

What is Anxiety?

Anxiety is what we feel when we are worried, tense or afraid - particularly about things that are about to happen, or which we think could happen in the future. Anxiety is a natural human response when we perceive that we are under threat. It can be experienced through our thoughts, feelings and physical sensations.

What are the Symptoms of Anxiety?

The symptoms of anxiety include, but are not limited to:

- A churning feeling in your stomach.
- Feeling light-headed or dizzy.
- Pins and needles.
- Feeling restless or unable to sit still.
- Headaches, backache or other aches and pains.
- Faster breathing.
- A fast, thumping or irregular heartbeat.
- Sweating or hot flushes.
- Problems sleeping.
- Grinding your teeth.
- Nausea (feeling sick).
- Needing the toilet more or less often.
- Changes in your sex drive.
- Having panic attacks.



The Anxiety Chain

Anxiety arises from our interpretations of situations, and these are based on our beliefs. Our beliefs are formed through our experiences, whether they're good or bad. These experiences are based in the **past**. These beliefs affect our perspectives on the world, and the more we uphold a belief the neural connections in the brain will be reinforced as the old patterns of thinking are repeated. It is these beliefs which will then cause our anxiety, and affect the **present** and **future**. In short:



However, notice that we can act now to change our present and future experiences. If we can provide ourselves with new experiences which challenge our thoughts and beliefs, we will change these beliefs which will then act to reduce our anxiety in the future.

When is it Appropriate to Change Anxiety?

Anxiety is a natural and normal human emotion, and as such it is unrealistic and unhealthy to expect to eradicate all anxiety from our lives. Anxiety can be appropriate in many situations, such as when we're crossing a busy road or playing golf as a lightning storm begins. Furthermore, there are many anxieties which don't interfere with our daily lives, such as a fear of spiders or heights. Therefore, when looking at the anxieties which we want to work on, it is important to identify which triggers and their accompanying emotional responses are interfering the most severely with our daily lives. The anxieties that are worth reducing most are ones which:

- Interfere with our goals.
- Cause extreme distress.
- Arise frequently.

Fight, Flight and Freeze

The fight, flight and freeze response is the body's automatic, inbuilt system designed to protect us from threat or danger. In the time of hunter gatherers, it was this response which would get us to run if we saw a bear on the horizon. It's this same response which would also make us choose to fight a rival tribe if they were encroaching on our territory. The fight, flight and freeze response is initially brought on by anxiety, and it is the amygdala which is the part of the brain that is responsible for triggering this reaction.



The Amygdala

The amygdala is one of the oldest parts of the brain, and is situated right in the middle near the brain stem. The amygdala is responsible for our emotional and environmental reactions. Environmentally speaking, it will be the amygdala which processes the bear coming over the hill or the aggressive rival tribesman, and when activated the amygdala will send a signal to the adrenal glands.

The adrenal glands are positioned just above the kidneys, and when triggered will encourage the release of adrenaline. We've all felt a surge of adrenaline at some point in our lives - it is adrenaline which causes our body to jump into a state of readiness for action. Adrenaline will provide us with a wave of energy and will activate the Sympathetic Nervous System (SNS). In turn, the activations of the SNS will move blood away from the digestive system towards the extremities of our bodies, where in theory it will be better placed to allow us to spring into action. Ultimately, it is the activation of the adrenal glands and the SNS which give us all of the physical symptoms of anxiety, such as sweaty palms, shaking, a faster heartbeat and many more. These are all just side effects of the body preparing itself for action.

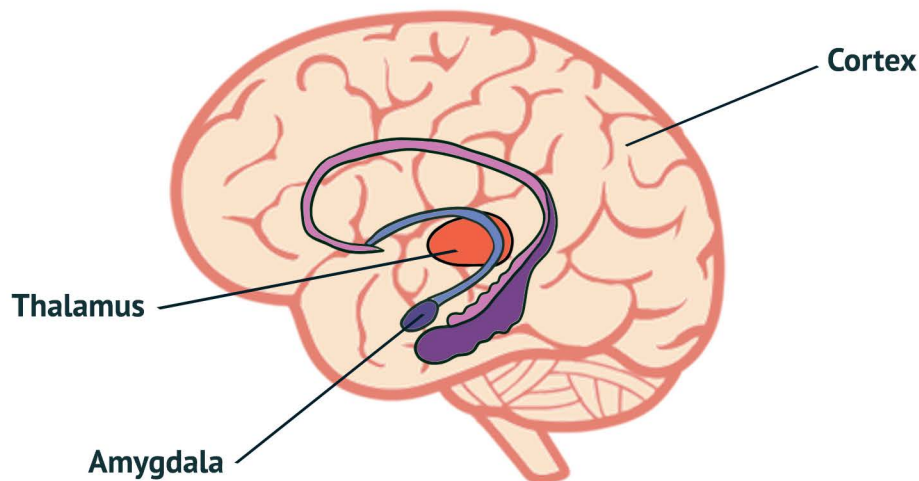
As previously described, these side effects overwhelm us and are designed to aid us in our survival. As the amygdala was so central to survival, natural selection meant that people with bigger, more active amygdalae outlived their peers and had a greater chance to reproduce. As a result, human amygdalae continued to grow bigger and bigger, until around 15,000 years ago.

Society has changed a great deal, and we no longer have a regular need to run away from bears, or to fight our neighbours to death. With the introduction of farming, social evolution changed drastically and quickly, and shortly after we started living in protected communities. These communities have done nothing but grow and become safer, and as these changes have outpaced natural evolution we still have a big, oversensitive amygdalae without a need for them in our immediate environment.

But how does the amygdala connect with the rest of the brain to produce anxiety?

Anxiety and the Brain

We're all human, and the brain is our biological computer - made up of trillions of neurons which fire in certain patterns and interlink in such a way as to produce our thoughts. Whenever we experience anxiety, we have physiological processes which are taking place in the brain which induce the anxiety response. It can help to understand exactly what is taking place in our minds when we're feeling this way, and understanding what's happening can help people to understand their reactions better and ultimately to learn how best to tackle them.



Thalamus - Think of the thalamus as the Grand Central Station of the brain. It processes all sensory information we receive (for example: touch, smell, visual, etc.) and sends it to the relevant parts of the brain for interpretation.

Cortex - The cortex processes information sent from the thalamus and is the thinking part of the brain. It allows us to logically process what's around us. For instance, we don't just see an old man and hear his voice, we recognise him as our grandfather and understand the specific sounds he's making. The cortex is also responsible for making important decisions; for instance the cortex can use logic when anxious to decide not to punch your boss in the face, or not to run away from the sound of a firework exploding. As great as this tool is, it can also lay the groundwork for us to think anxiously. The cortex allows us to imagine future outcomes, and when we're thinking of negative outcomes this is capable of instigating worry which leads to anxiety.

Amygdala - The amygdala is responsible for our emotional reactions, both positive and negative. For instance when someone violates your personal space it is this part which makes you angry. Where the amygdala is so central in the brain and so crucial to our survival, it has the power to bypass and override the cortex. We always hear of cases where a parent pulls a child out of the way of an oncoming car within a split second - often before they've even realised that there is danger at all. The amygdala is constantly scanning your experiences and senses and is ready to respond at the slightest sense of danger. People who experience panic attacks often experience amygdala induced anxiety, as it's brought on by a sudden trigger in the environment.



The Two Paths of Anxiety

Broadly speaking, there are two paths which can trigger anxiety. These are either through the *Cortex*, or the *Amygdala*.

Cortex-Induced Anxiety

As we've identified, the cortex is the thinking part of the brain. Anxiety is cortex-induced whenever it is our thinking which causes our anxiety. Cortex based anxiety is always based in anticipation, i.e. whenever we're taking the time to think over a **future** event and how it might go.

If we're thinking positively about the future, we won't start to feel anxious, however if we brood on negative thoughts we're quickly able to blow them out of proportion, and often irrationally so. If we're fully expecting a negative outcome when we think about the upcoming event, then this can be enough for the cortex to activate the amygdala which will trigger the associated symptoms.

Amygdala-Induced Anxiety

However, sometimes thinking isn't the source of our anxiety. As we've already recognised, the amygdala is subconsciously and constantly scanning our surroundings and environment for things which it perceives as dangerous. Some of these environmental factors can be primal (such as a fear of snakes or spiders), however the majority of them we have learnt to fear from our past experiences. For instance, someone might have grown up without a fear of cars until they had a bad accident, and from that point onwards they may have anxiety around cars. These triggers are always based in the immediate environment, making amygdala induced anxiety a product of the **present**.

There can be many forms of environmental triggers, such as specific locations, people, objects, language, smells, etc. In short, anything that we might come across in our day to day lives which our thalamus can process.

Taking Control of Cortex-Based Anxiety

It isn't the situation itself which causes anxiety, but rather our interpretation of it. Anxiety originates from our beliefs about the outcome of a given situation.

Cognitive Fusion happens when we don't make a distinction between our thoughts and reality. It is easy to sometimes forget that when we're thinking we're making many assumptions, all based off our usually less than accurate interpretation of a situation. It isn't healthy to take our thoughts and feelings at face value, and it's important to recognise that our assumptions are fallible. Using this knowledge, we can develop a healthy scepticism about our cortex.

Cognitive fusion is present in many unhealthy thought patterns. Find some of the more common thinking patterns which can in themselves create unnecessary worry:

Pessimism - If you identify with the following statements, you may engage in these thought patterns:

- "When I have an upcoming presentation or examination, I worry about it quite a bit and fear I won't do well"
- "I generally expect that if something can go wrong, it will"
- "I'm often convinced that my anxiety will never end"
- "When I hear that something unexpected has happened to someone, I typically imagine it's something negative"
- "If it weren't for bad luck, I wouldn't have any at all"
- "Most people will let you down, so it's best not to expect much"

Worrying - If you identify with the following statements, you may engage in these thought patterns:

- “I’m good at imagining all kinds of things that could go wrong in specific situations”
- “I sometimes worry that my symptoms are the result of some illness which hasn’t been diagnosed yet”
- “I know I tend to worry about trivial things”
- “When I’m busy or at work, I don’t have as much anxiety”
- “Even when things are going well, I tend to think about what could go wrong”
- “I have trouble falling asleep because of the things I worry about”

Obsessive and Compulsive - If you identify with the following statements, you may engage in these thought patterns:

- “I can spend a long time rehearsing certain events in my head”
- “When I make some kind of mistake or forget to do something, it takes me a long time to come to terms with it”
- “If a friend or relative disappoints me, it can take months for me to get over being upset and get back on good terms with the person”
- “I tend to get upset if I can’t keep certain objects in order or in good condition”
- “I can become preoccupied with arranging, counting, or evening things up”
- “Unpleasant thoughts or images often come to mind, and I can’t get them out”

Perfectionism - If you identify with the following statements, you may engage in these thought patterns:

- “I have high standards and usually hold myself to them”
- “I usually have a right way to do something and find it difficult to vary that approach”
- “People consider me extremely conscientious and careful as a worker”
- “When I’m wrong, I’m very embarrassed and ashamed”
- “I almost never perform at a level I’m satisfied with”
- “I have a hard time letting go of mistakes I make”

Catastrophizing - If you identify with the following statements, you may engage in these thought patterns:

- “I often imagine the worst when I’m thinking about how some situation might turn out”
- “I can make a mountain out of a molehill”
- “People would think I’m crazy if they knew the awful thoughts that go through my mind”
- “I often feel as if I can’t handle one more thing going wrong”
- “When something doesn’t turn out the way that I want it to, I find it difficult to cope”
- “I overreact to problems that others wouldn’t consider so much of a concern”

Guilt and Shame - If you identify with the following statements, you may engage in these thought patterns:

- “I become very concerned when I contemplate not doing something that I feel I should do”
- “I frequently worry about disappointing people and have trouble saying no”
- “If a friend is upset when I don’t come to an event, I may feel guilty for days”
- “It’s easy for others to guilt-trip me into doing what they want”
- “It’s very hard for me to admit my mistakes and discuss them with others”
- “Once a person criticises me, I tend to avoid spending much time around that person”

How to Calm your Cortex

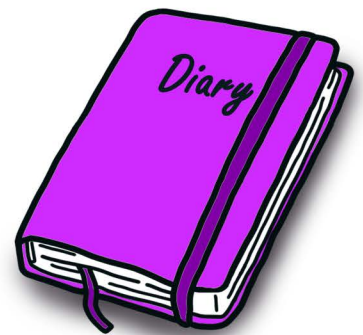
The cortex operates on something we call 'Survival of the Busiest'. That's to say, the more we use a specific thinking pattern, the more it becomes entrenched in our psyche and affects our beliefs. However, it is possible to change our thinking and thereby rewire these neural connections using logic to produce more accurate, and positive alternative thoughts! Some well-regarded techniques for achieving this include:

Logical Reasoning

As we've already identified, the cortex works logically. Therefore, if we can take a situation which we're worrying about and make efforts to disprove the thought, our cortex will accept the new truth and calm down. Remember, the cortex constantly makes assumptions, and these assumptions aren't likely to be representative of the truth.

Thought Diaries

These are incredibly useful tools which aid us in disproving of negative thinking patterns. Thought diaries provide a clear, solid format and process for deconstructing our thoughts and finding alternative thoughts. Please find attached at the end of this handout a thought diary for your own use. If you do not have a thought diary in reach, an alternative method can be to write down your thoughts and then to start disassembling them. For each point that you have, find evidence which contradicts it until you've covered the whole negative thought. Keep re-reading your logic until you've instilled this new perspective on the situation.



Useful Questions

Sometimes it may be hard to get out of an anxiety inducing thought pattern because we're judging ourselves too hard. At the end of the day, we're each our own biggest critics, and we all have a habit of blowing a situation out of proportion. To detach ourselves from the situation, we can ask some handy questions:

- Can I identify any reason or trigger which would have led me to feeling or thinking the way that I do now?
- Have I had any experiences that show that this thought or negative self-esteem belief is not completely true all the time?
- If my best friend or someone I loved had this thought or negative self-esteem belief, what would I tell them?
- If my best friend, or someone who loves me, knew I was thinking like this, what would they say to me?
- What evidence would they point out to me that would suggest that my thoughts or negative self-esteem beliefs were not 100% true?
- Are there any small things that contradict my thoughts or negative self esteem beliefs that I might be discounting as not important?
- Five years from now, if I look back at this situation, will I look at it any differently?

Replace Worry with Planning

In any event, forward planning is always useful. It pays to be prepared, so prepare yourself the best you can for the upcoming event. This will certainly help to alleviate some worry as you know that you'll be best prepared for the situation.

Distraction

We know that cortex based anxiety is around anticipation of the future, so distraction can be an incredibly useful tool if the above don't work. Distraction can take many forms, for instance meeting friends, going for a swim or walk, or doing any other hobby or interest which will take your mind away from the situation.

Taking Control of Amygdala-Based Anxiety

Identifying Triggers which Cause Amygdala Anxiety

Recall from the flowchart that all amygdala induced anxiety occurs from a trigger in your direct environment. The thalamus is constantly scanning our surroundings and receiving inputs from our senses. As a result, a trigger can take almost any form as it can originate from anything that we perceive. For example, a trigger could be:

- An object
- A specific place or location
- A person
- A word
- A smell
- A thought

The list could go on...

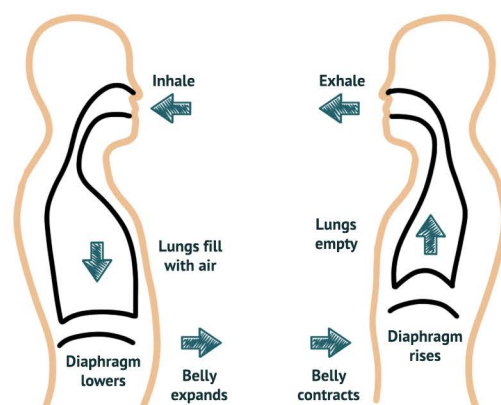
Triggers can be hard to identify as sometimes the past event, which your amygdala relates to anxiety, might not be stored in your conscious memory. Something that we can do to start to help recognise our triggers is to start taking notes of events which immediately trigger our anxiety. After you've done this a few times, you might start to see a pattern emerging.

How to Calm your Amygdala

When the amygdala is activated, the cortex will be overridden and we'll be under the full effects of anxiety. At this point, it's impossible to think rationally. As a result, the techniques that we've previously described to change existing thought patterns become redundant, and we need to focus on battling the present symptoms we're experiencing. When we're anxious, the SNS is activated, meaning that our heart rate will be elevated, blood will be taken away from the vital organs towards our extremities, and the body will be ready to jump into action. Resultantly, the best method to battle this is to fight these symptoms, lessening the activation of the SNS and returning us to our normal, responsive state. The best strategies to achieve this are:

Breathing Techniques - When panicked one of the first things to change can be our breathing pattern as it increases. By focusing on our breathing, we can return it to a regular state and simultaneously help to reduce the other symptoms of anxiety:

- **7/11 Breathing** - Focus on your breath. Inhale through your nose for 7 seconds, then exhale gently through your mouth for 11 seconds, or if you're unable to do this simply in a ratio of 7 breathing in and 11 breathing out. This tactic is useful because you can use it in any situation, and use it in a way that people around you won't even notice you're doing it.
- **Diaphragm Breathing** - This technique also focuses on the breath, but in a different sense. Normally, when we breathe, we use our chest muscles to lift and inflate our lungs. We want to shift our focus on using the diaphragm rather than our chest muscles. To achieve diaphragm breathing, we want to make sure that when we breathe in our chest stays static, and only our stomach moves in and out. To check you're doing this correctly, put your hand on your stomach and check to see if it moves as you breathe.



Muscle Relaxation Techniques - When anxious our muscles become tense, and so activation of the amygdala can be reduced by fighting this. To accomplish this, first find a quiet and comfortable space. You can either lie down or sit in a comfortable chair. Close your eyes, and focus on separate muscle groups. With each muscle group you concentrate on, tense them hard for 10 seconds, and then release them. Next, shift your attention to the next muscle group, and repeat the process. Unexpectedly, our muscles relax better after they've been tensed. You can check this yourself by clenching one of your fists hard, and then releasing it. Which hand now feels more relaxed?

Visualisation - This technique can take practice and requires you to strongly visualise yourself in your 'happy place'. This means to think back to a moment or place at which you've felt your happiest, and to really concentrate on the feelings, emotions and sensations you were experiencing at the time. For instance, could you feel the sun on your back at the time? Or was the wind rushing through your hair? To do this, you can either have your eyes open or closed, but it may be helpful to start doing this with your eyes closed to help you really cement that scene in your mind's eye initially.



Meditation - This doesn't suit everybody, but the long term advantages of practicing meditation and mindfulness regularly are well documented. Some of these benefits include improved sleep, lowered anxiety and depression, better mood regulation and reduced symptoms from PTSD. Guided meditation videos can be found on the 'Isorropia Foundation' Facebook page or on our website www.isorropia.uk. There are also many sources of guided meditation on YouTube and internationally recognised free to use apps such as 'Headspace'.

Exercise - Exercise has been proven to increase the levels of endorphins in the brain - the 'happy' chemical which also has the secondary effect of helping neurons to interact, thus helping us to think more clearly. Furthermore, exercise has the added effect of relaxing your muscles, and is proven to reduce amygdala activation for 96 hours after the event. Exercise can vary greatly and doesn't have to be strenuous. Anything from going for a short brisk walk to cycling 20 miles will help - and all forms of exercise are proven to calm anxiety.



Sleep Hygiene - Poor sleep hygiene is proven to increase amygdala activation. Most adults require somewhere between 7-9 hours of sleep each day, and any more or any less is damaging. A trial was conducted with two groups of people. The first group were deprived of sleep for 35 hours, whilst the other group were given a full night's sleep. Both groups were then exposed to a series of disturbing images, and it was found that there was a 60% increase in activation of the amygdala in the group which had been deprived of sleep.

What's the best strategy for conquering both types of anxiety?

Whilst the suggestions we have discussed are incredibly useful for reducing anxiety, the underlying reason may still be present and we'll find that we remain anxious whenever the situation or a similar one arises. Ultimately, the best strategy for overcoming anxiety is **exposure**. This means deliberately challenging our fears and putting ourselves in anxiety provoking situations. The more we maintain this, we'll quickly start to find what used to scare us doesn't anymore. For instance, a person who suffers from a fear of public speaking will continue to be worried at the prospect of doing this until they put themselves in a situation that proves to themselves that they can overcome it and that there is no real threat to fear. Recall:

Experiences



Beliefs



Anxiety

We know that our current anxieties are based on our past experiences, and to change our beliefs we will need to provide ourselves with new experiences which contradict long held beliefs. There are two techniques for exposure:

- **Flooding** - As 'flooding' suggests, this method involves immersing yourself in the situation and confronting it head on. There is no surer and faster way to overcome an anxiety than by facing it head on, and sitting in the situation until your anxiety reduces and you can process that there is no danger. Remember, the brain recalls negative past experiences, and by fighting and replacing these experiences we will ultimately shift our perspective and forge new neural pathways.
- **Gradual** - Rather than throwing yourself head on into a situation, it also works to expose yourself gradually. This technique doesn't work as quickly as flooding, but will ultimately have the same long term benefits. To achieve gradual exposure, it is vital to come up with a plan involving steps. For instance, a person with a fear of shopping might create a set of steps which will gradually immerse them in the situation. On the first day, they might drive to the parking lot. On the second day, they might park and then walk to the entrance before going home. On the third day, they might go inside briefly and have a look at some of the items. Building up to the day when they eventually get their items, go to the checkout, purchase them and leave.

A vital step with exposure is not to leave the situation whilst you're still feeling anxious. If a person leaves whilst feeling anxious, all that happens is that the former beliefs are upheld and the current anxiety provoking pathway in the brain is reinforced, making matters worse.



Strengthening your Resolve

Challenging your fears head on will be a scary prospect - after all these are literally situations which induce fear! However, it can help to recall a few motivations as to why you're doing this, thereby strengthening your resolve. A few are:

- **Act despite your anxiety** - Know that it'll get easier in time with the benefits being felt very shortly after the event.
- **Take it one day, or one minute, at a time** - Break down the scenario into small chunks. By continually making small efforts you'll eventually achieve your ultimate goal.
- **Focus on the positive** - Use alternative thoughts to focus on the positive. Remind yourself of the long term benefits of battling your anxiety.
- **Let the pursuit of happiness and a calmer life be your motivation!** Remember why it is that you're challenging your fears, and that the end goal is 100% worth the short term pain.

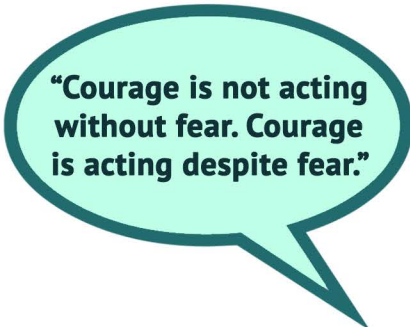


"Nothing great was ever achieved from a comfort zone."

Where to Start?

There has been a lot of information and techniques given to you in this handout, and it might be hard for you to work out where to begin. To battle your anxieties, here is the sequence we recommend:

1. Use relaxation, sleep and exercise to reduce the activation of the sympathetic nervous system.
2. Monitor your thinking for any anxiety provoking thoughts.
3. Deconstruct these thoughts logically to find more positive, accurate thoughts.
4. Determine your life goals and what anxiety interferes with those goals.
5. Identify triggers of fear and anxiety that interfere with your goals.
6. Design exposure exercises that can modify your amygdala's response to these triggers.
7. Practice exposure exercises until you notice a decrease in your anxiety and fear.



"Courage is not acting without fear. Courage is acting despite fear."