

Emotional Ergonomics

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Abstract

This discussion explores a term I have coined as *Emotional Ergonomics*. The basic premise of Emotional Ergonomics is based on the science of Ergonomics, which looks at the Human Factor in the workplace. Due to the great breakthroughs in the field of neurobiology, we're starting to understand the impact of the emotional brain in relationship to cognitive processing. We now understand that when employees' internal and external behaviors in the workplace are less effective, the employee and others are at greater risk. Neurobiology now understands that ineffective emotional processing of the employee's environment too often leads to unnecessary cognitive errors and increased psychological stress, which contribute to the potential for physical and psychological breakdown. Emotional Ergonomics looks at the variables which influence the employee's emotional brain, and their consequences.

The information considered in this paper is for the purpose of introducing the ideas of neurobiology and psychology, and their application in the field of Ergonomics. This discussion is from the recent empirical findings of our understanding of Limbic system (Emotional Brain). This discussion will explore how the emotional factors of the workplace, when not fully considered, will be a sound explanation of what is inhibiting, and interfering with a growing number of employees' performance.

For example, my first career started out in the area of corrections, where I was a twenty-two-year-old youth worker, working in a correctional setting with fourteen- to eighteen-year-old offenders, and where I had no previous work experience. One of my first emotionally ingraining experiences was with the Director for Youth Offenders. The first talk I heard from my new director, who was addressing eighty-five new employees besides myself, is what I now define as an emotionally toxic speech that served no purpose except to create fear, and with the fear came emotional damage. He said that in corrections, one should expect to survive only for five years. Then he went on to list all the reasons why 50 percent of us would not be able to handle the job, and why people burn out in corrections.

It seems that he was justifying our emotional fragmentation. In my mind, he set the stage for the emotional breakdown of this new staff. As you read this text, you will gain insight as to how the emotional brain is influenced by the environment, and how it is independent of the cognitive brain. Now having worked for seven years in that environment, if I had been taught Emotional Ergonomics, perhaps other employees and myself would not have found a need to move on.

The amount of money it costs for retraining staff, and to cover sick time, stress leave and senseless accident injuries in the workplace represents one of the employer's biggest costs. What would the savings be if the overall environment was more aware of the EMOTIONAL FACTOR? Would staff morale be higher? Would the institution save money, and have more to spend on upgrading, etc.? The reality in my case noted above is that we had 60 percent turnover of staff in the first four years. I lasted seven years. I believe that many more employees would have chosen to stay if the environment was more emotionally supportive. Unfortunately, the emphasis was on the behavioral training and cognitive training of the youth worker, and not on the emotional development of staff.

Stress is a phenomenon we all know, however, we are not all trained in how to prevent it from occurring. Emotional Ergonomics looks at how to prevent the buildup of stress from occurring in the workplace, so that stress management programs would not be perceived as the sole way for an employee to survive. I have always had a problem thinking about offering stress management training, because it implies that one must have stress before one can manage it. To me, that is too much like Russian Roulette!

Dr. William Glasser, author of *Choice Theory*, provides an excellent explanation of human behavior, especially in the area of 'why' human beings do what they do. In a brief summation of this theory, he explains that all human beings have four conscious needs (love and belonging, self recognition, fun, and freedom) and one unconscious need (survival). All human behavior is for the purpose of meeting one or more of these needs. In a workplace, many employees work for the purpose of providing the means for survival, for example, food, shelter, clothes, and transportation.

This is a problem, because the employees who are working, and are only perceiving that their job is a means to maintain an existence, are at greater risk of emotional disruptions. From my experience in the field of psychology, employees who are enjoying their jobs, and have also met the needs for self-recognition and belonging in the workplace, in addition to their survival needs, are for the most part much more emotionally stable, and more productive. Glasser explains that successful and happy employees attain this state mostly because they understand that they are really motivated only by their internal desire, and that the environment can only provide information. How they respond, and react to the information is their choice. Employees who are externally motivated are much more influenced by the environment, and can be much more emotionally unbalanced, which usually leads to emotional breakdown.

Employees who are emotionally overwhelmed, in the workplace, either overtly or covertly, can be best helped by teaching them prior to their first day on the job, that to be a productive and happy person, they will greatly benefit from living their life from the paradigm of internal motivation. They must realize that they are not a Skinnerian dog. To maintain emotional stability, they need to be taught, and managed from the lead management model. The basic guideline is no use of fear. Napoleon Hill explained that the greatest leaders were never into

motivating with fear, and because they were not, they got paid back by having outstanding employees who loved to work for the company, and with that came great profits. Emotional stability of an employee begins with how skilled they are at mastering their internal dialogue, so they can maintain a positive state about themselves and their job.

Dr. Albert Ellis, author of Rational Emotive Behavioral Therapy, agrees with Dr. Glasser that negative internal dialogue will only facilitate negative effect. This will affect individuals' physiology, and greatly inhibit their behavioral potential and competency. When employees are ruled by negative emotion, their overall performance will be reduced.

The phenomenon of stress in the workplace is becoming increasingly evident, and injuries continue to be a problem. Emotional Ergonomics is a process of taking the science of traditional ergonomics, and looking at the specific application of preparing the work environment and the employee in the realm of emotional IQ (the measure of emotional response to everyday living). To increase the emotional stability in the workplace, the employer would have to first identify the variables in the job that could influence and affect the employees' emotions.

It is my hypothesis that a great deal of the stress, human error, accidents, and injuries in the workplace would be greatly reduced if employers prepared their employees not only behaviorally and cognitively, but also emotionally.

From a neurobiological point of view, what is actually occurring during any emotional disruption is that the disturbance impairs the higher cortical brain functioning (thinking brain), becomes overridden by the Limbic structure (emotional brain), thereby reducing the human's ability to perform the job to their fullest potential. There appears to be enough evidence to suggest that an employee can be prepared not only cognitively, but also emotionally, so that they have a greater opportunity to be healthy in the workplace. With this health comes improved performance and productivity. The obvious factors present when the employer has emotionally healthy employees is great savings in the area of sick time, and short- and long-term disability.

In addition to training the emotional IQ of the employee, the employer can also screen their present emotional IQ, to establish a benchmark of emotional competence prior to hiring. Emotional Ergonomics studies and identifies the relationship of the employee's emotional IQ to burnout, physiological breakdown, physical breakdown, and mental errors. We as a society have traditionally emphasized cognitive ability and behavior task, with little emphasis on how the emotional brain operates. The science of ergonomics has come about from the need to help employees to be safer on the job, and to fully consider the human factor in the workplace (e.g., repetitive motion and its effects).

The goal of traditional ergonomics has been to create a physical environment that is conducive to the human being's ability to safely exist in the work environment. In other words, assisting the employee by manipulating the environment to be the most productive and safest that engineering design can produce. The science of ergonomics has proven that it is much more cost

effective to change the environment than to expect the human being to adapt to any environment, due to the human factor, and the cost of human breakdown.

The field of ergonomics to this point has greatly improved the workplace for many employees. This science has taken the human factor, and has pushed it to the forefront of industry and corporations as a major consideration in their daily operations. I have seen the application of ergonomics do an excellent job in the area of engineering design of the physical environment of the workplace; design of the equipment employees use; exploration of the human factor in regard to the work shift by studying the effect of circadian rhythms and sleep patterns; the effects of management style on the employee; the importance of reducing cognitive processing in repetitive or mundane tasks; and the effectiveness of a cognitively stressed person.

Emotional ergonomics, which I define as *the science which studies the influence of the emotional IQ of the employee, and its relationship in the workplace*, is the natural extension of this growing field. As a science, ergonomics is becoming increasingly more important to the workplace.

The goal of this science is to provide a methodology of preparing the employee's Emotional IQ in an effective manner which provides a conscious awareness of how information from the environment that they perceive in any moment of time through one of their five senses (sight, touch, taste, smell, and hearing) can influence their cognitive processing, and have an impact on their behavior and physiological health.

It is important for all employees to understand that how they perceive their environment, and interact in it, will determine how their emotional brain will influence them psychologically as well as physically. Emotional IQ also will have an impact on predicting employees' longevity. In my mind, the mandate of Emotional Ergonomics is to prevent unnecessary physical, psychological, and physiological breakdown of the employee (e.g., preventing accidents in the workplace). The obvious benefit is that the employee will be healthier, and the workplace will be safer.

Before I discuss the application of Emotional Ergonomics, I will be explaining how the emotional brain operates, so the reader will understand the potential benefits of emotional ergonomics in the workplace.

The study of emotional IQ is based on the science of Limbic system. The emotional brain has been launched into the public mainstream by Dr. Daniel Goleman's breakthrough book, *Emotional IQ*. Reviewing his research, and that of others in the area of Emotional IQ, I will provide a brief explanation of Limbic structure, where Emotional IQ operates. It is not in the scope of this brief to provide an in-depth explanation of the Limbic system, so please accept my apologies for any simplifications.

Anatomy of Emotional IQ

The area of the brain that is of great influence in regard to how one responds to the environment is the amygdala, an almond-shaped cluster connected near the Limbic ring. This part is made up

of two structures (corticomедial and basolateral nuclear group) on each side of the brain, underneath the uncus. The corticomедial nucleus is connected to the olfactory bulb, the hypothalamus, and visceral nucleus brainstem. The basolateral nucleus is connected to the thalamus and cerebral cortex. The hippocampus is located in the temporal lobe. The thalamus, the largest part of the diencephalon, is located in the temporal lobe side of the third ventricle. The primary purpose of the thalamus is to process almost all information before it is transferred to the cerebral cortex, operating in relationship to the central nervous system. Below the thalamus, the hypothalamus has control over the autonomic nervous system, where the thalamus is the primary broker of all information for the central nervous system. The part which surrounds the Limbic structure making a great part of the limbic system is the cingulate gyrus, which appears to be in charge of emotional learning, assigning emotional relevance to internal and external stimuli.

The importance of the Limbic structure is that it regulates the onset of all learning and memory. The amygdala provides the operation of providing emotional meaning to information being processed through one of the five senses. The hippocampus is the part that provides the medium for information from the neo-cortex to enter the Limbic system, where emotion and memories are fused. The hippocampus has the ability to remember the specific facts without emotion, and only with the help of the amygdala can human beings obtain the information to attach emotion to each memory. The hippocampus is a part of the brain that allows people to differentiate between particular events that are happening in the present or that happened five years ago.

The amygdala is like an alarm clock set to go off at any time. For example, all information comes to humans via one of the five senses, and this information first must go to the thalamus to be brokered to different parts of the brain for processing. When we see something, this information goes to the thalamus, then to the visual cortex, then to the frontal lobe for specific recognition and action. Since information comes in through our eyes, it goes to the thalamus first, and in the first single synapses goes to the amygdala, and then on the second synapses, the signal enters the neocortex for processing. As you see, the amygdala is activated even before conscious awareness. Because of the shortcut, and the need for only one synapses, the information arrives in the amygdala quickly, which is why humans are so aware of their feelings before their thinking.

All humans store both negative and positive emotion in their nervous system, and respond to them before conscious understanding. An example which explains this point is that if any of your friends lives with a phobia, you can tell it is real by how they respond. People with a phobia, such as a fear of heights, would, if blindfolded, and put in a situation that involved a specific fear and the blindfold was removed, they would instantly have panic before they consciously knew where they were. As Dr. Goleman teaches, this person has been emotionally hijacked. Chronic emotional hijacking will lead to the demise of human performance.

How We Get Emotionally Hijacked

As the amygdala becomes aroused, either by external stress or internal anxiety, it fully activates the body's physiology, and initiates a system known as the fight or flight response. It is important to note that this response is activated by human beings much more than is really necessary. The structure of the amygdala is not able to determine if the perceived threat to the system is a minor word anxiety (e.g., task deadline) or if an elephant is approaching quickly. If the body perceives a threat or dislike, it will respond, and the longer the person perceives the threat, the longer the fight or flight response will be activated.

What the individual has stored emotionally will determine what information will activate the amygdala. For example, an employee who is perceiving their job as being too structured may associate that structure to earlier childhood, where they had a controlling parent. This employee starts to keep the suppressed anger inside, the body starts to release unneeded chemicals, and the fight or flight response is activated. To onlookers, the employee seems fine, but inside they are a quagmire of negative emotion and thoughts. As the body becomes toxic, this employee is more at risk of becoming ill, prone to accidents, etc., because they are not emotionally satisfied. As Glasser teaches, all behavior is total — meaning that negative emotions will influence behavior and thinking. The concern in my mind is that not only is the employee at risk, but other employees are as well, because of the potential for accident.

When the amygdala is activated, it stimulates a nerve running from the brain to the adrenal gland, which triggers the secretion of norepinephrine and epinephrine, which are neurotransmitters designed to arouse the body. These chemicals activate the vagus nerve, which stimulates heart rate, and then returns more of these chemicals to the brain to increase arousal. As the volume of these chemicals increases, the emotional memory is strengthened. The greater the intensity of a situation, the more chemical the brain will release (norepinephrine), the result is a greater imprint. This event creates the structure for the learning of a phobia at an unconscious level, which is why many people do not understand phobia. Because the phobia is emotionally ingrained, not cognitively, it is outside the individual's conscious awareness.

Whenever an employee is not meeting one of their basic needs, they will become internally and/or externally frustrated, and the process of emotional hijacking begins. When the amygdala sounds the alarm, and sends messages to all parts of the brain, it stimulates the fight or flight response. The hypothalamus signals the pituitary to produce corticotrophin-releasing factors (CRF). The cerebellum is mobilized, and signals the medulla to activate all muscles and the cardiovascular system. Other circuits signal the locus coeruleus (LC) for a secretion of norepinephrine to heighten the activity in the brainstem, Limbic system in neocortex. This arousal in turn leads the hypothalamus to become hyperactive, continuing the pituitary gland to secrete CRF, alerting the body to continue to cope with an emergency that is not present. Because the amygdala also signals opioid centers in the cortex to release endorphins, the employee can start to become emotionally numb in the workplace. This is especially important

when looking at factory workers, because the body becomes numb, and this state tricks the employee into continuing to do movements that are destructive to the body, because they block out pain to the point that permanent structural damage is done, and the employee can no longer perform the task (e.g., carpal tunnel syndrome). In essence, the emotional and cognitive interpretations of the workplace become distorted, thus the employee can lose the ability to use the cognitive process to mediate their present circumstance, and make healthy choices.

Employees who are in a job where they are doing tasks which they perceive as mundane or repetitive; or are fatigued; engaged in negative self talk; have a lack of job fulfillment; previous life stress before entering the workplace; lack personal goals; lack an understanding of the value of their role; are the type of employees who are at tremendous risk of stimulating the amygdala, and strengthening the emotional memory that the job is unpleasant. The perception of the past that has been stored as unpleasant will put the employee at greater risk of job dissatisfaction, injury and accident in the workplace, and will facilitate the development of chronic distress, which will lead to what is called job burnout. Without a scientific explanation, I term the employee who is at risk of burnout as first being 'chemically toxic' (they have activated their fight or flight so often that their body is chemically out of healthy balance, and becomes toxic and susceptible to disease). The antecedent of all stress is perception. As a person starts to recognize consciously that their job is not meeting one of their basic human needs (self recognition, freedom, fun, relationships, and survival) the job becomes emotionally toxic.

The extensive stimulation of the amygdala interferes with the hippocampus functioning, and will affect the employee's ability cognitive processing ability. All employees under stress secrete endogenous stress hormones that affect the ability to remember. This disruption also will inhibit the employee's ability to maintain semantic representation (ability to do daily learned job tasks), and if it continues, will on a daily basis imprint the emotion in a negative manner, which can incapacitate functioning and logical reasoning.

Once the employee starts to tune in to what they do not like, they will start to find it can affect all aspects of their work. This is because the reticular activating system continues to point out all of their dislikes automatically. For example, if you buy a green minivan, you will start to notice how many green minivans there are around. The same holds true for the employee who has a negative belief about a part of their job. The belief can accumulate to the point that it sets off the emotional brain, without the conscious brain fully up to speed as to why they are upset. The cycle of stress works on what Dr. Hans Selye called cumulative stress. The body starts to develop a threshold, and once it reaches its threshold, tries to maintain it, and will only be able to maintain the maximum tolerance level for so long before it will eventually just stop being effective. As discussed before, this can show up in sick time, accidents, long-term disabilities, and body breakdown. Much of this can be avoided with what we now understand about the brain. The key is to educate employers, and teach them the value of Emotional Ergonomics.

How To Put Emotional Ergonomics Into The Workplace

To increase the emotional stability in the workplace, the employer would have to first identify the variables in the job that could be perceived by the employee as a negative emotional activity (defined as the parts of their job which are not the most enjoyable, and perceived as stressful). It would be thought of as potentially a task that the employee may store as a negative, which if accumulated could hinder their performance, as well as that of others, psychologically and/or physically. Once the detailed survey of different variables in the workplace was completed, the employer would determine the emotional and personality traits they would need from their employees.

When I talk about traits, I am referring specifically to individual personality characteristics. When selecting the right employee for the job, the employer should not only consider their credentials, experience and training, but should factor in the emotional criteria as well. Once the employer determines emotional criteria, the next step would be to determine the particular screening instrument to evaluate the employee's present emotional level prior to their employment. In addition to the Emotional IQ measures on the market, I prefer to use Grapho Handwriting Analysis.

Once an employee is hired, they are oriented as to how to prevent emotional toxicity. The purpose of Emotional Ergonomics training would be to train employees in the following areas:

- frustration tolerance
- processing negative beliefs
- increasing self-esteem
- developing value in the workplace
- effective communication
- identification and understanding of internal motivation
- individual goal setting
- finding fulfillment in their work
- developing self-efficacy
- learning how to cope with physiological changes, such as the effects of circadian rhythms and ultradian rhythms
- introduction to emotional IQ in the workplace
- how to effectively use employee assistance programs for health
- continued emphasis on health and wellness in the workplace

When employees are screened for emotional stability, and are emotionally trained for the workplace, the propensity for stress related illness, workplace injuries and accidents will be greatly reduced. An employee when emotionally strong will have greater, more fulfilling purpose in the workplace.

Factors that can be looked at when addressing the development of the emotional IQ of the employee are the true impact of the work environment, and how to affect the workplace so the employee can stay healthy.

The following will be of importance:

1. Employees who have a strong confidence in their job abilities, and have a true self-acceptance.
2. Employees who have a healthy support network at work and at home.
3. Employees who have a balanced self in the areas of exercise, diet, rest, social activities, and a focus on self-growth.
4. Employees who have a health break scheduled at work, approximately 10-15 minutes every two hours; well thought out shifts for optimal physiological and psychological productivity; appropriate time for rest and integration for employees who travel frequently in difficult time zones.
5. Have a system to monitor the employees' health level, attitude, and morale. Ensure the management understands the true consequences of employees stress, so that undue stressors can be resolved.
6. Evaluate the workplace from different perspectives to screen for potential stress.
7. Allow employees to have an opportunity to learn to stay healthy in the workplace.
8. Repeat programs. It takes the average person five to seven times to learn anything. A stress management course once every two years will not be a great deal of help in the long term.
9. Ensure the leaders are living role models of health and well-being.
10. Promote the theme that employees make companies, thus happy employees make happy companies, which usually results in better lives, and profitable companies.

The field of ergonomics comes out of the need for creating a physically and psychologically healthier workplace. The fact that now, ergonomics is almost always considered in the design of factories, oil platforms, and even offices, is evidence of how important it is to consider the human factor in the workplace, not from just a physical component, but psychological as well.

In closing, ergonomics is the study of human interactions in the workplace, not only cognitively and physically, but also emotionally. They are all tied together. The HUMAN EMOTION will be the factor which will ultimately determine the employee's success and health in the workplace, no matter what the task. There is now a need for this type of training, and the key to the design is that while the arm moves the same way in all humans, the mind perceives the world a little differently. This is why a canned program is of little use to an employer. They need an emotional program set up for their workplace, and a vehicle to train their employees to understand how to develop and improve their Emotional IQ. The benefit is two-fold. The employer has a productive employee who is not costing them excessively above their salary and other traditional expenses, and the employee benefits because they are happy and fulfilled in their employment.

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