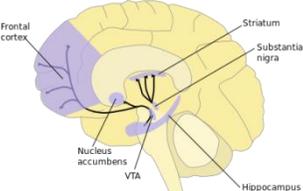


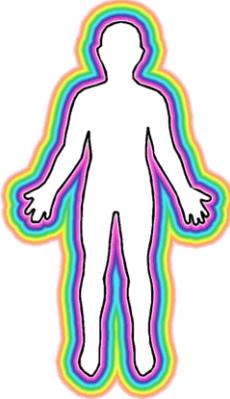
Parent and Professional Education : Stress, Hormones, Diet, the Brain and Learning.

Hormone	Function	Dysfunction	Increase by:	Decrease by :
<p>Dopamine</p>  <p>Important for learning and decision-making</p>	<p>Neurotransmitter :</p> <ul style="list-style-type: none"> • rewards ; • prediction/surprise • learning; • motor • alertness <p>Dopamine is released from the amygdala when the brain detects an emotionally charged event (new, different). Leads to increased heart rate. Dopamine greatly aids memory and information processing and stimulates the prefrontal cortex. The prefrontal cortex controls executive functions such as problem solving, maintaining attention and inhibiting emotional responses.</p> <p>Negative encounters deplete dopamine as a signal to the brain to avoid repeating them.</p> <p>We are hard-wired to do something for reward and avoid doing something to escape punishment.</p> <p>Flexible learners: more neurons in the brain responsible for the production and transport of dopamine.</p>	<p><i>Too little:</i></p> <ul style="list-style-type: none"> • ADHD • Restless legs • Poor memory retention <p><i>Too much:</i></p> <ul style="list-style-type: none"> • Addiction • infatuation 	<p>Exercise (short term and immediate)</p> <p><i>Protein rich foods:</i> Chicken Eggs Fish Red meat</p> <p><i>Folate rich foods:</i> Leafy greens Broccoli Cauliflower Lentils Chickpeas Black beans Pawpaw</p> <p><i>Tyrosine (amino acid):</i> Bananas Blueberries Strawberries</p> <p>Almonds Avocados Dairy products Lima beans Pumpkin seeds Sesame seeds</p> <p>Protect dopamine-using neurons with foods rich in antioxidants – vegetables and fruit.</p>	<p>Sugar and all associated sweeteners (eg corn syrup, fructose, dextrose, agave, sucralose, molasses, honey, syrup).</p> <p>High glycaemic carbs : cake, crackers, white bread, white rice, pasta, pies, potatoes and processed foods</p> <p>Drugs</p> <p>Poor sleep</p> <p>Alcohol</p> <p>Caffeine</p>
<p>Cortisol</p>	<p>Steroid hormone:</p> <ul style="list-style-type: none"> • increase blood sugar • suppress the immune system • aids in metabolism 	<p><i>Too much :</i></p> <ul style="list-style-type: none"> • Impaired learning • Inhibits long term memory retrieval • Decrease in bone 	<p>Caffeine</p> <p>Poor sleep</p> <p>Prolonged exercise</p>	<p>Omega-3 fatty acids</p> <p>Whole plant foods : vegetables, fruits, nuts, seeds, beans</p>

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 <p>Important for survival – flight, fight response</p>	<ul style="list-style-type: none"> • short term emotional memory • regulates blood pressure <p>Cortisol is released in response to fear or stress by the adrenal glands as part of the fight or flight response. Directs energy away from the frontal cortex to large muscles, and heart.</p> <p>Cortisol is needed to help stimulate dopamine production in the brain. However high levels of stress over a long period of time can affect levels of cortisol or ability of the brain to regulate these levels.</p>	<p>density and muscle tissue</p> <ul style="list-style-type: none"> • Increased abdominal fat • Decreased resilience • Lowers the immune system • Slows down thinking • Raises blood pressure • Contributes to insulin resistance 	<p>Trauma or stress</p> <p>Calorie restriction</p>	<p>Music</p> <p>Massage therapy</p> <p>Meditation</p> <p>Laughing</p> <p>Dancing</p> <p>Black tea</p> <p>Social connectedness</p>
<p>Serotonin</p>	<p>Neurotransmitter</p> <ul style="list-style-type: none"> • Regulation of mood • Appetite • Sleep • Learning and memory • Preserving brain function as you age • Relationships <p>Stimulates metabolism, cellular growth and digestion in the</p>	<p><i>Too little:</i></p> <p>Anxiety</p> <p>Depression</p> <p>Obesity</p> <p>SIDS</p> <p>Drug abuse</p> <p>Increased impulsivity</p> <p>Increased risk of suicide</p> <p><i>Too much:</i></p>	<p>Protein : turkey, fish, chicken, cottage cheese, nuts, eggs, beans</p> <p>Fat : eggs, dairy, fish, avocados, nuts, flaxseed, sunflower seeds</p> <p>Leafy greens</p> <p>Cruciferous vegetables (broccoli and cauliflower)</p>	<p>Avoid: caffeine, sugar, alcohol</p> <p>Long term stress</p> <p>NB Sugar and simple carbohydrates will cause short term release of serotonin but then cause a rapid drop after 2-3 hours.</p>

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	<p>gastrointestinal tract. 80%-90% of the body's total serotonin is in the gut.</p>	<p>Migraines Gastrointestinal problems Cardiovascular disease</p>	<p>Omega 3s and 6s are required for serotonin production, but must be in balance (generally need to increase omega 3s)</p> <p>15-20 minutes of exercise</p> <p>Sleep</p> <p>Exposure to bright light</p>	
<p>Insulin</p> 	<p>Peptide hormone:</p> <ul style="list-style-type: none"> Regulates carbohydrate and fat metabolism Reproduction <p>Produced by the pancreas, it causes liver, skeletal muscles and fat tissue to absorb glucose from the blood. Glucose is stored as glycogen in the liver and muscles, and stored as triglycerides in fat cells. Insulin stops the use of fat as an energy source, so when blood glucose levels fall below optimal levels, the body breaks down the glycogen in the liver and muscles to</p>	<p>Diabetes Metabolic syndrome Polycystic ovarian syndrome</p>	<p>Eating carbohydrates, especially highly processed foods and sugars.</p> <p>Being sedentary</p> <p>Caffeine</p> <p>Excessive alcohol</p> <p>Sporadic sleep</p> <p>Vitamin D deficiency</p>	<p>Resistance training, increasing muscle</p> <p>Eating vegetables, proteins, nuts and seeds</p> <p>Omega 3 fatty acids</p> <p>Vitamin D</p> <p>Tea</p> <p>Sleep (7-9 hours)</p>

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	<p>use as glucose.</p> <p>In the brain: Memory enhancing, however actions are complicated by blood glucose levels.</p> <p>Early research suggests links to learning, perhaps explaining why metabolic syndromes are linked with cognitive defects and behavioural disorders, such as depression and dementia.</p>			

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