

**HUMAN GIVENS THEORY OF COGNITIVE DISTORTIONS**- a work in progress  
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Cognitive distortions have also been referred to by several names, including 'thinking errors', 'faulty thinking', and 'mind traps'. It refers to the way our brain can distort information to give us an inaccurate view of the world. 'Things always go wrong for me', 'I am a complete failure in everything', 'You can't trust anyone'.

In CBT, these cognitive distortions have been identified by Beck in the 1980s. However, CBT treatment has tended to only involve labelling the distortions, and then addressing the resulting negative thoughts without further reference to the distortions. They also do not have a comprehensive understanding of how emotion causes thoughts and visa versa. As such, I would suggest that CBT does not provide a comprehensive of deep understanding of cognitive distortions as the Human Givens theory.

My proposed HG theory of cognitive distortions contains the following elements:

- -the role of emotional arousal (APET)
- -they are adaptive
- -they have a biological basis

In this paper, the role of emotional arousal in cognitive distortions, the adaptive function of cognitive distortions, and possible biological causes will be discussed.

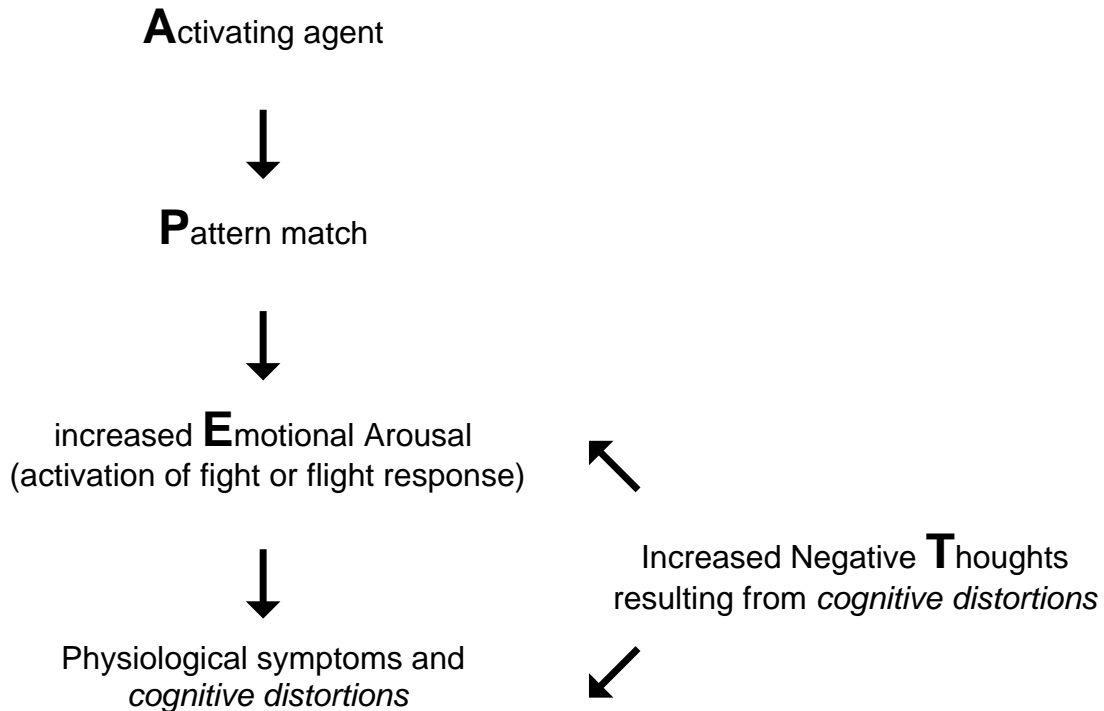
Apart from the obvious role in anxiety and depression (as seen in CBT), HG also understands the role in the formation of self-esteem and shattered beliefs in trauma. With regards to the theme of relationships, their role in social anxiety, irritability and anger, as well as co-dependency is mentioned. Their possible role in borderline personality disorder will also be discussed.

Finally, therapeutic implications of the Human Givens theory of cognitive distortions will be discussed. This includes how to use the distortions therapeutically. It also includes a photocopyable handout I have made in which I have linked CBT and HG techniques that I think actually counter the impact of specific distortions on negative thoughts when someone is aroused.

**The role of emotional arousal**

The HG theory uses the APET model to describe the interaction between emotional arousal and negative thoughts. Cognitive distortions are the link by which emotional arousal causes negative thoughts. In the HG model, the 'Activating Agent' is the trigger, usually sensory information, that comes into the thalamus. A 'Pattern Match' between the 'activating agent' and stored memories of perceived threat then occurs which activates 'Emotional Arousal'. This activates the fight or flight response which helps us respond more effectively to danger. The changes that happen to our body are well known, but lesser known are the changes that happen in our brains; cognitive distortions. These cognitive distortions distort the way we see things, leading to negative thoughts. These negative thoughts often lead to increased perceived threat, and hence increased emotional arousal. The thoughts can also trigger further pattern matches with can also trigger emotional arousal. Thus, cognitive distortions are a result of emotional arousal which in turn generates more emotional arousal.

## Diagram of the Human Givens Approach to Cognitive Distortions



### Adaptive function of cognitive distortions

Strong emotions like depression, anxiety, anger and even falling in love have an adaptive response to help our survival. Our strong emotions, or heightened emotional arousal, triggers the fight or flight response to help maximize our chances of responding well to the situation. In the example of perceived danger, much is known about the physiological changes that help us run or fight danger, but much less has been understood about the role of cognitive distortions in this process. Cognitive distortions, like their physiological counter-parts, facilitate our successful escape from danger. Information is distorted to enable us to respond more efficiently and quickly to an emergency situation.

## DESCRIPTION AND ADAPTIVE PURPOSE OF COGNITIVE DISTORTIONS

### Black and white thinking

In **black and white thinking**, we see things in all or nothing terms. When we use words like 'always', 'everybody/all', 'never', 'nobody', etc we are probably using this distortion. If there is an element of doubt or 'grey' when we are emotional, we will see it in an extreme 'black' form. For example, if you see a lion in front of you, you may be perfectly calm if it is behind bars in a zoo. However, if there is any element of doubt about your safety, like the back gate being open, the emotional part of your brain will classify the grey as being black and your body will be ready to run from potential danger. If we were to react as if there was relatively little danger in this situation, which may well be the case if there is another gate too, our logical brain would be too busy calculating potential risk, which may prevent us responding quickly if necessary. So, if there is a potential threat and things aren't completely 'safe', our brain will categorise things in black and white terms to help us respond very quickly to danger, which may save our lives.

### Perfectionism

When we do something in an emergency, it is important we do it right, or we could die, leading to the tendency for **perfectionism**. So, for example, if we are tying a knot in a rope to swing out of danger, it is very important that we get that knot right or we could die! Perfectionism is also influenced by the black and white thinking distortion. Either something is completely perfect or else we react as if it is not worth anything at all. We are likely to be using a perfectionistic distortion if we use words like 'should', 'ought', and 'must', and therefore is sometimes called 'musterbation'. When we have this mindset, getting things perfect makes us feel good. However, because of the importance of getting things right, we may become very upset and find it difficult to tolerate situations that are not perfect.

### Catstrophize

Related to black and white thinking is **catastrophizing**, in which we act as if we know that the worst thing will happen. It is very adaptive for us to plan for the worst case scenario, as this may save our lives if it actually occurs. In high risk jobs, there is often a plan for dealing with worst case scenarios, as this can provide an important safety net to have in place which make us more able to relax and feel better. However, when we are emotionally aroused, we are more likely to believe that the worst situation will actually occur. Using the above example, it may be quite adaptive to be ready to run if we notice that a gate to a lion's cage is open, even if there is only a slim chance that it may be true!

### Predicting the future

**Predicting the future** or 'fortune telling' is where we act as if we know what will happen. In order for us to react quickly to potentially dangerous situations, we need to assume we know what will happen. We do not have time to think through the factors that might affect the likelihood of this happening, as this would dangerously slow down our reaction time. Thus, if a lion is nearby, you might predict that it might want to eat you and get into your jeep without waiting to find out! Unfortunately, we are not actually able to predict the future - we would be very rich from winning the lottery!

### Mind reading

**Mind reading** is a form of predicting the future, when we assume and act as if we know what the other person is thinking without them telling us. In a dangerous situation, it is important for us to predict what the other person is thinking, so that we can quickly take evasive action. So, if we meet someone with a knife on a dark street, we might read their mind and assume that they are intending to stab us and cross the road. We do not have time to consider the evidence as to whether or not that thought is actually true. While mind reading may be adaptive, if we think others are thinking badly of us, this may increase our perceived threat and make us more anxious or depressed.

### Personalise

We are also more likely to **personalise** situations that might be unrelated to us, or take responsibility for things that are not under our control. Using the example of a lion, if we are in the wild and see some grass moving, we may wonder if the lion is behind it and relate the random event to ourselves. Similarly, we might take a random comment that we hear and assume that the person is talking about us.

### Over-responsibility

The other aspect of personalising is that we might try to **take responsibility for things that are beyond our control**. It is sensible to try to change things around us to make us safer, and many of us try to control our environment or those around us as a way of managing our emotions to help us feel better. So, if we can influence our environment it may help us be safer or at least feel better. Unfortunately, we can only control what we do, say, or choose to dwell on. If we try to regulate our emotions by focussing on things beyond our control, we may feel more helpless or scared when we are not able to control those things. Thus, while personalising has an adaptive function, it can also inadvertently increase our emotional arousal.

### Overgeneralise

HG recognises our ability to pattern match. **Overgeneralising** is taking one specific incident and responding as if that happens all the time or in all situations. We can pattern match from one dangerous situation to another because very rarely is one danger absolutely identical to the next. If we have been hit by a bus in the past, that memory is stored so that when we see a different vehicle coming hurtling quickly towards us, a pattern match happens to our past experience and our body gets ready to run from the truck. However, because of pattern matching we may sometimes inaccurately **overgeneralise** and feel strong emotions in safe situations. For example, if I make a mistake on the computer, I might think that I am incapable of using computers!

### Negative bias

When in danger, we have a tendency to scan for danger, focus on the negatives and potential danger, and block out the positives which may be irrelevant to helping us respond in the emergency. For example, if we know there is a lion out there, we will be focused on the potential danger instead of admiring the pretty butterflies and flowers! This is called a **negative bias**. As a result of the negative bias, we over emphasise the negative which often leads to increased perceived threat and stronger negative emotions. The trance-like state intense focus of attention in high emotional arousal, which helps us concentrate in an exam, enables us to have this negative bias.

### Minimise coping resources

A side effect of the negative bias is **minimising our coping resources**. Because we are focused on the problem and not the solution, we will also block out the positive resources that we have, or examples of times when we have dealt well in similar situations. This can undermine our resources and make us underestimate our ability to cope.

### Emotional reasoning

Finally, in an emergency the logical part of our brain inhibited. This is because the logical part of our brain is slower and will slow our responses down. The more emotionally aroused we are, the less logical we are! So, if we have not got full access to our logical thinking, what are we going to base our decisions on? All we have to rely on is our gut instinct or our initial thought, which we need to rely on without questioning it in order to respond rapidly to danger. This tendency to believe something, just because we think it or feel it, is called **emotional reasoning**. The inhibition of our rational thought when we are emotionally aroused has a very adaptive function. If you were walking along the pavement with a motorbike hurtling towards you, and your rational brain wondered what speed it might be travelling and what makes it is, you may well get run over! As you will see, this inhibition has an impact on our distortions too.

### Magical Thinking

Emotional reasoning and personalising can also lead to **magical thinking**. In this distortion, we believe that just because we have a thought that one of our behaviours might have caused an unrelated event, it must therefore be true. We may then invest much energy in doing those behaviours to prevent the disaster we fear. The more we try not to think of the thought, the more often it pops into our heads, further exacerbating the situation! So, if I flap my arms on the street corner to keep the dragons away, I may believe that there are no dragons because I have been flapping my arms, and feel compelled to continue flapping my arms. The more anxious I become if I am not able to flap my arms on the street corner, the more emotionally aroused I become. I will then not be able to see the situation very and become more anxious.

When emotional reasoning is combined with the other distortions it escalates our perceived threat. So, my perfectionistic and black and white distortions can lead me to think that either I can do salsa dancing perfectly or else I can't dance at all. The catastrophizing will influence me to think the worst; that I will slip and fall over breaking my leg and front teeth. Mind reading will then cause me to think that I know that you are thinking the worst; that I can't dance at all.

Generalising may cause me to think that you think I'm stupid and can't do anything because I can't dance. And emotional reasoning will dictate that because I think it, therefore it must be true! This is an example of how these distortions, which have an important adaptive function, can create havoc with our emotions. The more emotionally aroused we are, the stronger our distortions.

## POSSIBLE PHYSIOLOGICAL MECHANISMS CAUSING COGNITIVE DISTORTIONS

The biological mechanisms causing cognitive distortions support the HG theory that they are caused by emotional arousal. Much is known about the link between physiology and symptoms of emotional arousal on the body, but less is known about the link between physiology and the cognitive effects of emotional arousal. To understand the impact of emotional arousal, one needs to look at both the structural connections in the brain and their function, as well as the impact on the synaptic or cellular level. Only a few researchers like LeDoux (2002, 2003) have integrated both in their understanding, but even some of his theories are now outdated (Pessoa & Adolphs, 2010). I have put more detail than most people will need to know in this section for those who are interested, and everyone else can just read the sentence at the end of each paragraph!

When a potential threat is perceived, the amygdala activates the fight or flight response which gets the body physiologically ready for danger. The amygdala, among other things, triggers the adrenal gland to produce a stress hormone called cortisol, which then regulates the release of adrenalin. However, cortisol also makes changes in the areas important for memory such as the hippocampus, the amygdala, and the prefrontal cortex (PFC) to facilitate learning, storage of relevant information and promote behavioural change (Krugers, Hoogenraad & Groc, 2010) in response to threat. Interestingly, changes caused by cortisol are true for both imaginal and real experiences (Kessels & Malinau, 2009). However, the changes that facilitate new learning can also disrupt hippocampal activity and activity in the prefrontal cortex (LeDoux, 2003). Therefore, **the amygdala causes a stress hormone called cortisol to be released to help us respond to danger. But cortisol also has the effect of making the logical part of our brain (the prefrontal cortex) and the part involved with formation of memory and putting things into context (the hippocampus) not work properly, which I propose causes the distortions.**

### Negative bias, minimising resources

Information from the thalamus biases attention towards threat (LeDoux, 2003). Visual cortical routes send connections from the pulvinar nucleus of the thalamus to the higher cortex (parietal, frontal, cingulate, orbitofrontal cortex, insular) as well as to the amygdala, and the amygdala also sends connections to those same higher cortical areas (Pessoa & Adolphs, 2010). The parietal lobe and the cingulate gyrus are two areas particularly involved with attention. The parietal region, namely the superior parietal lobe and the temporal parietal lobe, is involved in selective attention; disengaging and shifting attention to novel or unexpected stimuli (Posner & Fan, in press). More is on the cingulated gyrus below. The neurotransmitter pinepherine (NE) from the locus coeruleus in the midbrain sends alerting or warning signals, and acetylcholine (ACh) from the basal forebrain is important for orienting (Posner & Fan, in press). Thus, **both the thalamus and the amygdala help direct attention to potential threat** (LeDoux, 2002).

The anterior cingulate gyrus and the lateral prefrontal areas are involved in the executive attention network, which is involved in monitoring and resolving conflicting stimuli, pain, planning and decision making, error detection, novel response, and overcoming habitual actions (Posner & Fan, in press). The lateral prefrontal area acts as the working memory to enable these functions to occur and the anterior cingulated acts as the interface between the amygdala and the prefrontal cortex. The neurotransmitters involved in this process in both these areas involve the dopamine from the ventral tegmental area, with all the dopamine receptors being in layer V of the cingulate (Posner & Fan, in press). Only humans and great apes have these unique cells in layer V of the anterior cingulate and the insula. The insula has a 'top down' impact by sending connections to the amygdala (LeDoux, 2003). Interestingly, in ADHD, attention is not activated in the anterior cingulate but in the insula, which does not involve stimuli conflict regulation, and in schizophrenia attention deficits are due to

abnormalities in the anterior cingulate due to a shift in dopamine in D2 receptors, which are strongest in the Layer II of the anterior cingulate (Posner & Fan, in press). The anterior cingulate is also important in helping us see distress in others, developing conscience, and monitoring errors. I propose **that if the lateral prefrontal area is not functioning efficiently due to high levels of cortisol, then our brain would not be able to correct the errors that responding to threat and therefore not attending to the positives, including our resources.**

When the amygdala detects threat, it not only influences the processes mentioned above to be hypervigilant and help direct attention to threat, but also has connections to the working memory in the hippocampus in a vigilant state, causing it to attend to threat, thereby biasing our thoughts and actions (LeDoux, 2002; LeDoux, 2003). **The amygdala therefore also biases the types of working memories in the hippocampus.**

#### Over-generalise

LeDoux (2003) describes a 'high road' of cortical pathways that are detailed but slow, and another pathway he refers to as the 'low road' of subcortical pathways which are simpler but much quicker. However, Pessoa & Adolphs (2010) have argued that a model of 'many roads' might be more accurate. Both acknowledge that the higher cortex, including the prefrontal cortex, is involved in the recognition of detailed visual stimuli. With regards to visual stimuli, Pessoa & Adolphs (2010) implicate the pulvinar region of the thalamus to be important in emotional processing of visual stimuli and describe waves of coarse to finer details being relayed in waves to the amygdala. I propose that **if the prefrontal cortex is inhibited by cortisol once the amygdala has been activated, finer details of the object might therefore not be transmitted when the conditioned fear response is formed, which explain how over-generalising might occur.**

In addition, the hippocampus provides the context for learning and remembering things (LeDoux, 2003). **If the hippocampus is dysfunctional due to excess cortisol, we will not have the specific context consolidated, making us more prone to overgeneralising.**

#### Black and white thinking, perfectionism

Although LeDoux's (2003) quick and dirty 'low road' pathway has been called in question, particularly relating to visual stimuli (Pessoa & Adolphs, 2010) if the logical prefrontal cortex is inhibited due to stress, it will find it difficult to logically fine tune the 'grey', and are more likely to see things in terms of 'black or white'. LeDoux (2003) discusses research on visual pathways shows that small non-cortical pathways from the retina to the superior colliculus, represents the quick route that is not very discerning and produces the startle response and quick reactions. Thus, **during arousal our brain will decide if we are in danger or not, but because of cortisol, we will not have access to the finer details from the higher cortex which help us to identify the grey areas.**

Perfectionism and minimising our ability to cope are both a form of black and white thinking; either things are perfect or they are useless/rubbish; either we cope perfectly or we can not cope at all.

#### Catastrophising, predicting the future,

Catastrophising and predicting the future, or fortune telling, are all related. In research on mindfulness, Brown found the midcingulate cortex kept our attention focused on the present rather than anticipating future events. Again, if this part of our brain was inhibited, we would be more likely to anticipate future events, or predict the future. LeDoux (2003) suggested that the prefrontal cortex was also involved in planning. LeDoux (2002) noted that the amygdala

was involved with actual threat while the nucleus of the stria terminus is involved in anticipated threat, and it has similar connections as the amygdala in triggering the body's response to danger. **If the prefrontal cortex is inhibited, would be less likely to correct errors and would become increasingly difficult to differentiate between what is slightly possible and what is probable when predicting the future.**

In addition, if we also had the tendency to see things in terms of black or white because of high arousal, then we might have more of a tendency to catastrophise, or predict the worst when we are predicting the future.

### Personalise and mind reading

With regards to personalising, the amygdala and ventromedial prefrontal cortex were involved in judgments of self-reference, with the ventromedial prefrontal cortex having an inhibitory effect on narrative self-reference (Farb et al., 2007). Thus, **when the prefrontal cortex is inhibited by cortisol, it would not be inhibiting our natural tendency for self-reference making us more prone to personalising.**

Another possible mechanism for mind reading, or predicting that we know what others are thinking or doing, comes from mirror neurons. The parieto-frontal mirror circuit, in which actions we see are understood from our own perspective, or from the 'inside' as a motor perspective rather than from an observed perspective (Rizzolatti & Sinigaglia, 2010). This means that while observing someone else's actions, mirror neurons act as if we are doing the action to help us understand it. Mirror neurons of the temporal lobe are stimulated when we see others having similar emotions to us, which helps us experience empathy for others. Similarly, mirror neurons of the parietal cortex, mentioned above, help us understand and predict the actions of others (Rizzolatti & Sinigaglia, 2010). Taken together, **mirror neurons help us to 'enter the mind' of another, and without the logic of the cortex to remind us that we might not actually know what other's intentions are without evidence, we would be prone to believing we know what others are thinking.**

**The state of focussed attention on threat, described above, particularly on material that is personally relevant may also help to explain our tendency to personalise situations when we are highly aroused.**

### Emotional reasoning

Haynes, Sakai, Rees, Frith, and Passingham (2007) found that activity in the medial and lateral regions of the prefrontal cortex are responsible for processing actions before we are consciously aware we have made those decisions. In fact, research shows that we make a decision have a second before we are aware we have made it (Haynes...). The dorsolateral prefrontal cortex gives the subjective experience of when to act, but it is really the posterior parietal cortex that is implicated in intention to act (Spence and Frith, 1999). As we have seen, the anterior cingulate and the lateral prefrontal cortex are involved in decision making, planning, correcting, and prioritising (Posner & Fan, in press). It is the role of the cortex to inhibit inappropriate responses rather than initiate appropriate ones (LeDoux, 2003). However, **if the prefrontal cortex is inhibited, then our decisions will be made without the choice or reasoning from the higher cortical evaluations, and so the automatic responses and 'emotional reasoning' will occur.**

### How does cortisol stop the prefrontal cortex, the hippocampus and the amygdala from working?

The amygdala activates the paraventricular nucleus of the hypothalamus (PVN) which releases corticotropin-releasing hormone (CRH) into the pituitary gland, which in turn



releases releases adrenocorticotrophic hormone (ACTH) into the blood stream that stimulates the adrenal gland to stimulate a slow release of cortisol into the blood stream (Krugers, Hoogenraad & Groc, 2010). Cortisol is also released in response to circadian rhythms. Cortisol acts to inhibit the production of noradrenalin by binding to receptors in the hippocampus, but this also has the effect of disrupting hippocampal activity. When sufficient numbers of receptors in the hippocampus are occupied, signals are sent to hypothalamus to stop it producing CRF corticotropin-releasing hormone, which causes the pituitary gland to stop releasing ACTH, which in turn stops the adrenal gland producing the stress hormones called cortisol and noradrenalin (LeDoux, 2002). Thus, **the amygdala causes cortisol to be released in order to regulate stress hormones.**

Cortisol initially facilitates long term potentiation (LTP) in the hippocampus (Krugers, Hoogenraad & Groc, 2010). For LTP, or subconscious learning, to occur glutamate in the gaps between the neurons (synapses) opens NMDA receptors (like gates) on the receiving neuron (or postsynaptic neuron), which allows calcium to enter the receiving neuron. Calcium is positively charged, and therefore builds a positive charge in the neuron. Once the right electrical strength has been reached (called the 'action potential'), the neuron will 'fire' (or send its message). We have other receptors called GABA receptors to regulate or inhibit the firing of neurons, so they are firing indiscriminately! GABA receptors let chloride, which is negatively charged, in to the neuron. Active GABA receptors therefore mean that the neuron will be more negatively charged, and will therefore need a stronger signal (ie a lot more glutamate to let the positively charged calcium in). to get the neuron to the right electrical charge to fire.

Cortisol activates mineralocorticoid receptors (MRs) and glucocorticoid receptors (GRs), the latter in the synapses in the areas important for memory such as the hippocampus, the amygdala and the prefrontal cortex (PFC) (Krugers, Hoogenraad & Groc, 2010). MRs don't need much cortisol to be activated and are therefore generally activated. They cause glutamate to be released by the presynaptic neuron via the stimulation of miniature excitatory postsynaptic currents (mEPSC), and the glutamate is essential for LTP to occur. They help to create new glutamate receptors from a pool inside the cell in a process called exocytosis, and can take a receptor from the wall and put it back into the unused pool inside the cell through a process called endocytosis. This doesn't happen at the synapse (by the gap between neurons) but further down the cell wall. MRs also move two types of glutamate receptors (GluA1 and GluA2) laterally from where they are being created or decommissioned to the synapse where they can be used. Thus, through MRs cortisol can increase the number of GluA2 receptors after LTP, and therefore consolidate learning. GluA2 have been reported to promote spine formation (ie extending the synaptic parts of the neuron), which provides a long term structural store and an increase in the capacity to store information. In times of stress, cortisol, through the MRs, triggers the release of more glutamate and creates more glutamate receptors to receive the glutamate in the post-synapse. This then allows information to be rapidly encoded through the AMPA receptors. MRs allow behavioural reactivity to new situations, appraisal of information and response selection (all from Krugers, Hoogenraad & Groc, 2010). Cortisol also affects the ability of GABA to inhibit glutamate (LeDoux, 2002) by initially increasing the amount of glutamate in the synapse and increasing the amount of AMPA receptors. **Through MRs, cortisol therefore facilitates LTP, or unconscious learning, through the production of glutamate and increases the synaptic strength by increasing the available AMPA receptors.**

According to Krugers et al. (2010), the GR receptors require 10 fold more cortisol to be activated than the MRs, and so are only activated during stress. Their impact is longer lasting genomic actions (ie changing proteins to make changes in the cell) and tend to affect the GluA2 and GluA3 glutamate receptors. GRs move the GluA2 receptors away from the synapse, thereby deactivating them **and preventing LTP and facilitate long term depression (LTD)**, which is involved in extinction and affects memory retrieval. Decreased

LTP and increased LTD weaken the synapse and is also important in the encoding and maintenance of relevant information. These changes can occur up to 24 hours after cortisol levels have dropped. Kruger et al. (2010) have proposed that after hyperpolarisation, changes in glutamate transmission may interfere in the ability to subsequently evoke LTP. A stronger signal is then needed to fire the neuron. I propose **that the effect of GRs response to cortisol on decreasing LTP, increasing LTD and requiring stronger signals to fire the neuron may be the mechanisms by which cortisol inhibits the firing of neurons and hence inhibits the functioning of the prefrontal cortex and hippocampus.**

**Norepinephrine and and corticotropin-releasing hormone (CRH) are known to produce synaptic plasticity which enhances the effects of cortisol** on the synapses in the areas important for memory such as the hippocampus, the amygdala and the prefrontal cortex (Krugers, Hoogenraad & Groc, 2010). These could enhance the initial positive effects of cortisol on LTP (or learning).

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## **ROLE OF COGNITIVE DISTORTIONS**

### **Role in the formation of low self-esteem**

When we have negative experiences, there is often a perceived threat and the fight or flight response is activated with the cognitive distortions. When we are emotionally aroused, HG theory postulates that we are also in a state that facilitates learning. The adaptive function of this is that we are more likely to learn in dangerous situations, which could save our life in the future.

When we have very negative experiences in our childhood, the cognitive distortions are activated by the emotional arousal. This means that when our beliefs about ourselves, others and the world are being formed, we are more likely to see things in terms of all or nothing instead of how they really are; believe the worst about ourselves or others; personalise and blame ourselves; have perfectionistic or unrealistic expectations; over generalise and make global (usually negative) statements about ourselves or others; we may pay attention to the negative experiences, which would further strengthen our negative beliefs; minimising our coping strategies making us less confident and try fewer things; and finally, because we think these things, emotional reasoning leads us to believe that they must be true! Because we are also in an emotionally aroused state that facilitates learning in these negative experiences, we are more likely to establish beliefs in these situations. These beliefs are based on distortions and are therefore more likely to be inaccurate and unhelpful.

Conversely, if we have powerful positive experiences as a child, we are more likely to have distortions that emphasise our positive qualities and promote high self-esteem. This explains one of the mechanisms by which both positive and negative beliefs are likely to be formed from our early experiences.

### **Role in the formation of shattered beliefs after severe trauma**

As above, it is the high emotional arousal in a trauma while experiencing distortions that makes new unhealthy beliefs likely to be formed. This can occur when a person has had normal beliefs previously. For example, after a severe car accident one could believe that it is extremely dangerous to ride in a car because one can't guarantee it is completely safe.

### **Borderline personality disorder (BPD)**

It is well known that people with borderline personality disorder often have traumas in their childhood. They also seem to have a more reactive physiological response to stress. Their underlying beliefs and assumptions on which their behaviour is based were formed during high emotional arousal, and would have been affected by cognitive distortions. As a result of these distortions, these assumptions and beliefs are more likely to be inaccurate and dysfunctional. Understanding the role of cognitive distortions can be useful in helping to correct maladaptive beliefs and assumptions. Teaching emotional regulation, or strategies to reduce emotional arousal is important for this group of people.

### **Role of distortions in relationship difficulties**

In situations of strong emotions, like conflict, it is easy to see how cognitive distortions can make things seem worse than they really are and can polarize people, exacerbating and intensifying the conflict. Underlying rules that are based on distortions can make people more vulnerable to things like assertiveness difficulties and co-dependency (when people don't look after their own needs and are over-responsible for the needs of others). Finally, in affairs the distortions based on the strong emotions facilitate not fully seeing the consequences of actions, blocking out the negatives to focus on positives etc.

## THERAPEUTIC IMPLICATIONS OF THE HG THEORY OF COGNITIVE DISTORTIONS

### Reduce emotional arousal

According to the HG theory of cognitive distortions, it is emotional arousal that is causing them, so any technique that helps reduce emotional arousal should help to reduce the negative thoughts that result from the distortions.

In HG treatment, there are many powerful techniques, such as Rewind, Molar Memory treatment, the effective use of our imagination, the use of language to reduce emotional arousal. Rewind helps to reduce emotional arousal caused by traumatic or frightening experiences. Lowered emotional arousal from these events means that there will be fewer distortions and unwanted intrusive thoughts. Updating memories is helpful in shifting unhelpful beliefs and shame. Various relaxation strategies, including 7/11 or controlled breathing reduce emotional arousal. Other specific techniques such as the use of the observing self and stimulate logical, rational thinking, which in turn can inhibit emotional arousal. Recent mindfulness strategies encourage us to observe our thoughts and disregard them. Some reframing techniques, and use of metaphors and storytelling can help us observe our situation from a different perspective. The process of observing in itself detaches us from the experience somewhat, thereby facilitating the reduction of emotional arousal, which would in turn reduce the cognitive distortions. In addition, by observing the negative thoughts, we are to some extent disregarding the implications of these distortions and not reacting to them. This helps to prevent the cycle of the negative thoughts which are a result of the emotional arousal generating further emotional arousal, cognitive distortions and escalating negative thoughts.

According to HG theory, unmet emotional needs lead to high emotional arousal. Emotional needs include the need to feel safe and secure, to have a sense of autonomy and control over our life, to have appropriate attention, to have significant emotional connection to someone else, to be connected to the wider community, to have time and space to reflect and consolidate our experiences, to have a sense of status and be accepted and valued, to have a sense of our own competence and achievements, and to be stretched and have a sense of purpose or meaning. Emotional arousal, or strong emotions have the original purpose/function to help to motivate us to take action to get these needs met. When these needs are better met, our emotional arousal reduces and so do our distortions.

More recent **mindfulness** strategies encourage us to observe our thoughts and disregard them. The process of observing in itself detaches us from the experience somewhat, thereby facilitating the reduction of emotional arousal, which would in turn reduce the cognitive distortions. In addition, by observing the negative thoughts, we are to some extent disregarding the implications of these distortions and not reacting to them. This helps to prevent the cycle of the negative thoughts which are a result of the emotional arousal generating further emotional arousal, cognitive distortions and escalating negative thoughts.

Thus, HG treatment techniques focus more on reducing emotional arousal that produces distortions. As arousal is reduced the distortions are also reduced, so there are fewer negative thoughts. Reduced negative thoughts mean fewer triggers for potential threat (pattern match) and subsequent emotional arousal. Thus, HG theory suggests that any technique that is effective in reducing arousal should reduce cognitive distortions. However, in themselves all of these techniques may not affect the underlying beliefs that were created as a result of distortions. This could be one of the ways that these techniques are effective.

While CBT techniques are mostly focussed on changing negative thoughts, many of them actually correct some of the specific distortions. So, even if there is high emotional arousal, there are CBT and HG techniques that can help to correct the distortions, reducing the resulting negative thoughts and therefore reducing the arousal that produces the thoughts (see handout and end of booklet).

### **Using cognitive distortions therapeutically**

#### **Explaining and normalising**

The HG understanding of cognitive distortions can help them better understand their adaptive function, which can be helpful in normalising people's distressing experiences. Also, it can help to make sense of why you might be asking them to try certain things that could help to reduce their arousal. This is particularly true if their symptoms are more thought than somatic (physical symptoms) based.

Briefly explaining that distortions occur when we are very emotional and the effect of distortions have on negative thoughts and arousal can help people to understand others. It can help people understand some of their partners, childrens, other family members or colleagues during conflict or high levels of stress, and help them understand the importance of calming the other person down. It may help them to personalise less if that is appropriate. It can also help them to see that their view of the situation may not be completely accurate if they are looking through the distortions too. They may then be more open to alternative ways of looking at the situation. This is only one tool of many in HG therapy.

Understanding this principle of how dysfunctional schema are formed in low self-esteem can be quite helpful in enabling the person to see how their beliefs may not be an accurate reflection of reality. This, in itself, can help people who have very entrenched beliefs to be more willing to adapt or start to shift their beliefs to a more adaptive, accurate and balanced perspective. The great news is that it is not all doom and gloom; nature has also given us the resources to be able to correct these distortions!

#### **We actually use the distortions in other HG techniques!**

We can also use cognitive distortions therapeutically! A counter-conditioning technique, used in HG as part of the treatment for addictions and compulsions, uses catastrophizing and predicting the future to intensify the perception of the negative consequences of the undesired behaviour. Emotional arousal is also intentionally increased to facilitate new learning/conditioning of the negative consequences of the thought or action.

Use of metaphor and storytelling uses our brains ability to overgeneralise, or pattern match. These techniques are particularly helpful in overcoming unconscious resistance. The resistance is probably there because our brain perceives some form of threat, implying that there is likely to be some emotional arousal during resistance. It would be interesting to note if storytelling and metaphors are more effective when someone is emotionally aroused?

Parents and therapists can use these distortions to help build self-esteem through positive experiences. So, if a child offers to help with the washing up, you could thank them and comment on how helpful they are, thereby using generalising in a positive way. The use of language to offer positive general statements that allows other to pattern match and fill in the gaps for themselves, thereby personalising and learning .Based on this view of the black and white thinking error as being part of our natural response to an emotionally aroused state, it is possible to understand why people may sometimes have this distortion and sometimes not.

## Cognitive Distortions

Cognitive distortions happen more often when we are emotionally aroused, such as feeling anxious, depressed, angry or in love. The emotional part of our brain inhibits the logical rational part of our brain, and distorts information to help us respond more efficiently and quickly to an emergency situation.

When we perceive danger, our brain categorises things as either safe, or if there is any element of doubt or grey, it responds as if the worst is happening, producing **black and white thinking**, or 'all or nothing' thinking to help us respond quickly.

When we do something in an emergency, it is important we do it right, or we could die, leading to the tendency for **perfectionism**, which is another form of black and white thinking.

When we are in a high risk situation, we need to know we have a safety net, so our brain has a tendency to **catastrophise**.

We have to **predict the future** without analysing it too much so that we can respond quickly, leading to **fortune telling** and **mind reading** errors, where we think or act as if we know what will happen or what others are thinking.

In a dangerous situation, we are more likely to consider how even unrelated events are related to ourselves, and also to try to control things around us, both giving us the tendency to **personalise** situations that may be unrelated to us or outside our control or we might be over-responsible for things beyond our control.

We have the ability to pattern match from one dangerous situation to help us to respond to other similar dangerous situations. However, because of this ability, we may sometimes **over-generalise**, or 'pattern match', to unrelated situations.

When in danger, we have a tendency to scan for danger and **focus on the negatives** and potential danger, and block the positives, which may be irrelevant to helping us respond in the emergency.

Because we are focussed on the problem and not the solution, and because we do things that undermine our confidence, we often **underestimate our resources** and our ability to cope with the situation.

In an emergency, we need to rely on our gut instinct with out questioning it, so there is a tendency to believe something just because we think it or feel it, called **emotional reasoning**, and can sometimes be called 'magical thinking'. This makes the effect of the other distortions to be much worse!

Because the distortions are caused by emotional arousal, any strategy that calms us down will help to reduce the distortions. There are also specific techniques to help correct distortions when we do get emotional:

**1. Black and white thinking** (categorising all things in terms of either all or nothing; when you use words like 'always', 'everybody/all', 'never', 'nobody ever', etc you are probably using this distortion)

*Strategy: (look for evidence that has been blocked out)*

- Look for the grey that has been excluded or exaggerated in order to have the black and white thinking.
- Are there any exceptions to this?
- Look at the evidence that both supports and contradicts your negative thought. What more accurate conclusions can you make?
- If you were an objective observer, what conclusions would you make about 'the evidence'?

**2. Mind reading** (believing that you know exactly what other people are thinking without them telling you)

*Strategy: (look at the actual evidence)*

- get evidence by asking people what they are thinking
- realise you might be wrong

**3. Catastrophising** (responding as if the worst thing will actually happen)

*Strategy: (rate the likelihood of it actually happening, plan for the worst and then let it go)*

- On a scale of 1-100, rate the likelihood that this event will actually happen
- Remind yourself of the negative effects that responding as if the worst thing will actually happen (on your emotions, behaviours, relationships, and lifestyle)
- Problem solve for the worst situation so that you can let it go
  - Brain storm many possible solutions
  - Select the best one for the given situation
- Once you have a devised plan, whenever you have that thought, remind yourself that you will wait to see what does happen and then deal with it if it actually does happen. In the mean time, let it go and distract yourself.

**4. Over-generalising** (taking one specific incident and responding as if that happens all the time or in all situations. Eg After one problem with the computer say that I am no good with computers or if someone doesn't like one thing you have done, that they don't like you or that they don't like anything you do)

*Strategy: Be aware of our tendency to pattern match to other situations and counter it by looking at what actually happened*

- Remind yourself that the incident was about a specific situation and not all situations
- Remind yourself of times when your generalisation was not true (eg things you have achieved using the computer or evidence that your friend does like you)

*Strategy: discrimination training*

- Notice the all differences between the past situation and your current one and focus on these differences
- Remind yourself of these differences often

**5. Perfectionism** (responding as if something is not worth anything unless it is absolutely perfect; when you use words like 'should', 'ought', and 'must', you are probably using this distortion)

*Strategy: Rephrase 'should' phrases as "I would like..."*

- This will help you to take responsibility for your own emotions and goals instead of feeling helpless and getting angry with yourself and others for your unmet needs.

*Strategy: Identify and challenge perfectionistic negative thoughts*

- Recognise that this is part of the black or white thinking pattern of the emotional brain
- Look for alternative, less extreme ways of looking at the situation

*Strategy: Create new and more helpful rules for your current situation*

- Recognise that perfectionistic tendencies are very helpful in some situations, but are not always the best 'rules' to follow in others situations
- Set up situations to test whether alternative rules are accurate

*Strategy: look at it from a different perspective the doesn't involve distortions*

- Imagine what would say to a friend if they were in your situation
- Imagine what someone you respect would do or say if they were in your situation

**6. Predicting the future or fortune telling** (responding as if you know exactly what will happen in the future)

*Strategy: (behavioural experiments to test accuracy of prediction instead of assuming that you know the outcome before it has happened)*

- Remind yourself that not all your predictions will come true, as none of us can know the future... or else you would be very very rich!)
- Remind yourself of the negative effects that responding as if you can actually always know the future (on your emotions, behaviours, relationships, and lifestyle)
- Make your prediction (but see it as only a prediction rather than actually knowing the future before it has happened)
- Set up a situation to test your prediction, then see what happens
- Assess whether your prediction was completely accurate or not
- Learn from it by adjusting future predictions and in future situations remind yourself that you may not always be accurate

**7. Personalising** (taking the blame or responsibility for things that were not under your control instead of looking after your own needs)

*Strategy: (realise what you can control and are responsible for ie your own thoughts and behaviours; and what you can control while letting others be responsible for their own needs)*

- Take responsibility for the things you can control, which are your own thoughts and actions
- Don't take responsibility for those things that you can't control:
  - your initial emotions (these are signals that something needs to change, whether it is something in your environment or how you perceive it; instead look to what you can do to make you feel better)
  - the thoughts, actions, and behaviour of others (while you might be able to influence these, they are ultimately not under your control and therefore it is unhealthy for you to respond as if you are responsible for them; instead focus on what you can do or say to influence others)
  - other events beyond your control (eg. the weather, car breakdowns, etc)
- Do a pie chart of responsibility. Create a circle and allocate a proportion of responsibility to each person/organization that has a connection with the event

**8. Negative bias** (intense focus of attention on the negatives while excluding the positives)

*Strategy: To reduce focus of attention on the negatives and notice the positives that you have blocked out*

- Think about the positives or evidence that may counter the negatives
- Ask yourself what is another, more helpful way of looking at the situation
  - How would a friend see the situation?
  - If you were feeling well, how would you see the situation?
  - Imaging you were looking at your situation like a movie
- Focus on something else other than the negatives using forms of distraction (including counting/spelling backwards)
- Pay specific attention to what you are experiencing through your senses (what you can see, hear, smell, touch) instead of focussing on a negative past or future
- Put yourself in a situation where you are stimulating your senses (eg go where there are lots of things to look at, listen to the radio or something that you enjoy, stroke an animal or have a massage) to help shift your focus of attention away from the negative



- Stop, pause and appreciate something (do this frequently)
- Positives diary; look for at least three things during the day that you can be grateful for and write them down in the evening (note: look for the small things too, and look for the silver linings to the dark clouds)

**9. Minimising coping resources** (believing you will not be able to cope at all)

*Strategy: increase your confidence in your ability to cope adequately*

- Remind yourself of specific times when you have coped adequately or well.
- Imagine yourself coping how you would like to in a situation (this will make it more likely that you will actually respond like this in that situation)
- Remember that just because we may not have coped perfectly in a situation, does not mean that we didn't cope at all – usually we find some way of getting by!
- Recognise that one of our resources is to ask for help when we need it

**10. Emotional reasoning** (just because you think/feel something, you believe that it must be true)

*Strategy: Recognise that just because you think or feel something does not mean that it is true; and use your emotions to help you meet your emotional needs*

- Try not to think of a pink elephant. Just because you might think of a pink elephant in the room does not mean that there is one. It is just a thought.
- Feelings can change, and therefore may not always be correct

*Strategy: Learn to listen to our initial negative emotions because they are indicating to us that something is not right (perhaps it is the way we are perceiving things or perhaps something in the environment needs to change)*

- Ask yourself what you need to do to feel better rather than dwelling on the issue that is triggering the emotion (dwelling on the emotion or ignoring it only usually makes the emotion stronger)

*Strategy: mindfulness- thoughts are like trains*

- Remember our thoughts are like trains coming into the station of our mind. We can't stop them coming, but we can choose if we are going to get on every train and ruminate on it

Instead, accept that the thought is there, label it, then refocus onto something else, and be aware of the thought eventually fading by itself

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