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Reaffirming the Nerve Pressure Model in the Age of Neuroplasticity

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In recent years, the conversation around chiropractic's effect on the brain has become increasingly sophisticated. Researchers like Dr Heidi Haavik, DC and Dr. Monique Andrews, DC have helped shift public and professional awareness toward the brain's adaptive responses to spinal adjustments. Their studies suggest that spinal manipulation can modulate brain activity—particularly in the prefrontal cortex, the area responsible for executive function, emotional regulation, and decision-making.

This research has undoubtedly advanced our understanding of chiropractic's potential beyond pain relief. However, some have mistakenly interpreted these findings to mean that the traditional nerve pressure model—which emphasizes the mechanical disruption of nerve function at the spinal level—is outdated or irrelevant.

Let's set the record straight: It is not.

In fact, a few weeks ago I was at a seminar with Dr. Dan Murphy, and he stated this previous argument exactly. He insisted that the nerve pressure model is outdated, it was always wrong, and, in fact, it never really made much sense to begin with. It was this event that started me on my journey down this rabbit hole. I knew immediately, upon hearing his statements, that, based on what I had already read in the literature, the brain-based model was still in its infancy and was being oversold; while the nerve pressure model is still accurate and relevant, but often rejected because most chiropractors don't like the fact that it may invalidate all of their claims if they are unable to alter its current state and have any lasting effect on their patient's symptoms.

The studies showing activation of the prefrontal cortex after adjustments are meaningful—but they do not negate the idea that spinal misalignments (or subluxations, to be more accurate) can interfere with nerve function. The prefrontal cortex responds to a broad range of stimuli—exercise, breath work, massage, and even music. Its activation is not unique to chiropractic care, nor does it require specificity of contact, segment, or line of drive. In other words, anybody can do it. Certainly any chiropractor can do it, and this is often seen as a unifying feature of this model. The question we have to ask ourselves, is the simple question of whether or not activation of the prefrontal cortex is synonymous with correction of the subluxation. If other things can do it as well, like music and

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massage, then the answer has to be no. We also need to ask ourselves, what does prefrontal cortex pathology look like if it is over stimulated. The answer, of course, is seizure activity. Seizures are synonymous with uncontrolled, over-activation of the prefrontal cortex. We certainly cannot say that seizures are synonymous with health. For that reason, we should never fool ourselves into believing that the purpose of chiropractic is to stimulate the prefrontal cortex with no upper limit on how much activity should be created. In fact, the current brain-based model of subluxation is slowly and insidiously redefining chiropractic as a stimulatory procedure, and the highest aim is to create the most stimulation; as evidenced by the emergence of the Y-strap and the ring-dinger.

In other words, general stimulation of the spine can activate the prefrontal cortex, but that does not prove it is correcting subluxation. This is where the distinction between neurological correlation and causation becomes critical.

The nerve pressure model, especially as emphasized by Dr Clarence Gonstead, is grounded in anatomy and biomechanics: disc displacement causes inflammation and mechanical pressure on the nerve root, leading to dysfunction in the corresponding organ or tissue. This model is not invalidated by the presence of higher brain changes—it is simply addressing a different mechanism.

A few weeks ago, I was talking with Dr. Trent Bachman, DC. I was telling him about what I had been looking into and about these changes in the prefrontal cortex, but that nobody has ever really quantified their findings to be able to say what it all means and how much activity there should be. Dr. Bachman is, himself, highly published and was mentored by none other than Linus Pauling, the two-time Nobel Prize winner. He shared with me an anecdotal experience that he had when he was invited down to a neurology lab in Arizona. They performed a few exploratory tests to see what they would find, and what they found was rather remarkable. As he shared the story, when they delivered Gonstead-specific adjustments, delivered to segments objectively identified as being subluxated, the neurology equipment showed that they had increased activity in the premotor cortex, not just the prefrontal cortex.

This finding is not trivial.

Unlike the prefrontal cortex, the premotor cortex is not activated by general relaxation or wellness inputs. It is functionally involved in motor planning, postural control, and sensorimotor integration. When the premotor cortex lights up, it implies that the brain is reorganizing its control of movement—a clear sign that something more than just stress relief is occurring.

Dr. Bachman's insight supports the idea that a truly corrective adjustment restores proper afferent input from the spine, leading to improved central processing and motor output. That's not just a brain change—that's a functional recalibration of the brain—body interface.

In fact, Dr Bachman's observation strengthens the nerve pressure model, and here is why:

- Subluxation, in the Gonstead sense, disrupts joint mechanics, alters disc loading, and creates nociceptive irritation to the dorsal horn and beyond.
- That disturbance alters afferent input to the brain, resulting in poor sensorimotor integration.
- A specific correction doesn't just feel better—it restores clean communication between body and brain.

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- The premotor cortex activation suggests the brain is now receiving accurate segmental input—meaning the nerve is no longer under duress, and the subluxation is neurologically resolving.

In short, neuroplasticity doesn't negate nerve interference—it explains what happens after it is corrected.

Gonstead adjustments are mechanically and neurologically specific:

- Only one segment is adjusted
- Line of correction is precise and reproducible
- Objective findings (scope, X-ray, palpation) guide the contact
- Adjustments are delivered with minimal force and maximum specificity

This is not the case with most Diversified approaches, which often involve multiple segment manipulation without definitive confirmation of true subluxation.

It is also worth considering why much of the current research emphasizes broad cortical activation—especially in the prefrontal cortex—rather than focusing on measurable changes in neuromechanical or segmental function. While these studies are valuable, they tend to validate forms of chiropractic that emphasize global nervous system influence rather than segmental correction. This direction of inquiry is particularly convenient for institutions where the dominant technique—such as Diversified—is less biomechanically precise and less often associated with rapid, objective symptomatic change. In that light, demonstrating any cortical response, even absent symptom improvement, becomes an attractive way to substantiate the clinical value of non-specific adjusting protocols.

This does not mean the research is invalid—but it does suggest that the research questions being asked may be shaped by the curriculum being taught, and that might not be leading us to the best science—or perhaps I should say, the most complete science. The result is a model of chiropractic that leans toward general neuromodulation rather than segmental correction—one that is easier to study, but arguably less reflective of the clinical outcomes seen in specificity-driven systems like Gonstead.

If Dr. Bachman's findings are validated further, they would suggest that only specific, segment-focused adjustments—like those in Gonstead-restore proper motor control through premotor activation. And that is what makes Gonstead chiropractic so powerful: it is not just about moving bones or calming the nervous system. It is about precision-driven correction that normalizes structure and restores neuromechanical function—from the disc to the nerve to the brain.

We should embrace the exciting findings from Drs. Haavik, Andrews, and others, but we should also be clear: not all adjustments are equal. While many techniques may affect the brain, only specific chiropractic corrections, like those in the Gonstead system, appear to have a unique ability to influence the areas of the brain responsible for motor control and movement restoration.

Rather than abandon the nerve pressure model, as so many have already demonstrated their willingness and eagerness to do, it is time to evolve it—by connecting it to the latest neuroscience without losing sight of its foundational biomechanics. The brain model doesn't replace the disc model or the nerve pressure model. The brain simply responds once the disc has been corrected and the nerve pressure has been removed. ❋