

Module: Psychological Foundations of Mental Health

Week 4 Beyond basic cognition and emotion

Topic in Action Metacognition – Part 3 of 4

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Lecture transcript

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Today, we're going to be thinking about worry and rumination in the general population.

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So let's think of some examples of what I mean by worry and rumination.

Here's an example of worry. What if I don't have enough money to pay the next rent? Then I'll have to borrow money from my parents, and then they'll be disappointed in me, and then I'll feel like a failure. And I won't ask them for help again. And then the next month, what if I can't pay the rent? Then my landlord will chuck me out, and then I'll be on the street.

As you can see, the person's thoughts run from one negative idea to another. How about Rumination? He is an example.

Why do I always over-analyze everything? If it's too silent when we meet up, I have to say something. And that's how I end up saying stupid things. Then I just analyse it. But then I think, why am I analysing it? I'm sure other people are not analysing these small actions, so I get irritated with myself. I keep doing it.

So here is a good example of rumination and that can lower your mood.

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So what are worry and rumination? The first person to really research worry was called Tom Borkovec, and he defined worry as a chain of thoughts and images, negatively affect laden and relatively uncontrollable. So I think he captures the essence of worry by seeing that it's a stream of verbal thoughts. And although there are images, they are less often than the verbal thoughts. And the key thing here is that the person finds them to be relatively uncontrollable. Worry is a key feature of something called generalised anxiety disorder.

In terms of rumination, one of the lead researchers in the field was Nolen-Hoeksema. And her definition of rumination is that rumination is the process of thinking perseveratively about one's feelings and

problems, rather than in terms of specific content of thoughts. So it's that repetitive nature of negative thoughts that she's trying to capture there.

Rumination is a very key feature of depression that also occurs in other disorders, in a similar way that worry also occurs across psychological problems. We'll come back to that in the next lecture.

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So what are the similarities and differences between worry and rumination? Well, first of all, they're both forms of something called repetitive negative thinking. They both involve lots of negative thoughts that repeat themselves. They're also similar, in that they are quite generalised and abstract verbal thoughts. They tend to be as if you're talking to yourself about ideas, and they don't tend to have the specifics that some other forms of thinking have.

Another similarity is that people find them difficult to control. Both are seen as forms of mental problem solving. They both have issues that are unresolved, worry about the future or rumination about past occurrences. But there are also differences.

One is that worry tends to be about events that haven't yet occurred, and don't necessarily have to be about the person themselves. They could be worrying about loved ones or friends. However, rumination tends to be about past events. And quite quickly, the style of thinking relates to the person themselves and criticism to the person themselves.

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So now let's begin to think about what keeps worry and rumination going. What I'm going to suggest today is that this is maintained by cognitive processes, top-down attentional control, where people are directing their thinking, and more bottom up, habitual information processing biases.

You will have already learned about attentional bias in a number of previous lectures. If you recall, that's when people attend to threatening information. And that can also maintain worry and rumination. But to hear of something new today, we're going to think about interpretive bias, or interpretation bias.

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So let's think about how attentional control can relate to worry and rumination. As you will probably recall, attentional control is a limited capacity resource that we need to use to ignore distracting information and to shift our attention from one topic or task to another. So how could this be relevant to worry and rumination?

Well, when you're concentrating on the task at hand and you have a distracting negative thought, you need to ignore that thought using attentional control. And then when you're in a situation when you've started worrying and ruminating and you wish to stop worrying and ruminating, you have to shift your attention away using attentional control. So we can see that this may be a pertinent process in the maintenance of worry and rumination.

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So let's think about attentional control in relation to worry. Researchers for many years have established that anxiety is associated with less available attentional control. But does this relate to worry?

So in a study by Sarah Hayes, she asked high worriers and non-worriers to do a dual task to assess attentional control. This task involves pressing a random key on a keypad of 15 keys every second, whilst at the same time either worrying about your main worry topic or thinking about a personally relevant positive future event. What we can determine from this task is how much attention control is available to do the key press task, when the person's thinking about their worry or positive topic.

What Sarah Hayes found was that the non-worriers we're unaffected, in terms of how random they were in pressing the keys when they were worrying or thinking about positive topics. However, high worriers were performing much more poorly on being random on the keypress task when they were worrying than when they were thinking about a positive topic. So this suggests that attentional control is being taken up by worry in high worriers, whereas that isn't the case in non-worriers.

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Attentional control has also been looked at in relation to rumination. Ed Watkins and Richard Brown asked people who had depression and other people who didn't have depression to do a task for them. First of all, participants were asked to either ruminate or do a distraction task. And immediately following the task, they then had to generate numbers at random every one second. This task is difficult, because actually people fall into patterns of number generation, rather than being random.

What they found was that following rumination that people with depression were less random, so they had more attentional control taken up by the rumination, whereas the control participants didn't find it difficult to be random following rumination. In contrast, when either group performed the task following a distraction task where they wouldn't have been ruminating, their performance was the same. So this suggests that when people who are depressed engage in rumination that attentional control is being used and continues to be used after the rumination has finished.

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So having thought about attentional control, let's now turn our minds to the bottom up processes. We've already established in other lectures that attentional bias occurs, but here we're thinking about interpretation bias.

All the time, we are encountering ambiguous information in life, and we are interpreting it in different ways. For example, when someone smiles at you, it could be that they're being friendly, or it could be that they're laughing at you with derision. So how people interpret information can clearly have an impact on their mood.

To take this example, the company you work for have been making some redundancies recently. When you think about your current job and level of ability, you know that your position in the company is at this point, the information is ambiguous. It could be that you have a positive interpretation-- secure-- or it could be that you make a negative interpretation-- not secure-- so that you're going to lose your job. So you can see that different interpretations can be made of the same information.

There's strong evidence that negative interpretation bias operates in people with generalised anxiety disorder and depression, and in other psychological problems, as well. But just because a cognitive process is evident in a population doesn't mean it drives the clinical problem. So does it have a causal role? In this case, does interpretation have a role in maintaining worry and rumination?

In 2000, Andrew Matthews, Sue Grey, and Bundy Macintosh conducted some seminal work that did involve training people's interpretation. And this paradigm is known as cognitive bias modification. Using this type of paradigm, we can determine whether worry and rumination are driven by negative interpretations.

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In a study we conducted in 2009, high worriers were randomly allocated to either a benign training condition or a controlled condition. They completed something called interpretation modification, and this involved listening to lots of different scenarios that were repeatedly completed with positive interpretations, to facilitate a more positive interpretation bias. The control condition performed a similar task, but the interpretations were resolved half the time in a positive way and half the time in a negative way, so that their interpretation bias wouldn't be changed.

Following interpretation bias modification, they performed the worry persistence task. This task involves focusing on your breathing for five minutes, and at random intervals, you have to indicate whether your thoughts are indeed focused on your breathing or whether you were having a thought intrusion. If you were having a thought intrusion, you indicate whether that's positive, negative, or neutral, and give a very brief summary. The person then is asked to worry about their main worry topic for five minutes and then perform the breathing focus task again.

The critical measure is the number of negative intrusions the person has. A blind assessor also rates the thought intrusions as to whether they're positive or negative or neutral, in order to determine how many objective negative intrusions occur. Following the worry persistence task, participants then perform the dual task mentioned previously, where they had to press keys at random whilst worrying.

So let's look at the results. What we found was with the light blue bar being the people who were trained to have more positive interpretations and a dark blue bar representing the control condition where their interpretation bias wasn't changed, the top graph represents the number of negative thoughts they had, either before worrying or after worrying. As you can see, having been trained to develop more benign interpretations, the benign group have less negative thoughts intrusions, both before and after worrying.

Turning now to the bottom graph, this represents the information about how random people are, with higher numbers indicating less randomness, so poorer attentional control. And again, with the light bulb representing the benign group and the dark bar representing the control group, you can see that when the benign group worried and did the key press task, they were more random and had more attentional control to be more successfully allocated to their key press task whilst worrying.

So what implications does this suggest? This suggests that attentional control is taken up by worry, and this is driven by the negative interpretations people have. Furthermore, we can conclude that negative interpretations have a role in uncontrollability of worry when more negative thoughts occur, and it's more difficult to concentrate on other tasks whilst worrying.

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Using a similar approach of cognitive bias modification, Paula Hertel conducted research on non-ruminators, to see whether increasing the number of negative interpretations people made by training increased the susceptibility towards rumination. And indeed, what she found was you are able to increase the number of negative interpretations in people who don't normally ruminate, but also when this occurs by training, you actually have the person see themselves as engaging in more rumination. So this suggests there is a causal role for negative interpretations in maintaining state rumination.

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So in conclusion, thinking about the processes of that maintain rumination and worry, it seems that these same processes may maintain these different forms of repetitive negative thinking. We've shown evidence that interpretation bias may drive worry and rumination, and also that attentional control is taken up disproportionately by worry and rumination, particularly in those who are prone to engaging in unhelpful repetitive negative thinking of this nature, so people who worry frequently or people who have depression.

All of this leads the person to keep focused on their negative thoughts. And what we'll hear about later is how worry and rumination can be so problematic that it can drive clinical disorders, such as generalised anxiety disorder and clinical depression.