The Brain's Biochemistry on Trauma

*When it comes to leaving toxic partners such as narcissists, sociopaths, or psychopaths, our brain's biochemistry is not on our side. Due to these biochemical bonds, survivors struggle with No Contact and may suffer many relapses on the road to recovery from the psychological trauma of the relationship. Our brain's chemistry can lock us into this addiction to the narcissist, sociopath or psychopathic partner.

Oxytocin

This hormone, known as the "cuddle" or "love hormone," is released during touching, orgasm, and sexual intercourse; it promotes attachment and trust (Watson, 2014). It is the same hormone released by the hypothalamus that enables bonding between mother and child. During "lovebombing" and mirroring in the idealization phases with our abusive partners, it's likely that our bond to them is quite strong as a result of this hormone.

Intermittent reinforcement of positive behaviors dispersed throughout the abuse cycle (e.g. flowers, gifts, compliments, sex) ensures that we still release oxytocin even after experiencing incidents of abuse. Intermittent reinforcement is a concept coined by B.F. Skinner (Ferster and Skinner, 1957) which describes a schedule where a subject's desired behavior is only rewarded occasionally, rather then every time. A common metaphor used in real life is a gambler at a slot machine who continues playing, even though he/she/they will only win something a fraction of the time and the loss may be large in comparison to the actual gain.

Anytime we are emotionally or psychologically smitten with someone, this tends to heighten our sexual attraction and chemistry to them as well – so during the idealization phase, the narcissist becomes good in bed because of the level of emotional security, trust, attachment and intimacy a victim feels given all the attention, praise and flattery he/she/they receives from the narcissist.

During the devaluation phase, the victim becomes hooked by the traumatic highs and lows of the relationship which condition him/her/them to the adrenaline rush of unpredictability, fear and the hope for another scrap of the idealization phase. Susan Anderson, LICSW (2010) notes that intermittent reinforcement in abusive relationships contains a push-pull dynamic that secure relationships lack, causing victims to become addicted to the drama and the chaos of the relationship. Paradoxically, individuals in toxic relationships actually feel more attached and trauma bonded to unhealthy relationship partners rather than healthy ones who give them a sense of security.

We tend to feast on every incident of makeup sex or small scrap of tenderness due to the emotional hunger we experience during the devaluation phase of the relationship. Sex with the narcissist or socio/psychopathic partner acts as an emotional reset button as well as grooming

tactic that makes us crave the early idealization phase and continue to invest in our partner in the hopes that the outcome will be a positive one, despite evidence to the contrary.

Dopamine

The same neurotransmitter that is responsible for cocaine addiction is the same one responsible for addiction to dangerous romantic partners – dopamine. Our cravings for a partner we are in love with who has rejected us causes activity in the reward system of the brain similar to cravings for a drug like cocaine (Fisher, 2016).

Survivors who are often rejected and devalued in the devaluation and discard phases of the relationship undoubtedly suffer the consequences of a narcissist mixing bonding with betrayal to get them hooked on the drug that is their abuse. This craving is exacerbated by the fact that we tend to ruminate over memories with our past partners. According to Harvard Health, both drugs and intense, pleasurable memories trigger dopamine and create reward circuits in the brain, essentially telling the brain to "do it again."

Dopamine is not just about pleasure. It's also about survival. The salience theory of dopamine suggests that our brain releases dopamine not just for pleasurable events but to important ones that are linked to survival (McGowan, 2004). **Dopamine is not just a messenger that dictates what feels good; it also tells the brain what is important and what to pay attention to in order to survive.** And the more powerful the experience is, the stronger the message is to the brain to repeat the activity for survival.

Abuse survivors are unfortunately hijacked by dopamine. According to Susan Carnell, Ph.D (2012), abusive tactics like intermittent reinforcement work well with our dopamine system, because studies show that dopamine flows more readily when the rewards are given out on unpredictable schedule rather than predictably, following conditioned cues.

So, the random sweet nothings whispered to us after an incident of emotional abuse, the apologies, the pity ploys, the rare displays of tenderness during the devaluation phase, right before another incident of abuse – actually help cement this type of reward circuit rather than deter it.

What helps these dopamine cravings is a powerful form of cognitive dissonance that arise when we hold conflicting beliefs regarding our abuse that are undoubtedly affected by our physiological bonds with them as well as their false mask and intermittent moments of kindness. Dr. Joseph M. Carver (2004) speaks about the power of cognitive dissonance in his article "Love and Stockholm Syndrome," where he refers to cognitive dissonance arising with an antisocial personality disordered partner as a survival mechanism in an "abusive, controlling environment."

We are able to rationalize, minimize and even deny abuse due to cognitive dissonance, attempting to uphold our original beliefs about the abuse being a kind, loving, and affectionate person while recalling and romanticizing the early stages of the relationship. Combine this with

powerful experiences of abuse which alert our brain to "pay attention" as well as pleasurable memories we recollect over and over again – and we've got ourselves a biochemical bond from hell.

Cortisol, Adrenaline and Norepinephrine

Cortisol is a stress hormone and it gets released in large doses during the traumatic highs and lows of an abusive relationship. It is released by the adrenal glands in response to fear as part of the "fight or flight" mechanism. Since we are unlikely to have a physical outlet of release when cortisol is triggered during cycles of emotional abuse, this often traps the stress within our bodies instead, especially if we are experiencing symptoms of PTSD or complex PTSD from the abuse (Van der Kolk, 2015; Walker, 2013).

New research confirms that cortisol strengthens the impact of memories associates with fear and that oxytocin and cortisol actually work together to consolidate fear-based memories (Drexler et al, 2015). Cortisol is released both in the creation of new traumatic memories as well as the recollection of them. During a flashback, "cortisol levels spike…as the memory reconsolidates and is encoded into specific neurons" (Bergland, 2015). The inevitable flashbacks and secretion of cortisol to fear-based events further consolidates and embeds the memory more deeply into our neural networks, ensuring that the memories from the trauma are more intense, or vivid and ultimately more difficult to recover from.

As we ruminate over incidents of abuse, increased levels of cortisol lead to more and more health problems. Some suggested ways to counteract the effects of this hormone, include physical activity, mindfulness, meditation, laughter, music, and social connectivity.

Adrenaline and norepinephrine also prepare our body for the flight or fight response, and are culprits in biochemical reactions to our abuser (Klein, 2013). When we see the person we love, adrenaline is released, causing our hearts to race and our palms to sweat. Yet this same hormone is tied to fear – research has confirmed that when we share an intense, scary experience with our partner, we become more attached and drawn to them because fear also releases dopamine, which caters to the reward system in our brain. (Georgia Health Sciences University, 2011).

This means that when we fear retaliation from our narcissistic partner in the form of a smear campaign, when we become scared of their narcissistic rage or outbursts – we actually become more bonded to them in a way we wouldn't expect – addicted to the pain, the fear, and the anxiety embedded within the abuse cycle.

According to Bergland (2012), adrenaline also promotes an antidepressant effect, triggering fear and anxiety which then releases dopamine – this can cause us to become "adrenaline junkies," addicted to recklessly seeking the rush evoked from vacillating between tender bonding and betrayal. During No Contact, withdrawal from that "rush" can be incredibly painful. This is why so many partners of narcissists tend to relapse and go back to their abusers. This is also why it can be difficult to maintain No Contact.

Serotonin

Serotonin is a hormone that regulates mood. When we fall in love, the serotonin levels in our body fall in a way that mimics the way they are lowered in individuals with Obsessive Compulsive Disorder (Marazziti, 1999). This may come as no surprise to individuals who have been groomed early on in a toxic relationship to expect excessive praise and flattery from a charming emotional predator. Individuals with low levels of serotonin are also more likely to engage in sexual behavior, which then again releases dopamine and oxytocin to bond victim to abuser (Arabi, 2016).

This is why narcissistic abusers dominate our brains in the early idealization phases of the relationship with their love-bombing, the excessive adoration we receive in the beginning. Imagine how this effect is compounded in the devaluation and discard phase, when we are made to think about our narcissistic partner 24/7 due to their covert putdowns, their silent treatments, their stonewalling, their infidelity, and their sudden disappearances. We become obsessed with them not just through love, but again, through fear, anxiety and rumination.

References

Anderson, S. (2010, November 08). Can't let go of a bad relationship?

Arabi, S. (2016) *Becoming the narcissists nightmare: How to devalue and discard the narcissist while supplying yourself.* New York: SCW Publishing

Bergland, C. (2012, November 29). The Neurochemicals of Happiness. https://www.psychologytoday

Bergland, C. (2015, July 10). Cortisol and Oxytocin Hardwire Fear-Based Memories. Retrieved from https://www.psychologytoday.com/cortisol-and-oxytocin-hardwire-fear-based-memories

Carnell, S. (2014, May 14). Bad boys, Bad Brains. Retrieved from heeps://www.psychologytoday.com/blog/bad-appetite/201205/bad-boys-bad-brains

Carver, J.M. (2004). Stockholm Syndrome: The Psychological Mystery of Loving an Abuser, Page 3.

Drexler, S.M., Merz, C.J., Hamacher-Dang, T.C., Tegenthoff, M., & Wolf, O.T. (2015). Effects of Cortisol on Reconsolidation of Reactivated Fear Memories. Neuropsychopharmacology, 40(13) 3036-3043. Doi:10.1038/npp.2015.160

Ferster, C.B., & Skinner, B.F. (1957). Schedules of reinforcement. *Appleton-Century Sciences, 8(7)*, 294-300. Doi:10.1016/j.tics.2004.05.010

Fisher, H.E. (2016). Love Is Like Cocaine – Issue 33: Attraction – Nautilus. Retrieved from heep://nautil.us/issue/33/attraction/love-is-like-cocaine

Georgia Health Sciences University. (2011, February 28). Brain's Reward Center Also Responds to Bad Experiences.

Klein, S. (2013). Adrenaline, Cortisol, Norepinephrine: The Three Major Stress Hormones Explained. Http:/www.huffingtonpost.com/2013/04/19/

Marazziti, D., (1999). Alteration of the platelet serotonin transporter in romantic love. *Psychological Medicine.*

McGowan, K. (2004, November 1). Addiction: Pay Attention. Retrieved from https://www.Psychologytoday.com/articles/200411/addiction-pay-attention

Van der Kolk, B. (2015). The body keeps the score: Brain, mind, and body in the healing of trauma. New York: Penguin Books

Walker, P. (2013). Complex PTSD: *From surviving to thriving: A guide and map for recovering from childhood trauma.* Azure Coyote Publishing.

Watson, R. (2014, October 14). Oxytocin: The Love and Trust Hormone Can Be Deceptive. Retrieved from https://www.psychologytoday.com/blog/love-and-gratitude/201310/oxytocin-the-love-and-trust-hormoe-can-be-deceptive