Module:
Psychological Foundations of Mental Health

Week 4
Beyond basic cognition and emotion

Topic 1
Attitudes – Part 4 of 4

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Lecture transcript

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At the start of this topic, I discussed the functions of attitudes. They serve symbolic purposes by helping us to express our values. Furthermore, they give us a means of making fast decisions without having to rely on all the information. As a result of this second function, attitudes guide us in approaching what we desire and avoiding what we dislike. But how does this work? What information do we use to form these attitudes and beliefs?

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Some of the most important processes that determine our attitudes are heuristics, simple rules that are used to form an attitude judgement with little cognitive effort.

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How do these heuristics operate and result in attitudes? Let's give an example based on the game of chess. Don't worry if you're not familiar with chess. I'll explain the relevant details to you. In the game of chess, your goal is to capture your opponent's piece called the king. You have 16 pieces of your own to attempt doing so, but so does your opponent.

Games of chess can last a long time and involve several turns, in which you and your opponent move one of their pieces across the board. In order to win the game of chess, you usually need to capture first many of the opponent's pieces, before you can capture her or his king.

But which one of the opponent's pieces to catch first? You can capture pieces called pawns, rooks, knights, and more. Which one to choose? What strategy will get you to victory closest?

Ideally, at the start of the game, it would be great if you could work out your entire strategy. You plan your first move, second, third, and all the others, keeping in mind what your opponent could do in response. Unfortunately, this is impossible to do. It is far too complex. Even our most sophisticated computers cannot calculate all the different options to obtain a strategy that guarantees victory.

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So how do we and chess computers, for that matter, play a game of chess? We use heuristics or rules of thumb. For example, the piece called queen in chess is much more powerful than a pawn. As a result, a good way to get closer to victory is to try to capture the opponent's queen, if that is possible.

Although capturing the opponent's queen is no guarantee for victory, it is generally a good strategy to do so. It is effective. So when playing chess, you may use this simple rule of thumb, when I get the opportunity, I will try to capture the opponent's queen.

Heuristics work in much the same way. They do not guarantee success, such as being entirely accurate in our attitudes. But they are usually not too far from incorrect.

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What kind of heuristics do people use when forming attitudes or beliefs? There are many of them, and I will discuss briefly two. Imagine the following. You see a fellow student in the cafeteria. He looks shy and reads The Principles of Philosophy by Rene Descartes. What do you think? Does this person study business or philosophy?

Chances are that you will assume that the person is a philosophy student, and research indicates that this is, indeed, typically what people would conclude. After all, the person fits the stereotypical view of philosophy students and not that of business students.

The problem with this inference is, however, that on the whole, there are far fewer students of philosophy than business. It is, therefore, not unlikely, based on the mere number of students in business compared to philosophy, that the person is actually a business student.

The example, where people base their beliefs on the similarity between a target, the student, and a population, philosophy students or business students, is known as a representative heuristic. People base their judgement and attitudes on the level of similarity between a target and a population. This may often be correct. But sometimes, the heuristic leads to wrong conclusions.

Another prevailing heuristic is the availability heuristic. This works as follows. How likely do you think it is to die from a shark attack? Say, of one million people, how many die of a shark attack?

According to National Geographic, most likely, not a single one. In fact, they estimate the number of deaths due to shark attacks at one in 3.7 million. To put that in perspective, they estimate the chances of dying from the flu at one in 63.

Why do people tend to think that shark attacks are a more common cause of death than they really are? According to the availability heuristic, this could be because such an event is easy to imagine or remember, for example, because you saw it in a movie or in a news report.

Indeed, according to the availability heuristic, people estimate the frequency of an event is higher, the easier it is to bring it to mind. This may be an effective and reliable heuristic in many cases. But, as you can see from the shark example, sometimes it is not.

Now that you have a bit of an understanding of how these heuristics work, how do they relate to mental health or maladaptive behaviour? Heuristics are usually influential in many problem behaviours, such as in addictions.

Think of gambling, for example. Big wins, such as winning the lottery or getting the jackpot when playing a slot machine, may be very easy to bring to mind. After all, we see them in movies, advertisement. And when they occur, they're highly memorable.

As a result of the availability heuristic, people may subsequently start to believe that winning with gambling is much more likely to happen than it is in reality, potentially leading to irresponsible gambling.

In the next bit, Dr. Aitken Deakin will discuss how attitudes can, unfortunately, lead to problematic attitudes and behaviours, such as in the context of gambling.

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Cognitive psychologists who study decision making have proposed that we often use heuristics, simple rules of thumb to allow us to make efficient decision making. Heuristics attempt to explain how we make our decisions or judgement very rapidly, seemingly effortlessly, on the basis of very little information.

Now, these heuristics, which we might experience as gut feelings, may be a very good way of making a simple decision, especially a small decision, such as whether to spend a very small amount of money. In these cases, the cost of getting a wrong answer or a slight error in our decision might well be very small.

And it may be that the kind of costs we incur by buying something at a slightly higher price are less valuable to us than the time we might lose trying to find out the most efficient price or the best way to purchase something. However, any small errors will add up if we keep making similar decisions over and over again.

Now, in the example of gambling, as you might expect, popular gambling games, which, of course, are popular with casinos, as well as with players, provide an excellent case study of situations where heuristics can prove very costly. Gambling, by which I mean the placing of monetary bets for uncertain rewards as a form of entertainment, is a very common behaviour. And for a small proportion of people who gamble, it can become a huge problem.

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Gambling is a very common activity in the UK. Recent surveys have indicated that around 70% of the British adult population gambles at least once every year. Much of this is gambling on the national lottery, but around a half of adults gamble at least once a year on games other than national lottery, with scratchcards, horse race betting, and slot machines being the most common form of gambling behaviour.

In 2007, it was estimated that the per capita expenditure in the UK averages out to around 155 pounds per year. To put that example into context, in the way The Guardian newspaper did, means a typical British family will spend 3.60 each week on gambling, which is 80 pence more than it will spend on fruit.

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Cognitive psychologists who want to understand gambling and problem gambling focus on the types of cognitions that those who engage in gambling rely on. We use verbal report measures, questionnaires where we ask people questions along the lines of, do you have particular lucky numbers? Do you engage in superstitious behaviour?

Now, people who agree that they do have luck related cognitions and superstitions will report a distorted sense of their chance of winning in something such as a lottery. Problem gamblers, that is, people who have difficulty in controlling how much gambling they engage in, are or become more susceptible to these types of cognitive distortions, these tendencies to overestimate their chances of winning in certain types of gambling game.

Understanding these distortions is also important, because we know that individuals who show higher levels of distortion tend to have poorer responses to treatment for gambling addiction. Conversely,

cognitive therapy that directly targets this type of distortion has been shown to be effective in helping people with problem gambling get their behaviour under greater control.

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Now, we can look at two different common forms of gambling game and consider each of them in terms of the ways in which they may lead to cognitive distortions. The first example we'll look at is slot machines or fruit machines. In these machines, the reels move, and when they line up, a jackpot or large win can be recovered.

When playing these machines, as well as winning, it is possible to nearly win, that is, when the reels line up in such a way that if one of the reels had moved a little bit further or a little less far, a jackpot would have been won. This is an example of a near miss or near win, which is a special kind of failure to reach a goal. It's when the person comes close to success. And in the mind of the gambler, we could regard them as not constantly losing, but rather, constantly almost winning.

Cognitive psychologists who have studied gambling behaviour in laboratory have investigated the degree to which these near-miss effects influence gambling behaviour. What we found is that when the near misses occur on roughly a third of the non-winning trials, people will maintain their gambling behaviour in the face of a large sequence of losses more than if no such near misses occur.

Now, near misses are taken by the gambler as indications, somehow, that they are more likely to win. Why might this be so? Well, we could think about the role that near misses play in games of skill. If you're taking a penalty in a game of soccer, and when you strike the ball, it comes off the post, you didn't score a goal, but you very nearly did.

If the ball bounces back off a corner flag, you didn't score a goal, but clearly, you had less control over where the ball was going than if you hit the post. So in a game of skill, where you have or are learning control, a near miss could indicate that you are gaining control and that you are more likely to succeed next time.

It has been shown when people playing slot machines have control in terms of whether or not they are spinning the reels, they show a greater sensitivity to near misses, that is, that a near miss leads to increased desire to play, only if they themselves are spinning the wheel and not if the wheel is being spun by the computer without their engagement. So near-miss effects may indicate an example where people believe they have more control over the outcome of a gambling game than they really do.

There is considerable evidence to suggest that this happens. For example, people are more likely to place large bets when they roll the dice themselves in a dice game in casinos. And people will pay a lot more money for a lottery if they get the chance to choose the number on the tickets. Now, in either of these cases, the fact that the player themselves roll the dice or the player themselves chose the numbers on the lottery has no actual effect on their probability of winning.

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When playing roulette, players frequently bet on red or black outcomes from the roulette wheel. And it's typical in a casino for the wheel to display a recent sequence of red or black outcomes. A well-known phenomenon is that most people believe that after a run of red outcomes, a black outcome seems more predicted or more likely.

This is often referred to as the gambler's fallacy. The gambler's fallacy, that is, the tendency for people to believe that an outcome that hasn't occurred for a while is somehow becoming more likely, can be understood if we think about the heuristic of representativeness.

Because we know that a sequence of outcomes from a roulette wheel contains some black and some red outcomes, we expect a small sequence of outcomes to contain the same properties to be

representative of a larger sequence. Because we expect a small sequence to contain both red and black items, after a run of red items, we think the remaining ones have to be black.

This has some real world cost to people who play roulette, insofar as they mistakenly believe that there are opportunities within the game when the odds are in their favour. They believe that if they wait until they see a run of red outcomes, they can bet on a black outcome at some point where the bet has a higher probability of winning.

Unfortunately, despite its intuitive appeal, the gambler's fallacy is entirely misleading. The probability of whether the next spin of the wheel will come up red or black is completely independent of what's happened up to now. The wheel has no memory. And thus, knowing what happened on the last few spins of the wheel gives us no information and can be of no help to us in predicting which of the outcomes will occur next.

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As well as studying people's behaviour, cognitive psychologists have also attempted to look at the biological processes which underpin these cognitive distortions observed in gambling. For example, using simplified roulette wheels and slot machines, we can identify which parts of the brain responds to particular events in an MRI scanner.

Recent results have shown that when people experience a near big win, that is, a near miss to a jackpot in a slot machine, their brain activation looks very similar to the activation that's seen to a win, suggesting that in some sense, people are responding to near wins as if they were wins.

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The amount of activation associated with a win, having bet on the black part of the wheel, is influenced by whether that was inconsistent with the gambler's fallacy, that is, it followed a run of red outcomes, or it was less consistent, that is, it came from a short run of red or following black outcomes.

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Understanding the cognitive processes that lead people to engage in and enjoy gambling behaviour and understanding the neural processes that support these types of cognitions are an ongoing and important research area that helps us not only to understand people, but also to help people and to develop new treatments for those who have difficulty in controlling their gambling behaviour.