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HEALING IN TWO LANGUAGES: BIOLOGY AND BECOMING

Post-traumatic growth (PTG) is often described as the quiet aftermath of survival. The transformation of that crisis. For many breast cancer survivors, growth emerges not only through physical recovery but also in an expanded capacity for gratitude, connection, and meaning making. Healing becomes less about returning to who they were and more about discovering who they've become.

But growth after trauma doesn't always come from what the world recognizes as illness. Some wounds are invisible; shaped not by surgery or chemotherapy but by traumatic experiences like coercion, emotional abuse, grief or the slow erosion of safety. These too alter the architecture of the brain. The neural rewiring that follows such pain mirrors what we see in survivors of physical illness: adaptation, resilience and sometimes, unexpected strength.

As someone pursuing a dual degree in Pharmacy and Bioinformatics, while simultaneously navigating trauma, I've come to see healing as both a biological and profound human process. It happens in cells and in spirit, in synapses, and in silence.

What the Research Shows

A systematic review by Liu, Doege, Thang, and Arndt examined 37 studies involving nearly 8,000 cancer survivors, most of them women in their 50s within five years of a breast cancer diagnosis. The research explored how post-traumatic growth (the positive psychological change that can follow adversity) relates to quality of life.

The findings were both hopeful and complex. Overall, people who reported greater personal growth also tended to report better quality of life. That growth often showed up as a stronger sense of self, deeper connections, spiritual change, or renewed gratitude for life. Yet the relationship was neither simple nor universal. The studies used diverse tools, some focusing on emotional well-being, and others on physical health or social adjustment. Because many were cross-sectional studies, it remains unclear which comes first: does growth improve quality of life or feeling better allow for growth?

Cultural context also shaped these experiences: how people define "growth" or express "resilience" can differ across backgrounds and belief systems. Nevertheless, research consistently indicates that the process of healing is seldom straightforward. Numerous survivors reported experiencing a dynamic interplay between pain and personal growth, reflecting both loss and unanticipated gains.

For healthcare professionals, the takeaway is clear that care must be holistic. Conversations about recovery should include not only physical symptoms but also meaning - making, connection and identity reconstruction. Programs that encourage reflections like narrative therapy, support groups, or spiritual care may help survivors integrate their experiences. But growth should never be demanded or romanticized. It's not a prize for suffering but a possibility that emerges differently for everyone.



Invisible Injuries and the Rewiring of the Self

While the review focused on cancer survivors, I couldn't help but think of another kind of healing. The one that happens after an invisible injury.

After my marriage ended, I didn't have scars to show for it, but my brain and body carried the evidence. Coercion and emotional abuse taught the nervous system to fear its own perception. I lived in a constant state of hypervigilance. Light felt harsher, sound sharper, and decisions heavier than they should have been. It wasn't heartbreak alone I was healing from. It was a neurological injury born of trauma and prolonged psychological stress.

When I began intensive outpatient therapy (IOP) two weeks ago, I finally began to learn the language for what my body had been trying to say all along. Trauma rewrites the brain. It can shrink the hippocampus, amplify the amygdala, dull the prefrontal cortex, literally changing how we process memory, fear, and safety. Neuroplasticity, the brain's capacity to form new connections, became my lifeline. Each grounding exercise, each therapy session, each quiet morning I managed to study again after sleepless nights, all of it was evidence of my brain's quiet work of repair. Healing, I realized it wasn't about forgetting what happened. It was about rewiring my body to carry it differently.

There were moments during my hospital stay when the world felt painfully still. Where time moved slower than I thought. Yet, in that sterile, quiet surrounding, small kindnesses stood out like constellations: a nurse's gentle kindness in giving me something wholesome to read (*Happiness: The Crooked Little Road to Semi-Ever After* — a memoir by Heather Harpham), a doctor's thoughtfulness and a

fleeting sense of safety. Those moments became data points in a living experiment (how the human mind learns to trust life again).

Where Science Meets Empathy

As a pharmacy and bioinformatics student, I've been trained to measure, quantify, and analyze. But healing resists measurement. There are no clear biomarkers for grief, no clinical assays for courage.

In oncology, we track tumor markers and survival curves. In trauma recovery, the indicators are subtler. The ability to rest without fear, to study again, to laugh without guilt. These too are physiological events. Signs of an autonomic system slowly returning to balance.

The science and empathy I've learned aren't opposing forces. They are two dialects of the same truth. One speaks in data and the other in humanity. Healing becomes bilingual when the two begin to converse. When the clinician, researcher, and survivor coexist in one body and listen to each other.

Reclaiming Agency: The Gradual Return to Self

For years, I mistook functionality for healing. I was excelling academically, getting accepted into a dual degree program in PharmD and master's in bioinformatics. But inside, I broke down. My trauma had trained my brain to associate achievement with "danger" of sorts, to anticipate punishment or looming grief after every success or happiness.

Therapy began a cautious unlearning process. Through the Intense Outpatient Program IOP, I began to reclaim small territories of safety. Learning that rest doesn't mean weakness and vulnerability isn't a liability. Reading about



neurotransmitters while my own self felt hijacked was its own irony. But over time, understanding the biology of stress and trauma has become a form of self-compassion.

I began to see my healing not as contradiction but as collaboration between science and self. Between intellect and intuition.

Expanding the Definition of Growth

Post-traumatic growth is often misinterpreted as triumph. True progress usually happens quietly. It looks like making mac and cheese at 3 a.m. because you've remembered to eat it. It shows up to therapy even on exam days. It looks like talking about pain without an apology. Healing from trauma, much like recovering from cancer, doesn't mean life returns to its old shape. It means building a new one. The same neuroplasticity that helps stroke patients recover speech also helps survivors of abuse rebuild trust. Both are forms of rehabilitation. One visible, and the other invisible.

My own growth isn't linear or clean. Some days I feel strong, while on other days I feel fractured. But I no longer see these moments as opposites. Both are evidence that I am still in motion. Still rewiring. Still becoming.

Toward a More Human Science

The systematic review showed that growth and quality of life are connected subtly imperfectly but genuinely. My own life mirrors that complexity. Healing isn't a single outcome it is a spectrum of becoming. As we widen the lens of post-traumatic growth, we must include invisible injuries. The psychological and spiritual recoveries that unfold quietly in people who have lived through coercion, abuse, grief, loss or emotional isolation. Their survival too rewires biology. Their stories too belong to our definition of resilience.

Healthcare must evolve to meet this truth. Recovery is not only about symptom management but about helping people rediscover agency, connection and meaning. It is about listening to the why behind survival and not just how.

Healing, I have learned, is both biology and becoming. It is the brain keeping a promise to the soul that even after devastation, life can reorganize itself around meaning. Whether it's the body recovering from chemotherapy or the mind recovering from psychological injury, the principle remains. Growth is not a return to what it was. It's an evolution toward what can still be.

In that sense, post-traumatic growth is not just a concept I study. It is a language I live in, one neuron, one act of courage, one breath at a time.

References

Liu, Zhunzhun, Doege, Daniela, Thang, Melissa, & Arndt, Volker. The relationship between posttraumatic growth and health-related quality of life in cancer survivors. *Journal of Affective Disorders*, 2020. <https://doi.org/10.1016/j.jad.2020.07.044>