

STRESS/DEPRESSION/ANXIETY --- An Opinion

Our topic is ImmunoNeuroEndocrine Stress. Let us venture into one aspect of the “Neuro” component of INE Stress. We know that depression and anxiety (including Major Depression) are inflammatory conditions --- major players in our concept of INFLAM-AGING. In our discussions of INE Stress as it relates to INFLAM-AGING, we speak endlessly of Vicious Cycles ...

The emotional duress of depression/anxiety involves one such Vicious Cycle. Emotional turmoil causes INE Stress, and INE Stress exacerbates emotional duress. The INE Stress from emotional turmoil causes Metabolic Imbalances, and Metabolic Imbalances make an individual more vulnerable to INE Stress. INE Stress plus Metabolic Imbalances create an accelerated INFLAM-AGING, and INFLAM-AGING devastates Vital Reserves such that there is ever fading resistance to the INE Stress of emotional Dis-Ease.

So, should we manage our lives such as to minimize “stress” at all costs? Should we react to all sources of “stress” in our lives as a negative, and fear them, run from them, suppress our reactions to them? --- No, no, no ...

You are certainly familiar with Hans Selye’s General Adaptative Stress (GAS) paradigm. One important aspect of GAS is that most potential sources of stress are actually merely challenges --- challenges that have the potential to actually enrich our lives. They can be considered a form of emotional exercise - -- such that every challenge successfully confronted makes us stronger in facing future challenges. So, Selye identified a very clear difference between what he called “eu-stress” and damaging stress.

It is essential that you understand this concept of good stress. You undoubtedly have countless patients who are feeling overwhelmed by stress, and a substantial portion of those could be legitimately diagnosed as suffering from depression or anxiety. But as a NUTRI-SPEC practitioner you can easily understand that a prescription for anti-depressants or anxiolitics is not the answer, certainly not long-term. The answer is using NUTRI-SPEC to reduce INE Stress and break the multiple inter-related Vicious Cycles.

To help you understand the proper role of stress in people’s lives, and how that role becomes distorted as people lose their Adaptative Capacity (that only you can restore with NUTRI-SPEC), I have reproduced below a letter I sent in reply to a perceptive and intelligent young man I have mentored for several years. My reply is in bold face, while his original letter is in letter font ...

Devon,

You do not want, and I am not prepared to write, a dissertation on neurophysiology and neuroendocrine responses --- so --- I will keep this extremely general.

The Swiss (my grandfather came to America from Switzerland as an infant, then went back there for his education) have an old adage regarding stress that is apropos of this discussion. ---- Translated from the French and German, it goes something like this --- "Worry is not a sign of sickness, but a sign of health. If you are not worried, you are not risking enough. Taking carefully planned risks is an essential part of life's most enriching experiences." ---- From what you have written in your email, you clearly understand this concept of good stress.

One other preliminary comment I should make derives from my own experiences: Everywhere we go we hear people squawking, "I have too much stress!" 99 out of 100 of these people, quite the contrary, do not have too much stress (as per the sentiment expressed in the Swiss adage), but rather are suffering from stress deprivation.

These tend to be among the people who never grasped the concept of self-reliance, self-realization --- that your life is a gift to cultivate as you will. Happiness is not something we find, but rather something we create. These people are not suffering from too much stress, but rather from too little happiness. Depending on what aberrant neurophysiology these people express, they refer to themselves as suffering from "stress," or "depression," or "anxiety."

These people are powerless in the face of life's challenges, and are at a loss as to why life hasn't treated them better. In their passive state of unhappy body/mind/heart/soul, they moan, they groan, they cry, they take their antidepressants and their anti-anxiety drugs --- while they wait in vain for happiness to appear. My Baby Boomer Generation was the first to be so pathologically overindulged as children and adolescents that half of us became conditioned to expect life should happen for us. Each succeeding generation has been increasingly deprived and depraved.

Another major contributor to stress/depression/anxiety is the media. If you take people who have no concept of self-actualization, and then expose them to a relentless bombardment of cleverly designed media propaganda convincing them how they are supposed to live --- these people will suffer terribly when they do not meet the standards of "success" as defined by the establishment. Completely lacking in a personal value system, these unhappy souls have no capacity to be true to themselves, because there is no self to be true to.

Comments dispersed throughout your email below ...

Dear Dr. Schenker,

In the past year, as I endured the neurological challenge of working with stressed out people in a high pressure office, I have often thought about the question of what constitutes healthy stress versus damaging or harmful stress for human beings. The line is probably a blurry one, and depends greatly on a range of characteristics that vary from individual to individual (or to use one of your favorite terms, "metabolic individuality"). That said, I am sure that there are some universal constants which are identifiable and known to those familiar with the disciplines of neuroscience, physiology, biochemistry, etc.

Before I ask my questions, I'd like to explain how I personally understand what "good stress" and "bad stress" are, and provide real-life examples of how I conceptualize each. Throughout life, we have all heard a good amount of talk about the negative effects of "stress" in general: in particular, how it causes premature aging and greater susceptibility to illness. But we have also heard about the importance of being challenged and forced to face down our fears in a constructive way. So it seems that we modern people often live in a gray area of not knowing if we're after too little or too much in a given moment, what our limits are and how often we should test them.

(THIS IS AN EXCELLENT PARAGRAPH, DEVON --- CLEARLY EXPRESSING THE SWISS WISDOM ...) In my mind, "good stress" is an unease caused by having a sense of responsibility and needing to meet goals, and in the case of more extreme personalities, a very animated sense of ambition. This is the stress we feel when that big test is coming up, or that really important job interview is two days away, or that occasion when we will be delivering a presentation or speech is fast approaching, or when we're about to play or coach an important game, or when we're just looking out into the future and setting goals for ourselves. This type of stress is, I think, the lifeblood of human activity.

"Bad stress", on the other hand, is the sort that makes life a constant battle within ourselves; it is what causes, at times, an overwhelmed feeling of helplessness --- **HELPLESSNESS IS A KEY CONCEPT HERE. IN FACT, WHAT IS TERMED LEARNED HELPLESSNESS IS A TOOL OF NEUROPHYSIOLOGISTS WHO STUDY THE STRESS RESPONSE IN ANIMALS. IF YOU TAKE A LAB RAT AND THROW HIM IN ICE COLD WATER, NEUROPHYSIOLOGISTS CAN MONITOR THE HORMONAL RESPONSE, AND THE NEUROLOGICAL ACTIVITY OF VARIOUS BRAIN CENTERS. THERE IS A VERY CLEAR ACUTE STRESS RESPONSE,**

**INVOLVING A SPECIFIC SET OF HORMONES AND NEUROLOGICAL REFLEXES. A LITTLE LATER, THROW THE SAME ANIMAL INTO THE SAME COLD WATER, AND YOU WILL GET THE SAME RESPONSE. BUT, AFTER REPEATED DUNKINGS, THERE COMES A POINT WHEN THE ANIMAL QUILTS FIGHTING. HE "ACCEPTS" THAT LIFE AS HE KNOWS IT IS OVER, AND HE IS RESIGNED TO A FATE OF CHRONIC RECURRING MISERY. AT THE POINT, AN ENTIRELY DIFFERENT SET OF HORMONES AND NEUROCHEMICALS ARE SECRETED. --- LEARNED HELPLESSNESS --
--- SUCH IS THE STATE OF COUNTLESS HUMANS WHO ARE VICTIMS OF THEIR LIVES, RATHER THAN THE PRIME MOVERS IN THEIR LIVES.**

Against life's challenges as well as a sense that time is flying while control is being lost. This is the stress of people living paycheck to paycheck, or of single mothers trying to stay afloat and provide for their kids. It might also be the stress of people who are simply being asked to do too much without being provided adequate assistance or taught the requisite skills, and who are being inhumanely bombarded by their superiors (such is the case where I worked, where one female co-worker told me at a meeting in Williamsport that she was on Xanax because of the pressure coming from on top).

[--- SIDE NOTE REGARDING XANAX: XANAX IS ONE OF THE ANTI-ANXIETY DRUGS THAT HAS COME TO BE DISPENSED LIKE CANDY BY THE MEDICAL ESTABLISHMENT. THE TRUTH IS, MOST OF THESE DRUGS HAVE NEVER BEEN OFFICIALLY APPROVED FOR LONG-TERM USE. THEY ARE DESIGNED FOR SHORT-TERM CRISIS THERAPY ONLY. YET MILLIONS OF PEOPLE TAKE THEM DAY AFTER DAY AFTER DAY AFTER DAY --- THEIR USE IS SO COMMONPLACE THAT MOST PEOPLE DON'T EVEN CONSIDER THEM "DRUGS" ANYMORE. BUT THE SAD TRUTH IS, THESE ARE POWERFUL NEUROTOXIC DRUGS. XANAX CAUSES AN EMERGENCY ROOM VISIT EVERY 4½ MINUTES IN AMERICA. --- NOT FROM OVERDOSES, BUT FROM MERELY TAKING XANAX ACCORDING TO THE DOCTOR'S PRESCRIPTION.

NOT ONLY IS THIS ONE PARTICULAR DRUG RESPONSIBLE FOR AN EMERGENCY ROOM VISIT EVERY 4½ MINUTES, BUT ALSO THE DRUG CAUSES SUCH EXTREME DEVASTATION OF COGNITION THAT A PERSON WHO TAKES IT LATE IN THE DAY AS A SLEEP AID IS LIKE A ZOMBIE UNTIL NEARLY NOON THE NEXT DAY. THE COGNITIVE INTERFERENCE IS SO EXTREME THAT THESE PEOPLE ARE NOT SAFE TO DRIVE A VEHICLE UNTIL AT LEAST 11:00 THE NEXT MORNING. YET, THERE ARE ALL THE GUYS DRIVING TO WORK AND ALL THE WOMEN DRIVING THEIR CHILDREN TO SOCCER PRACTICE EARLY THE NEXT MORNING AFTER TAKING XANAX THE NIGHT BEFORE. FURTHERMORE, LONG-TERM USE OF XANAX VERY OFTEN CAUSES TARTIVE DYSKINESIA --- BIZARRE, UNCONTROLLABLE MOVEMENTS REFLECTING PERMANENT BRAIN DAMAGE. NOW MULTIPLY THIS XANAX HORROR STORY BY THE

DOZENS OF OTHER NEUROTOXIC DRUGS SUCH AS SSRI'S, WELLBUTRIN, ETC.,ETC., ETC. --- SUCH IS OUR MISERABLE, MODERN LIFESTYLE.]

I think "bad stress" is also a problem for people who want everything that modern technology and modern transportation allow in theory, but without having any sort of organized, definite sense of completeness as to what they're after, let alone a sense that they are about to achieve a goal or set of goals. --- **YES, A COMPLETE ABSENCE OF SELF-ACTUALIZATION --- AND A LIFELONG AFFLICTION WITH STRESS DEPRIVATION, SO THAT THERE IS NO CAPACITY TO WITHSTAND EVEN THE MOST MINOR STRESSOR.** A great example of this that comes to mind is when I was starting out with Prudential in late 2009 and I had to work with a group of 20-somethings at weekly trainings in Pittsburgh. One redheaded guy whose name I no longer remember had just graduated from Duquesne Law School, but he had decided to give financial services a whirl instead of going into law. One reason was that he said he had never encountered so many miserable people in his life as he had at law school and, especially, when he was interning at law firms around Pittsburgh. Maybe Joe can chime in with what his experience at George Mason has been, but I quite clearly remember this guy stating affirmatively that his experience around law circles in Pittsburgh was disquieting.

Now this late 20-something co-worker at Prudential gave us, as one example, a couple he knew, both of whom were lawyers. Apparently they both worked 50-60 hours per week, but they hardly saw each other. They slept together and got to spend some time on Sundays, but aside from that, they just exchanged pick-up duty of their two young kids from school, daycare, and sports practices. Despite having a high income compared to most, I would imagine that their meals were mostly on-the-run and often times just fast food (take-out Chinese, McDonald's, etc.). I would also imagine that during at least one of those two or three free weeks in the year they had from their normal routine, they planned a big shebang of a vacation that made them even more tired when they came back from it than they were when they left for it. The point is - my Prudential colleague made it clear that the two spouses weren't happy people, and they felt overwhelmed by the hours they were working and the obligations pressing on them at every turn. Being lawyers, they were supposed to be living an American dream of success and prosperity, but to themselves, life was a drag.

Having just given examples of excessive stress, though, I should give examples of stress-free lives that are probably also very unhealthy.

The first example would be connected to your favorite demographic, Dr. Schenker: college students. These are people who must generate their own stress because little is imposed on them in most cases. They are not forced to be professional or meet anything but the most measly standards in order to get a dime-a-100-dozen college diploma. They can sit around and smoke for four years, breaking the pattern with attending some sporting events here and there, maybe going to a concert, and showing up for class a couple times before

mid-terms or Finals, but overall, they are living a life of fantasy in which they are almost entirely removed from responsibilities and are living off society's consensus and financial backing. Bored 18-to-23-year-olds are cases of people who don't have enough stress. --- **A GOOD EXAMPLE OF THIS --- A KID WHO OFTEN CHECKS ME OUT AT THE SUPERMARKET JUST INFORMED ME THE OTHER DAY THAT AS A PENN STATE STUDENT HE IS ON ACADEMIC PROBATION. HE WAS THRILLED. HIS COMMENT WAS, "IT'S A LITTLE MORE EXPENSIVE THIS WAY BUT AT LEAST I GET ANOTHER YEAR OF COLLEGE." --- IN OTHER WORDS, HE GETS ANOTHER YEAR OF LIVING IN WHAT YOU DESCRIBE AS A "LIFE OF FANTASY." --- COMPLETE STRESS DEPRIVATION AND COMPLETE ABSENCE OF SELF. HE IS A CHILD, AND WILL PROBABLY REMAIN A CHILD HIS ENTIRE LIFE --- ALWAYS WONDERING WHY HE CAN NEVER ACHIEVE RICHES/ SATISFACTION/HAPPINESS.**

Other examples of the "stress-free" are college professors who do the bare minimum to teach classes or who don't have a developed capacity for intellectual rigor (all too many), as well as people who are content with living off of welfare or who feel too helpless to ever get off of it. These are people who can live in psychological and cultural fantasy lands, because they parasitically feed off of civilization much more than they contribute to it. For them, life is a passive episode of either getting what they feel like having or feel like seeing, or not getting those things. --- **YES, PARASITES. THE "FORTUNATE" AMONG THOSE SUFFERING FROM STRESS DEPRIVATION ARE THOSE WHO CONTINUE TO HAVE LIFE HANDED TO THEM JUST AS THEY DID AS CHILDREN. THEY ARE NEVER TRULY HAPPY, BUT AT LEAST THEY HAVE THE ILLUSION OF COMFORT AND SECURITY. BUT WITHOUT TRUE HAPPINESS, THE ILLUSION OF COMFORT AND SECURITY JUST DOESN'T CUT IT, AND XANAX COMES TO APPEAR A VIABLE OPTION.**

In the case of the college professors, seeing the "Affordable Care Act" passed by Congress brings happiness because it provides psychological reassurance that society is moving in the right direction, while hearing calls for increased border security causes outrage within their Frankfurt School-sensitized minds. Why do those damn Tea Partiers have to ruin my good feelings about the direction of our society? Why do they have to get in the way with asking for a racist institution such as the Border Patrol to be better staffed? This makes them want to pop some Xanax after waddling like the unathletic ducks they are on a treadmill.

In the case of those on welfare, "happiness" comes from knowing that the political party that will keep the government income they live off of flowing will remain in power (i.e., Happiness comes from knowing that socialist welfare schemes are politically guaranteed), and from being entertained and satisfied, day after day, with short-term stimulants, be they drugs, TV shows, music, sex, or sports. There is nothing wrong with any of the things I listed per se, but

if they are used as a constant means of escapism from actually doing something productive for years and years and years, then yes, they are problems. And the point is, for the purposes of this discussion, this lifestyle is not causing a healthy stress that comes with striving for productivity. It is, fundamentally, a stress-free life that leads to emotional distortions and misplaced energy that may cause excessive stress in the form of family disarray, crime, drug addiction, and a sense of wasted time and purposelessness. Greg can probably speak to this based on what he witnessed in the Knoxville inner city school district where he taught. --- **MORE PASSIVITY. MORE ILLUSION OF COMFORT AND SECURITY. MORE UNFULFILLMENT.**

So it seems that in the modern world, we have a society of people who are on polar opposite extremes of the stress spectrum: people who are either taking medication to ease their nerves (or who at least feel like they need medication), and then those who are all too often slothful and purposeless. There are people in between, and there are certainly people who mix the two extremes, but by and large it seems that all too many people fall into one of the two extreme categories.

In the end, this is an inefficient and unhealthy reality for everyone. I am sure, Dr. Schenker, that you witness these sorts of problems all the time with your patients.

And this finally brings me to my questions. I am mostly interested in the strict science here, Dr. Schenker, but I would of course love to read any additional commentary or anecdotes you have to offer:

1a) How are feelings of "stress" or "anxiety" triggered in the brain and in the nervous system, i.e. what is the process from thought (e.g.

"I don't have enough time to get ready for this test!) to chemical/hormonal response (deep-rooted fear that I won't get a good grade on the test)? ---

THERE ARE MANY, MANY HORMONES AND MANY, MANY NEUROCHEMICALS INVOLVED IN THE STRESS RESPONSE. WHICH COMBINATION OF HORMONES AND NEUROCHEMICALS IS TRIGGERED DEPENDS LARGELY ON WHETHER THE STRESS IS ACUTE IN NATURE, OR WHETHER IT CALLS FOR LONG-TERM PLANNING.

IF LATE AT NIGHT SOMEONE JUMPS YOU IN A DARK ALLEY, YOUR BODY WILL ELICIT AN ACUTE STRESS RESPONSE. IN CONTRAST, IF YOU ARE TOLD YOU HAVE A MAJOR PRESENTATION TO GIVE OR A MAJOR TEST IN 4 WEEKS, YOU WILL HAVE A SIMMERING LOW-GRADE STRESS RESPONSE THAT WILL CONTINUE FOR SEVERAL WEEKS, THEN AN ACCELERATED STRESS RESPONSE THE LAST FEW DAYS BEFORE THE BIG EVENT, THEN AN EXPLOSIVE STRESS RESPONSE THE DAY OF THE EVENT, AND THEN FINALLY A MAKE OR BREAK STRESS RESPONSE

DURING THE EVENT ITSELF. HOW THESE VARIOUS STRESS RESPONSES MANIFEST DEPENDS ON THE CONCEPT YOU ALLUDED TO ABOVE --- THAT OF METABOLIC INDIVIDUALITY.

HERE IS A LITTLE STORY ABOUT ONE OF MY OWN PERSONAL RESPONSES TO STRESS ...

I WAS 11 OR 12 YEARS OLD, A 6TH GRADE STUDENT IN AN ELEMENTARY SCHOOL SERVING GRADES 1-6. MY 6TH GRADE TEACHER, MRS. MONTGOMERY, WAS THE FACULTY SPONSOR OF THE SCHOOL'S STUDENT COUNCIL, AND I WAS PRESIDENT OF THAT STUDENT COUNCIL. THAT DEAR OLD WOMAN WAS THE MOST EXTRAORDINARY TEACHER I EVER HAD --- THROUGH ELEMENTARY SCHOOL, HIGH SCHOOL, AND COLLEGE. THERE WERE NOT MORE THAN 5 ADULTS TO WHOM I SHOWED RESPECT THROUGHOUT MY CHILDHOOD AND ADOLESCENT YEARS, AND SHE WAS ONE.

--- ONE DAY MRS. MONTGOMERY TOOK ME ASIDE AND DELIVERED A KILLER PUNCH. WHAT SHE COMMANDED WAS NOT SOMETHING THAT NEEDED TO BE DONE FOR ANY OTHER PURPOSE THAN BECAUSE SHE SAW IT AS SOMETHING ESSENTIAL TO MY PERSONAL DEVELOPMENT. --- SHE INFORMED ME THAT I WAS GOING TO GIVE A SPEECH ABOUT THE STUDENT COUNCIL TO THE PARENT-TEACHER ASSOCIATION. --- I ALMOST DIED ON THE SPOT --- FEAR AND SHOCK.

SINCE I AM BLESSED (OR CURSED?) WITH THE CAPACITY FOR EXTRAORDINARY REACTIVITY IN BOTH MY SYMPATHETIC AND PARASYMPATHETIC SYSTEMS, I HAD A NEARLY OVERWHELMING SURGE OF HORMONAL AND NEUROCHEMICAL SECRETIONS. I TREMBLED, MY STOMACH CHURNED, MY PALMS WERE COLD WITH SWEAT. HOW COULD I POSSIBLY SURVIVE THE NEXT FEW WEEKS OF PREPARATION? THEN --- HOW COULD I POSSIBLY STAND IN FRONT OF A FULL AUDITORIUM AT A PTA MEETING? MY BRAIN RACED, MY HEART RACED --- MAYBE IN THE NEXT FEW WEEKS THE RUSSIANS WOULD ATTACK AND THE PTA MEETING WOULD BE CANCELLED. BETTER YET, MAYBE WORLD WAR 3 WOULD START AND THE WHOLE WORLD WOULD BE DESTROYED. THAT WOULD SOLVE EVERYTHING.

DAY AND NIGHT I COULD NOT GET THE UPCOMING TRAUMA OUT OF MY MIND. EVERY TIME MY TEACHER AND I GOT TOGETHER TO DISCUSS AND WRITE THE SPEECH, I HAD THE SAME WAVE OF SYMPATHETIC AND PARASYMPATHETIC STRESS RESPONSES.

DOOMS DAY FINALLY ARRIVED. IN THE TWO HOURS PRECEDING DEPARTURE FOR THE PTA MEETING, I WAS OVERWHELMED WITH A PARASYMPATHETIC STRESS RESPONSE. MY STOMACH RUMBLED AND

TUMBLED, I COULD NOT EVEN THINK OF EATING SUPPER. I HAD SEVERAL VIOLENT BOUTS OF DIARRHEA. IN THE CAR, MY GUT TWISTED IN KNOTS. SITTING IN THE AUDITORIUM WAITING FOR MY TURN TO SPEAK, ZILLIONS OF BUTTERFLIES FLUTTERED HYSTERICALLY IN MY STOMACH. --- BUT THEN --- THE MINUTE I WAS CALLED TO STAND IN FRONT OF THE AUDIENCE, MY STRESS RESPONSE COMPLETELY SWITCHED FROM PARASYMPATHETIC TO SYMPATHETIC. AS I TURNED TO FACE THE HUNDREDS OF PARENTS AND TEACHERS, I FOUND THAT I COULD NOT FACE THEM HEAD-ON. I STOOD IN THE CLASSIC BOXER'S STANCE --- ONE FOOT IN FRONT OF THE OTHER --- THE ULTIMATE IN FIGHT OR FLIGHT SYMPATHETIC RESPONSE. AS I BEGAN TO SPEAK, THE WORDS CAME THROUGH A COTTON MOUTH --- SYMPATHETIC VASOCONSTRICTION HAD CUT OFF THE CIRCULATION TO MY SALIVARY GLANDS. STARING AT A SPOT ON THE FLOOR IN THE AISLE THAT BISECTED THE AUDIENCE SO THAT I WOULD NOT HAVE TO LOOK ANYONE EYEBALL TO EYEBALL, I RACED THROUGH MY MEMORIZED SPEECH --- "STUDENT COUNCIL BECAME A PART OF THE NEW WYLAND SCHOOL PROGRAM IN THE FALL OF 1959 ..." ----- AND FINALLY, IT WAS OVER. I SURVIVED, AND, WITH SIGNIFICANT CONTRIBUTION FROM THAT WONDERFUL TEACHER, I THRIVED.

SO IN ANSWER TO YOUR QUESTION, DEVON, MUCH OF STRESS RESPONSE IS MEDIATED VIA THE SYMPATHETIC/PARASYMPATHETIC NERVOUS SYSTEM. THERE ARE THOSE WHO RESPOND TO STRESS WITH PRIMARILY A SYMPATHETIC RESPONSE, SOME WITH A PRIMARILY PARASYMPATHETIC STRESS RESPONSE, SOME WITH A COMBINED HYPER-SYMPATHETIC + HYPER-PARASYMPATHETIC RESPONSE, AND SOME WHO ARE DEFICIENT IN THE SYMPATHETIC AND/OR THE PARASYMPATHETIC CAPABILITY OF RESPONDING. --- METABOLIC INDIVIDUALITY.

FROM A HORMONAL STANDPOINT, THERE ARE 2 MAJOR HORMONAL STRESS RESPONSES. ONE MAJOR STRESS HORMONE IS CORTISOL, PRODUCED BY THE ADRENAL CORTEX GLAND --- AND THE OTHER IS ADRENALINE, PRODUCED BY THE ADRENAL MEDULLA GLAND. (ADRENALINE IS ANALOGOUS TO A SYMPATHETIC REACTION IN THAT THE SYMPATHETIC NERVOUS SYSTEM SECRETES NORADRENALINE AS ITS MAJOR NEUROTRANSMITTER.) SO --- SOME PEOPLE ARE CORTISOL STRESS RESPONDERS, SOME PEOPLE ARE ADRENALINE + NORADRENALINE STRESS RESPONDERS, SOME ARE DEFICIENT IN ONE TYPE OF RESPONSE OR THE OTHER, AND SOME ARE EXTREMELY REACTIVE IN BOTH SYSTEMS.

ONCE A CHALLENGE IS PERCEIVED, THE BRAIN IMMEDIATELY DECIDES WHETHER THIS IS AN ACUTE CHALLENGE REQUIRING IMMEDIATE RESPONSE, OR WHETHER IT REQUIRES AN INTERMEDIATE OR

LONG-TERM ADAPTATION. THE APPROPRIATE SYMPATHETIC/PARA-SYMPATHETIC AND CORTISOL, &/OR ADRENALINE/NORADRENALINE RESPONSES ARE ACTIVATED. --- AT THE SAME TIME, THERE ARE INPUTS FROM THE CEREBRAL CORTEX THAT RATIONALLY (OR IRRATIONALLY) MODIFY THE FUNDAMENTAL STRESS RESPONSE. THERE ARE ALSO MANY OTHER BRAIN NEUROCHEMICALS THAT ARE ACTIVATED OR SUPPRESSED --- INCLUDING SEROTONIN, DOPAMINE, GAMMA-AMINOBENZOIC ACID, ETC., ETC. --- SO --- "I DON'T HAVE TIME TO GET READY FOR THIS TEST!" --- CAN ELICIT ALL SORTS OF RESPONSES, SUCH AS ...

- "THAT TEACHER IS SUCH A JERK --- HOW COULD HE PULL THIS ON ME?!"

- "THIS MEANS I'LL HAVE TO ALLOCATE A CERTAIN NUMBER OF HOURS EVERY EVENING TO PREPARE ADEQUATELY ..."

- "I DON'T CARE ABOUT THIS COURSE ANYWAY!"

- "IF ANYBODY CAN RISE TO THE CHALLENGE OF THIS TEST, I CAN!"

- "IF I DON'T COME THROUGH WITH A GRADE ON THIS TEST, I'LL GET A B IN THE COURSE AND THERE GOES MY CHANCE AT GETTING INTO MED SCHOOL."

--- AND EVERY ONE OF THOSE THOUGHT PROCESSES ELICITS A DIFFERENT NEUROCHEMICAL RESPONSE ACCORDING TO THE CONCEPT OF METABOLIC INDIVIDUALITY.

1b) Does stress/anxiety begin in the limbic system (an area of the brain you once gave me a little explanation of)? **--- IT DOES NOT BEGIN IN THE LIMBIC SYSTEM, BUT IT DEFINITELY RECRUITS THE LIMBIC SYSTEM AS A PLAYER IN THE RESPONSE. THE LIMBIC SYSTEM CAN BE CONSIDERED SORT OF A SECOND LEVEL OF BRAIN FUNCTION --- ABOVE THE PURELY REFLEX BRAIN CONTROL OF THE SENSORY AND MOTOR FUNCTIONS OF THE BODY, YET BELOW THE CEREBRAL CORTEX. THE LIMBIC SYSTEM HAS A LOT TO DO WITH EMOTIONAL RESPONSE --- AS PER THE VARIOUS THOUGHT PROCESSES THAT WERE OFFERED ABOVE AS HOW THOUGHTS AND EMOTIONS INTERPLAY IN RESPONSE TO "I DON'T HAVE ENOUGH TIME TO GET READY FOR THIS TEST!"**

1c) (After googling a bit) What exactly is the amygdala's role - is it the foundation of this whole process from thought to chemical/hormonal response? **--- THE AMYGDALA IS JUST ONE COMPONENT OF THE LIMBIC SYSTEM. PROBABLY THE 3 MOST CRITICAL COMPONENTS OF THAT LIMBIC SYSTEM ARE THE AMYGDALA, THE HIPPOCAMPUS, AND ABOVE**

ALL, THE HYPOTHALAMUS. THE HYPOTHALAMUS IS THE ONE THAT INTEGRATES THE COMBINATION OF HORMONAL AND SYMPATHETIC/PARASYMPATHETIC RESPONSES. THE HIPPOCAMPUS HAS A LOT TO DO WITH LONG-TERM MEMORY --- INTEGRATING THE CURRENT PERCEIVED CHALLENGE WITH PAST MEMORIES, AND DECIDING WHETHER THE CURRENT RESPONSE TO THAT CHALLENGE NEEDS TO GO INTO LONG-TERM MEMORY. THE AMYGDALA HAS MUCH TO DO WITH EMOTIONS --- PARTICULARLY THE INTEGRATION OF FEAR AND MOTIVATION. DOES THIS CHALLENGE MOTIVATE ME TO TAKE ACTION? OR, DOES IT MOTIVATE ME TO GIVE UP IN DEFEAT? IS MY CHOICE OF ACTION TO BE MOTIVATED BY FEAR, OR BY THE DESIRE FOR ENRICHMENT?

2a) What exactly are the brain chemicals and hormonal fluids released, activated, and/or spread during moments of stress and anxiety? --- **I MENTIONED MANY OF THESE ABOVE. SOME OF THEM ARE RELEASED "DURING MOMENTS" AS IN AN ACUTE STRESS RESPONSE. --- FOR EXAMPLE, THE FIGHT/FLIGHT SYMPATHETIC NERVE RESPONSE AND ADRENALINE RESPONSE, AND SOME ARE MEDIATED VIA CORTISOL STRESS RESPONSE. SOME OF THEM, HOWEVER, ARE NOT "DURING MOMENTS" BUT DURING PERIODS OF STRESS AND ANXIETY THAT ARE STRETCHED OUT OVER PERIODS OF HOURS, DAYS, WEEKS, MONTHS, OR LIFETIMES. MOST OF THE ANTIDEPRESSANT DRUGS ARE DESIGNED TO INCREASE SEROTONIN, DOPAMINE, AND NOREPINEPHRINE IN THE NERVOUS SYSTEM. MOST OF THE ANTI-ANXIETY DRUGS ARE DESIGNED TO JUST OVERALL DECREASE THE REACTIVITY OF THE CENTRAL NERVOUS SYSTEM (CENTRAL NERVOUS SYSTEM DEPRESSANTS), SO THAT THE PERSON IS QUITE CONTENT TO BE A ZOMBIE RATHER THAN FEELING THE STRESS OF HIS IMPOTENCE.**

2b) What is healthy about these brain chemicals and hormonal fluids being released into the blood stream?

2c) What is harmful about these brain chemicals and hormonal fluids being released into the blood stream? --- **THESE CHEMICALS FALL UNDER THE CATEGORY OF "GOOD STRESS" UNLESS THERE IS A FAILURE OF STRESS RESOLUTION. ONLY WHEN THERE IS A FAILURE OF STRESS RESOLUTION AND THESE CHEMICALS ARE RELEASED IN ABUNDANCE OR OVER A PROLONGED PERIOD OF TIME DO THEY CREATE DAMAGING METABOLIC EFFECTS. THE POTENTIAL HARM OF THESE CHEMICALS OF UNHAPPINESS ARE TOO NUMEROUS TO MENTION --- AND INVOLVE EVERY ONE OF THE BODY'S BIOCHEMICAL BALANCE SYSTEMS AND THE FUNCTION OF EVERY ORGAN --- HEART, BLOOD VESSELS, LIVER, KIDNEYS, AND OF COURSE, ELICITING VICIOUS CYCLES WITHIN THE BRAIN.**

3) What are the brain chemicals and hormones associated with vigor and liveliness? --- **CORTISOL AND ADRENALINE/NORADRENALINE ARE METABOLIC ACTIVATORS AND "UP" HORMONES --- UNTIL PRODUCED IN EXCESS OR FOR PROLONGED PERIODS OF TIME. THYROID HORMONES ARE A LONG-TERM METABOLIC ACTIVATOR ASSOCIATED WITH MENTAL ALERTNESS AND ACUITY AND QUICK NEUROMUSCULAR REFLEXES. TESTOSTERONE IS (AS HAS BEEN EXPRESSED IN PAST EMAILS) ALMOST A MASTER HORMONE IN TERMS OF VITALITY FOR BOTH MEN AND WOMEN. ON THE FEMALE SIDE, PROGESTERONE IS AN INCREDIBLE HORMONE THAT ALLOWS A WOMAN TO EXPRESS PERSONAL POWER WITH NO LOSS OF FEMININITY --- MAINTAINING YOUTHFUL VITALITY AND MENTAL/EMOTIONAL CALM AND SELF-ASSURANCE IN THE FACE OF ANY KIND OF CHALLENGE. DOPAMINE IS A BRAIN CHEMICAL THAT IS A FIRST COUSIN TO THE NORADRENALINE. IT HAS A LOT TO DO WITH GRATIFICATION AND PLEASURE. MANY OF THE ADDICTIVE DRUGS POTENTIATE THE EFFECTS OF DOPAMINE. SEROTONIN (IN SMALL PHYSIOLOGICAL QUANTITIES) IS ALSO A FEEL GOOD HORMONE. BUT EVEN IN SLIGHT EXCESS, IT BECOMES A JEKYLL AND HYDE --- POTENTIATING A TENDENCY TO SUICIDE AND CREATING ALL SORTS OF METABOLIC IMBALANCES.**

4) What are the brain chemicals and hormones associated with feelings of joy or "happiness"? --- **THEY ARE ONE AND THE SAME AS THOSE THAT ARE ASSOCIATED WITH VIGOR AND LIVELINESS. CORTISOL CAN EASILY BE OVERDONE --- BUT ADRENALINE/NORADRENALINE, TESTOSTERONE, THYROID, PROGESTERONE, AND DOPAMINE ARE ALL ASSOCIATED WITH A CELEBRATORY MOOD. ADDITIONALLY, THERE ARE ENDORPHINS THAT CONTRIBUTE TO A "JOY TO THE WORLD" STATE OF BEING.**

5) What are the brain chemicals and hormones associated with sluggishness and lethargy? --- **EXCESS PARASYMPATHETIC ACTIVITY (IN THE ABSENCE OF HIGH CORTISOL) WILL KNOCK A PERSON DOWN AND OUT. ESTROGEN IS ANOTHER DOWNER, THOUGH IT IS ALSO ASSOCIATED WITH ANXIETY. A WEAK SYMPATHETIC SYSTEM OR A WEAK THYROID WILL MAKE A PERSON LETHARGIC AND APATHETIC. GAMMA-AMINOBENZOIC ACID IS ANOTHER DOWNER, AND BLOCKING ITS RELEASE IS ONE MECHANISM OF ACTION OF SOME OF THE ANTIDEPRESSANT DRUGS.**

6) What exactly do common antidepressants seek to do (in physiological terms)? --- **I HAVE PRETTY WELL COVERED THAT ABOVE --- MANY ARE DESIGNED TO INCREASE SEROTONIN, INCREASE DOPAMINE, &/OR INCREASE NORADRENALINE. SOME ARE DESIGNED TO DECREASE GAMMA-AMINOBENZOIC ACID.**

7) Where is the line between healthy impact and harmful impact of stress? --- **THE LINE IS VARIABLE AS TO BOTH LOCATION AND QUALITY DEPENDING ON METABOLIC INDIVIDUALITY. AS I SAID AT THE TOP OF THIS EMAIL, MOST PEOPLE ARE ACTUALLY NOT SUFFERING FROM STRESS, BUT ARE ACTUALLY SUFFERING FROM WHAT COULD BE CALLED NOTHING MORE COMPLICATED THAN THE ABSENCE OF HAPPINESS. HOW THEIR ABSENCE OF HAPPINESS IS MANIFEST DEPENDS UPON WHAT STRESS RESPONSE SYSTEM THE INDIVIDUAL TENDS TO RELY ON, OR WHAT STRESS RESPONSE SYSTEM TENDS TO BE UNABLE TO RESPOND ADEQUATELY. ----- IN THE CASE OF PEOPLE WHO ARE TRULY UNDER EXCESS STRESS --- A WIFE DYING OF CANCER, A HUSBAND WHO BEATS HER EVERY NIGHT, A LOVED ONE WHO IS SLOWLY LOSING IT TO ALZHEIMER'S, A BUSINESS THAT IS GOING UNDER, UNRELENTING PRESSURE FROM A BOSS AT WORK --- IN THOSE CASES THE LINE BETWEEN HEALTHY AND HARMFUL STRESS HAS TO DO WITH THE DEGREE OF STRESS RESOLUTION. IF THE PERSON HAS SUNKEN TO THE DEPTHS OF LEARNED HELPLESSNESS --- ALL IS LOST. THE ONLY SOLUTION IS TO CHANGE THE LIVING ENVIRONMENT --- QUIT THE JOB, DECLARE BANKRUPTCY AND MOVE ON, PUT THE ALZHEIMER VICTIM IN A GOOD HOME, AND DIVORCE THE SPOUSE (AFTER CONSULTING YOUR PRIEST). ABOVE ALL, THE KEY TO DEALING WITH STRESS/DEPRESSION/ANXIETY IS NOT IN LOOKING FOR A WAY TO "DEAL WITH IT" --- BUT RATHER TO FILL LIFE WITH SO MUCH POSITIVE, THAT THE PERCEIVED NEGATIVE BECOMES INSIGNIFICANT BY COMPARISON.**

Thanks,
Chris