
THE BODY'S RESPONSE TO CHRONIC ANXIETY AND STRESS

AN ART PIECE DEPICTING HOW THE BODY RESPONDS TO PROLONGED STRESS AND ANXIETY, AND HOW MEDICATIONS SUCH AS LEXAPRO ALTER THAT RESPONSE.

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Art Piece



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1 Explanation

The illustration represents the body's biological response to chronic stress and anxiety, and how medication like Escitalopram (Lexapro) influences that response. Many art pieces illustrate the societal and psychological aspects of stress and anxiety. Works like these convey what it may be like to suffer from chronic stress, an anxiety disorder, and face the social pressures or stigmatism associated with them. However, these illustrations often neglect the physiological response. As such, this art piece tries to fill that gap.

Note: In creating an art piece that encapsulates the physical response to chronic stress and anxiety, the project focuses primarily on breadth rather than depth. In doing so, we miss some interesting mechanisms, but exchange that for a more coherent art piece.

1.1 Allostatic Load

Allostatic load is the wear and tear on the body caused by chronic activation of the stress system. Without intervention, chronic stress is a vicious, uncontrolled feedback loop that further damages the body.

Chronic stress is strongly associated with glucocorticoid resistance (Cohen et al., 2012)¹, meaning that it takes higher glucocorticoid levels to deactivate the stress response. When the hypothalamic–pituitary–adrenal (HPA) axis is continuously activated — a central component of the stress system — it constantly releases glucocorticoids (such as cortisol). The constant release builds resistance, creating a feedback loop that further activates the stress system.

Chronic activation of the stress system leads to bone deterioration, sleep disturbances, neural atrophy (McEwen, 2004)², and a reduction of muscle proteins (Preiser et al., 2014)³. GCR resistance also increases the duration and severity of the inflammatory response, with a strong association between pain and chronic stress (Hannibal et al., 2014)⁴.

This art represents allostatic load through the chaos on and around the skeleton. The late nights caused by sleep disturbances are reflected in the coffee stain across the canvas, which also represents bone deterioration from allostatic load. The vines wrapping around the brain and the pectoralis minor represent neural atrophy and decreased muscle protein levels. The reason for the vines specifically is that they are a recurring motif in my work of external forces that affect the subject. Finally, the scribbles give the 'feeling' of the violent feedback loop of stress.

1.2 Sympatho-Adrenomedullary System (SAM)

The SAM system is responsible for the "fight or flight" response in the stress system. Panic or anxiety attacks — which many who have anxiety or stress disorders suffer with — are highly associated with this system. As such, to represent the physical feeling of your heart beating out of your chest, the heart of the skeleton is outside its ribcage. Additionally, vines wrap around the neck of the skeleton, simulating shortness of breath.

¹See Cohen et al., 2012 in bibliography

²See McEwen, 2004 in bibliography

³See Preiser et al., 2014 in bibliography

⁴See Hannibal et al., 2014 in bibliography

1.3 Mitigants

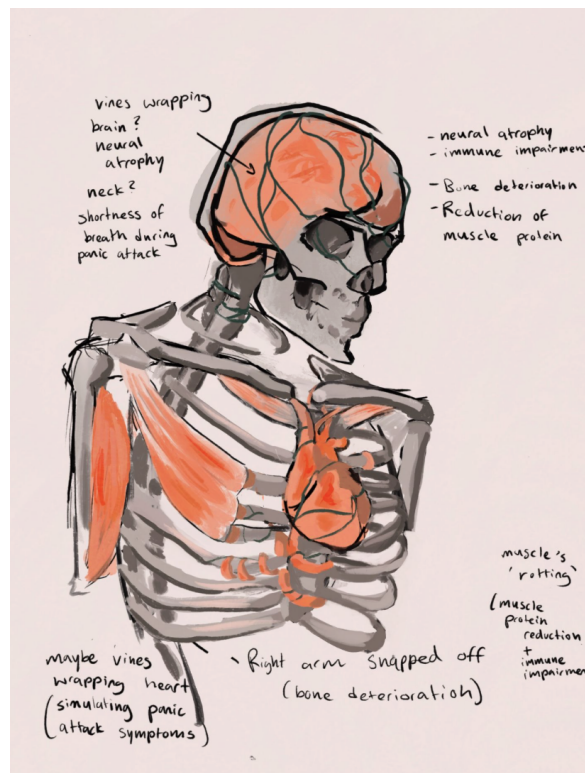
Many people mitigate the effects of chronic stress or anxiety through SSRIs like Escitalopram. A placebo-controlled evaluation of Escitalopram showed strong statistical evidence that SSRIs reduce the total and peak cortisol levels (Lenze et al. 2011)⁵. As such, SSRIs can mitigate some of the adverse effects of stress's feedback loop, bringing some structure to the chaos. The magenta boxes represent this. Though everything surrounding the skeleton is chaotic, the magenta boxes bring an order not found anywhere else in the piece.

However, Escitalopram alone is often not able to fix all the symptoms that people with chronic stress or anxiety suffer; some of the chaos remains. The best mitigant depends on the individual but usually involves a combination of behavioral therapy, meditation, and pharmaceuticals such as Escitalopram.

2 Process

Much of the inspiration (like the vines or skeleton) draws from motifs from my previous works. As such, here are some related topics and concepts that I used in the past, as well as a rough thumbnail sketch for my final illustration.

2.1 Concept Sketch



⁵See Lenze et al. 2011 in bibliography

2.2 Previous Related Works



Perfectionism Anxiety is strongly correlated with perfectionism. This is an illustration of perfectionistic tendencies: anxiety over imperfection prevents work from even starting.



Overworked Like anxiety's association with perfectionism, a large stressor for young adults comes from external pressure to overperform. As such, many feel that to succeed, they must go above and beyond with everything they do, fueling anxiety.



Expectations As mentioned before, a large stressor for young adults comes from external pressure to outperform. However, these expectations usually come from good intentions. So, this piece represents those good intentions, dragging the bottom hand into a 'better' environment, even as it destroys the hand in the process.

3 Annotated Bibliography

Note: Though not all of the following works were directly represented in the piece, these references and their associated annotations provided a coherent account of the stress system. All of these papers contributed to understanding the underlying physiological response reflected in the final product.

1. Bryant, R. A., Creamer, M., O'Donnell, M., Forbes, D., McFarlane, A. C., Silove, D., & Hadzi-Pavlovic, D. (2017). *Acute and Chronic Posttraumatic Stress Symptoms in the Emergence of Posttraumatic Stress Disorder: A Network Analysis*. *JAMA Psychiatry*, 74(2), 135–142. <https://doi.org/10.1001/jamapsychiatry.2016.3470>

This paper studies how stress symptoms change over time after trauma, and how post-traumatic stress develops into PTSD. In the first 12 months, many patients reexperienced symptoms (such as flashbacks and physical responses), while as time went on, symptoms became more tightly connected, developing into PTSD.

2. Charmandari, E., Tsigos, C., & Chrousos, G. (2005). *Endocrinology of the Stress Response*. *Annual Review of Physiology*, 67, 259–284. <https://doi.org/10.1146/annurev.physiol.67.040403.120816>

Charmandari et al. (2005) reviewed how the central and peripheral nervous systems respond to stress, noting that corticotropin-releasing hormone is the primary stimulus for the body's stress response. The paper examines the effects of chronic activation of the stress system across growth, thyroid function, reproduction, metabolism, gastrointestinal function, immune function, and psychiatric disorders.

3. Clarke, D. M., & Currie, K. C. (2009). *Depression, anxiety and their relationship with chronic diseases: A review of the epidemiology, risk and treatment evidence*. *Medical Journal of Australia*, 190(S7), S54–S60. <https://doi.org/10.5694/j.1326-5377.2009.tb02471.x>

This paper reviews the association between depression and anxiety with chronic diseases. The authors note that depression is more common in all disease groups, while anxiety is especially more common in patients with heart disease, stroke, or cancer.

4. Cohen, S., Janicki-Deverts, D., Doyle, W. J., Miller, G. E., Frank, E., Rabin, B. S., & Turner, R. B. (2012). *Chronic stress, glucocorticoid receptor resistance, inflammation, and disease risk*. *Proceedings of the National Academy of Sciences*, 109(16), 5995–5999. <https://doi.org/10.1073/pnas.1118355109>

Cohen et al. (2012) studied how chronic stress affects glucocorticoid receptor resistance. They found strong statistical evidence that chronic stress increases GCR resistance, prolonging inflammatory responses and increasing disease risk.

5. Dhillon, S., Scott, L. J., & Plosker, G. L. (2006). *Escitalopram*. *CNS Drugs*, 20(9), 763–790. <https://doi.org/10.2165/00023210-200620090-00010>

This review examines Escitalopram's effects on GAD, SAD, panic disorder, and OCD. Escitalopram prescriptions (including Lexapro) are highly potent SSRIs, with evidence suggesting they are nearly twice as potent as citalopram.

6. Hannibal, K. E., & Bishop, M. D. (2014). *Chronic Stress, Cortisol Dysfunction, and Pain: A Psychoneuroendocrine Rationale for Stress Management in Pain Rehabilitation*. *Physical Therapy*, 94(12), 1816–1825. <https://doi.org/10.2522/ptj.20130597>

This review details how chronic stress may lead to cortisol dysfunction, inflammation, and increased pain sensitivity. Stress is rarely addressed in pain rehabilitation despite its strong physiological links to pain.

7. Lenze, E. J., Mantella, R. C., Shi, P., Goate, A. M., Nowotny, P., Butters, M. A., Andreescu, C., Thompson, P. A., & Rollman, B. L. (2011). *Elevated cortisol in older adults with generalized anxiety disorder is reduced by treatment: A placebo-controlled evaluation of escitalopram*. *American Journal of Geriatric Psychiatry*, 19(5), 482–490. <https://doi.org/10.1097/JGP.0b013e3181ec806c>

This study evaluated how SSRIs interact with the HPA axis in adults with GAD and found strong evidence that SSRIs reduce cortisol levels, thereby reducing HPA axis hyperactivity.

8. McEwen, B. S. (2004). *Protection and Damage from Acute and Chronic Stress: Allostasis and Allostatic Overload and Relevance to Psychiatric Disorders*. *Annals of the New York Academy of Sciences*, 1032(1), 1–7. <https://doi.org/10.1196/annals.1314.001>

McEwen (2004) examines how prolonged stress leads to allostatic load, which can cause obesity, bone deterioration, immune impairment, and neural atrophy. Key regions of the brain are heavily affected by stress hormones.

9. Preiser, J.-C., Ichai, C., Orban, J.-C., & Groeneveld, A. B. J. *Metabolic response to the stress of critical illness*. (n.d.). Retrieved October 9, 2025 from <https://dx.doi.org/10.1093/bja/aeu187>

This review examines the metabolic response to stress in critical illness, explaining how the reduction of muscle protein is one of the more harmful long-term consequences.

10. Stein, M. B., & Sareen, J. (2015). *Generalized Anxiety Disorder*. *New England Journal of Medicine*, 373(21), 2059–2068. <https://doi.org/10.1056/NEJMcp1502514>

Stein and Sareen (2015) review the biological, psychological, and treatment components of Generalized Anxiety Disorder, including diagnosis and stepped-care therapy combining CBT and pharmacotherapy.