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**Stress, ADT, and Mirror Neurons – Understanding their
Interconnections to Help you Thrive Better at Work**

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Abstract

Managers today have to deal with a large number of parallel demands on their attention and time. To be effective at work it is no longer sufficient to be competent and knowledgeable – rather one needs to be able to manage stressors effectively. Stress need not necessarily be a ‘bad’ thing, and yet poor management of stress can lead to severe underperformance at work. In this paper I explore the physiological and cognitive dynamics that form an inevitable part of the stress response. I also explore it’s interconnection with Attention Deficit Trait (ADT) and the role of mirror neurons because managers seldom work alone – their performance is mostly embedded in a context of several individuals working together.

Keywords: Stress, Attention Deficit Trait, Mirror Neurons, Brain, Mental Functioning

2.1– Introduction to Stress

Stress is formally defined as the body-mind system's response to perceived threat. This word 'perceived' is a very important part in the definition of stress and its importance will be discussed in detail in the next sections. At this point, let's pay extra attention to the meaning of this word 'perceived' to note the point that this is a 'response' which is designed by nature to kick in, even before we are sure that there is an actual threat. Let us look at how this response kicks in even when the perceived danger could actually have been functional for us.

Let's do a little role-play-like exercise to understand nature's intentions behind it.

Let's imagine that a friend of mine, say Amit and I, are walking down a path in a jungle and we see some movement in a bush nearby and some orange furry type thing and Amit says "Ah! That might be a tiger" and he runs away. But, I am a professor and as professors we have been taught not to get into 'black and white judgments' about things. I try to think in an integrative way, and look at a problem or situation from all possible angles. Therefore, I don't run away and analyze the situation and think "That need not be a tiger, it could be a stuffed toy, it could be someone hiding there or something that I could explore". But, if we see it in the long run, it's Amit who is likely to survive longer and not me because sooner or later, it's going to be a real tiger and it's going to eat me up.

In the above example, what was it that helped Amit escape which eventually helped him survive and what was it that did not help me escape?

It is something we call as the 'stress response'. Something just clicked in Amit and he thought "That is a tiger" and he ran away, whereas I didn't. What was it that clicked? We can think of this as moving from mode 1 to mode 2, something similar to active, sleep or silent modes, etc. in our smart phones and computers. Amit moved from one mode to another mode. This other mode is called 'stress mode' and shifting to this mode is what helped him escape.

In the next section, let us examine the changes that took place as a result of this shifting of modes.

2.2 – Effects of Stress on the Physical Body

In this section, we will look at the changes in Amit's body-mind system that enabled him to react in that way as soon as he perceived the threat. As soon as our brain picks up a threat signal, the region of the brain known as the 'hypothalamus' sends out alarm signals and releases certain hormones that work as catalysts to go all over the body and various parts of the mind to deal with this perceived threat.

The first hormone that is released is what we all are very familiar with, known as ‘Adrenaline’- the fight or flight response hormone. It is released almost instantaneously. It pumps up the heart to beat much faster to circulate the blood, increase blood pressure and energize us i.e. it provides us with a sudden burst of energy. This is exactly what Amit needed to run away from the tiger.

The next hormone that is released is known as ‘Cortisol’. It is released a little late. Say, adrenaline takes seconds to be released, cortisol will probably take minutes to be released. This is because it is similar to a two-step process i.e. it involves the release of two mini hormones which then trigger the release of cortisol. The fact that a space exists is important and we will talk about this space when we start talking about managing stress in a later section. Now, what does cortisol do? It acts as a catalyst and goes through the body to alter functions of various organs.

If Amit is running away from the tiger, he needs to use his arms and limbs the most, and that is why adrenaline increases the blood sugar and pumps glucose into the arms and limbs. Besides this, a sudden surge of energy and glucose is created by suppressing certain other functions that would have otherwise used up bodily energy. They are suppressed for the duration of the perceived threat. Now let’s see what responses are suppressed. These are the systems that we might not really need at the instant when we have to run away from a threat (a tiger in our example).

Let us imagine Amit has eaten a nice heavy breakfast and his body is digesting it. The digestive system takes up a lot of energy to perform its task. At the instant when he has to run away from the tiger as fast as possible, what do you think is more important? Digesting that heavy breakfast or running away from the tiger? It is more important to run away from the tiger. Therefore digestive system is put on hold i.e. suppressed for the time being. Another system that is very important but not as important at this instant is the immune system. There are bacteria and germs all around us and within us. Our body is continuously fighting them but, at the moment it is more important to fight the tiger.

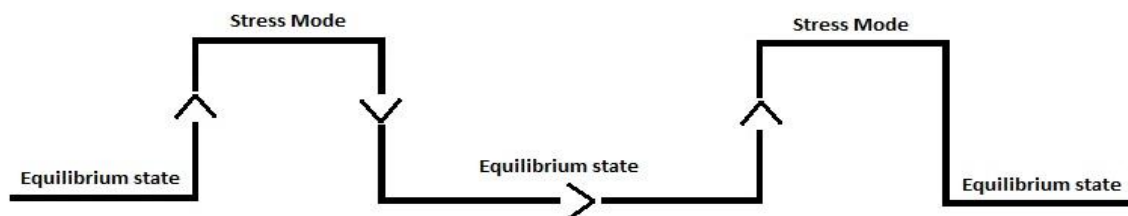
Therefore, the reserve of that energy is given to the hands and legs and few parts of the brain which we need to fight the tiger or to run away. Next system that can be suppressed is the growth system. We are continuously growing. Not just kids, all of us are growing and are generating new cells. But we can grow a little later, once we run away from the tiger. So, growth is put on pause. Similarly reproductive system is very important to reproduce but not right now. Not when the tiger is there. So the entire reproductive system goes on temporary suppression. All these responses are triggered by cortisol. It’s a catalyst and as long as cortisol is present in the blood stream, these functions are suppressed. Along with the four systems mentioned above, certain other peripheral systems related to the skin and nails are also suppressed as they are important in

the long run but not very important right now in the face of the threat. It is a very clever design and it actually helped Amit escape and survive in the face of danger.

There is just one problem. This stress mode is supposed to be a temporary mode. When it extends for an elongated period of time, it creates problem. All the changes and release of hormones was triggered by the sympathetic nervous system. Once the perceived threat has disappeared, the system stays in the stress-excited response state for a buffer period, for a simple reason that the threat might reappear. We are on red alert for some time and then naturally come back to normal state. How do we come back to normal?

Another nervous system known as the ‘parasympathetic nervous system’ comes into action. New hormones are released that flush out the cortisol and adrenaline from the system, because as long as cortisol is present, it’s going to be suppressing the basic systems like digestion, immunity, etc. Here, the kidneys work to flush the cortisol out and the entire system comes back to its normal functioning mode in which all bodily functions work as they should.

So, if we were to draw a little graph to explain this shifting of modes, it will probably be something like this.



Once the perceived threat is detected, the sympathetic nervous system goes up. Adrenaline, cortisol and few more hormones are released. This is the stress state i.e. the red alert state. It stays there for some time after the perceived threat has passed, and then comes back to its normal state known as homeostatis i.e. equilibrium state.

It is normal if the system comes back to the equilibrium state and there is a significant period of time before the next perceived threat comes, i.e. when the body again goes into the stress mode. This time gap between the two threats is the time when all our systems are working normally. The body system can handle this.

A fascinating book called '*Why zebras don't get ulcers*' talks about the stress response mechanism. Just like us, animals also get stressed when they see a threat. They run away from the threat and when it is gone, they go back to grazing i.e. back to their normal state. But the problem with us is that we might stay in that state for longer period than what might be needed. Before we come down, a second perceived threat may appear. Sometimes, the perceived threat

may be one that we cannot run away from. The body-mind system works exactly in the same way to a threat, whether it is social, cognitive or physical in nature. No matter what, a threat is a threat.

A threat in a workplace could be fear for a presentation which you need to make, or a project that is not going well. It could be thoughts such as "Oh, my God, if I don't do this well, I will get shouted at." or "Oh, my God, I may lose my job." These are the threats which we cannot run away from. We forget them and calm down but the next time we think of it, it acts like a new tiger all over again. If we can't run away from the threat, we can't get that threat out of our system. We might be chronically in a state of stress. That is why medical literature and people say that stress can be bad for our health.

2.3– Effects of Stress on Mental Functioning

In the previous section, we talked about the changes that occur in the body. That gave us a precursor to understand the changes in the body. Along with body, there are parallel changes that happen in our mind, in our thinking styles, in the lenses that we view the world with and in our focus. Just like our body, we have a normal and a stressed mind state. In this section we will see what happens to our mind in the stressed state.

To understand this let us go back to the same example where Amit sees the tiger and runs away but I don't as I was analyzing it. What were the changes in Amit's thinking style and in his ways of processing information that enabled him to run away from the tiger which didn't happen in my case? The first thing that helped him was the snap judgment he made when he saw the bush shaking and ran away i.e. the 'black and white thinking'. On the other hand, I was using nuanced thinking. Such nuanced integrative thinking is very valuable at other times especially if we are a manager in the knowledge economy but not at that moment. When we are in a stressed state, the mind automatically switches to very rudimentary black and white thinking, 'Judgmental thinking'!

Another thing that helped Amit was 'focused thinking'. We talked about bounded awareness in the previous section. What is bounded awareness? It is the ability to focus and to be aware of only certain stimuli in the environment. This bounded awareness becomes even more bounded i.e. focus becomes even more focused when we are under stress. In the example, Amit was thinking about the tiger and only the tiger and that helped him. I was thinking of various possibilities but when I am facing a threat, it is not functional for me to have such a broad open minded vision. It is functional to think about the tiger and only the tiger and run away. Our focus and our vision gets very narrow when we are under stress. But this, in the long run, may not be functional.

Next, we will talk about the lens through which we all look at the world. In positive psychology, it has been found again and again how it is actually useful to look at the world through rose-tinted glasses. An optimist looks at the world through rose-tinted glasses, i.e. if there are mixed signals, an optimist interprets them in the best possible way. They see the glass as half-full rather than half-empty. It has been seen that optimists show much better longevity, better health and many other benefits.

Going back to the tiger scenario, let's see what happens to these lenses when we are under stress. Amit sees the tiger and runs away, and somewhere else he sees another bush shaking, just a bush shaking, nothing else. These are 'neutral signals' which can be interpreted in multiple ways – "there is a cute rabbit hiding there", "maybe somebody needs my help" or "it could be a tiger". In this particular case, when he is already running from a tiger, what's going to be the most useful interpretation for Amit? "This could be another tiger, run away!" Or "It could be the same tiger". Interpreting neutral signals in the worst possible case-the glass is half-empty, is functional. So when we are stressed, our lenses shift and we start looking at the world with distrust, skepticism and doubt. We imagine the worst case in each person, in each thing that happens. This is designed to help us escape from threat and keep us safe.

Another thing that helped Amit escape was 'the impulsiveness' to make very impulsive decisions. Impulsiveness is not considered as a good trait in long run, but in the situation when we are running away from the tiger, it can be useful. We need to make impulsive judgments and that's why the mind becomes more impulsive when we are in the stressed state.

Let's look at yet another factor, 'the ability to be comfortable with uncertainty'. Great managers and leaders need to be able to embrace uncertainty, stay with the problem, the solutions and with the fear without rushing, to bring closure to events. These are very valuable traits for a leader or manager, but when we are facing imminent danger, what helps? What helped Amit escape? There was a spike in the need to bring closure to this threat. He didn't want to stay and figure out if it was a tiger or not. So this spike, in a need for control, to bring closure to the uncertainty and whatever is bothering, gets triggered as well when we are in a stressed state.

A leader needs to be able to see 'the big picture'. But here, it actually helped Amit not look at the big picture but look at just the problem that's bothering him. This can be seen as a mode that helped Amit in escaping from an imminent threat. But it may not be good if our mind continuously operate in this mode if we are a manager, a leader or even if we are normal human beings interacting with others.

An example can explain this change in a better way. Suppose I am a manager hiring someone for a job and I hire a person because he is an integrative thinker. He can think of nuances, he can see the several shades of grey, doesn't reach snap judgments or take impulsive decisions and he can

look at the big picture. I also hire this person because he is very cheerful and positive, he looks at the world in a very optimistic way and the other interviewers thought that as well. Then once this person joins us, we just burden him with too much work, create too much worry and we just ramp up the stress level in our organization. As a result this person starts being very stressed. When he is under stress, he starts misinterpreting what his colleagues and other persons are saying. This change can be explained in this way. When we are stressed, we have a lens which tends to interpret things in the worst possible way. So, his natural optimism is not showing up. What's showing up is someone who is misinterpreting things, not seeing the big picture, very narrow-minded, being judgmental and impulsive, who seems not happy in dealing with uncertainty while going through such time of flux and change.

This is happening because he is operating in a stressed mode which may not be suited for working ideally. And yes! Perhaps the stress sometimes is quite inevitable. But we should also try to be able to operate in the normal mode for as long as possible, which is efficient and effective.

2.4 – Possible Benefits of Stress

So far, we have seen that stress can be bad for us only if it prevails for extended periods of time. In the short run, it can help us. The sudden spike of energy in the body can help us to run away from threat and danger. We will now see how it helps our mind. It helps us to focus on the work we are doing and getting it done without being distracted, without thinking about all the millions of other things. As we saw in the previous section, the big picture is not always good. Sometimes, we want to bring closure to a project. Stress helps us work on things with stringent deadlines.

At this point, we will talk about one more predominant hormone that is released during stress which is known as 'Oxytocin'. Oxytocin, commonly known as the trust hormone, has become very popular these days. It is also called the cuddle hormone because it is released when we hug someone. The reason it is given these nicknames is that oxytocin works on our social behavior. It works on the social part of our brain. It encourages us to go out and make connections. This hormone is released in mothers during and immediately after child birth. It's the hormone that makes us want to bond with others, makes us reach out and ask for physical comfort with other human beings. It induces us to ask for support as well as to give support to those who need it.

Nature was quite brilliant in including this hormone in the mix of stress hormones that are released. You must have noticed that in times of crisis and calamity, people tend to bond together in unusual ways that they otherwise would not have. We see that when there are natural calamities in places, people just get together, bond and socialize. They don't want to be alone. That is what oxytocin does. It is part of nature's design that when we face a threat, we go out and

seek comfort, give comfort, co-operate with our friends, but not with our foes. The negative lens exists to make us cautious of future attacks. Oxytocin ensures that we don't face our problems alone and that we try to reach out, get help, bond and communicate.

There was a Technology, Entertainment and Design (TED) talk by Stanford psychologist/ Professor Kelly McGonigal titled as "How to make stress your friend". She has presented her research supported by plenty of evidence. One main point she made is that it's a person's attitude towards stress rather than the stress itself that causes damage. Our beliefs and thoughts can actually lead our bodies to believe that something is helpful and something is harmful. That is, if we fear stress, it is going to damage us more.

While Professor Kelly has showed many evidences that stress is not bad for us, it is still true that stress can be bad for us if it stays for prolonged periods of time. The fact that cortisol suppresses functioning of our digestive system, immunity system, reproductive system, growth and many other body systems. Oxytocin may be giving us a few benefits, but cortisol is suppressing other systems. We can tolerate a little suppression, but we cannot withstand prolonged suppression. Our digestive system would break down if it is suppressed for a prolonged period. Similarly if our immunity system is suppressed for a prolonged period, we would catch a cold or fall sick and indeed we do fall sick when we are stressed for prolonged period.

We can say that stress equips us to grow up and face challenge, gives us the extra energy, has good side effects such as wanting, leading us to go out and connect with people we care about and care for but, only in small doses. In a large dose, chronic stress can be bad for our body as well as for our style of thinking because we don't want to always be focused on small things. We need to be able to see the big picture, see the good things in life and want the positive lens back. That's how we will grow. So, we should use stress as a spike of energy and focus. Without it, we probably wouldn't be that functional or productive.

2.5 – Workplace Stress and Attention Deficit Trait (ADT)

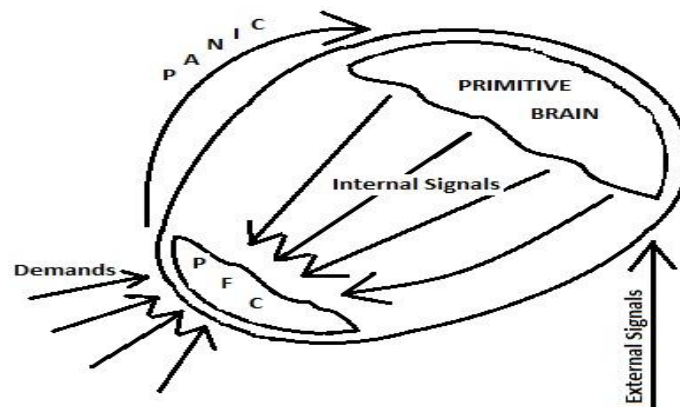
In this section, we are going to talk about workplace stress. There are many causes for stress at the workplace. It can be something big that can lead us to perceive it as a threat and therefore we go into a panic mode and the entire stress response gets triggered. Thoughts such as, "Oh! I might lose my job" or "Oh my god! This is going to create a complete mess" or an ego threat such as, "Oh my god! People are going to laugh at me" can seem to be really big.

There are different ways of dealing with the threat. One is to put that threat in perspective to really see if it is big enough, and then work with it. This is called 'cognitive framing'. If we know that our mind is prepared for it, we can step in before the stress attacks and can actually prevent much damage. We can also find ways to calm ourselves to believe that the threat doesn't

really work. But, we have to work at eliminating the cause and not just the response because if it is not a cause that we can run away from then we can just do it. If it is a deadline that's really bothering us, we could decide to just get focused and finish it i.e. we can eliminate the cause. Work so that the cause is no longer there. That's one approach and stress can actually help us in such a case to work more.

If the cause is some imaginary thought that is not going to come true and the thought just keeps reoccurring, then we have to work on our mind. We can't eliminate the cause but have to reappraise that. We need to come to a state where we don't see that as a threat any more. This is the only way one can manage this kind of stress. Another kind of workplace stress that affects all of us is just plenty of tiny demands on our time. Edward Hallowell has coined a term for this kind of stress that is induced by several small demands on our attention and the term is "Attention Deficit Trait". It's not an attribute of a person but it's something that is triggered by environment and it can happen to anyone.

Let's look at a rough sketch of the brain and discuss the role of few of its important parts.



Here, the first part we are going to focus on is called 'primitive brain'. This is a part that we have in common to our ancestors. And the other important part is the pre-frontal cortex which Edward Hallowell says contains the 'executive control' because this is the most evolved part of our brain and perhaps the chimpanzees too have it to some extent. This is the part we use the most as managers or as executives. The pre-frontal and frontal lobes is the part that we use for decision making, calculation, prioritizing, logic and all the tasks that we value about ourselves for the kind of work we do.

Pre-frontal cortex is similar to a super computer. It is very capable and efficient but it is not a very good parallel processor. It is more of a serial processor and less of a parallel processor. Here, we can think of a question. Aren't there individual variations in this? Aren't women supposed to be better at parallel processing than men? That's true, but everyone has a threshold of processing things in parallel. One can do three, four, five or six tasks at a time, but at some

point they will reach their threshold. For each of us, our pre-frontal cortex has a threshold which might be unique to us. We have a finite capacity to process things in parallel.

What happens when we hit our threshold? When the demands on attention and processing that the environment places on our pre-frontal cortex hit our threshold, it gives up and sends a panic signal to the primitive brain. According to the structure of the brain, usually it's the primitive brain which is higher in the hierarchy. It sends signals such as—"All is well", "Everything is fine" i.e. umbrella signals, to the pre-frontal cortex. As long as the primitive brain is fine and comfortable, the pre-frontal cortex is the new cortex and the frontal lobes have all the space and permission they need to perform their function.

In the tiger example, when the threat is perceived, the primitive brain actually comes to the rider's seat and the functioning of the pre-frontal cortex is partially suppressed. Only some parts of the pre-frontal cortex functions and also not at its full capacity. The primitive brain fuels focused thoughts such as "I just need to run and get out of here". It helps us escape from that perceived threat.

In the example, the threat signal comes from outside i.e. from the tiger. In this case where our mind is surrounded by too many demands, the threat signal is internally generated. It is generated from our own pre-frontal cortex which cannot handle all the parallel demands and attention and says "panic" and sends the control back to the primitive brain. This kind of stress called ADT, is very interesting in two ways. The first reason is that the brain gets caught up in a "neurological catch-22 situation". The reason we got stressed and got into this muddle is because there were several demands on our prefrontal cortex. These demands can be like, I am working on some calculations in an excel sheet and replying to an email and when I am trying to do them in parallel, a colleague steps in and says "do this" and I am also thinking about a presentation I have to make later in the day. All these are small things but they all require our prefrontal cortex. Once our primitive brain is in the riding seat, we are equipped to run away i.e. to perform very primitive actions. I cannot solve the problem, structure the presentation or reply to the email because I cannot process and prioritize. Our primitive brain cannot do the kind of work that the prefrontal cortex has to perform. But it is in the riding seat so it says, "panic noted, can't solve the problem" which even the prefrontal cortex can't handle.

This is the 'neurological catch-22 situation' and this kind of stress is very unique. One of its characteristics is a sense of low panic and guilt. Here, the sense of panic is understood but why is there a sense of guilt? This sense of guilt is because we are not able to put our finger on the cause of this stress. If it's a fear of losing the job or an upcoming deadline, we know the cause of our stress. But in this case, we don't know the cause. And we feel guilty because we are supposed to be able to do all these things. It only gets worse by the implicit norms that we see in the workplace these days in corporate life.

Somehow, these norms were formed by people who didn't know enough about the brain. This is justified on our part because we didn't design our brains, nature designed it for us and she designed it for us to handle a limited number of things. But we are trying to do many things in parallel. We don't realize that even though we are completely capable of doing each of these tasks, we are not designed to do them all at the same time. Hence, when we don't realize that, we feel guilty, incompetent, irritable and panicked. This is a result of the workplace stress and in the next section we will see how we can recover from ADT.

2.6 Recovering from ADT

In this section, we will discuss about the ways to deal with the stress discussed in the previous sections.

The solution is quite simple, but sometimes it seems counter-intuitive. Since, we have so many demands on our mind, we tend to attend more and more to them. But it does not help because at that point our prefrontal cortex is not functioning at its full capacity as primitive brain is in the riding seat. We try to do more work in that state when we are not as intelligent and not thinking as clearly as we ought to and are not making great decisions. It is not a very useful strategy. To get out of this loop, we need to give the control back to our prefrontal cortex i.e. we need to soothe our primitive brain. How do we do that?

We soothe the primitive brain in ways that the primitive brain understands. We don't try to philosophize or logic ourselves out of the situation. Very simple things we can do are: go out for a walk, relax, socialize or chat with a friend and go back to work. The primitive brain soothes down i.e. the control comes back to the prefrontal cortex and we can get started with our work once again. Let's discuss very briefly about why just going out and having a chat with a good friend or someone we care about can soothe the primitive brain and get us out of our perceived panic attack.

Imagine that you go out and have a chat with your friend. While you are chatting with your friend, your primitive brain also communicates with the primitive brain of your friend through what we now know as "mirror neurons". We will discuss about mirror neurons in detail in the next section but for now let us assume our primitive brain understands that "if there is a huge problem, this is my friend; he or she cares about me". Thus, our primitive brain gets soothed. But there are two things you need to be careful about. One is to make sure it's not some friend who is working on the same project as you and therefore you both hustle for the same reason. It's not going to work then and also your friend's primitive brain could instead pick up your irritation and anxiety. But you can give it a chance. Typically, it is easier because if your friend is maintaining her calm, she is probably doing so because there is no real big problem. But it's just these small things because of which our prefrontal cortex reacts. As you interact with her and share smiles,

your primitive brain is going to pick up cues and soothe down, giving control back to your prefrontal cortex. Your pre-frontal cortex can now look at things rationally and see that there isn't a really big problem. It's just that it wants to do things one at a time and then it can do them.

2.7 – Mirror Neurons

In this section, we are going to talk very briefly about how mirror neurons play out. First let's see what mirror neurons are. Mirror neurons are a relatively recent discovery and they were discovered in a very interesting way by a scientist in a lab by accident in Italy. At that time, scientists had been studying one human brain at a time in a lab. They were studying the brain of a monkey and they were mapping different regions of the brain. There was a lab assistant who was keeping track of which action of the monkey activates which part of the brain. During a break in the experiment, the lab assistant noticed activation of the part of the brain usually associated with a monkey's arm movement, but the monkey was still. He called up the professor and told him that there was something wrong either with the previous mapping or with the way they had wired up the monkey. They checked everything and it seemed to be correct and then they just happened to notice that the monkey was intently gazing outside the window. The monkey was looking at another lab assistant who was standing outside the window. That assistant was eating and was moving his hand up and down.

As the monkey was gazing intently at this person, brain cells usually associated with the monkey's own hand movements were lighting up on the screen. This observation led to the discovery of mirror neurons. Thereafter, the scientist started observing the interactions between two people in the lab and studied their brains. We are that social. So the next time you are talking to a friend, you might think that you are talking to your friend but your brain is also talking to your friend's brain even without you knowing it. That's how we pass on moods and thoughts. We actually pass on our neural configurations to other people owing to the presence of mirror neurons.

This study showed that mirror neurons can actually help us out through social interactions.

2.8 Prioritizing Post-ADT

In the previous sections, we have talked about few seemingly easy strategies to soothe our primitive brain and regain prefrontal cortex's control. But, as mentioned earlier, one needs to be careful with these strategies. Let's say you were really stressed at work and had five or six tasks to perform such as having three computer screens open and people asking questions. It just all gets too much and you recognize that it is 'ADT' or 'two things in parallel' and you decide to go for a walk. You went for a walk, called up your mum, chatted with her, felt soothed and as a result, started thinking rationally and intelligently. When you come back to office and start

working, again there are three windows in parallel, one phone call and presentation work. The panic signal goes back and you go back into the same port. But, you can't keep going for walks and calling up mum as you also have work to do. So what can one do to handle this?

The solution is that when you come back, you need to handle things one at a time i.e. prioritize them, but in which order? ADT can be managed in two ways. The first way is first aid. When we have just come back and are not really sure how fresh and rejuvenated we are feeling and we still feel like we need some hand holding, then we need to prioritize our work. We need to take the easiest task first and the next one only after finishing the first one. Why do we need to do that? That's because we are building confidence. It's similar to a child panicking; we would give the child a very easy task, not a challenging one. Consider the prefrontal lobes as a child and give it easier tasks first, to build confidence and then the more challenging tasks. It might seem counter-intuitive if we are under a lot of pressure. In that situation, we would want to do the most challenging and important one right away but, perhaps our brain is not ready for that.

If our brain has really rejuvenated and we are feeling completely fine i.e. if our prefrontal cortex is completely humming and bursting with life and energy like it is when we get up after a good night's sleep, then we can start with the challenging and most important task but, one at a time. We should attempt one task with focus, minimize the distractions, give it the entire attention of our prefrontal cortex and get it done.

2.9- Managing for ADT

In this section, we will discuss how we can manage for ADT or stress that is induced by several multiple things together. There are two ways to look at this. As mentioned earlier, the first few things we can do to increase the capacity of our brain are eat in a way that helps our brain, get good rest, good sleep, drink plenty of water, take breaks as intermittently as we work and take social breaks. They are not a waste of time; they are good for us from a productivity point of view. This is what we can do at a personal level.

Remember, ADT was induced by the environment, because of the multiple demands on our attention. Can we also manage the environment around us so that we don't get bombarded with multiple demands for attention? Absolutely, we can! Being a little more disciplined about not allowing e-mails to interrupt when we work, switching off our phones when we work, or whatever it is that works for us. We should try and see that we don't keep getting demands on our pre-frontal cortex at the same time.

To me personally, one of the greatest learning from looking at ADT and the way the brain is organized has been to try and see what I can do especially when it comes to things such as e-mail and checking messages on the phone etc. I used to do quite a bit of that until something

interesting happened. I lost my iPhone, it was stolen when I was holidaying on a highway. I had an option to get another one, but I just decided to experiment for some time without that as a new version was soon going to be released. So I held on and I had an old phone that I used ten years ago.

While I was waiting for the release of the next version of the iPhone, I experienced so much peace that I decided not to buy a new one. All I could do on that old phone is take calls and make calls. I could forget about checking e-mail on the phone or surfing. It has led to so much peace of mind; it had made my life so much easier that I decided not to go back to a smart phone. The funny thing is, five months after I did that, looking at my experience and probably influenced by other sources as well, my husband who had a smart phone put it away and got himself a dumb phone like mine. By no means does it suggest that we all need to drive away from technology. We need to find our own comfort zone and maybe we won't be always using dumb phones.

Maybe we will see the benefits of having a smart phone and that will overshadow at some point, the costs that we associate with it and we might just go back to smart phones. The point here is that we should experiment and find our comfort zone because all of us, in the current environment, find ourselves bombarded by demands for attention. They may not be demands for work. They might be demand for attention, a joke that you received or your child recounting a very happy incident from his school.

That's a demand on our pre-frontal cortex. All these demands could be good things or they could be bad things, but when a lot of them come together, the pre-frontal cortex gives up and we get into the panic response and therefore the stress. It is all about finding ways to manage our environment. Here, I definitely do not advocate running away from relationships or from conversations or from technology, but we should just understand that they wire us up. Therefore, let us use this knowledge about the functioning of our brain and our own self-knowledge about what is our individual capacity of doing things in parallel. We should try not to get into this trap again and again. We still will get into it, but when we get into it, let us also recognize how to come out and manage things better once we come out.

So, this is how we can manage ADT. In the next section, we will see how we can help others manage stress.

2.10– Helping Others Manage Stress

You have seen that the ways of dealing with ADT are very simple and they seem real no-brainers. Things that probably your grandmother has been telling you all the time such as take a walk, take a break, hang out with friends, relax, talk to your mum, put some music, and have a good meal soothes your primitive brain as well. These are very important because sometimes the

solutions are so simple that we tend not to do them-“This can’t solve my problem because you know what? My problems are emanating from the fact that I am doing financial derivatives and advanced calculus and planning board meetings and all that, How can taking a walk help?”

Taking a walk can help because your primitive brain is in the riding seat and you need to soothe that before you can do all these advanced calculus and calculations that you need to be doing. If you are a manager, you should take the time and effort to organize the environment around the people who are working for you as well. You can try and help them manage their environment so that you are not leaving them in parallel with many things at the same time. You cannot give them work ‘A’ to do and in the middle interrupt them for work ‘B’ and then ask them, “No! Give me ‘C’ right now”. You should try not to do that.

Try not to add to the stress of the people whom you hire because you have hired intelligent people and you want them to work with the intelligence that you hire them for. You don’t want to hire intelligent people and then put them in a situation where they are smart but you are not letting the smart part of their brain function. You are inducing their primitive brain to function by overloading them with so much work. Since their primitive brain operates now, they can't perform any of the smart tasks that they could have done for you. This is not a very clever way of utilizing the resources you have hired. Hence, you should manage ADT for yourself as well as others. And not only should you help manage the environment for people who work with you and for you i.e. both your colleagues and sub-ordinates, but you should also empower and equip them with this information, so that they can also take steps to internally manage their own stress better.

At this stage, I am going to share an incident. I was quite a nerd when I was a student. I stumbled upon certain rituals that worked really well for me; both from the point of view of studying as well as from the point of view of doing well in examinations. It’s only now I realize that I used my brain very effectively. Let me share with you a few of my studying methods. I am someone who actually loves nature and being outdoors and is very passionate about nature. When I get stressed usually I hug trees. I just love being surrounded by plants. When I was at school, I always used to study in my garden. When I went to college i.e. to IIT Madras which has a beautiful large green campus, I used to take all my books to the garden, climb the trees and study there.

I used to feel a little weird, awkward and shy about this and my friends would call me a monkey. But this worked for me because I didn’t really feel like studying indoors. I did not know then that I was really soothing my primitive brain. My primitive brain was very happy when I was on a tree or when I was in the midst of nature; and when my primitive brain was happy, it was giving all these “go ahead”, “everything is fine” signals to my prefrontal cortex which was all open and ready to absorb the math, the formula, all the intelligence, and all the processing. The processor

was there for my use and disposal. I did not realize it, but it was a ritual, I just kept doing it. And similarly before exams, I had this sort of mantra, something that I would never compromise on. On the day of an exam, I would eat my favorite food before I would go for the exam. I would make sure that I was feeling very happy, my emotions were good. I used to get myself into a place of feeling very nice and I used to say a little prayer, perform my own little ritual to the God that I believed in and just get myself into this very good space before I would embark on the math or the analysis or the exam, whatever it was.

Again by doing that, I was guiding my primitive brain into a very cozy, happy, comfortable position, giving everything to the prefrontal cortex to process what was coming in. It really worked. I thought it was just a ritual and it was just mine. Several times when I was in school as well as in college, my friends have asked me, "hey! I have to study, what works for you?" I did try sharing things with them but it couldn't work for them. Because climbing a tree may not soothe everyone's primitive brain. I cannot just reveal my prayers and mantra to someone and tell them that it's going to work the same way for them. It works for me because it's so personal to me. What I didn't realize was, I should have told my friends to find a way that would help them to be comfortable, that will soothe their own primitive brain.

The primitive brain gets soothed in primitive ways. Once that's soothed, you have your prefrontal cortex ready to process the difficult and nerdy tasks that you want to do. I knew friends who would study very well in the company of a best friend or with someone they were dating. Since, their primitive brains were humming and happy just to be in the company of the other person; their prefrontal cortex would be all ready to process the information and the stuff, do the logic, and do the analysis.

When you take this knowledge forward to implement it on yourself, your colleagues and your subordinates, share the strategies that worked for you but more importantly share the structure of the brain, share the process, so that people can come up with their own strategies that work for them. Otherwise, if you just tell everyone to go for a walk, or do things that works for you, It becomes just like these rituals that might not work for them. Also you don't need to do ask them to do everything i.e. go for a walk, pray, meditate, climb a tree, eat your favorite food etc. They need to carry out one or two of the tasks, at the most. Thus, share the process, share the signs and that will really help people manage their own stress better.

2.11- Conclusion

To conclude, stress by itself is neither good nor bad. We cannot have a blanket statement that stress is helpful or harmful. It depends on the context and the kind of work. Stress can help us focus and it can energize us to finish a task. It can help us focus, caution us and make us prudent and alert. It can also make us social, motivate us to go out and seek support and also give

support. Whether these benefits are going to be helpful to us or not depends on the nature of the challenge. If the task at hand is something that needs focus and single-minded attention, and something that we need to finish within a deadline, it doesn't need creativity or nuanced thinking in several shades of gray. It doesn't need us to look at the big picture. Only then, stress can help us.

But if it's a task that needs us to look at the big picture or to see the brighter side of things, then stress might not be helpful. It also depends on whether it's an individual task or a group task. When we perform one of those team-building exercises such as white water rafting or hiking and go through such a dangerous context which is very stressful; we come back with a real sense of bonding with the team. Oxytocin that was released during our stressful simulation or activity actually helped us bond better and create better relationships with our peers. Hence, if you feel more connected to people with whom you have gone through a danger or a really challenging phase, oxytocin was at work. Those are benefits of stress. Therefore, stress can benefit you but it depends on the nature and context of the task.

There are harmful effects also. Certain functions in our body are put on pause when we are under stress. The reproductive system, the digestive system, growth, immunity and some parts of our brain function less effectively. It's not the creation of new energy, it is the trade-off that we are making for that excess energy and focus. We are drawing excess energy from our future resource of energy.

Let us consider an analogy. What do stimulants such as tea and coffee do? They give us a burst of energy. They don't create energy, but they help us borrow energy from our own future reserves of energy. For example, suppose I have a class where it is important for me to play a match and I need a burst of energy. So, I borrow energy from my own future self and after the match or the class, I go back and relax. Remember the troughs and the peaks that I drew. That's really stress. We can use nature's design of the stress response intelligently. The only caution is that we need to be really cautious about not to fool ourselves into believing that this benefit is going to stay forever. It is to recognize that the benefit works for certain kind of tasks and contexts and it is also imprudent to recognize that this benefit works in spikes i.e. in short bursts.

It's not something that we would want to continue on a prolonged base because this benefit comes at a certain cost. There are certain other functions that are giving up their right to function in order to give us these benefits. So let's appreciate nature's design of the brain which has a primitive brain and a pre-frontal cortex with division of work. Let's appreciate nature's design of our bodies, of the sympathetic nervous system and the parasympathetic nervous system. Nature has given us a very intelligently, thoughtfully and compassionately put together structure, in terms of our body-mind system.

Stress becomes a problem if we ignore nature's design and we expect our bodies and minds to operate like machines. We have been designed in a certain way and we don't want to operate like machines. As long as we decide to acknowledge our human selves and work in line with that design, stresses like workplace stress will not be able to damage us.

And lastly, let us acknowledge that stress is just a word that has been coined by us; it is not something that exists out there. The science about stress is incomplete and is still evolving. We are still learning more about our body and mind and all the functions of the multiple hormones that are released. In fact, the discovery about oxytocin being related to stress and actually providing a natural buffer to some of the ill effects of stress that are caused by it on the heart is very recent.

So, as we learn more and more about stress, let's be open to revising our own ideas about stress because our beliefs and attitudes indeed influence our reality. Two latest studies in the United States also have recently confirmed that it is the beliefs about stress more than the stress itself that actually leads to long term damage in human bodies. Meanwhile, let us use our knowledge in the best possible way.