

CONSCIOUSNESS

Consciousness has been thought of in two ways:

- As being about the subjective experiences we have. For example, is your experience of the color yellow the same as mine?
- Consciousness has also been thought of as awareness of the subjective experiences we have.

Philosophers study both ways of thinking about consciousness, and psychologists usually just study conscious as awareness, which we will talk about today.

As we discussed in the lecture on perception, there is just too much information in the world for us to be conscious of all of it at once. We are able to sense a big part of what is happening in the environment, but if we paid attention to all of the information from our senses, we would be overwhelmed. Consciousness works similarly to a spotlight: only the area directly under the light is conscious, the rest remains unconscious. This metaphor is useful, but it has implications for how we understand what conscious and unconscious mean.

There are two main theories in psychology on consciousness, one is historical and one is modern.

We will start with the **historical approach**, which can be attributed to Freud. Freud is an icon in psychology because he introduced the idea that there is an unconscious. He came up with many fascinating theories some of which are no longer part of how we think about psychology today. One major limitation in how Freud did psychology was that Freud did not rely on the scientific method and his theories were not testable: it is not possible to conduct experiments to either prove or disprove Freudian theories. His theories mostly originated from his observations of the Victorian era he which he grew up and lived. According to Freud, the unconscious is the repository of the nasty desires we have that are too threatening to be conscious. These thoughts are often about forbidden desires. The content of the unconscious is pushed down so that it does not interfere with consciousness. So the unconscious was like a bad beast that could threaten our egos. Freud distinguished consciousness and the preconscious. The preconscious is stuff that can become conscious if we pay attention to it; the unconscious however is locked away, and we have different tools we use to make sure that the content of the unconscious stays away. For example, Freud talked about repression, a motivated way of pushing stuff down. Freud thought that all boys wanting to have sex with their mom and kill their father (Oedipus complex). Because that's a very nasty thought, it would often be repressed. Another of such tools is transference: for example, we might be really angry with our sister, but wanting to hit her is too threatening, so we hit the dog instead.

As psychology was changing, the beast metaphor for the unconscious that Freud came up with was replaced by another metaphor: the unconscious was seen as similar to a computer. When we use a computer, although we are not aware of it, a lot happens behind the scenes, and it does not have to be like a nasty beast. Like for a computer, the mind has modules or activity centers. We tend to think that everything happens consciously, and that nothing happens unless we plan it and think about it. In fact, consciousness (or the conscious experiences we have) is just one part of the brain machine like other parts, not a part that supervises and control all other parts. The unconscious does what it needs to do to help people function in everyday life. Research shows that we overestimate the role of consciousness. Our very own UVA psychologist Tim Wilson wrote a book called Strangers to ourselves in which he outlines how important the unconscious is and shows that we probably could not function right without the unconscious. If you woke up one morning without an unconscious, you would die right away because you would not be able to breathe. Breathing is not a conscious act, you don't say to your body "OK breathe now". Let's grant you breathing, would you still be able to make it through the day without the unconscious? Well no, you would not even be able to get out of bed. All the things that allow us to move, keep our balance and coordinate our movements are done unconsciously; to grab a cup of coffee that is sitting on the table, we don't say to our body "now lift the right arm, turn the hand slightly to a 55 degree angle, open the fingers at a 3 inches diameter, etc". Even if we were to grant you moving and balance, you would still not function right. Think about language: when you listen to a lecture in class, everything makes sense right away, it's not necessary for you to go and look up each individual word in a sentence, and reason about which meaning for each word is the right one in this specific context. All of that happens automatically for us; otherwise it would just be way too inefficient. Even the things we tend to consider exclusively dependent on consciousness like reasoning and decision making, can happen unconsciously. Let's see some examples:

1. **Unconscious learning:** people can learn things without knowing that they are learning them. Research on unconscious learning is typically done on patients who suffer from anterograde amnesia; those people are unable to form new memories (like in the movie Memento, or like Dorie in Finding Nemo). A French physiologist studied such patients. Those patients could shake someone's hand, introduce themselves, then leave the room and not remember five minutes later that they had already met the person. So they would start all over, introduce themselves and shake hands again. The French doctor added an interesting twist. He shook hands with one of such patients but put a pin in his hand. The pin did cause pain. Five minutes later, he came back to meet the patient. Although the patient had no memory of having met the doctor before, the patient refused to shake the doctor's hand, but could not explain why. The patient had unconsciously learned that shaking hands with this person causes pain. A lot of

things can be learned without us being able to consciously direct the learning. Some patients with anterograde amnesia can learn to play the piano really well unconsciously. They would not remember that they had been practicing, but they would still be very good at playing.

2. Another example of unconscious processing is **unconscious filtering**: if you are at a huge party, you focus your attention to hear the person to whom you are talking to. You manage to filter out the information that is not relevant to you and your conversation; you filter out what other people are saying. But as soon as someone says your name, you will hear it because it is relevant to you, this is called the cocktail party phenomenon. We have processes that are filtering info out if we don't need to focus on it, but sometimes, those same processes will redirect our attention to relevant information.
3. **Unconscious priming**: priming means to present someone with info that will later influence their behavior. The key in priming experiments is to expose one group to one type of information, and another group to another type of information, then to observe how they behave. In class, we were asked to write down the first brand of laundry detergent that comes to mind. Most of us came up with "Tide". It turns out that at the beginning the lecture, we were primed with a picture of a moon and an ocean. For the class demonstration, there was no control condition, since all of us saw the same picture. But this demonstration has been studied with experimental methods and a control group, and it was found that compared to the control group which did not see the picture, people who saw the picture were more likely to come up with "Tide". In class, we also talked about a study that was conducted at NYU. If you were a participant in that study, the experimenter would ask you to find words in a grid of letters, and when you are done finding all the words in the grid, you should go to the other room to get the experimenter. The experiment was set up so that whenever people would go to the other room to get the experimenter, the experimenter would be chatting with someone else. There is one twist: some of the people who were in the study were asked to find words related to rudeness, others were asked to find words related to politeness, others were asked to find unrelated words (control condition). The researchers measured how long it took participants (the word searchers) to interrupt the experimenter's conversation to signal that they were done with the word searching task. The experimenter stopped pretending to chat if the participant did not interrupt for up to 10 minutes. The researchers found the following: only 17% of participants who were asked to look for words related to politeness interrupted the experimenter during the 10 minute conversation, 40% of participants in the control condition interrupted the experimenter, and 70% of participants who were asked to look for words related to rudeness interrupted the experimenter. When people were informed of the purpose of the experiment, they still did not believe that the priming through the

word search task had affected them. In a similar vein another study primed people with words related to the elderly (Florida, cane, wrinkles), and others with unrelated words. The researchers measured how long it took participants to walk from the experiment room to the elevator down the hall. People who were primed with words related to the elderly walked slower to the elevator than people primed with other things. So just seeing some incidental words affects our behavior. In another study, people were either primed with words related to supermodels or words related to professors. People primed with professors did better than people primed with supermodels at a trivial pursuit game. This is very interesting: we can think of stereotypes or ideas, and that can affect what we do or how well we do; things not in our consciousness actually affects us.

Control

Our conscious mind feels more control than we actually have. The main role of conscious control is to help us do something different from what our unconscious wants to do. So what are the limits of the control our consciousness has on our unconscious? One example is the **Stroop effect**, which was demonstrated in class. We were shown a list of color names, and asked to name the color of the ink for each color name, and ignore the actual color name. This was very easy when the word "yellow" was written in yellow ink, and the word "red" in red ink. This was very difficult when the word "yellow" is written in red ink, and the word "red" in yellow ink. Why? Reading is automatic, we can't help but read. That's why this is difficult. We can't look at a word and not read it. The fact that we are reading automatically makes it get in the way of what we intend to do, which is to name the ink color. Kids are typically better at this task than adults, because kids aren't very good readers and reading is not yet automatic for kids. People who have English as a second language are also better at this than people who have English as their first language because it's easier for them to ignore the word's meaning since the meaning does not come to mind automatically as for native speakers.

Another example of when our unconscious gets in the way of what our conscious mind wants us to do is in **thought suppression**, which was demonstrated in class. We were all told to make sure we are NOT thinking of white bears for two minutes. If we happen to have thoughts of white bears during the two minutes, we should raise our hand and admit that we have failed at this task. What was found? Everyone found themselves thinking about white bears. This is odd for two reasons: we were supposed not to think about white bears, and before being told not to think about them, none of us thought of white bears. The psychologist Dan Wegner studied this effect. What happened? When we try not to think about something, our mind monitors our thoughts to make sure the item "white bears" is not part of it. Checking that "white bears" is not part of our thoughts automatically makes "white bears" appear in our thoughts. Everyone has

weird thoughts that they don't want to think about. The extent to which we perceive those weird thoughts as being meaningful has clinical implications, like for obsessive compulsive disorder. Imagine that we have a weird thought of hitting the dog on the head with a hammer; we would typically not consider this thought to be important and meaningful. But for people with obsessive compulsive disorder, they might think that the thought is meaningful, that it suggests that they are bad people, that the dog will get hurt, that this is all horrible, that they need to do something to make sure the dog does not get hurt, etc, you can see how this is getting out of hand. Thoughts just happen and we have lots of thoughts we would not be proud of.

Illusion of control: a sense that we are controlling things when we are not. This has been studied in gambling. People feel that they have better odds of winning when they are rolling the dice themselves compared to when someone else rolls the dice for them, even though the outcome is completely random. Dan Wegner did a lot of research on this illusion of conscious will. Is our will a real determinant of what happens or is it an illusory determinant? Our experience is that thoughts create action, but for Dan Wegner, the relationship between thought and action is correlational and not causal. He argues that there are unconscious processes that make both thought and action. As a result we have conscious experience of our thoughts and we ultimately act, but we make the error of concluding that the thought created the action. He wrote a book called the illusion of conscious will to explain this phenomenon. It is challenging because it defies what we believe about how important our thoughts are. But then what are thoughts good for? They are very useful in that they help us identify things that are coming from inside of us as an organism vs. things that are coming from the outside world. This provides information on what I as an organism (whether it's the conscious or unconscious part of me) is doing vs. what the world is doing to me. When do we experience thoughts as causing action and when do we not experience thought as causing action? Dan Wegner outlined three principles:

- **Priority:** the thought has to come before the action and not after, otherwise we don't experience thought as having caused the action
- **Consistency:** the thought has to be related to the action
- **Exclusivity:** no other plausible causes can be identified for the action. If a woman falls off a balcony right after we thought that she might fall, but because someone pushed her, we would not think that our thought caused her to fall.

There is some evidence to support those three principles:

- For priority: participants see a screen with objects on the screen. They are in pairs, and they are moving something like a mouse together to put a cursor on the objects on the screen. The other person in the pair is a confederate (works with the researcher and pretends to be a participant). Participants are told through headphones to think about specific things and move the cursor so that it

ends up on some object. The researchers were interested in when participants would believe that them moving the cursor and not the confederate caused the cursor to be on the right object. Remember: they are moving the cursor together, so there is no reason for the participant to think that his or her particular move caused the cursor to be on the right object, and not the confederate's. In fact, the confederate was trained to be able to always control where the cursor would end up. The researchers found that people were more likely to believe that they and not the confederate controlled where the cursor ended up when they were told through the headphones to think about that object 5 seconds before it ended up on the right object than when they were told to think about it 30 seconds before.

- Consistency: thoughts ought to fit the action. We watched in class about dowsing. The "dowsing specialists" in the clip were using the independent movements of a piece of metal wire folded in a special shape to find many things, such as metal objects and water. We learned from the clip that dowsing actually does not work. When the researchers used experimental methods, the professional dowsers could not find anything. What had happened was that them unconsciously wanting to find something would affect their hand motion and make the dowser react. Interestingly, the dowsers did not believe that their unconscious made the dowser react. Actually they partly believed that their mind had something to do with it, but they thought their mind was picking up signals from the environment and that their mind was not creating the motion on its own. They did not believe that they controlled the dowser because they did not see how their thoughts fit the reaction of the dowser. Note that the dowsing specialists in the clip are not dumb people, we all tend to underestimate the influence of our expectations.
- Exclusivity: the evidence for this principle comes from studies on facilitated communication for people with autism. Children who are autistic have a really hard time communicating. Parents were frustrated that they could not understand what their child wanted, and everyone, including researchers, was motivated to come up with a solution to help autistic children communicate. Facilitated communication was proposed as a solution: a trained communicator puts his or her hands on the autistic child's hand; that specialist was believed to be able to just follow the movement of the autistic child's hands on a keyboard. Using this technique, autistic children would "write" long emotive paragraphs, and everyone believed that they were communicating. It turned out that the children were not communicating anything, but that the specialist was unconsciously deciding what to type. Given that another explanation (the child was doing it) was available, the specialist and everyone else did not have the experience that they were doing it and not the child.

So in today's lecture, we have seen that our conscious control was limited. So what is conscious control good for? Again, it helps us identify what's internal vs. what's external. This is critical for helping us learn what we can do and what we can't do. True, we end up giving more credit to conscious control than it deserves, but this allows us to benefit from useful information. Also having a feeling of sense of control makes people feel better. In one classic study by Langner, people in a nursing home were assigned to one of two conditions: in the first condition, they were given a plant, and told that the plant was just for them to enjoy, and that they did not need to take care of the plant. In the second condition, they were told that they were responsible for the plant. Participants in the first group had no control over the plant; participants in the second group had control over the plant. The researcher found that 6 months later, twice as many people died in the group that did not have control over the plant compared to the people who had control over the plant. People began to realize that it was beneficial to have control over our lives, and these findings were particularly important given how nursing homes were run back in those days. These findings have since been integrated in the structure of nursing homes, which are now assisted living facilities that make sure to give their members some form of control.