eager to classify planes as more dangerous than cars.

Photo by Almos Bechtold on Unsplash



Negativity bias

Have you ever wondered why the media show more negative information and stories than positive ones and why true crime podcasts have risen in popularity? It can be explained by the negativity bias. The negativity bias is an evolutionary effect – our brains are wired to avoid danger. It's the habit of over-noticing negative things, centring around the gloomy aspects of a situation, and having pessimistic views. On Wikipedia, we can read, "In other words, something very positive will generally have less of an impact on a person's behaviour and cognition than something equally emotional but negative." We frequently experience stronger reactions to negative stimuli. That also means that people are much more likely to remember negative events and form unpleasant memories than happy ones. What are some real-life examples of the negativity bias? Sometimes, a single argument with your partner can cloud weeks of happiness in the relationship. Even little criticism that hurts us can be stuck in our minds for months. Also, as I previously mentioned, the media use the negativity bias to ensure viewership. People are more likely to become engaged in pessimistic and sad broadcasts. But how can we protect ourselves? Well, first of all, we should minimise our exposure to negativity. Why view something that will only hurt us? Secondly, focus on the positive aspects of life. Write lists of what you are grateful for and what made you happy. Preach those positive values, and you will start to see them in your life!

Cognitive biases are errors our brains make while trying to simplify incoming information. They occur from heuristics and may lead to mistakes in perception. We've discussed certain types, but it's just the tip of the iceberg. There are many other biases. I don't mean to scare you at all. It's important to know that biases are more common than we might think because the first step in overcoming them is simple awareness. With this knowledge, we are more likely to notice when we fall victim to them. Then, we can reflect on ourselves and review our thinking patterns. Another aspect is to practise slow, thoughtful decision-making. I'm not saying not to trust your instincts, but take a minute to think, "Where is my conclusion coming from?" Sometimes, taking the time to make a calculated choice can save us from falling into anchoring, confirmation or availability bias. Last but not least, focus on positive aspects and reasonable data.

I strongly encourage you to explore the topic of cognitive biases on your own. It's definitely something that applies to all of us, and the knowledge could really come in handy. There are many sources, including YouTube lectures to pick from, so don't worry about accessibility!

Glossary

align – to arrange something in the correct position
anticipate – to expect something
attribute – to say or believe that something is the result of a particular thing
bias – a strong feeling in favour of or against one group of people or one side in an argument, often not based on fair judgement
cognition – the mental action or process by which knowledge and understanding is developed through thought, experience, and the senses
gloomy – sad and without hope
heuristics – a method of solving problems by finding practical ways of dealing with them, learning from experience
mental shortcut – unconscious thought patterns that enable individuals to make quick, intuitive decisions and judgment
procrastination – the act of delaying something that you should do, usually because you do not want to do it
stimulus – something that produces a reaction in a human, an animal or a plant
susceptible (to) – very likely to be influenced, harmed or affected by something
viewership – the number or group of people watching a particular programme

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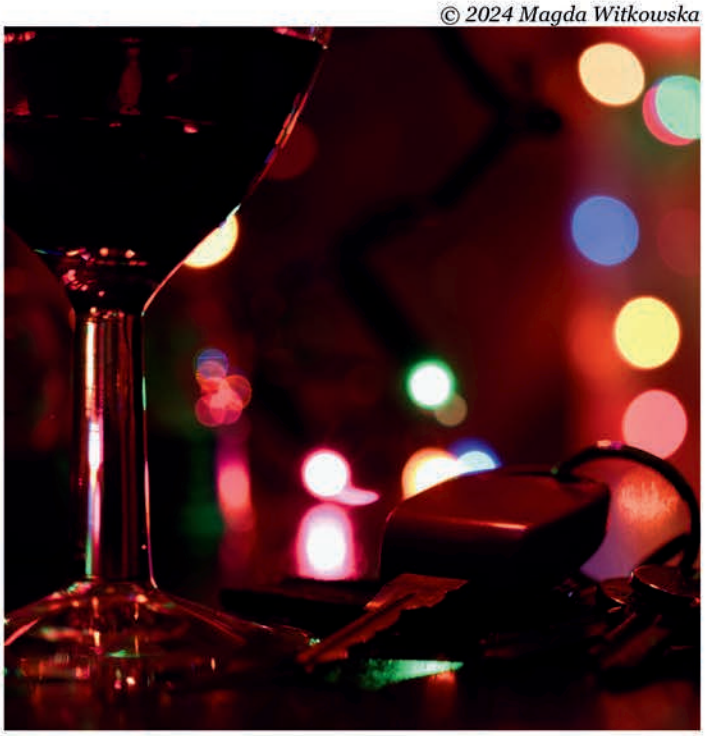


Does The World Truly Exist?

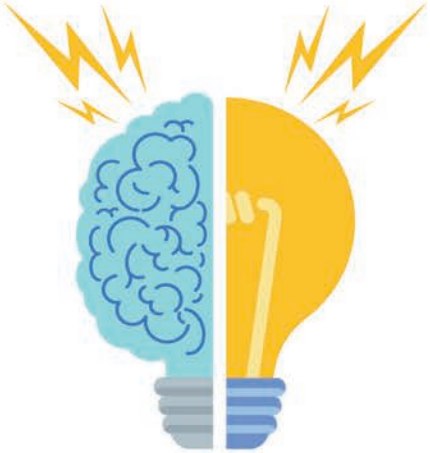
Interview with Łukasz Przybylski, PhD

By Jan Wolicki

Łukasz Przybylski, PhD

Łukasz Przybylski is a cognitive scientist with a background in philosophy and psychology. He holds a PhD in social studies and serves as an assistant professor in the Department of Psychology and Cognitive Science at Adam Mickiewicz University in Poznań. His research interests include cognitive theories of perception and visual action control, particularly the neural correlates of actions, such as object manipulation, environmental exploration, and tool use. He also explores issues related to embodied and distributed cognition within the framework of ecological psychology.

Łukasz Przybylski is involved in many research and deve-lopmental projects at the intersection of science and business, cooperating with leading companies in the field of user experience and universal design. He completed postdoctoral fellowships at the Cognitive Development Laboratory (University of California, San Diego) and at the Laboratory of Action and Development (Adam Mickiewicz University).



Jan Wolicki: When I look at your research, a question arises: Does what we see and touch really exist, and why do we perceive the world the way we do?

Łukasz Przybylski: I understand you are referring to the concept of perception. Perhaps it would be worthwhile to start with the goal of perception, which is perceiving. The primary aim of the perceptual process is to gather information about the characteristics of the environment that may be significant for an organism's survival. This information is received from stimuli, primarily visual, auditory, and tactile, from the environment. Sometimes, it is sought in our environment using attentional processes. The information collected this way does not satisfy cognitive curiosity but is primarily acquired to enable effective action. This effectiveness is the most important goal of perception. Organisms that managed to accelerate effective actions by even a few seconds (e.g., escaping a predator in time) became the victors in the history of life.

JW: Do we also contribute something to this process, or is all the information located outside the organism?

ŁP: The process of perceiving information also involves a specific component in the form of prior knowledge acquired through past experiences. Almost every perceptual situation is supplemented by the knowledge we bring to it through memory. This issue remains a challenge for perception researchers. This additional loop of knowledge, which includes not only memory processes but also expectations and imagination, indicates that perception involves the fundamental bottom-up and top-down processes.

JW: Returning to the thread of the first question – does the perceived world correspond to the one that truly exists?

ŁP: The common-sense answer to this question is that we are given real objects and events in the world. This attitude is often referred to as naïve realism. When we perceive (e.g., visually) an object, the way it appears depends on several external factors, such as a change in lighting, the angle of view, or our distance from the object. Perception researchers often cite the example of a coin whose perceived shape may appear more circular or elliptical depending on the angle of observation. This phenomenon is known as perceptual relativity and constitutes a significant part of our everyday experience.

But these are not the only doubts. Others concern the fact that, in perception, we sometimes experience properties of perceived objects that they do not actually have. Such cases are known as perceptual illusions and, as we now know, involve all the senses. As a side note, it is worth mentioning that there is a growing contemporary view that perceptual illusions are not distorted versions of normal perception but serve distinct functions, such as testing the efficiency of the cognitive system.

To summarise this point, apart from philosophical debates, the question of whether the perceived world is the one that truly exists is of less concern to contemporary cognitive science.

JW: What role does language play in this perception of the world, and what role does the body play? Do they function in a fully integrated manner or more independently?

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ŁP: This is a highly complex issue that requires an evolutionary context to understand fully. In recent years, numerous studies, including neuroimaging research, have shed light on the role of the body, for example, in the tool-making practices of our ancestors. Importantly, most of these studies suggest that the cognitive abilities used in tool-making co-evolved with and overlap those underpinning other fundamental human skills, such as the use of complex gestures (which also require the use of the body) and language.

In other words, the central premise is that the human ability to use tools and, more broadly, technology, gestures, and language may share the same evolutionary roots. Both language and the ability to use the body in such sophisticated ways – even extending it to incorporate elements of the environment – are, in a sense, unique to our species. They require hierarchical sequencing of motor and cognitive actions (consider the seemingly simple act of hammering a nail). Acquiring, using, and passing on these interconnected skills also requires hierarchically structured cues and instructions, that is, a complex language.

Our close relatives, chimpanzees, although excellent at communication and capable of using simple tools, do not come close to us in either of these skills.

JW: Do differences in how our bodies function and how we function within them affect how we perceive the world?

ŁP: This is a very important question that cognitive scientists have been asking themselves for some time. It concerns whether and to what extent the functions of our mind go beyond what the brain does. The answer to this question, in an era fascinated by research using neuroimaging techniques that greatly emphasise the role of the brain, is not necessarily obvious. Without delving into the details of this debate, it is enough to say that it is hard to question the role of the body as an integral component of cognition. The mind needs the body and delegates specific tasks to the body and its products.

Photo by Amanda Dalbjörn on Unsplash

The sensations created in the process of perception are directly dependent on our bodily makeup. There are no pure sensations; all are intertwined with the body and its motor functions. An example of this is the placement of the eyes in the human skull, which determines a specific, limited field of vision.

Seeing anything beyond this range requires, for example, head movement. The arrangement of eyes in most birds means that such movements are not necessary for visual perception, as in the case of a chicken. The subject can even anticipate how the incoming information from the outside will change, and consequently, how the sensation will evolve, as a result of a specific sequence of movement.

For example, we can plan body movements when observing a narrow crevice in a rock or a narrow mountain path in the Tatra Mountains. This happens because the mind has a representation of our body, which we call the body schema, meaning it has access to the motor capabilities of the body, which change over the course of life (we grow, exercise, train, age).

Using the body introduces expertise into our functioning and frees the mind from needing to process complete information every time. This principle is evident in sports, dance, and even mundane tasks like entering a PIN number on an ATM keyboard. The body serves as our external memory.

Photo by Etienne Girardet on Unsplash

JW: Where does the role of psychology end and cognitive science begin in studying these phenomena?

ŁP: The study of perception is not the exclusive domain of cognitive science. In some ways, it is also a subject of philosophy and, of course, psychology. Psychologists focus on determining the actual course of the perceptual process and finding empirical regularities that govern the individual senses. For cognitive scientists, however, perception is a multi-stage process of information processing that the subject extracts from the environment. They generally respect David Marr's postulate to consider perceptual processes at three basic levels: the theoretical level, the representation and algorithm level, and the neural implementation level.

At the theoretical level, the question is: What does the process of perceptual information processing involve? At the level of representation and algorithm, the question is: How and according to which algorithms are representations of perceived objects created? At the level of implementation, the key question is: In which neural structures are perceptual processes realised? It's also important to remember that cognitive science, unlike psychology, does not focus solely on humans.

Perception is not just a human domain, but also that of other species that share this planet with us. Moreover, and particularly important in today's world, perception is also a domain of artificial systems. Studying and designing it within such a broad context is one of the most important tasks of cognitive science.

Glossary

artificial system – man-made setup designed to replicate or simulate natural processes
bottom-up – processing driven by information coming directly from the environment
empirical – based on observation or experience rather than theory
hierarchical – arranged in a system where elements are ranked above or below one another
implementation – the process of putting a plan or system into action
naïve realism – the belief that we perceive the world exactly as it is
neuroimaging – techniques used to visualise the brain and its functions
perceptual relativity – the idea that perception can vary based on external conditions, like lighting or angle
schema – a mental framework or representation that helps organise information
tactile – related to the sense of touch
top-down – processing guided by prior knowledge, expectations, or experiences


Lifestyle
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Let Your Head Rest

Recently my friend told me that she had been struggling with something for weeks until she took a nap. It all sounds silly, right? She was once again trying to come up for a solution to her problem, but she was so worn out that she decided to get some sleep instead. She thought, "I'm not going to figure it out anyway, might as well go to sleep." After sleeping the solution magically appeared in her mind. It made me wonder: how does our brain miraculously solve our problems on its own?

Sometimes problems can overflow our head making us unable to process them properly. When we have many things on our mind, we tend to get stuck in a loop of unfinished projects, assignments or decisions that are waiting to be made up. It feels like our head is completely empty. Even if rationally, we know we are capable of doing something – our mind is an empty piece of paper. While trying to resolve a problem our brain gets bombarded with excess amounts of information, that are not always useful to the topic. Overstimulated brain can not filter the information.

Well, it all comes down to the incubation effect. Incubation happens when our brain on its own filters and discards irrelevant information and adds extra elements. It also weakens the effects of obstacles that interfere with problem-solving. Incubation relates to regeneration of resources and process of resting.

It happens mostly through memory consolidation. Brain moves temporary memories and information into long term memory. While consolidating, it also filters unrelated data and pushes it out. That way, we can start the thinking process with proper and organised information. Consolidation happens during sleep.

Sleeping per se is crucial, because in the same time as consolidate, we also get so much needed rest. Sleep is vital to keep our brain ready and able to think. Simply – tired brain is a groggy brain. When we are tired, our thinking process is much slower. Lack of sleep is connected to troubles with memory, such as memory lapses or brain fog.

Sometimes you just have to get a good nights sleep, stop fixating on your problems and your brain will do the rest by itself. Don't stress. The human brain is wired to organise and deal with those things.

Karolina Tomczak

Pun Please

What do you get when you cross a psychologist with a Sunday Roast?

Food for thought.

Why did the memory go to therapy?

It had too many unresolved issues!

Whimsical LANGUAGE

Idioms

Don't judge a book by its cover

Avoid snap judgments based on appearances and stereotypes

The pot calling the kettle black

People should not criticise someone else for a fault that they have themselves

Think before you leap

It's important to pause to consider the consequences of your behaviour before acting and avoid impulsive action

Put your thinking cap on

Focus and use your brain

That's food for thought

It refers to something that provokes deep thinking or consideration

Proverbs

The pen is mightier than the sword

Words and ideas are more powerful than violence

Knowledge is power

Those who have knowledge can make informed decisions, solve problems, and exert influence

The mind is like a parachute. It only works when it's open

An open mind – one receptive to new ideas and perspectives – is necessary for growth, learning, and effective functioning

He who hesitates is lost

Hesitation or indecision in critical moments can result in missed opportunities or failure

Rome wasn't built in a day

Significant changes or improvements take time (related to cognitive development and gradual learning)

"Eden"

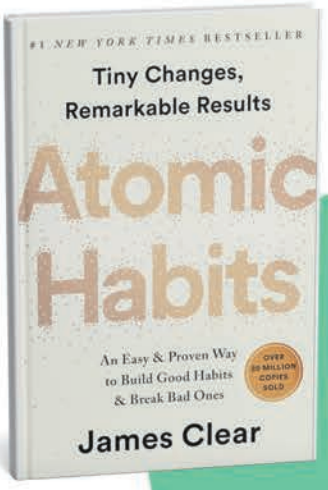
I started to read *Eden* rather reluctantly – so far, I had mixed experiences with Stanisław Lem's books. Given that this one was written over sixty years ago when the outlook on many things was vastly different than nowadays, I didn't want to get my hopes too high. What I found, however, was the exact opposite of disappointment. The book is well-paced, the author skillfully weaves action and detailed descriptions of surroundings together, slowly building up dramatic tension.

The plot follows a small space crew of scientists who crash-land on an uncharted planet whose records hold only the name of Eden. Soon, it turns out that, despite being a truly fascinating place with rich, beautiful nature, Eden is much more sinister than it seems at first glance. The local civilisation is, in the eyes of humans through which we observe it, truly mortifying and incomprehensible.

With each horrific discovery, the crew's moral dilemma grows stronger: should they interfere in the affairs they perceive as evil or leave the alien society to its own devices? Do they even have the right to judge an unknown culture? Find out for yourself. If you enjoy emotional whiplash and topics revolving around ethical problems, I believe you will enjoy this book. Fair warning, though: it's definitely not a light reading.

Review by Daria Fruń

"Atomic Habits"



By now, I think we all have at least heard about the phenomenal book written by James Clear. He explores the notion of creating and sustaining new beneficial habits while unlearning the ones that no longer serve us. The title isn't supposed to sound "cool" but summarises Clear's approach to habits in general. He said, "Atomic can mean tiny or small, like an atom. And it is a core part of my philosophy that habits should be small and easy to do." He narrates his book by telling a story about his own bumpy journey of rehabilitating from a severe cranial injury that he suffered when playing baseball. He wanted to change his life, and his little steps are documented in this book as a guide with advice for others. As he lists on his website, his work can help you: start (and stick to) good habits, make good choices and avoid bad ones, accomplish more in less time, create better systems and processes, and achieve meaningful results without overwhelming yourself. I truly believe he's right, although it's no magic. There's plenty to take away from Atomic Habits. This read is quick and easy to digest, and you're guaranteed to be left with at least some food for thought.

Review by Martyna Lekan

A sound mind in a sound body. *How to take care of your memory?*

By Martyna Lekan

Photo by Britta Preusse on Unsplash

Be physically active every day

Exercise not only will make you feel good but also will help your brain perform more effectively because of the increased blood supply. Additionally, some studies show that having strong muscles may lower your chances of developing Alzhimer's! So make some time for strength training, too!

Sleep enough and well

Sleep plays a critical role in the formation and storage of long-term memories, especially during REM sleep. What is significant about it, both sleep depravation AND oversleeping can disrupt memory processing and other cognitive functions. Adequate sleep ensures proper brain function, making it incredibly important to get the recommended amount of rest each night to strengthen memory consolidation. (Your body will thank you as well!)

Food for thought

Macronutrient (protein, fats, carbs) under-nutrition and micronutrient deficiencies may heavly affect brain development and general cognitive health. According to study in *Front Public Health*, micronutrients like B group vitamins or iron play a crucial role in healthy cognitive function, as well as high protein and low-fat diets. There's tons of diets out there and not every single one works well for every person. It's best to consult with your physician first and do some bloodwork to ensure the best fit for your unique body and brain!

Sources

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Photo by Duong Ngan on Unsplash

Holiday bubble tea: *Gingerbread Delight*

Ingredients:

- Chai tea base
- Tapioca pearls
- Milk (*we recommend almond*)
- Gingerbread syrup (*you can make one!*)
- Brown sugar
- Cinnamon powder
- Whipped cream (optional)
- Gingerbread cookies for garnish

Gingerbread syrup recipe

Instructions:

- Boil tapioca pearls according to package instructions.
- Steep chai tea and let it cool.
- In a blender, combine the tea, almond milk, gingerbread syrup, brown sugar, and a dash of cinnamon powder. Blend until smooth.
- Put tapioca into a festive glass and pour the mixture in.
- Top with whipped cream and garnish with crumbled gingerbread cookies for an extra festive touch.
- Enjoy!

Language Exercises

Exercise 1.

Guess the idioms and proverbs based on the given images.

Answers on page 34

1. .....

2. .....

3. .....

4. .....

5. .....

Exercise 2.

Complete the table with the correct forms of the missing parts of speech. Then complete the sentences below with the words from the table. Sometimes there is more than one answer.

NOUN	VERB
	retrieve
	store
recall	
consolidation	

1. _____, in crude terms, is a process of recovering information stored in memory.
2. Forgetting may occur through a lack of _____ when information cannot be transferred from short-term memory into long-term memory.
3. Short-term memory has limited capacity and _____ only seven plus or minus two elements at a time.
4. Most events _____ in episodic memory fade away within a relatively short time unless they are emotionally significant.
5. In a history test, a student uses explicit memory to _____ the date of an important battle.

Exercise 3.

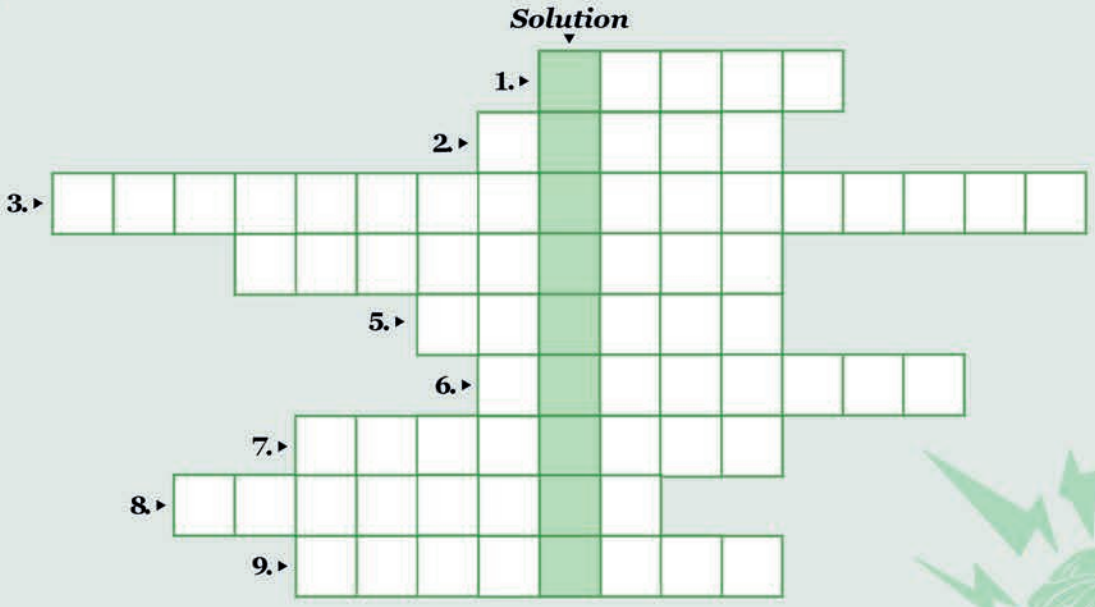
Complete each sentence with the correct adjective related to the senses.

For example: vision → visual.

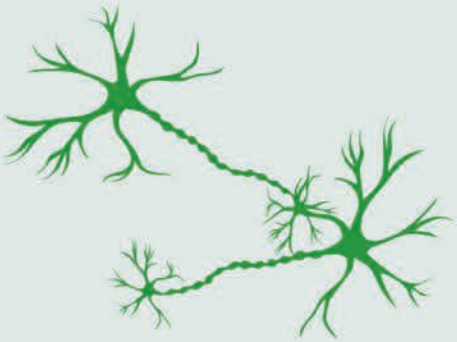
1. She asked me to describe the _____ sensations of the dish, hoping that I would enjoy every morsel of it.
2. The _____ details of the sunset were so stunning that we stopped to admire the sky's colours.
3. The _____ stimuli of the forest, including birds chirping and leaves rustling, made him enjoy the mushroom hunting even more.
4. Everyone got hungry as the _____ experience of bread baking in the oven filled the house.
5. I love the _____ sensation of my favourite soft blanket in winter as I wrap myself up.

Exercise 4.

Complete the crossword puzzle using the provided clues.



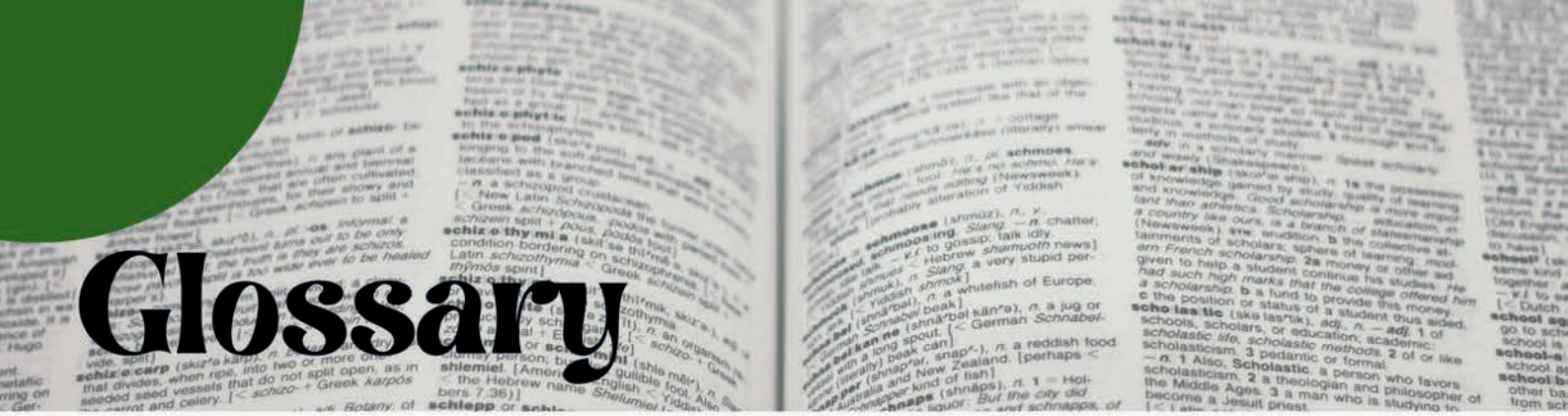
1. to stop happening or existing; to stop something from happening or existing
2. a lack of good judgement
3. impossible to notice as different or separate
4. memory techniques that help you remember information
5. to get information or a reaction from somebody, often with difficulty
6. something that produces a reaction in a human, an animal or a plant
7. able to feel or experience things
8. a false belief
9. a constant feeling of distrust or fear that others want to harm you



Exercise 5.

Choose the correct word.

1. The twins are so alike that they are **distinct/indistinguishable** from each other.
2. His **delusions/hallucinations** led him to believe that everyone around him was plotting against him.
3. Investing all her savings in a pyramid scheme turned out to be an act of sheer **fallacy/folly** that left her up to her ears in debt.
4. Her **paranoia/psychosis** made her feel as if someone was watching her, even though she was alone in her house.
5. The loud voice **triggered/elicited** her panic attack, causing her heart to race.
6. Her **prejudice/bias** in favour of her friend was obvious as she consistently overlooked her mistakes and praised her work, which was, at best, average.
7. She hadn't driven in years, but her **explicit/implicit** memory made her comfortable with the gearbox right away.



Glossary

Cognitive psychology

capacity – the ability to contain
cognition – the mental process of acquiring knowledge and understanding through thought, experience, and the senses
cognitive structure – mental organised pattern of knowledge that help individuals understand and interpret the world
exceed – to be greater than a number or amount; to go beyond a permitted limit
heuristics – mental shortcuts or rules of thumb that help people make decisions or solve problems quickly, but they can sometimes lead to errors
recall – to remember something
revolve (around) – to focus on, be about something
track – to follow or watch something

AI

branch out – to spread into different areas or develop in different ways
computational theory of mind – a theory that compares the mind to a computer, suggesting that thinking and mental processes work like calculations or instructions
differentiate – to show how things are different from each other
display – to show or make something visible
distinct – clearly different or separate
distinguishing – something that makes one thing different from another
gravitate towards – to be attracted to or drawn to something naturally
indistinguishable – impossible to notice as different or separate
irreplaceable – too special or unique to be replaced with something or someone else

Does The World Truly Exist? Interview with Łukasz Przybylski, PhD

artificial system – man-made setup designed to replicate or simulate natural processes
bottom-up – processing driven by information coming directly from the environment
empirical – based on observation or experience rather than theory
hierarchical – arranged in a system where elements are ranked above or below one another
implementation – the process of putting a plan or system into action
naïve realism – the belief that we perceive the world exactly as it is
neuroimaging – techniques used to visualise the brain and its functions
perceptual relativity – the idea that perception can vary based on external conditions, like lighting or angle
schema – a mental framework or representation that helps organise information
tactile – related to the sense of touch
top-down – processing guided by prior knowledge, expectations, or experiences

How Do We Solve a Problem?

campaign – an organised effort or activity, often for advertising or promoting something, aimed at achieving a specific goal
metaphorical – using symbolic or figurative language to represent something; not meant to be taken literally
milestone – a key point or stage in a process or journey that indicates progress or completion of parts of the overall task
target state – the desired goal or end result that one is trying to achieve

Cognition and Psychosis

auditory – related to the sense of hearing
cognitive distortion – thoughts that can distort how a person sees themselves, their life, their situations, their relationships, and other people
delusion – a false belief
encrypt – to put information into a special code, especially to prevent people from looking at it without authority
fallacy – a wrong idea or mistake in thinking or reasoning
folly – a lack of good judgement
gripping – exciting or interesting in a way that keeps your attention
insightfully – in a way that shows a clear and often original understanding of a problem or situation
olfactory – related to the sense of smell
paranoia – a constant feeling of distrust or fear that others want to harm you
prone – likely to suffer from something or to do something bad
psychosis – a mental condition characterised by a loss of touch with reality, involving symptoms such as hallucinations, delusions, disorganised thinking or incoherent speech
straitjacket – a piece of clothing like a jacket with long arms that can be tied together, used to control a person who is violent and thought to be likely to harm themselves or others
tactile – related to the sense of touch, using your sense of touch
trigger – something that causes a strong reaction
viral infection – an infection caused by a virus
vulnerable – easy to hurt or harm
widespread – existing or happening over a large area or among many people

Memory & Intelligence

aligned (with) – in agreement or consistent with
cog – a part of a machine that works together with other parts to make the machine work
cognitive impairments – problems with thinking, learning, or recall as a result of damage or disease of the brain
consolidation – the process of making memories stronger and long-lasting
deviation – a difference from what is usual or expected
explicit memories – memories that can be consciously recalled or talked about, such as a certain experience or specific facts
holistic – considering something as a whole rather than focusing on individual parts
mnemonics – memory techniques that help you remember information
multifaceted – having many different aspects or features
neuroplasticity – the brain's ability to reorganise and create new connections if the brain is damaged or injured
predictive – able to predict future outcomes or results based on current information
prominent – important, well-known, or easily noticeable
proxy – something that stands in for or represents something else
psychometrics – the science of measuring mental abilities, intelligence, and personality
recall – to remember
retain – to keep or remember information in your mind so that it can be accessed and used later
retrieve – to get or bring back information from memory
store – to keep information
stripped (of) – without something
ultimate – the final or most important
warrant – to justify or require something

Why Do We Make Irrational Decisions?

align – to arrange something in the correct position
anticipate – to expect something
attribute – to say or believe that something is the result of a particular thing
bias – a strong feeling in favour of or against one group of people or one side in an argument, often not based on fair judgement
cognition – the mental action or process by which knowledge and understanding is developed through thought, experience, and the senses
gloomy – sad and without hope
heuristics – a method of solving problems by finding practical ways of dealing with them, learning from experience
mental shortcut – unconscious thought patterns that enable individuals to make quick, intuitive decisions and judgment
procrastination – the act of delaying something that you should do, usually because you do not want to do it
stimulus – something that produces a reaction in a human, an animal or a plant
susceptible (to) – very likely to be influenced, harmed or affected by something
viewership – the number or group of people watching a particular programme

Why Do We Laugh?

benign – kind and gentle; not hurting anybody
cease – to stop happening or existing; to stop something from happening or existing
deem – to have a particular opinion about somebody/something
elicit – to get information or a reaction from somebody, often with difficulty
homeostasis – the process by which the body reacts to changes to keep conditions inside the body, for example, temperature, the same
non-verbal – not involving words or speech
pent-up – (of feelings, energy, etc.) that cannot be expressed or released
prevalence – a condition of being widespread
superiority – the state or quality of being better, more powerful, greater, etc. than others
tie into – to be connected or related to something
tip – move in a particular direction

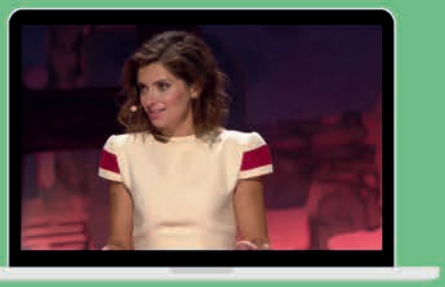
Whimsical Language

Don't judge a book by its cover – avoid snap judgments based on appearances and stereotypes
The pot calling the kettle black – people should not criticise someone else for a fault that they have themselves
Think before you leap – it's important to pause to consider the consequences of your behaviour before acting and avoid impulsive action
Put your thinking cap on – focus and use your brain
That's food for thought – it refers to something that provokes deep thinking or consideration

The pen is mightier than the sword – words and ideas are more powerful than violence
Knowledge is power – those who have knowledge can make informed decisions, solve problems, and exert influence
The mind is like a parachute. It only works when it's open – an open mind — one receptive to new ideas and perspectives – is necessary for growth, learning, and effective functioning
He who hesitates is lost – hesitation or indecision in critical moments can result in missed opportunities or failure
Rome wasn't built in a day – significant changes or improvements take time (related to cognitive development and gradual learning)

Last but not least...

TED



How language shapes the way we think

Lera Boroditsky, November 2017

There are about 7,000 languages spoken around the world – and they all have different sounds, vocabularies and structures. But do they shape the way we think? Cognitive scientist Lera Boroditsky shares examples of language – from an Aboriginal community in Australia that uses cardinal directions instead of left and right to the multiple words for blue in Russian – that suggest the answer is a resounding yes. "The beauty of linguistic diversity is that it reveals to us just how ingenious and how flexible the human mind is," Boroditsky says. "Human minds have invented not one cognitive universe, but 7,000."

Watch here!

Did you know that ...

The word **bias** comes from the French word ***biais***, meaning a slant, a slope, or an oblique angle. In cognitive psychology, it refers to a tendency to favour or oppose someone or something, where our judgements are influenced by personal experiences, emotions, or prejudices.

Bias often occurs outside our awareness, meaning we're "slanting" our thinking in one direction without realising it – similar to how ***biais*** originally described a sloped surface.

Linguistic Tidbit

Some people have a rare condition that makes them recall nearly every detail of their lives with astonishing accuracy. This condition, known as **hyperthymesia** or **superior autobiographical memory** (**SAM**), allows them to remember events and experiences, no matter how far in the past, so vividly and with such immense emotional charge that it feels like those moments have just occurred. One such person is Jill Price, who, in her book *The Woman Who Can't Forget*, describes her struggles with **hyperthymesia** and her inability to let go of the vivid snapshots – both good or bad – that constantly flood her back.

Answers to exercises

Exercise 1.

1. to knock someone for six
2. to go out on a limb
3. every cloud has a silver lining
4. when life gives you lemons, make lemonade
5. don't judge a book by its cover
6. keep your chin up

Exercise 2.

1. gustatory
2. visual
3. auditory
4. olfactory
5. tactile

Exercise 3.

1. indistinguishable
2. delusions
3. folly
4. paranoia
5. triggered
6. bias
7. implicit

Exercise 4.

1. cease
2. folly
3. indistinguishable
4. mnemonics
5. elicit
6. stimulus
7. sentient
8. delusion
9. paranoia

Solution: COGNITION

Exercise 5.

1. Retrieval
2. consolidation
3. stores/retains
4. stored
5. recall

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