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Emotions and emotional disorders

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Introduction

This course is about stress, emotional disorders and the brain. You will learn about some of the disorders related to the feelings of stress, sadness and anxiety including how these disorders are diagnosed, their biological correlates, and evidence of their possible causes. To start, the course looks at some definitions of mood, emotions and emotional disorders and explains how emotions and emotional disorders themselves can be placed in the wider context of our evolutionary heritage.

This OpenLearn course is an adapted extract from the Open University course SDK228 *The science of the mind: investigating mental health*.

Learning outcomes

After studying this course, you should be able to:

- recognise the value of an evolutionary perspective in understanding emotions (or moods) and emotional (or mood) disorders
- specify brain pathways involved in the perception and processing of emotions
- describe the rationale of approaches used in the diagnosis of emotional (or mood) disorders
- outline the characteristics and experience of specified emotional disorders
- demonstrate understanding of information about the prevalence of mental health disorders in populations.

1 Moods, emotions and disorders

Mood, like emotion, is an affective state or in layman's terms; 'a feeling'. Those in favour of a distinction between the terms 'mood' and 'emotion' suggest that emotion has a clear focus (i.e. its cause is self-evident), whereas mood is diffuse and can last for days, weeks, months, or even years.

Other researchers use the terms 'emotion' and 'mood' interchangeably. The basic disagreement seems to be about whether it is important to recognise that one state (emotion) is normally associated, by the person experiencing it, with a particular object or cause, and the other (mood) is often not. What difference might this make? Some evidence suggests that a particular 'mood' can affect our thoughts, perceptions and behaviours for prolonged periods – the so-called 'mood effect'.

There is evidence that when a mood or its source is brought to the attention of the person experiencing it, the mood effect can disappear (Schwarz, 1990). So it has been suggested that although moods (like emotions) can have identifiable sources, the effects of moods depend on the sources going unnoticed; and that a distinction between moods and emotions is therefore meaningful and even useful.

Certainly, it may help our understanding of some kinds of treatment for affective and anxiety disorders. For instance, mindfulness-based or cognitive therapy approaches may exert their effect by training people to become more aware of their moods, and of what is influencing or causing them.

Another common distinction found in the study of moods and emotions concerns states and traits. A trait is a relatively stable attribute of an individual, whereas a state is a temporary response to circumstances.

Take, for example, anxiety. A person shows state anxiety when something causes him or her to feel anxious temporarily. The anxiety then dissipates and the person feels 'normal' again. An example might be the anxiety that some people feel when heading to an appointment with the dentist, or waiting for an operation. However, in some people anxiety is a trait – they can simply be described as 'anxious people'. Trait anxiety has therefore been suggested to be a relatively stable characteristic of a person.

While traits may indeed be more stable, it does not mean that they are not malleable, at least to some extent, though perhaps they are harder to change.

1.1 What is an emotional disorder?

The terminology used to classify mental health disorders like emotional disorders has developed and changed over many decades. Multiple usages are current and can be very confusing. 'Affect' is another term for 'mood', so one term often used is 'affective disorders' which simply refers to 'mood disorders'. Depression (also known as major depression or MD) is the most commonly occurring of the set of mood disorders known as affective disorders.

A set of disorders that are clearly distinguished from those falling under the term 'affective disorders' is anxiety disorders. These have in common a strong element of fearfulness, apprehension or anxiety and include generalised anxiety disorder (GAD), panic disorder, phobias, and obsessive–compulsive disorder (OCD). It may puzzle you that the 'affective disorders' do *not* include anxiety disorder(s), even though anxiety is certainly an emotion! This is simply an anomaly rooted in the history of terminology in this area. However, the anxiety and affective disorders are collectively often referred to as emotional disorders, and this is therefore the term that will be adopted throughout the rest of this course.

1.2 Occurrence and cost of emotional disorders

Whilst anxiety and sadness are everyday emotions, their more serious manifestations can be hugely problematic for a significant number of people.

National statistics compiled by the Government show that in England in 2007, 16.2% (around 1 in 6) of 7325 adults between the ages of 16 and 64 years met the clinical diagnostic criteria for at least one emotional disorder (or common mental disorder; McManus et al., 2009).

Of these, depression and anxiety (or a mix of the two, called 'mixed anxiety and depression' or MAD) were by far the most common, as Figure 1 shows. Note that the term prevalence is a scientific term that refers to the number of people experiencing a disorder or illness at a particular time.

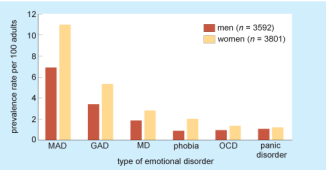


Figure 1 Prevalence rates in England in 2007 of a range of emotional disorders (also known as common mental disorders) by gender. MAD: mixed anxiety and depression; GAD: generalised anxiety disorder; MD: major depression; OCD: obsessive compulsive disorder.

- Why do you think we consider that the data in Figure 1 show prevalence *rates* and not simply prevalence as defined in the paragraph above?
- Because they show the number of people who have emotional disorders, expressed as a *rate* per 100 (i.e. a percentage) of the population. Prevalence would just tell us the *total number* of people with emotional disorders in the population.

The burden to society as a whole is therefore considerable, as anxiety and depression are implicated in 20% (1 in 5) of days lost from work in Britain, and around one in five GP consultations in the UK are about emotional disorders.

Depression has also been linked to the loss of more than 100 million working days in England every year, and it is strongly associated with suicidal thoughts and with suicide, being implicated in around 2500 deaths a year (Thomas and Morris, 2003). McCrone et al. (2007) estimated the total annual cost of depression, including lost employment, in England as at least £7.5 billion a year.

Clearly, it is therefore important to try to understand both emotions and emotional disorders. We start this process here by looking at the nature of emotions and emotional systems.

2 Emotions in an evolutionary context

Like other living things, people are the products of millions of years of evolution. An evolutionary approach thus has the potential to provide a number of important insights into the nature and function of emotions and emotional systems, and can enhance our understanding of what constitutes mental health and ill-health more broadly (Marks and Nesse, 1994; Nesse, 2006).

The evolutionary approach postulates that many of our physical, mental, social, emotional and spiritual characteristics and tendencies exist because they were useful or even essential in enabling our ancestors to survive and reproduce more successfully than their competitors. In other words, such characteristics and tendencies were adaptive; helping us to adapt to survive.

It is important to realise that evolutionary processes build on, or modify, what is already there – they cannot start from scratch. The changes brought about by evolution are a bit like remodelling your home over time. You may have installed electricity in your ancient cottage, but the low beam at the bottom of the stairs is part of the core structure of the building and cannot be removed. So, though you need to bend a bit to avoid banging your head on it, you just have to live with it. In the same way, we retain a great deal of the machinery and modes of operation of many of our ancestors. For instance, parts of our brain, particularly those parts associated with emotions have a similar structure and organisation to that of many other animals. We will explore this later on in the section.

2.1 An evolutionary approach to emotion in humans and animals

The evolutionary approach suggests that non-human animals, our evolutionary relatives, experience emotions too. Anybody who has a pet dog or has observed any animals carefully should need no convincing of this! Charles Darwin was one of the first to study the expression of the emotions in animals and humans systematically (Darwin, 2009 [1872]). Figure 2 shows a dog expressing two rather different emotions – aggression and fearfulness (or submission).

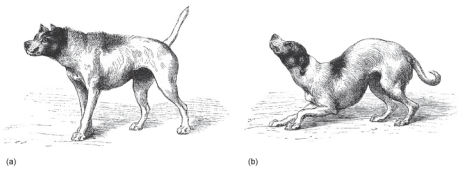


Figure 2 Dog showing (a) aggressive and (b) fearful postures.

Activity 1 Identifying features of different emotions

Allow 5 minutes

Look carefully at the two pictures of the dog and list the main differences you can see between the aggressive and the fearful postures.

Answer

The position of the ears, the tail and the height of the body are all different. The aggressive dog stares straight ahead; the submissive dog does not. The hairs on

the back of the aggressive dog are raised. You may have noticed other differences too.

It is striking how different the postures are. Indeed, diametrically opposite emotions appear to have evolved features that make it very easy to tell them apart. Similarly, a happy face is normally easy to distinguish from an angry one. Such features suggest that the expression of emotions has an important function in social communication – for instance, in letting others know how we feel and what the consequences, pleasant or unpleasant, might be if they approach us.

A consequence of the evolutionary heritage we share with other animals, in particular mammals such as rats, and even more so, monkeys and apes, is that there is significant similarity in the biological bases of many of our emotional response systems, as you will see in Sections 2.3 and 2.4.

The evolutionary approach also suggests the universality of human emotions – an idea again first clearly espoused by Darwin (2009 [1872]). This is the idea that all human races and cultures experience similar emotions, such as sadness, anger and joy. This has not always been accepted, which is not surprising, as cultural differences amongst humans have created strikingly different behaviours and displays of emotions in circumstances that appear otherwise comparable. A classic example is provided by cultural differences in the public expression of emotion at the death of a loved one. In traditional Japanese culture, weeping and wailing in public would be deemed scandalously uncontrolled and undignified. In others (such as traditional Indian culture), the absence of such behaviour might be deemed equally scandalous – signifying a lack of feeling for, and attachment to, the deceased.

Differences such as these led to the assumption that people in different cultures did not feel the same emotions, or did not feel them in the same way (e.g. Bruner and Tagiuri, 1954). However, there is convincing evidence of the universality of basic human emotions.

2.2 Evidence for the universality of human emotions

Paul Ekman and his colleagues showed photographs of North Americans displaying a range of emotional expressions to people, such as the Fore of New Guinea, who had had virtually no contact with Westerners. They wanted to know which expressions the Fore would identify as (say) those of a man who had lost his child.

- Why was it important that the Fore people had had minimal contact with Western culture?
- To ensure that they had not simply learned about the relationship between the expressions in the photos and the emotions that the photos represented, via contact with Western culture.

The Fore did prove competent at identifying emotions in Western faces. Ekman and his colleagues also photographed responses to emotional situations in the Fore, and this time asked North Americans to assess them – which they did, also accurately. Ekman concluded that recognition and expression of emotions was shared across cultures, at least for the six emotions he felt were ‘basic’: happiness, surprise, sadness, anger, fear and disgust; see Figure 3.



Figure 3 Photographs showing facial expressions for the six basic emotions. Top row, left to right: happiness, surprise, fear. Bottom row, left to right: sadness, disgust, anger.

But explanation was still needed for the fact that people from different cultures sometimes showed *different* expressions in circumstances where one would expect them *all* to show a particular emotion, such as sadness. Ekman suggested that this was because different cultures learned different 'display rules' for emotions. For instance, Japanese culture has a display rule that emotions such as anger or disgust must not be expressed in front of people of higher social status, whereas North American culture does not have such a rule. When Japanese and Americans were secretly observed watching a gory film, both showed facial expressions of disgust. When they were shown the film in the presence of a person with higher social status, the Japanese smiled, but the Americans still showed facial expressions of disgust.

Based on such findings, Ekman (1972, 2003) proposed his neurocultural theory of emotions. This suggested that certain human emotions were universal, but that the facial expression of these emotions could be influenced by social learning via local culture. ('Culture' is used here to mean practices or ways of thinking, so the term can apply widely, at different levels. Thus there could be 'cultural' differences between socio-economic classes, between men and women, and so on.)

All in all, therefore, sadness and anxiety have the same biological bases in all humans, and are experienced in fundamentally similar contexts – thus bad feelings are reliably aroused by losses, threats of losses, and the inability to reach important goals (Emmons, 1996).

However, culture does have an effect. It can affect *what* we regard as important goals or losses and therefore what triggers our emotions. Thus in Westernised societies some women may feel anxious and depressed at not being as thin as their culture considers desirable. In some Asian cultures, where male offspring are greatly prized, some women who give birth to one daughter after another may feel great despair and anguish. Cultural factors may also come into play in how acceptable people find it to display emotions and to admit to feelings, particularly negative ones. As diagnosis of emotional disorders is reliant on subjective report and assessment by interviewers, it is easy to see how cultural factors could impact on the diagnosis of problems like depression and anxiety (Section 4).

Our basic emotions, however, are those that all humans feel, and underlying them are brain structures and connections that are not just common to humans but have an ancient lineage, as explained in the next section.

2.3 Evolutionary layers of the brain

A well-known model for understanding the basic structure of the human brain was developed by Paul MacLean in the 1960s (see Maclean, 1990). He called it the triune brain and suggested that three distinct brains emerged successively in the course of evolution and now coexist in the human skull. (It was mentioned earlier that evolution could not start building a structure from scratch – this is a good example!). We suggest

that if you are not already familiar with the basic anatomy of brains then you spend a few moments exploring the brain using
the interactive brain resource associated with this course before you examine MacLean's three brains model below. (Note that you need to sign in to the website to use this resource.)

The 'three brains model' proposed by MacLean (Figure 4) were:

1. The so-called *reptilian brain*, the oldest of the three in evolutionary terms, which controls the body's vital functions such as heart rate, breathing, body temperature and balance. The main structures here are the brainstem and the cerebellum. One characterisation of the reptilian brain calls it 'reliable but somewhat rigid and compulsive'.
2. The *limbic brain*. This is also an evolutionarily ancient part of the brain and is found in mammals (such as rats, cats, dogs, monkeys, etc.). In the so called 'limbic brain' there is the amygdala, which registers unconscious memories of behaviours that produced pleasant or frightening experiences, and is closely linked to emotions, along with the thalamus, hypothalamus and hippocampus. The limbic brain has been characterised as 'the seat of the value judgments that we make, often unconsciously, that exert such a strong influence on our behaviour'.
3. The neocortex (the 'new cortex') evolved more recently in primates such as monkeys and apes, our closest relatives. It constitutes most of the cerebral cortex, which is highly developed in humans, with two large cerebral hemispheres. The neocortex, is thought to underlie language, abstract thought, imagination, consciousness and the development of culture and has been characterised as 'flexible, with almost infinite learning abilities'.

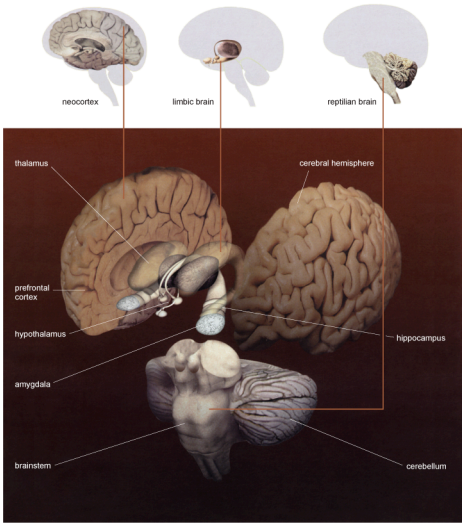


Figure 4 The triune brain, showing the so-called reptilian brain, the limbic brain and the neocortex.

Some neuroscientists find the 'triune' brain model simplistic and misleading. Certainly, it should not be taken literally. For instance, the 'reptilian' brain is not a distinct entity, identical to that of reptiles, within our own human brains. And our so-called 'three brains' do not operate independently of one another – we have one, highly interconnected brain, with different areas communicating with and influencing one another continually.

However, the triune brain concept is helpful in understanding that the influence is not always fully reciprocal – 'older' parts of the brain such as the limbic brain appear to have a

stronger influence on the ‘newer’ parts than vice versa. For instance, neural pathways sending messages from the amygdala to the prefrontal cortex (PFC) which is part of the neocortex are extensive, but pathways sending messages in the opposite direction are relatively sparse.

As you will see if you look at the related OpenLearn course *Understanding depression and anxiety*, this has significance for the conscious control we can exert over our emotions.

2.4 The amygdala and emotion

The amygdala, a structure in the limbic brain, plays a central role in our emotional perception and our responses (LeDoux, 1998). The amygdala has a similar role in other mammals such as rats and monkeys – this is important and relevant, given the use of animal models in scientific studies to study several aspects of issues related to emotions and emotional disorders, as will become clearer if you study the related OpenLearn course *Understanding depression and anxiety*.

Parts of the amygdala are involved in triggering the responses we associate with fear, such as submission, fleeing, or staying rooted to the spot (i.e. freezing). Other regions elicit feelings of ‘bliss’ or peacefulness, while still others evoke aggression and attack.

Life-or-death situations demand extremely rapid responses, which the amygdala is well-placed to mediate. For instance, if you are out walking at night in an unfamiliar neighbourhood and hear a sudden thump behind you it may make you jump in alarm. Your heart will be beating hard and all your senses will be alert – because your ‘fight or flight’ reaction has been triggered. Information from the senses (from hearing, in this case) reaches the amygdala, which triggers the ‘fight or flight’s stress response. There are two routes via which this sensory information can get to the amygdala (Figure 5).

One route, known as the ‘low road’ or the ‘quick and dirty’ route, carries relatively crude information from the ear to the amygdala via the thalamus: ear → thalamus → amygdala. This is the subcortical route – i.e. it is ‘below the cortex’ and is fast and unconscious – a response is triggered in a split second before you are aware of what actually made you jump. The other route, the ‘high road’ is a cortical route, as it goes via the cortex: ear → thalamus → cortex → amygdala. It is longer, slower and indirect, but provides more detailed information about the stimulus, and allows conscious awareness and assessment of it. So you may feel rather sheepish, on realising that it was just a cat jumping onto a dustbin!

The quick unconscious route elicits an ‘automatic’ reaction around a fiftieth of a second (20 milliseconds or thousandths of a second) after the sound enters your ear. The longer, slower route via the cortex takes 200 milliseconds (a fifth of a second) – this is how long it takes before you are consciously awareness of what made you jump. This is still very quick, but the unconscious route is 10 times faster.

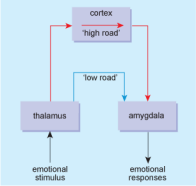


Figure 5 Information about emotional stimuli reaches the amygdala via a direct pathway from the thalamus (‘low road’) as well as by a pathway from the thalamus to the cortex (‘high road’) to the amygdala.

The above also shows that our emotions can be triggered extraordinarily rapidly and unconsciously. If we are in a very 'reactive' state, we may find ourselves responding emotionally to situations and stimuli without thought or judgement, perhaps with disastrous results. Fortunately such initial and unconsciously triggered emotional responses can be modified and corrected by conscious appraisals into more considered and appropriate responses. For instance, if someone knocks into you, your response will depend on whether you think the person did this deliberately or accidentally.

We will revisit the role of appraisal, and of the amygdala in emotional responses, in the related OpenLearn course *Understanding depression and anxiety*.

Activity 2 The pathways of the fear reaction

Allow 5 minutes

Following a sudden sound, which of the following pathways, A to E, provides (a) the unconscious route that mediates the fear reaction; (b) the conscious route that mediates the fear reaction and also allows appraisal of the stimulus that caused the fear?

A. ear → amygdala → cortex → hippocampus → emotional response
B. ear → orbitofrontal cortex → thalamus → emotional response
C. ear → thalamus → amygdala → emotional response
D. ear → thalamus → cortex → emotional response
E. ear → thalamus → cortex → amygdala → emotional response.

Answer

(a) C; (b) E.

2.5 The value of negative and positive moods and emotions

An evolutionary approach allows us to be open to the idea that negative as well as positive emotions have value. This is obvious for some negative emotions such as fear and anxiety; for example, in the context of escaping from a bear. It is not so obvious for sadness, or worry (a form of fear and anxiety about the future).

It has been suggested that sadness can be useful in some circumstances and hence have an 'adaptive' function. For example, it might make individuals reconsider problems such as failed goals, and lead them to abandon unhelpful ways of behaving or of doing things (e.g. Oatley and Johnson-Laird, 1987). To use a physical analogy, pain is unpleasant and aversive but is considered adaptive as it can benefit an injured individual by preventing further harm or damage.

That low mood can indeed be useful is shown in a series of studies carried out by the psychologist Joseph Forgas and his team at the University of New South Wales. They found that, while performing a task, people in whom a sad mood had been induced paid more attention to details, were less gullible, less likely to make errors of judgment, and were more likely to come up with high-quality, persuasive arguments than people in whom

a good mood had been induced (Forgas, 2009). Good or bad mood can be induced in people by, for instance, showing them happy or sad images or films.

Worry, too, can be useful. Psychologist Graham Davey of the University of Sussex found that although worrying sometimes made things worse for participants in his study, it often motivated them to take action and resolve problems and this in turn reduced anxiety (Davey, 1994). Similarly, McCaul et al. (2007) found that cigarette smokers were more inclined to stop smoking if worried about the risks of smoking. Overall, such findings suggest that mild to moderate levels of worry can be beneficial, motivating people to put in the bit of extra effort and attention needed to make a success of their endeavours.

Conversely, an evolutionary stance allows for the possibility that emotions we consider desirable may not be universally (i.e. in all circumstances) 'good' or appropriate. While there is evidence that positive mood facilitates creativity, flexibility and cooperation there is also evidence that misplaced optimism can lead to rash decisions and risk-taking (Alloy and Abramson, 1979).

Aversion and approach are facilitated by different emotions. Low and high mood may be useful in certain situations but may be very unhelpful in others.

2.6 The pressures of modern life

A number of studies (for instance in countries such as the USA) suggest that people currently feel more anxious and stressed than in the 1950s, despite unprecedented improvements in physical health and wealth (e.g. Twenge, 2006). Perhaps this reflects increasing dissatisfaction with the pressures of modern industrial societies, in which the pace of change has been accelerating for many decades.

Some researchers suggest that modern life itself is particularly stressful and happiness particularly elusive, because we live in a very different world from that in which we evolved. Culturally, humans have come a long way from their ancestors. Only 30–50 000 years ago our ancestors lived in small kin-groups as hunter-gatherers (Figure 6).



Figure 6 Hunter-gatherers today: A group of Khoisan people of the Kalahari desert singing and dancing around their campfire.

This time span of a few tens of thousands of years, though it may appear long, is not in fact sufficient to allow significant *biological* evolution, though it has witnessed a tremendous explosion of *cultural* evolution. Our brains and emotional propensities, on this account, remain more or less as they were in our ancestors. In Eaton et al.'s (1988) memorable phrase, modern people are like 'stone-agers in the fast lane'.

What are the implications of this for our well-being? Physically, it has been suggested that many of our chronic health problems, for example atherosclerosis (hardening of the arteries), diabetes, high blood pressure and the complications of smoking and alcohol

abuse, result from the mismatch between the environment in which we evolved (sometimes referred to as the environment of evolutionary adaptation or EEA) and the environment in which we currently live. For instance, we have an evolved propensity to prefer sweet and fatty foods – this would have been valuable for survival in the past, when these energy-rich foods were rare. Now, in an environment of easy availability and little energy expenditure, indulging this preference can lead to obesity and diabetes, with their often harmful consequences.

Mentally and emotionally, too, many people, particularly in urban areas and the industrialised world, now live in a hugely different environment. For instance, many of the expectations that people face from their families, employers and society, and the perceived pressures from advertising and media to achieve goals of fame, beauty and success are unrealistic and unachievable for most people. This can be highly stressful and demoralising. On this view, the complexity of modern goals and the difficulty and effort needed to achieve many of them play a very significant role in feeding negative emotions such as anxiety and depression.

Some people have linked such pressures to the consumer and individualist attitudes in modern industrial societies (e.g. Twenge, 2006). Indeed the distinguished stress researcher Robert Sapolsky of Stanford University argues that the ‘epidemic’ of stress and stress-related mental distress in Western societies, which are hugely rich and privileged compared to the rest of the world, is strongly linked to psychological factors: ‘We’re ecologically privileged enough that we can invent social and psychological stress’ (Sapolsky, 1998).

As we consider in the related OpenLearn course *Understanding depression and anxiety*, the effect of chronic stress can be very deleterious for some people.

2.7 Social competition, stress and subordination in animals

The behavioural tendencies of animals in situations of defeat and outranking, and hierarchies, have inspired insights into human mental health and well-being.

Living in a group entails competing with others for desirable resources such as food and mates. In many species such competition has led to the development of status hierarchies. Anyone who keeps chickens is well aware that there is a strongly enforced ‘pecking order’ amongst the hens. This was one of the first dominance hierarchies amongst animals to be described by scientists, and the term ‘pecking order’ was coined in this context.

Animals who accept subordination avoid fights with dominants; indeed they show clear signals of submission and readily cede space and resources to dominants. They may suffer harassment, displacement and bullying or scape-goating attacks from others (Figure 7, Figure 8).



Figure 7 Rhesus macaques: the infant son of a subordinate female (who is out of the frame) has been kidnapped and is being mistreated by a dominant female. The infant was distressed and his mother agitated but unable to intervene to rescue him. After some hours the subordinate female managed to snatch her baby back when the dominant female let go of him.



Figure 8 A young male rhesus macaque wounded in a fight with other males showing submissive posture and fear grimace.

Why do animals accept subordination in a hierarchy? The simple answer is that strongly social animals normally have no choice. They may be beaten in a fight by a stronger animal or an alliance of animals. But they may be better off remaining in the group because life alone, outside the group, may be even more stressful and dangerous than life as a subordinate. Being in such situations can be very stressful for animals, affecting the levels of stress hormones in their blood, their reproductive systems and their cardiovascular health (Sapolsky, 1998).

Animals that have been beaten and outranked typically give up – they readily respond in a submissive way to dominant animals, rather than fighting back. This appears to be an evolved, adaptive strategy to being defeated (in situations where rebellion is most unlikely to succeed): it is better to cut one's losses and accept the status quo than to continue fighting and risk injury or even death.

How is this relevant to human mental health? We explore this in the next section.

2.8 Social competition, stress and subordination in

humans

Status hierarchies are deeply ingrained amongst humans, and social and economic hierarchies and inequalities within and between societies have powerful consequences for poverty, self-esteem and health, including mental health (Wilkinson and Pickett, 2009).

Humans also appear highly sensitive to situations that parallel, or are analogous to, outranking and defeat in animals such as monkeys. The clinical psychologist Paul Gilbert (Gilbert 1989, 1992), building on the suggestions of Price and Sloman (1987), suggests that 'evolutionary-based "social mentalities" that involve ranking and power are activated in depression'. Essentially he believes that depression is a state like that of an outranked, defeated monkey, and is likely to be provoked by situations of loss where a person feels 'helpless and powerless, seeing no way forward'. Gilbert suggests these are also situations in which people are likely to feel humiliated and ashamed.

In support of these suggestions, there is evidence that the situations people find most stressful are 'social evaluation' situations, where not only might they fail, but they will be *seen* to fail – that is, situations where public humiliation is a possibility. For instance, Dickerson and Kemeny (2004) reviewed studies of cortisol levels in people placed under different kinds of stress. They found that people's cortisol levels were highest in situations where their performance was likely to be assessed in public and where they felt they had no control over their performance (Figure 9). (See Box 1 for an explanation of the type of data shown in Figure 9.) Some of the changes in cortisol levels shown in Figure 9 were statistically significant. Statistical significance means that a mathematical test has been applied to the results and has shown there to be a difference that is 'real'; in other words, a difference that is most unlikely to have been obtained by chance. When scientists report that the results are *significant*, they mean that they are statistically significant.

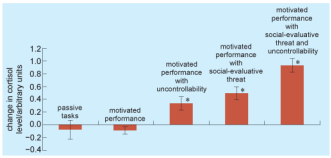


Figure 9 Mean (+/− SEM) change in cortisol levels in potentially stressful situations. Values above 0.0 indicate a rise in cortisol levels. * denotes that the change is statistically significant. Key to terms: *Passive tasks* –tasks such as watching a film that do not require cognitive responses; *Motivated performance* – tasks such as delivering a speech or solving an arithmetical problem that require cognitive responses and achievement of a goal; *Uncontrollability* – a situation of 'forced failure' where participants have no chance of succeeding despite their best efforts, for example where too little time is given to complete a task; *social evaluative threat* – occurs when an aspect of self (such as ability) could be negatively judged by others.

Gilbert (1989) suggested that what would be most likely to lead to depression would be:

- situations of direct attack on a person's self-esteem that forced the person into a subordinate position
- events undermining a person's sense of rank, attractiveness and value, particularly via the consequences of the event for roles (for instance, as a mother or professional) that the person held dear; and
- blocked escape.

Testing these ideas, Brown et al. (1995) found that humiliation and entrapment were indeed the most powerful provoking events for the onset of major depression in their study population of women (Table 1; see also Box 2 for definitions of humiliation, etc.).

Table 1 Onsets of major depression by type of provoking event within the six months before onset of depression. (Modified from data in Brown et al., 1995.)

Psychosocial aspects of life event	Number of events that occurred in this category	Number (and %) of events in this category that provoked onset of major depression
Humiliation and entrapment	131	41 (31%)
Loss alone	157	14 (9%)
Danger	89	3 (3%)
Total	**377**	**58 (15%)**

The differences shown Table 1 are highly statistically significant.

- From Table 1, what is the second most powerful provoking kind of event for the onset of depression?
- Loss alone – 9% of such events led to depression.

Box 1 Research methods: analysis of scientific data – descriptive statistics

The data in Figure 9 are shown as the mean change in the concentration of cortisol in the blood, plus the SEM (standard error of the mean, which is generally written as +/− SEM) You will probably be familiar with the term ‘mean’ which is calculated by adding up all of the data from a group of participants and dividing the total by the number of participants. The mean is sometimes referred to as the average and it allows simple comparisons to be made from one group to another. For example, you can easily see that the mean results for those in a situation of ‘motivated performance with social evaluative threat and uncontrollability’ are very different for the results for those in a situation of ‘motivated performance with uncontrollability’. However, the mean is a summary of the data obtained and can mask considerable variation within the data. The size of the mean does not tell you anything about the range of the data, in other words the lowest and the highest values. It is possible that some of the values obtained in the first group above were the same as values obtained in the second group above. The second problem with the mean is that it can be distorted by one value that is much higher or lower than the rest of the values obtained for the group. For these reasons, sometimes different ways of summarising data are used, which give a different picture of the data. The first of these is the median, which is found by ranking the data in order of value and taking the middle value (median values are shown in Figure 13). The second is the mode, which is the

value that occurs most frequently. The mean, median and mode are sometimes referred to as ‘measures of central tendency’.

Most scientific data in this course, however, are presented in the form of a mean. In order to make sense of differences between means, researchers calculate an additional statistic which takes account of the pattern of the observed values, known as the variance. The variance is calculated from the differences between each value and the mean, so the more values there are that are much higher or lower than the mean, the greater the variance will be. The variance is usually quite a large figure relative to the mean value, so the square root of the variance is often used, known as the standard deviation (SD). The SD therefore gives an idea of the spread of data about the mean. Alternatively, a further calculation is performed, which takes into account the number of participants, giving a SEM. The SEM gives an idea of the accuracy of the mean, or how close it is to the true population mean. Data is usually presented in the form mean ±SD or mean ±SEM. In graphs, the SD or SEM is usually shown as a small bar (line with a flat top) above and below the mean value, as shown in Figure 9.

In summary, descriptive statistics such as the mean, SD and SEM, are used to summarise quantitative data and provide useful information about the values and spread of data obtained in different groups. They allow comparisons between groups. They do not, however, allow any meaning or significance to be inferred from these observations; this requires the application of a relevant statistical test.

Box 2 Psychosocial dimensions of life events

(Modified from Kendler et al. (2003))

- Loss: for example, a real or anticipated loss of a person, a material possession, employment, health, respect in the community or a cherished idea about oneself or someone close to oneself.
- Humiliation: feeling devalued in relation to others or against a core sense of self, usually with an element of rejection or sense of role failure.
- Entrapment: ongoing circumstances of marked difficulty of at least 6 months’ duration that the subject can reasonably expect will persist or get worse, with little or no possibility that a resolution can be achieved as a result of anything that might reasonably be done.
- Danger: the level of potential future loss, including both the chance that a given traumatic event will recur or a possible sequence of circumstances in which the full threat or dire outcome has yet to occur.

In the following section we consider emotional disorders, such as major depression, further.

3 Recognising emotional disorders

We all have set-backs that can make us feel low, sad or anxious. What is the difference between these states, and states of low mood that are officially considered to be disorders? You might be surprised to learn that in real life there is no clear dividing line to distinguish ‘normal’ from the disordered experience of these emotions, However, we often know when all is not as it should be. First-person accounts, or personal narratives like the one given in Vignette 1 are illuminating in this regard.

Vignette 1 An experience of depression: Lewis Wolpert

Professor Lewis Wolpert (1929–), a distinguished British biologist, generally stable, happily married and with a good job at a university, descended into what was diagnosed as an episode of severe depression. A self-confessed hypochondriac, in the weeks before the episode he had been anxious about the effects of a new drug (flecainide) prescribed by his cardiologist to control his long-standing irregular heartbeat or atrial fibrillation. (The old drug, which he had taken for several years, had become ineffective.) He speculates that this change may have triggered his depression. The new drug gave him morning sickness and severe stomach cramps, which accentuated his hypochondriac streak and made him fear he might have a stroke. Worried, and against his doctor’s advice, he cancelled a trip abroad to a science conference. Instead of making him feel better, this made him feel even more distressed and anxious, as he felt he had let down his colleagues. He began having difficulties sleeping and started to think a lot about death. Then one night he had a dream about devils and woke up with a compulsion to kill himself. He writes:

[…] my mental state bore no resemblance to anything I had experienced before. I had had periods of feeling low but they were nothing like my depressed state. I was totally self-involved and negative and thought about suicide all the time. I just wanted to be left alone and remain curled up in my bed all day. I could not ride my bicycle and had panic attacks if left alone too long.

I also had numerous physical symptoms – my whole skin would seem to be on fire and I would on occasion twitch uncontrollably. Each new physical sign caused extreme anxiety. Sleep was very difficult and sleeping pills only seemed to work for a few hours. The future seemed hopeless and I was convinced that I would never recover and would probably end up completely mad

[…] I thought of suicide all the time but did not know how to do it. As I was too scared of heights, jumping from my window which was high up was ruled out […] Nothing gave me pleasure and every decision, no matter how small, increased my anxiety. I had no emotions and was unable to cry but I did retain a macabre sense of humor […] I got a bit better during the day and by evening could read and watch TV, but next morning I was back in the original bad state […] My memory seemed to be failing and I was frightened that I was going insane.

(Wolpert, 2009, pp.1–2)

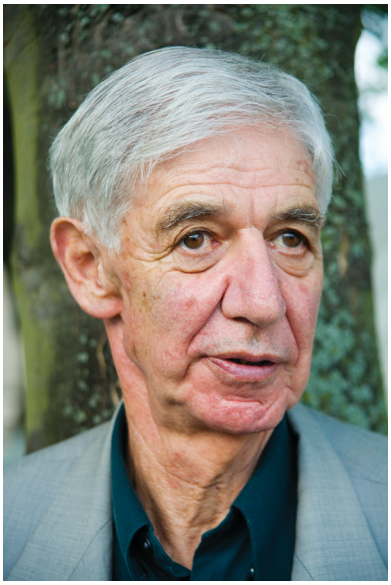


Figure 10 Lewis Wolpert (1929–).

Lewis Wolpert (Figure 10) found his recovery from the episode was tortuous, involving drugs and psychotherapy. Wolpert was aware that 90% of those who suffer a severe depressive episode have a relapse. Indeed, four years later some of the symptoms of his depression recurred; once again he received treatment and recovered. Since then he has suffered other episodes though none as severe as the first (Wolpert, 2009).

As Wolpert's case shows, depressive episodes do not just include despair, they can also include feelings of panic and anxiety. Indeed feelings of anxiety are almost always present in depression, though anxiety can occur without depression.

3.1 Diagnostic criteria for emotional disorders

Formal diagnostic criteria exist to identify emotional disorders. Two international examples are the DSM-IV-TR (APA, 2000) or ICD-10 criteria (WHO, 2007)). Such systems are based on signs and symptoms, which psychologists sometimes group into four categories:

- *mood or emotional symptoms*, for instance feeling sad
- *motivational symptoms*, such as difficulty making decisions
- *cognitive symptoms*, involving thought, such as worry or pessimism, and
- *physical symptoms*, such as bodily aches or pains.

Diagnostic systems such as DSM-IV-TR have been criticised for a number of reasons, some of which will be considered in Section 4. However, they have been very influential, so it is important to consider them. They not only determine what diagnosis a patient seeking help receives, they underpin a great deal of research work into the causes and correlates of mental disorders.

- How do diagnostic criteria underpin research work?
- Researchers who are interested in (for instance) whether depression is linked to changes in the brain need to compare the brains of people who are and are not depressed. They often use DSM criteria to decide who is or is not depressed – so these criteria will determine who falls into each of the groups being compared.

Thus the process of diagnosis is clearly critical, as our understanding of emotional disorders is fundamentally underpinned by how we decide who suffers from them.

DSM-IV-TR, which we will focus on here, splits emotional disorders into two clusters, affective disorders and anxiety disorders.

3.2 Affective disorders

Affective or mood disorders include manic-depressive illness or bipolar disorder (it is called bipolar because it has 'two poles': mania and depression). However, by far the most prevalent affective disorder is major depression (MD), which accounts for 80–95% of all depressions. Major depression is sometimes called unipolar disorder to contrast it with bipolar disorder. In MD the individual suffers depressive symptoms (for example sadness, hopelessness, passivity, sleep and eating disturbances) without ever experiencing mania. In mania, the individual experiences symptoms of extreme elation, expansiveness and irritability, talkativeness, inflated self-esteem, and flight of ideas. DSM-IV-TR distinguishes between two kinds of bipolar disorders, depending on whether the depression has full manic episodes or just 'hypomanic' episodes (episodes that are not as severe as full manic episodes). Table 2 lists and provides a brief description of the main affective disorders. Our focus in the rest of this section will be on major depression (MD). Bipolar disorder will not be considered further here.

Table 2 Affective or mood disorders (modified from Bear et al., 2007 adapted from DSM-IV-TR (APA, 2000).)

Name	Description
Major depression (MD), also called major depressive disorder (MDD); unipolar disorder; major depressive episode (MDE); clinical depression	Lowered mood and decreased interest or pleasure in all activities, over a period of at least 2 weeks
Dysthymia or dysthymic disorder	Milder than major depression, but has a chronic, 'smouldering' course, and seldom disappears spontaneously
Bipolar disorder (Type I); was called manic-depressive disorder (see also for mania)	Repeated episodes of mania, or mixed episodes of mania and depression, hence also called manic-depressive disorder. Mania is a distinct period of abnormally and persistently elevated, expansive, or irritable mood and impaired judgement
Bipolar disorder (Type II)	Characterised by hypomania, a milder form of mania that is not associated with marked impairments in judgements or performance, but associated with major depression
Cyclothymia or cyclothymic disorder	Hypomania alternating with periods of depression that are not major, i.e. fewer symptoms and shorter duration

Postnatal depression (PND)	Usually, the depression begins during the first year of parenthood, and ranges in severity from mild to severe
Seasonal affective disorder (SAD)	Depression is more common in the winter months and in the Northern Hemisphere, which suggests to some researchers that brain chemistry is affected by sunlight exposure

3.3 Diagnosing major depression (MD)

Between ordinary low mood and serious depression lie a range of depressive experiences of varying degrees of severity – that is, there is a continuum. One important issue for diagnostic schemes is whether to draw a line between 'ordinary sadness' and serious depression and, if so, where this line should be drawn.

DSM-IV-TR (and ICD-10) diagnostic systems are categorical – that is, they are used to decide whether a particular named disorder is *present* or *not present*. In effect, they draw a line through a continuum of experience. It is a bit like deciding that all men over the height of 5 ft 6 in (1.68 m) fall into the category 'tall', while all those under this height fall into the category 'short'.

The DSM-IV-TR criteria for MD are shown in Box 3. Depression that does not meet the criteria is categorised as *subclinical depression*, while any depression that does meet the criteria is categorised as *clinical depression*.

As you look at Box 3 below, think back to Lewis Wolpert's account of his depression (Vignette 1), and consider how the criteria below relate to his experience.

Box 3 Diagnostic criteria for major depressive episode

(Adapted from DSM-IV-TR (APA, 2000))

The American Psychiatric Association suggest a diagnosis of depression if, during the same 2-week period, a person experiences five (or more) of the following symptoms, which must include either or both of the two primary symptoms:

The primary symptoms are:

1. persistent feelings of sadness or anxiety
2. loss of interest or pleasure in usual activities

The secondary symptoms are:

3. changes in appetite that result in weight losses or gains not related to dieting
4. insomnia or oversleeping
5. loss of energy or increased fatigue
6. restlessness or irritability
7. feelings of worthlessness or inappropriate guilt
8. difficulty thinking, concentrating or making decisions
9. thoughts of death or suicide or attempts at suicide

Note: symptoms should not be counted if:

A. They are the direct physiological effects of a substance (drug of abuse, or medication) or a medical condition (e.g. hypothyroidism)
B. They would be better accounted for by bereavement (i.e. the loss of a loved one).

Activity 3 Using diagnostic criteria

Allow 10 minutes

Considering Lewis Wolpert's depressive episode, and the criteria in Box 3:

a. Which of the criteria were clearly or probably met in Wolpert's account?
b. Are there any criteria that there might be some uncertainty about?
c. Were there any experiences in Wolpert's account that are not mentioned in the criteria?

Answer

a. All of criteria 1–9 appear to have been met.
b. It is interesting that a change of drug preceded Wolpert's episode; he also had a medical condition (atrial fibrillation). We don't have any information about the extent to which these were responsible for any of the symptoms he experienced – so we don't know if item (A) in the criteria in Box 3 applied or not.
c. He mentions physical (somatic) symptoms and deteriorating memory (though the latter could perhaps be covered by criterion 8).

In real life, low mood is a continuum – people can be mildly, moderately or seriously depressed. Scales other than the DSM are used to assess the *level* of depression on a continuum. The Beck Depression Inventory is one such scale.

Can you think of a situation in which it would be useful to have a scale such as the BDI?

Answer

In studies where researchers are interested in the efficacy of a particular drug treatment or other intervention, they need to assess the severity of the depression before and after the treatment or intervention. Scoring on a scale such as the BDI would allow such an assessment.

Activity 4 Diagnosing major depression

Allow 5 minutes

Jean has lost her beloved husband and consequently has been feeling very low for the last two weeks. Bill has lost his job and is feeling similarly low. Symptoms 1, 2, 3,

4, 5 and 8 in Box 3 definitely apply to both Jean and Bill. Are they equally likely to be diagnosed as suffering major depression (MD)? Explain your answer.

Answer

No, they are not. Jean is unlikely to be diagnosed with MD because criterion B in Box 3 specifically excludes those whose symptoms may be linked to the loss of a loved one – which would appear to apply in her case. However, Bill would be diagnosed with MD, as job loss and consequent feelings of bereavement are not allowed for in the DSM-IV-TR criteria for MD.

3.4 Anxiety disorders

Fear, anxiety and worry are part of normal experience and can all be very useful, as we have seen. However, when they become exaggerated, or attached to inappropriate stimuli or situations, they can interfere with normal functioning and cause immense distress. Anxiety disorders are characterised by constant or intense feelings of apprehension, uncertainty and fear. These feelings are one extreme of a continuum from 'normal' fear to anxiety – the responses differ not in kind but in degree. Both involve the 'fight or flight' system that comes into play in situations of actual or perceived danger. Table 3 shows a range of anxiety disorders together with brief descriptions of their symptoms.

Table 3 Anxiety disorders (from Bear et al., 2007 adapted from DSM-IV-TR (APA, 2000)).

Name	Description
Panic disorder (PD)	Frequent panic attacks consisting of discrete periods with the sudden onset of intense apprehension, fearfulness, or terror, often associated with feelings of impending doom
Agoraphobia	Anxiety about, or the avoidance of, places or situations from which escape might be difficult or embarrassing, or in which help may not be available in the event of a panic attack
Obsessive-compulsive disorder (OCD)	Obsessions, which cause marked anxiety or distress, and/or compulsions, which serve to neutralise anxiety in the short term
Generalised anxiety disorder (GAD)	At least 6 months of persistent and excessive anxiety and worry
Specific phobia	Clinically significant anxiety provoked by exposure to a specific feared object (such as birds or blood) or situation, often leading to avoidance behaviour
Social phobia (or social anxiety)	Clinically significant anxiety provoked by exposure to certain types of social or performance situations, often leading to avoidance behaviour
Post-traumatic stress disorder (PTSD)	The re-experiencing of an extremely traumatic event, accompanied by symptoms of increased arousal and the avoidance of stimuli associated with the trauma

Some anxiety disorders, such as phobias, appear to be provoked by fear of a *specific* danger (Table 3). In others, such as GAD, no specific object is known to pose a threat, but strong anxiety is chronic, present almost daily for months on end. In the rest of this section we will focus on GAD.

3.5 Experiencing anxiety

GAD is one of the most prevalent emotional disorders (Figure 1). It has been estimated that more than 5% of people will be diagnosed with GAD in their lifetime, and 12% of those who attend anxiety clinics are diagnosed with GAD (Kessler et al., 2005). Anxiety is also part of mixed anxiety and depression (MAD) one of the most common emotional disorders (Figure 1). We will return to MAD in Section 4.

The case report in Vignette 2 describes one woman's experience of GAD.

Vignette 2 Generalised anxiety disorder (GAD) – Suzanna's story

I have been suffering from GAD for nearly 2 years now.

I am no better now than when I was first diagnosed, and I have to say, that I ended up feeling very alone and afraid. […] I am on disability living allowance due to the severity of my symptoms. I'll list them in the hope that someone else suffering will see them and realise that they are not alone:

- Palpitations
- Chest pain
- Back pain
- IBS [irritable bowel syndrome]
- Stomach pain
- Breathlessness
- Pains in arms and legs
- Constant feeling that I'm going to die
- Insomnia
- Headaches and feelings of tightness in the head
- Blurred vision

There are just too many symptoms to list them all. GAD can manifest itself in so many different physical ways that you end up not knowing what is real and what is part of the anxiety […] I ended up going to casualty thinking I was having a heart attack, so many times. I […] continue to believe my symptoms have physical causes. The fact that I'm even writing this shows that somewhere inside, I must be aware that my severe anxiety is causing it. There are just too many symptoms for it to be one physical illness. Doesn't help when you're sat on your own going through it. If I can help anyone, it is by saying that you must be the first person to help yourself. Be stronger than I have managed to be and demand the help you need. This is a real illness and I have been told that it is second only to depression in this country, and yet I cannot find the help I need.

(Anxiety UK, 2007)

Those suffering from GAD (Figure 11) are sometimes characterised as 'worriers', with daily life dominated by anxious thoughts. Their muscles may be unusually tense, and they

may have hardening of the arteries (Thayer et al., 1996). It appears to be more common amongst poorer people, those with lower education, and those living in urban environments. In the USA it is more common amongst young black people (Blazer et al., 1991), and there is evidence that it is more common in countries in which there is war or political oppression than in countries at peace (Compton et al., 1991).



Figure 11 Chronic worry and anxiety characterise GAD.

- Why might GAD be more common in these situations?
- These seem to be situations in which people experience a lack of control over their own destinies and future – about violence, their own safety, discrimination and lack of opportunity. These are just the kind of situations where people would be more likely to worry.

3.6 Diagnosing generalised anxiety disorder

GAD is typically diagnosed if a patient shows anxiety symptoms that do not adequately fit any of the criteria for the other anxiety disorders listed in Table 3, but do fulfil those for generalised anxiety disorder. The DSM-IV-TR criteria for GAD are listed in Box 4.

As you look at Box 4, look back also at Suzanna's account of her anxiety (Vignette 2) and think about how her experience relates to the criteria below.

Box 4 Brief diagnostic criteria for generalised anxiety disorder

(Adapted from DSM-IV-TR (APA, 2000))

Criteria A–F need to be satisfied for a diagnosis of GAD.

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).
B. The person finds it difficult to control the worry.
C. The anxiety and worry are associated with three (or more) of the following six symptoms, with at least some symptoms present for more days than not for the past 6 months (*Note*: only one item is required in children):
    A. restlessness or feeling keyed up or on edge

B. being easily fatigued
C. difficulty concentrating or mind going blank
D. irritability
E. muscle tension
F. sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep).

D. The focus of anxiety and worry is not about having a panic attack (as in panic disorder), being embarrassed in public (as in social phobia), being contaminated (as in obsessive-compulsive disorder), being away from home or close relatives (as in separation anxiety disorder), gaining weight (as in anorexia nervosa), having multiple physical complaints (as in somatisation disorder), or having a serious illness (as in hypochondriasis), and the anxiety and worry do not occur exclusively during post-traumatic stress disorder.
E. The anxiety, worry or physical symptoms cause clinically significant distress or impairment in social, occupational or other important areas of functioning.
F. The disturbance is not due to the direct physiological effects of a substance (e.g. a drug of abuse, a medication) or a general medical condition (e.g. hyperthyroidism) and does not occur exclusively during a mood disorder, a psychotic disorder or a pervasive developmental disorder.

Activity 5 Diagnosing types of anxiety

Allow 5 minutes

Does Suzanna's experience (in Vignette 2) suggest state or trait anxiety? Explain your answer.

Answer

Susanna's anxiety is not temporarily elicited by particular circumstances, after which it disappears, as would be the case in state anxiety. Her anxiety seems to be ever-present, so it is like 'trait anxiety'.

There is evidence that those who have a tendency to be anxious (have trait anxiety) can benefit from psychotherapy, relaxation and meditation.

4 Challenges in the diagnosis of depression and anxiety

People suffering from depression or anxiety often seek informal help at first – consulting friends, neighbours and family, and relevant websites and books. Only if the problem persists are they likely to seek professional help. Typically, the professional consulted will be the family doctor or GP.

People experiencing emotional distress may seek out a GP because they are experiencing physical symptoms such as back pain, heart palpitations, sleeping difficulties, tiredness, loss of appetite, etc. For such symptoms, GPs may need to exclude some conditions, such as hypothyroidism.

GPs often do make independent decisions about whether a patient is suffering from an emotional disorder or not, though if they feel uncertain, or if the disorder seems very serious, the patient may be referred to specialists in mental health diagnosis and care, such as psychiatrists.

Ideally, a GP would have the time and resources to carry out appropriate psychological and physiological tests, and to spend time assessing anyone who was suffering from an emotional disorder. However, as the average GP visit in the UK lasts only a few minutes, this is a counsel of perfection. Indeed a meta-analysis (see Box 5 for what a meta-analysis involves) of studies involving over 50 000 patients concluded that GPs do not recognise depression in a significant number of those who have it, and also frequently diagnose it in people who do not have it (Mitchell et al., 2009).

Box 5 Research methods: meta-analysis

A meta-analysis ('meta' means 'high-level' so meta-analysis means 'high-level analysis') considers the results of previous studies (published, and sometimes unpublished) on a specific topic to reach a more reliable overall conclusion. This is a very valuable process since it allows researchers to make sense of the often conflicting information that is presented by individual studies. In addition, meta-analyses can help in understanding precisely why individual studies show different or conflicting results. For instance, one study may show that Treatment X works, while another study may show that the same treatment doesn't work. A meta-analysis might identify a variable (such as the 'age of participants') that explains the discrepancy: the first study may have been conducted with older people, and the second with younger people. This would suggest the possibility that Treatment X is effective with older patients but not with younger ones.

Meta-analyses need to be done carefully to try to make sure that the measures used in the different studies are comparable. For instance, if an emotional disorder such as major depression is assessed in different ways in some studies than in others, then this could confuse the results of the meta-analysis.

Mitchell et al. (2009) selected studies where GPs were making routine 'unassisted' diagnoses – based on their own judgment, 'without specific help from severity scales, diagnostic instruments, education programmes, or other organisational approaches' – that is, the way GPs normally make diagnoses.

The accuracy of the GPs' diagnoses of depression had been assessed independently in each of the studies included in the meta-analysis, using DSM or ICD criteria for

depression. Thus Mitchell and his colleagues had information about the extent to which GPs got the diagnosis of depression right or wrong.

They found that: 'In general, a motivated GP in an urban setting (where the rate of prevalence of depression is 20%) would correctly diagnose 10 out of 20 cases, missing 10 true positives. The GP would correctly reassure 65 out of 80 non-depressed individuals, falsely diagnosing 15 people as depressed'.

Activity 6 Misdiagnosing depression

Allow 5 minutes

What is the percentage of true cases of depression misdiagnosed? Are these false negatives or false positives?

Answer

10 out of 20, that is 50%, of people are misdiagnosed as OK, even though they are depressed. These are false negatives.

What is the percentage of non-depressed people incorrectly diagnosed as depressed? Are these false negatives or false positives?

Answer

15 out of 80, that is 18.75%, of people who are not depressed are incorrectly diagnosed as depressed. These are false positives.

The number of people misdiagnosed as false negatives or false positives (from above, 15 + 10 = 25 out of 100, 1 in 4, or 25%) is therefore substantial. Moreover, as GPs prescribe antidepressant drug treatment and make referrals for counselling and therapy, this means some people who need treatment will not be offered it, while others may be prescribed treatment they do not need.

Where drug treatments are offered to false positives, this can be problematic, as drugs typically have side effects and can be difficult to come off. Fortunately the evidence also suggests that GPs are less likely to misdiagnose serious cases of depression (Mitchell et al., 2009).

The above should not be seen as a criticism of the diagnostic abilities of GPs. As Tyrer (2009) points out, the diagnosis of depression is fraught with difficulty even for experts, so it is not surprising that misdiagnosis, especially of milder and moderate cases of depression, occurs. The fact that depression is often mixed with anxiety, as we consider below, may make diagnosis even trickier.

Activity 7 Factors affecting diagnosis of emotional disorders in a primary care setting

Allow 20 minutes

Take a few minutes to think about, and make a list of, factors that might help a GP (working in the normal way, without assistance) to assess a patient more accurately for an emotional disorder such as depression. This activity should help you appreciate the factors at play in a primary care setting that may impact on diagnosis.

Discussion

You may have thought of some of the following factors or come up with others:

- The GP is able to spend enough time with patient to probe in a sensitive way and explore if there are any underlying issues (e.g. somatic or social) if the patient appears upset or worried.
- The GP is sensitive to emotional signals from the patient.
- The GP has specific mental health training.
- The GP knows of, and can apply, the biopsychosocial approach.
- The patient recognises, and is willing and able to speak about, his/her personal emotional distress.
- The GP is familiar with the patient (i.e. the patient is not a new, but is a regular visitor to the surgery) so is aware of what is normal or not for the patient.
- The GP has known the patient or patient's family for a while and knows the patient's medical issues.
- Having one of the patient's friends or family members present – they may be able to provide another perspective on the patient's condition.

Some people complaining of somatic symptoms may not be sensitive to, or may be unwilling to acknowledge, emotional suffering in themselves. Some may feel that somatic symptoms will be taken more seriously by the medical profession, or be more amenable to medical treatment. Hence they may be more likely to mention these to a doctor than feelings of anxiety and depression. Personal and cultural values may come into play here, too – for instance, the evidence suggests that there may be a gender difference, with men less likely to report emotional distress than women.

4.1 Are the diagnostic categories correct?

According to DSM-IV-TR, if the criteria for two or more disorders – such as MD and GAD – are each satisfied in the same person, the disorders are comorbid.

In fact, MD and GAD are often comorbid. Figure 12 shows the odds ratios for having an anxiety disorder at the same time as major depression. Box 6 explains what an odds ratio is if you are not familiar with this term.

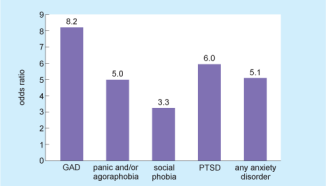


Figure 12 Likelihood that a comorbid anxiety disorder is also present in patients diagnosed with major depression (MD).

Box 6 Odds ratio

Imagine that the chances in the USA of adult men having GAD are on average 1 in 100. But what of the subset of adult men who already have MD? What are the chances that such men will have GAD as well as MD? An odds ratio tells us about the increase in the chance that such men will have GAD, already having MD. If having MD increases the chances of having GAD from the usual 1 in 100 to 8.2 in 100, then the odds ratio for having GAD when you have MD is 8.2. If having MD has no effect at all on the chances of having GAD then the odds ratio is 1.00 (it does not affect the odds). An odds ratio of 1.05 means for the population of men with MD the chances of having GAD are increased by 5%. The further away from 1 the odds ratio is, the stronger the effect.

- What might this kind of pairing between MD and GAD suggest?
- That there is some connection between the two conditions. For instance: (i) one causes the other; (ii) both are due to a common cause; (iii) there is just one underlying condition with a range of symptoms, with some symptoms matching the (artificially set up) criteria for one condition and others matching the criteria for the other condition.

Activity 8 Identifying an odds ratio

Allow 5 minutes

Look at Figure 12. What is the odds ratio that 'any anxiety disorder' will be present in people who have major depression? What does this mean?

Answer

The odds ratio that 'any anxiety disorder' will also be present in people who have major depression is 5.1. This means that the chance of 'any anxiety disorder' being present is 5.1 times higher in people who have major depression, compared to the normal chance of having 'any anxiety disorder'.

In practice, it is increasingly recognised that in many cases a person has *some* symptoms of depression (but not enough to justify a diagnosis of depression), and *some* symptoms

of anxiety (but not enough to justify a diagnosis of anxiety). Neither DSM-IV-TR nor ICD-10 provide for the proper diagnosis of such a condition. However, an increasing number of researchers recognise this as mixed anxiety and depression disorder (MADD), also called mixed anxiety and depression (MAD – see Figure 1) or cothymia (Tyrer, 2001). Indeed MAD was found to occur in around 55% of all those suffering from an emotional disorder (or common mental disorder) (McManus et al., 2009), making it the most common emotional disorder by far.

The existence of strong comorbidity between anxiety and depression, and mixed anxiety and depressive disorder, have led some researchers to suggest that these disorders lie on an anxiety–depression continuum or spectrum.

Indeed there is evidence to suggest that 'cases' of disorder might map onto a single spectrum of 'counts of mental symptoms', with no evidence for clustering of symptoms into disorders such as those proposed by DSM-IV-TR and ICD-10 (Das-Munshi et al., 2008; Melzer et al., 2002).

Using a CIS-R scale ('Clinical Interview Schedule – Revised' scale – see Box 7), Das-Munshi et al. (2008) assessed the presence of symptoms of mental disorder and mapped them onto 'recognised' depression and anxiety disorders such as MD, GAD, MAD and comorbid anxiety and depression.

Box 7 Clinical Interview Schedule – Revised (CIS-R)

The CIS-R is a structured interview schedule used in national surveys such as the *Adult Psychiatric Morbidity in England, 2007: results of a household survey* (McManus et al., 2009) to assess neurotic symptoms and common mental disorders in the population. For each interviewee, the severity of symptoms such as fatigue, concentration and forgetfulness, sleep problems, irritability, depressive ideas, depression, anxiety, panic, worry about physical health, compulsions, obsessions and so on, is scored on a scale of 0–4 (0–5 in the case of depressive ideas). The scores are summed to give an overall severity score: a score of 12 or more indicates a significant level of symptoms, and a score of 18 or more suggests treatment is needed. In the APMS (2007) interviewees' answers to the CIS-R were also used to derive ICD-10 diagnoses of GAD, MD, phobias, OCD and panic disorder. MAD was defined as having a CIS-R score of 12 or more but falling short of the criteria for any other common mental disorder.

The distribution of CIS-R scores they obtained for the four different disorders (and for 'no diagnosis') is shown in Figure 13.

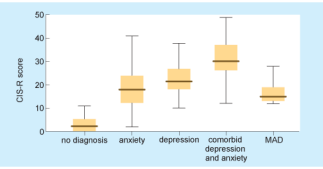


Figure 13 Box plot distributions of CIS-R symptom scores for five diagnostic groups. In a box plot distribution 50% of the scores obtained (between 25%–75%) lie inside the box. The horizontal line across each box shows the median score (see Box 1). The bars above and below the box show the range of scores in each case, from minimum (at bottom of bar) to maximum (at top of bar).

- The higher the CIS-R score, the more serious on average a disorder is likely to be. On this basis, looking at Figure 13, which of the four disorders would appear to be least serious and which would appear to be most serious?
- Mixed anxiety-depression would be least serious; comorbid depression and anxiety would be most serious.

Interestingly, such critiques appear to be having some impact. The next version of the DSM (DSM-5, published 2013), while still applying a categorical approach, proposed a new disorder called mixed anxiety depression.

Activity 9 Using the diagnostic categories

Allow 10 minutes

Think back to Suzanna's case in Vignette 2. Does it satisfy DSM-IV-TR criterion C for the diagnosis of GAD (Box 4)? Give reasons for your answer.

Answer

Yes, her case appears to satisfy criterion C. Suzanna has at least three of the symptoms listed, and she has suffered from GAD for over 6 months. The symptoms she has include: (6) sleep disturbance (she mentions insomnia); (5) muscle tension (she mentions 'feelings of tightness in the head') and (1) feeling keyed up or on edge (she mentions 'constant feeling that I am going to die', which could fit with this).

4.2 Medicalising sadness?

Depressive disorders are amongst the most commonly diagnosed mood disorders. Indeed by some accounts there is a veritable epidemic of depression all across the world (Murray and Lopez, 1996).

Some critics have suggested that the apparent increase in depressive disorders may be due to changes in the criteria used to diagnose depression. The main issue here is how to distinguish depressive disorder from normal suffering. DSM's own definition of a mental disorder is that a disorder involves a dysfunction *in an individual*; hence an *expected response* to a stressor should not be considered a disorder. Critics argue that DSM's own criteria subvert this definition – DSM lists the symptoms that must be present for a given diagnosis, but ignores the *context* in which the symptoms developed.

- Why might context be important here?
- In some contexts the kinds of symptoms listed for a diagnosis of depressive disorder might be a normal and expected response to a stressor; in other words, the suffering is 'normal', not 'dysfunctional'.

DSM-IV-TR is thus accused of medicalising ordinary, in the sense of 'to be expected in the circumstances', sadness; that is, of having criteria that allow conflation of the kind of sadness expected after a loss or disappointment, with the altogether different phenomenon of long-term and apparently inexplicable 'melancholia' (Horwitz and Wakefield, 2007). For example, DSM-IV-TR, while recognising the legitimacy of depressive symptoms for 2 months following bereavement in the shape of the loss of a loved one, does not recognise that other losses (e.g. of a job, a marriage) can also be a form of bereavement and lead to depressive symptoms.

- What is the effect of DSM-IV-TR ignoring other contexts that could legitimately precipitate a loss or bereavement response?
- Depressive disorder (rather than context-related sadness or grief) would be diagnosed. This could lead to inflation of the number of cases of depressive disorder diagnosed and referred for treatment.

Ordinary sadness is a common human experience that may have an adaptive function and for most people it dissipates on its own without treatment in days or weeks. Nevertheless, it is probably the case that many people experiencing it find it unacceptable and unbearable, and welcome any diagnosis that allows treatment and relief from the symptoms.

Indeed many people now appear to see low mood and anxiety as a 'disease' that can and should be cured as quickly as possible with drugs. Thus some of those who experienced low mood and anxiety consequent on severe financial set-backs or job losses in the UK recession of 2009 apparently 'pressured' their doctors into prescribing antidepressant and other pills, wanting a 'quick fix', even though other forms of help (such as advice on how to cope with debt) might have been more appropriate.

It is difficult to argue the rights and wrongs of this, and this course certainly cannot do full justice to such a complex issue.

Conclusion

While acknowledging the biological antecedents and value of emotions such as sadness and anxiety, and the possibility that 'ordinary' sadness and anxiety may now be over-diagnosed as disorders and over-medicalised, we must not forget that we are dealing with a spectrum of severity. Thus, far from being ordinary, major depression is an *extreme form* of sadness – described by those like Lewis Wolpert who have experienced it (Vignette 1) as 'malignant sadness' (Wolpert, 2001). There can be no doubt that severe depression is a disorder, associated as it is with self-harm, inability to work and even suicide. What might underlie such disorders, and why do some people experience such extremes of sadness, and of other emotions such as anxiety, while others do not? This question is addressed in the related OpenLearn course *Understanding depression and anxiety*, where we consider the possible causes of emotional disorders.

Any examination of emotional disorders needs to done against the backdrop that emotional phenomena have evolved over millions of years, and that negative as well as positive emotions have functions. There is evidence that sadness and worry can be beneficial.

The concept of the 'triune brain' postulates that the human brain can be thought of as 'three brains'. Some are 'ancient' in evolutionary terms, while others are newer. Parts of our brains are very similar to those in other animals, and include the brain bases of emotional responses such as the fear response.

There is good evidence for the universality of emotions such as fear, anger, sadness and joy amongst humans, as a result of shared biological bases. However, culture affects which emotions are displayed and what they are associated with.

Observations of the behavioural tendencies of animals in situations of defeat and outranking have inspired important insights into human depression and anxiety.

DSM-IV-TR distinguishes between affective (or mood) disorders and anxiety disorders. First-person experiences of major depression (MD) and generalised anxiety disorder (GAD) are described and considered in the light of DSM criteria for these disorders.

There are established diagnostic criteria for deciding whether particular affective or anxiety disorders are present in an individual or not. However, the process of diagnosing such disorders is not straightforward. This is an important issue, not just for the treatment of patients suffering from emotional disorders (for instance, GPs get a significant proportion of diagnoses of major depression wrong) but also for those trying to clarify the risk factors for these disorders.

Acknowledgements

This course was written by Saroj Datta and Claire Rostron.

Grateful acknowledgement is made to Katherine Leys for coordinating the Research Methods boxes throughout this course.

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