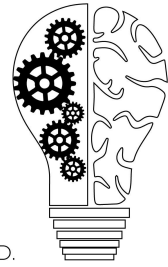


## **Episode 053: Frontal Lobe Damage: Treating Patients through Grief, Acceptance and Growth**

David Puder, M.D., Jaeger Ackerman



DAVID PUDER, M.D.  
**PSYCHIATRY &  
PSYCHOTHERAPY**

This PDF is a supplement to the podcast “Psychiatry & Psychotherapy” found on [iTunes](#), [Google Play](#), [Stitcher](#), [Overcast](#), [PlayerFM](#), [PodBean](#), [TuneIn](#), [Podtail](#), [Blubrry](#), [Podfanatic](#)

There are no conflicts of interest for this episode.

*In this episode of the podcast, I interview Steven Prince, one of my patients who had a rare form of a stroke—in the right orbital frontal cortex. He participated in a psychiatric program that I run. He tells his story of how his function and emotions changed, and how he dealt with it. At the end of the episode, I talk more with Jaeger Ackerman about the science and neurology of his case so other mental health professionals can have a basis for how to think about approaching brain injury.*

## **The case of Phineas Gage**

### **The history of the study of frontal lobe damage**

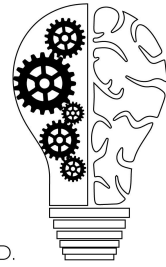
Phineas Gage was a railroad construction worker who experienced a massive frontal lobe injury in 1848 in New England. He was efficient, capable, and full of energy prior to his accident. During an explosion at work, a 13 pound iron bar was launched through his face at close range, up through his skull. It entered his left cheek, went through his eye, and came out of the top of his skull, landing 100 feet away.

Gage was carted to a local doctor where he got out of the cart and walked into the doctor’s office. As the doctor treated him for a few weeks, brain matter and infections, bone particles and tissue were oozing out of his head. Still, Gage survived, with relatively little physical injury after he was healed, with the exception of his left eye.

The main effect of Gage’s injury was in his behavior. He was studied, a medical marvel of survival, and is now reputed to be one of the first, and therefore most important, cases dealing with frontal lobe damage and its effect on behavior. After his accident, Gage was belligerent, fitful and profane. He lost the balance between his emotions and his intellectual ability to function.

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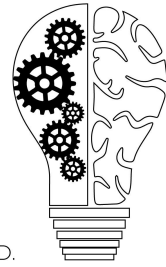
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### **Other symptoms of broad temporal frontal lobe damage can be:**

- Apathy
  - Extensive lesions of lateral prefrontal convexity ([Paradiso 1999](#))
  - Profound indifference in attitude towards others ([Cummings 1993](#))
- Depression
  - Anterior ([Stuss 1986](#)) and Lateral lobes ([Paradiso 1999](#))
  - Left lesions more likely to lead to depression than right lesions ([Rogers 1998](#))
  - Postmortem neuropathology of depressed patients indicated generalized prefrontal diminution ([Cotter 2005](#))
- Euphoria ([Grafman 1986](#))
  - Sporadic or recurrent and resembles the affect of the hypomanic state (nervous, irritable, sometimes paranoid)
  - Usually accompanied by compulsive, shallow, childish humor
  - Distractibility and hyperactivity
- Motion and Emotion
  - Hypokinesia (dorsolateral lesions) ([Heilman 1991](#))
  - Hyperkinesia- aimless/excessive motility (orbitofrontal lesions) ([Meyer 1948](#))
    - **Perseveration** (repeating old patterns of behavior even in circumstances that demand change) ([Konow 1970](#))
  - Emotional Lability and disinhibition (orbitofrontal lesions)
- Empathy
  - Large lesions of orbitofrontal/ventromedial cortex impair mainly affective empathic component ([Shamay-Tsoory 2004](#))
  - Inability to interpret and respond to emotional voice or facial expressions ([Shaw 2005](#))
- Social Behavior
  - Insatiable hunger/ Bulimia ([Erb 1989](#))
  - Hyper Sex Drive ([Jarvie 1954](#))
  - Angry impulsivity ([Berlin 2004](#))

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### **Grief, acceptance and growth**

#### **Steven's story**

Steven had five strokes and tinnitus. It was also not physical trauma, and Gage's was much worse. His decline led him to spend five hours a day researching his health conditions.

He was suffering from anxiety, depression, fear and grief in reaction to his health condition, and Steven did something about it. He came to my outpatient group.

At his worst, Steven's tinnitus caused him to lock up the guns in his house so he wouldn't think of ending his life, and he says he "took xanax like candy." He felt as if he was mourning and grieving losing who he was. He'd had a successful career previously, but he no longer found the same meaning in his life.

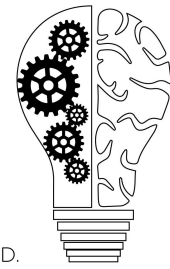
During his struggles with his mental health, Steven joined the [day treatment program](#) that I am the medical director of. When he first came to the program, he didn't think he would fit in. When he introduced himself on the first day of meetings, he told the others his name, and then described his illness. When the entire room finished introducing themselves, the therapist kindly pointed out that they had all introduced themselves through the lens of their illnesses. "Aren't you people? Humans? **You are not your diagnosis,**" the therapist said. Steven said it changed his life to see it that way.

As he became more comfortable being his "new" self, more comfortable with his emotions and frustrations about his limitations, he became more aware of how he was speaking and thinking about himself. He learned to accept his illness instead of battling it. When he accepted it, he was alright with moving on and being a whole person, just in an entirely different way. He says he became more self confident, healthy, and less stressed. His wife has commented on his increased empathy as well.

#### **Steven's diagnosis - Right Side ACA Strokes**

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After Steven's stroke, he felt "flooded." He would become overwhelmed with audio and visual stimulation, which caused him to have to retreat into a dark room for up to 24 hours.

### **ACA Stroke/Frontal Lobe Damage symptoms**

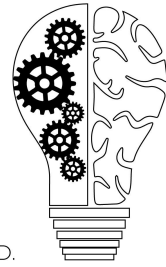
1. Accounts for 0.3 to 4.4% of total stroke cases. Males are more commonly affected than females, and most of these strokes occur between the age of 59 and 75. ACA strokes arise on the left hemisphere more commonly than the right. ([Kang and Kim 2008](#), [Arboix, Garcia-Eroles et al. 2009](#))
2. Most common presentation is motor deficits characteristically involving the contralateral lower extremity; present in 86.3-90% of ACA strokes ([Kumral 2002](#))
3. Other motor disorders related to ACA infarcts include hypometria, bradykinesia, global akinesia, loss of reciprocal coordination, parkinsonian gait, tremor, dystonia, and motor neglect ([Nagaratnam, Davies et al. 1998](#), Kobayashi, Maki et al. 2011)
4. Sensory deficits less common; ~25%, and always correlate with weak extremity (Kang 2008)
5. **Abulia** (willpower, assertiveness), agitation, motor perseveration, memory impairments, emotional lability, anosognosia are neuropsychological features reported in ACA infarcts (Kang and Kim 2008)
6. Altered consciousness and speech disorders identified in up to 43.1% of ACA infarcts (Arboix, Garcia-Eroles et al. 2009)
7. Transcortical motor aphasia and transcortical mixed aphasia ([Nagaratnam, Davies et al. 1998](#), Kumral, Bayulkem et al. 2002)

The main part of the brain that is typically affected by this kind of stroke is the prefrontal cortex region, which makes up 29% of human brain matter. Humans are unique in that the prefrontal cortex is significantly larger than in other species. This region of the brain is responsible for temporal organization, executive memory and executive attention.

**Temporal organization** is the most general and characteristic of all prefrontal functions in the primate and enables the organization of actions and thought within the domain of

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time. This temporal organization facilitates the capacity for elaborate behaviors, speech fluency, higher reasoning, and creative activities.

**Executive memory** is the idea of taking formed prior experiences and being able to learn from them and make decisions about the future. This ability effectively organizes the present in order to prepare for the future

**Executive attention** deals with using short term active memory to apply to the immediate here and now. Within executive attention, there are a few main functionalities:

- The **preparatory set** is the part of the brain that reconciles sensory cues and coordinates past memories to prepare the body for active response—like a runner gearing up for a race.
- **Inhibitory interference control** enhances contrast to different information. The brain filters out what it needs in the immediate, and is able to dampen down everything else that doesn't matter. In Steven's case, this part of his brain was damaged because he had a lack of control over what information was inhibited or processed as important by his brain.

Also in Steven's case, I opted to focus on increasing his sensorium by lowering his xanax intake to help him increase his executive functioning so he could become more himself.

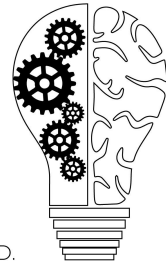
The fascinating thing is that the brain can change itself. If you have a loss of movement from a stroke, you want a program that is 5 days per week and really intensive. That's why partial programs can be helpful to guide the patient in developing the brain in a way that would be most healing for a loss of psychological function.

### **The importance of emotional congruency**

One of the main things we focus on in the program Steven was part of is implementing the importance of congruence. Congruency is about making sure who you are on the outside reflects who you are on the inside. When people are incongruent, they put undue psychological stress on their personality to perform and feel the need to appease

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others. Steven adaptively relied on his ability to tell funny stories, and when he felt he could finally just “be” and not “perform” for others to make them feel more comfortable, he felt he could take that part of his personality off. He became more congruent with what his inner state felt like.

As Steven shed his need to please, he became more assertive. He also learned to handle his tinnitus with self compassion and lower anxiety. Now, he lives with it and it causes him little emotional distress.

Within the program, doctors helped our patients develop congruence through their writing, drawing and talk therapy. We can often see incongruencies in those different modalities and begin to talk about them. Another way we help them with their mental health is through encouraging them to start doing strength training.

### **Moving on**

Steven’s passion is now helping connect others who need support through their chronic illnesses. He wanted to find a support group where he lived, but he couldn’t, so he started his own on Facebook. He opened it to more than stroke victims, and he has been successful in creating that group, having guest speakers who are mental health professionals, and building a supportive community within it. He says he wants to bring hope and encouragement to people with chronic illness.

Watching Steven change and heal has been a pleasure. He has moved through the grief, acceptance, and growth that is possible for many of our patients.

## **Treating patients with frontal lobe damage**

Other than therapy, I find that optimizing a patient’s sensorium is incredibly important to restore normalcy of life.

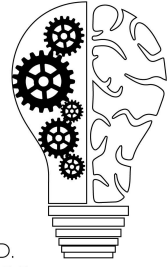
You can improve sensorium through improving sleep, diet, and strength training. Also, having meaning and purpose, having friendships and an internal locus of control, can also optimize sensorium.

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**Consider listening to this one next:**

- [Sensorium Part 1: Total Brain Function Optimization](#)



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