

The causes of bipolar disorder

Knowing what *causes* bipolar disorder will help:

- Prevent the illness
- Aid diagnosis
- Lead to better treatment.



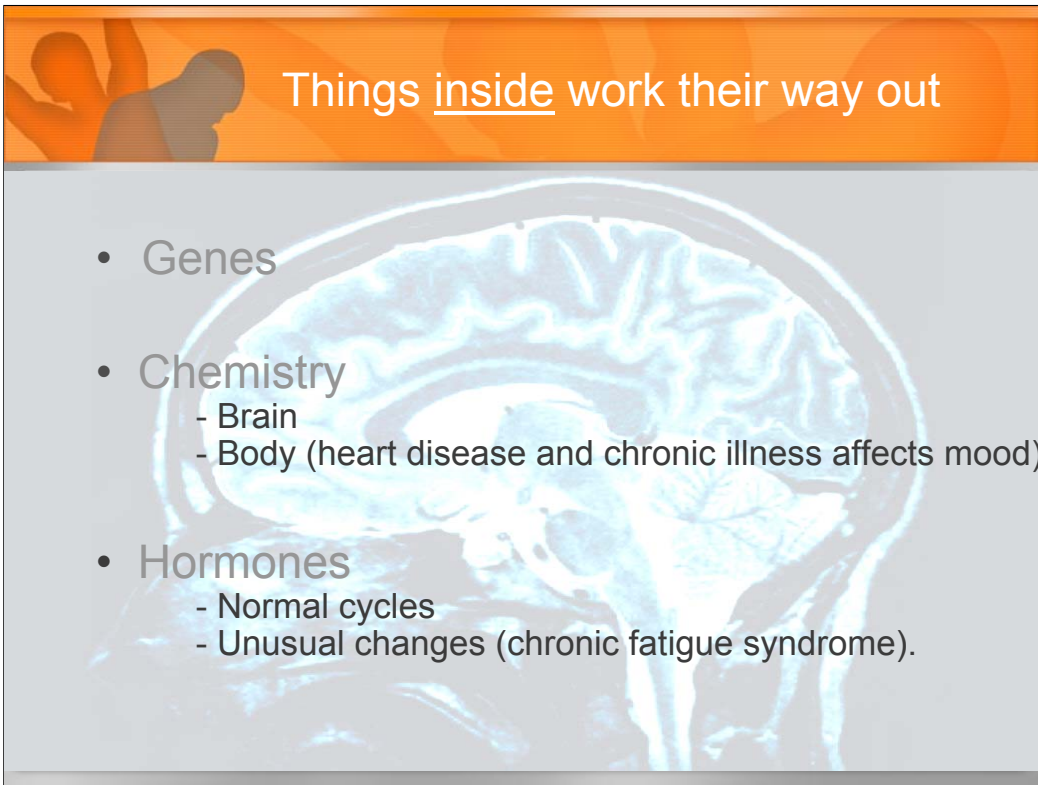
In this presentation we're going to talk about the causes of bipolar disorder. So, why do we need to know the cause of bipolar disorder? Knowing will clearly help prevent the illness, aid diagnosis and hopefully, provide us avenues for better treatment.



The causes of bipolar disorder

- Those that work their way *out* from *inside* the body
- Those that work their way *in* from *outside* the body.

The causes of bipolar disorder can be considered in two groups: those that work their way out from inside, and those that work their way inside from without.



Things inside work their way out

- Genes
- Chemistry
 - Brain
 - Body (heart disease and chronic illness affects mood)
- Hormones
 - Normal cycles
 - Unusual changes (chronic fatigue syndrome).

Considering the first, we can list these as: genes, chemistry and the hormones in our bodies.

Genetics

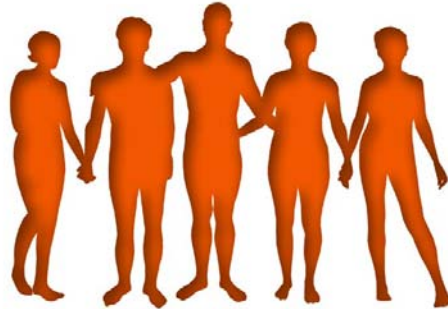
- Genes → our 'make up'
- Bodily matters and the environment
→ → Genes!

The cause that we most often hear about is that of genes. These provide the recipes for the make-up of proteins. Proteins ultimately affect the brain, body and our behaviour – in essence, us. Similarly, the body and the environment can, surprisingly, alter genes.

Genes v environment



GENES
make up
around 50% or less



ENVIRONMENT
makes up
the remainder

In bipolar disorder, the fraction of risk that can be attributed to genes is probably around 50% or less and the remainder is made up by environmental influences.

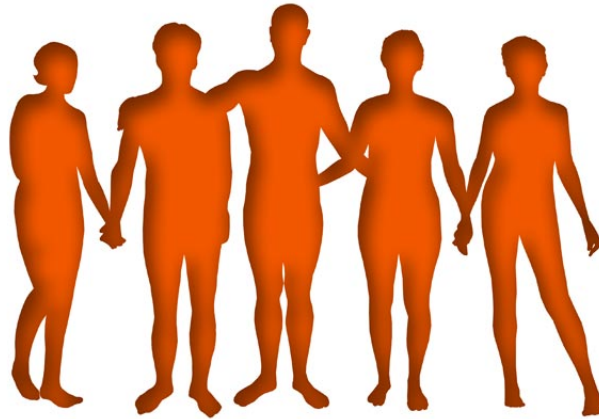
Possible genes

Exciting developments:

- moved from genes cause bipolar disorder to
- which genes cause what components of bipolar disorder
- which genes predict response.

A number of possible genes have been identified and the effects of treatments are also being explored. Many exciting developments have occurred, particularly in bipolar disorder and now we're moving on from examining genes that cause the illness to, perhaps, specific aspects of bipolar disorder itself, perhaps even, being able to predict response.

Things outside affect things within



People

- family
- friends
- society.

Things outside of the brain can also affect things within. People for instance, family, friends, society as a whole or individually.

Things outside affect things within

- **The environment**

- where you live
- what you do

- **Seasonality**

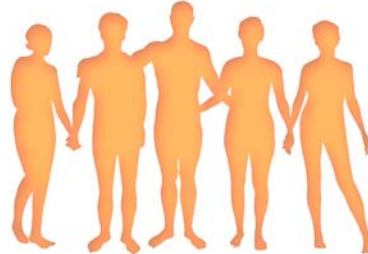
- spring seems to be associated with manic relapse.



The environment too is important, where you live, what you eat and what you do. Surprisingly, even seasonality can affect the onset and manifestation of mania.

Environmental factors

- Risk due to 'environmental influences' is up to 50% or more
 - birth-related factors
 - personal background
 - social background
 - family background
 - history of medical conditions
- No strong evidence for association between other demographic factors (e.g. gender, ethnicity) and bipolar disorder.



Environmental and demographic factors that are important include, factors related to birth, personal background, social and family background. History of medical conditions is also important. However, there is no strong evidence for association between other demographic factors, such as gender or ethnicity, and bipolar disorder.

Stress



- Family
- Work
- Environment as a whole.

Another important factor is that of stress. In bipolar disorder, episodes of illness can be triggered by stress. Typical sources of stress include family, work and the environment.



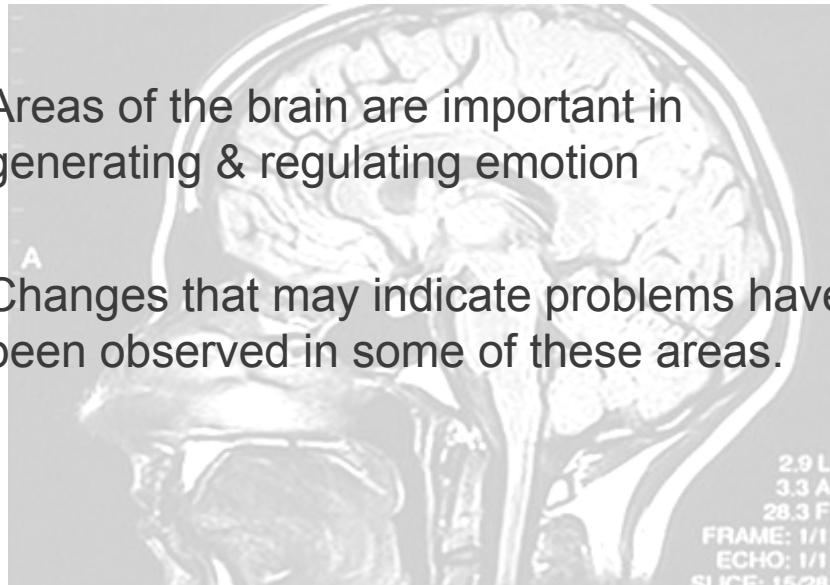
Personal background

- IQ likely to be higher
- Prior to onset greater difficulty may be experienced:
 - at school
 - with social adjustment
- Further investigation is necessary in this area.

Patients with bipolar disorder are likely to have a higher IQ than the general population. However, prior to onset they do encounter greater difficulties in schooling and adjusting socially. The reasons for this are not as yet clear, and further investigation is necessary.

Make up of the brain

- Areas of the brain are important in generating & regulating emotion
- Changes that may indicate problems have been observed in some of these areas.



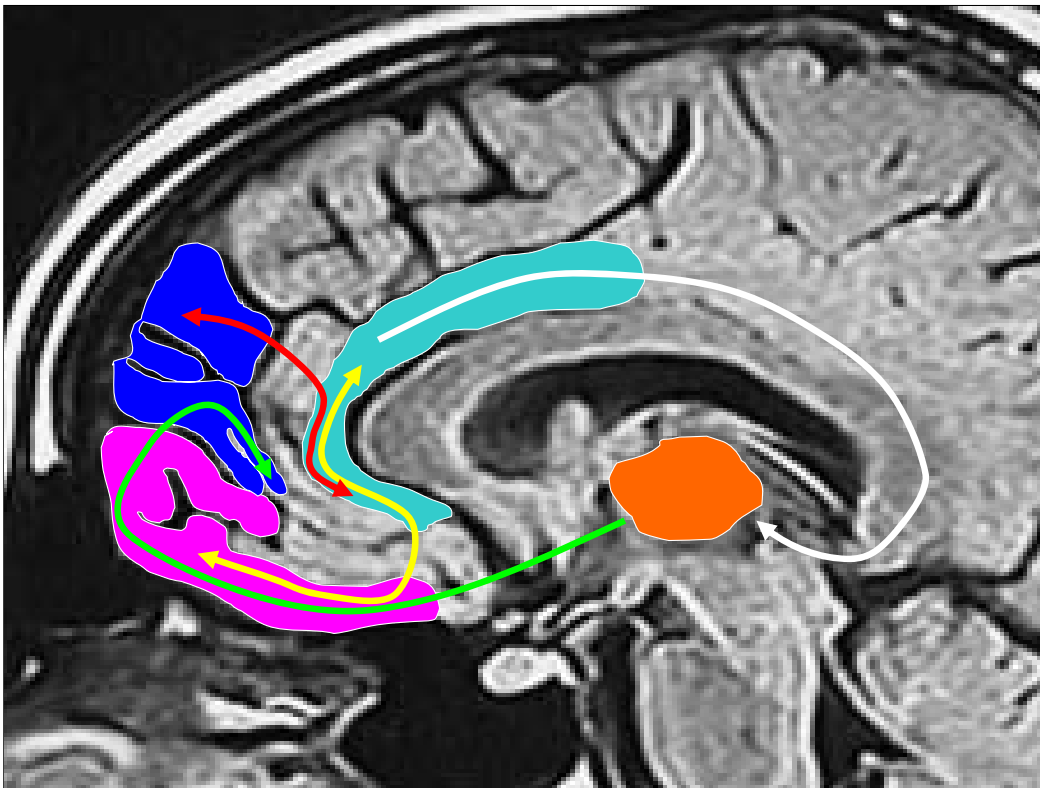
So what do all these possible causes mean in terms of understanding the make-up of the brain. Clearly, there are areas of the brain that are important in both generating and, subsequently, regulating emotion. Many studies have indicated that there are changes both in these areas and their connections, in the case of people who have bipolar disorder.



Emotion

- To understand the world around us and make emotional sense of it we need to:
 - take information on board
 - compare it to what we know
 - determine how we feel and whether this will influence what we do.

To better understand bipolar disorder, it is important to understand how we generate emotions. In order to understand the world around us and make emotional sense of it, we need to be able to take information on board, then compare it to what we already know and, on the basis of this, determine how we feel and whether this influences actions that we take. A number of brain regions are important in these processes.



Here, we are looking at a sideways picture of the brain. This region is the anterior cingulate and it is thought to be important in decision making. The region in pink is called the orbitofrontal cortex, this is important for social decision making, as opposed to the blue region which is the medial prefrontal cortex thought to be important in working memory. The region in orange is the thalamus and cingulate, subcortical areas which have, up until recently, been thought to be only important in motor functions, rather than emotion. These various regions are interconnected and talk to each other, making decisions, determining how we behave, how we feel on the basis of the information that they receive. These circuits subserve emotion within the healthy brain, and are thought to be disturbed in bipolar disorder. However, it is not clear whether it is just an abnormality of the various regions that I've outlined, or indeed the connections between them. Ultimately, the brain is a homeostatic system, always tending back to a norm and it is perhaps in the regulation of these systems that an abnormality in bipolar disorder lies. Clearly, the answer lies within some of these regions or indeed the connections between them.



Summary

- Bipolar disorder has a biological basis
- Environmental influences
- Family, work and relationship stressors
- We *are* developing a better understanding and this will help all aspects of overcoming this illness.

So, in conclusion, although this has been a brief overview of the causes of bipolar disorder, the important thing to bear in mind is that it has a biological basis and that this is yet to be determined. However, environmental influences, in particular stressors maybe within family, work or relationships, are important in contributing to this illness.