

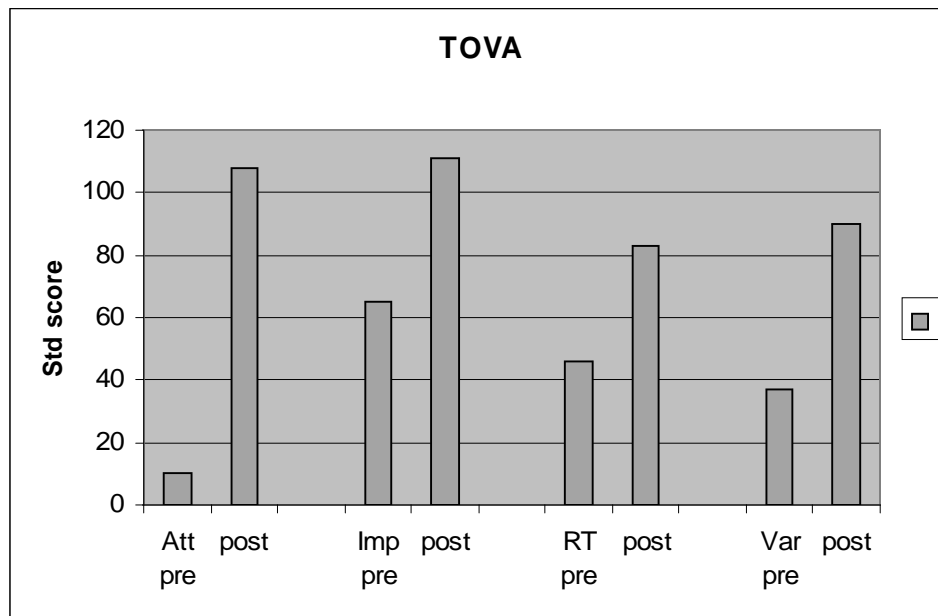
# **Clinical Use of SMR-Beta Training on Post Traumatic Stress Disorder and Adult Attention Deficit Disorder: A Case Study**

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The patient "Laura" is a 33 year old female who originally entered psychotherapy for the treatment of depression, violent behavior, suicidal ideation, drug use and conflicting feelings regarding her sexual orientation. At the time of her referral she was working full time as a security guard. She is of Mexican decent and has 4 sisters and 3 brothers. The family relationship history is characterized by violence, severe sexual abuse and estrangement. Laura was sexually assaulted by several of her older brothers at the age of 8 (brothers were 11, 13 and 14). The father was also sexually abusive with her and at one point in her childhood she would sleep with a kitchen knife under her pillow for fear he would enter the bedroom and molest her or one of her sisters. As an adult she continued to have symptoms of PTSD (depression, anxiety, insomnia, night terrors, heightened startle response and drug dependency) related to these early traumatic events. After a long and protracted illness, the father died of cancer when Laura was 13. Even as an adult, Laura continued to blame herself for his death in that she remembers wishing out loud on several occasions that "he would die". During his illness she would have to sit by his bedside to watch over him for several hours after returning home from school. She stated that she dreaded coming home and on several occasions would stay out until late in the evening in order to avoid being with her father. Early on in therapy she felt very strongly that her behavior some how hastened her father's death. Shortly after his death Laura began using drugs and alcohol and at the age of 21 served 6 months in prison for possession for cocaine. Upon entry into therapy Laura stated that she has always considered herself the "black sheep" of the family in spite of the fact that 2 of her brothers were unemployed and had done time in prison and she had been steadily employed for years.

Laura decided to begin EEG biofeedback after 3 years of intermittent psychotherapy (pt rarely stayed in treatment for more than 2 months at a time before dropping out). At that time she was considering returning to school on a part time basis, something she had done several times before but had never completed a single semester due to her inability to concentrate. She stated that she was unable to maintain attention when reading a book for more than a few sentences at a time before becoming anxious and distracted. (Persons with PTSD often cannot hold their minds "still" for fear of the omnipresent traumatic material entering consciousness. Thus concentration of any sort may be experienced as threatening and even terrifying.) In addition, she was experiencing nightmares on a regular basis and occasional night terrors. Initial TOVA results indicated severe impairment on 3 scales (sustained attention, response time, variability) and moderate impairment on 1 (impulse control). Although alpha- theta training at O1 has been used with great success on PTSD patients (Peniston, Kulkowsky, 91), I decided to start with C4 SMR and C3 Beta training as patient initially had great difficulty closing her eyes without experiencing extreme anxiety. In addition, it has been the general experience of most practitioners that teaching a patient to hold their mind "still" via an external focus (resulting in enhanced SMR and Beta activity) helps the patient feel more in control thereby laying the ground work for a more stable transition to an internal focus at the initiation of alpha- theta training. This idea is based on the Othmer's work and Val Brown's 5-phase model,

among others. C3 Beta enhancement was used primarily to treat the patient's depression and cognitive deficits while C4 SMR training was used for the purpose of reducing rage and reactivity. It has been demonstrated that training both hemispheres yields better results than training solely on one hemisphere or at Cz (D. Kaiser, '97).



After 20 sessions of SMR- Beta training, the patient's TOVA revealed dramatic improvement on all 4 scales (Std scores ranged from 83 to 110). Additionally, she was much less reactive and felt more emotionally "stable". Her sleep patterns had improved a great deal as well. Although she was still having nightmares, they had become less frequent and had decreased in their intensity. Her depression lifted and she became considerably more animated and less irritable. Shortly after starting college, she reported that she was able to read whole chapters at a time without frustration or anxiety and was actually enjoying and retaining what she had read. She completed her first semester in college with a B average and has not used cocaine in over a year. Laura also appeared to have made a dramatic leap forward in learning to embrace her Mexican heritage. Where as less than a year ago she would sometimes refer to members of her own community as "wetbacks", she began expressing genuine pride in her roots and even decided to major in Chicano Studies at school. Her emerging self esteem also compelled her to come out to her family about being a lesbian. As expected she got mixed reviews on that front but was able to weather her family's conflicted reactions with much less self deprecation and a virtual absence of self destructive behaviors. These would have been typical responses for Laura following any form of rejection from her family prior to undergoing EEG training. Laura's relationships with her family members continue to be troubled but she has been able to handle the upheavals with relative ease. As with most patients, there is generally parity between the internal and the external chaos (-i.e. persons with disregulated brains tend to live disregulated lives with the latter being more resistant to change). Laura's tendency towards pathological guilt was markedly reduced due to her more realistic and loving appraisal of herself.

Despite these dramatic improvements in cognition, mood and behavior, there was not a significant change in the EEG. In fact despite low frequency inhibition, there appeared to be a slight increase in theta activity in both hemispheres over the course of the 20 sessions. My own clinical experience, as well as that of many others, has shown that training at C3 and C4 can often yield dramatic changes in mood and cognitive ability without a commensurate change in specific EEG amplitudes. This may be due to the fact that there are more subcortical connections over the sensory-motor strip and training over this part of the cortex engages mechanisms of timing and control that deal with more fundamental issues of regulation. This, in turn, may lead to a more global (but locally more subtle) change in the EEG. This, as opposed to training off the strip which often yields dramatic, but somewhat localized, changes in the EEG without major improvements in behavior or cognition (own observation as of 1999).

The traumatized brain learns how to navigate it's own internal mine field in an attempt to reduce the individual's pain. Unfortunately, the need to live "around" these traumatic memories results in the person having to live within narrow corridors and cul de sacs of consciousness (-e.g. the arousal confinement of hypervigilance). Drugs, alcohol and other assorted compulsive behaviors help maintain the structure by temporarily reducing the strain. But when the mind is quiet, it pushes against the walls of these corridors in an attempt to integrate the traumatic experience into consciousness. Often times the "quiet" stillness of alpha-theta training can feel somewhat more threatening than the "active" stillness of low beta/ SMR training where the individual feels more in control due to the grounding connection with external (visual) stimuli. Ultimately, a transition should be made to alpha-theta training in order for the traumatized individual to complete the emotional re-education process. In Laura's case, alpha-theta training still feels somewhat threatening to her, indicating a need for further work. But she continues to show improvements in her mood and consolidation of her gains with SMR- Beta training.