**Chapter 10 - Hypnosis in Neurowarfare**
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[rough draft, 9/10/2020]

Is Torture Hypnosis? It's an interesting question to consider while we may view the process of hypnotism as a non-invasive parlor game, the reality is that in interrogation in the military intelligence world 'pressure' or 'torture' is used to induce a suggestive state in interrogates. This is partly what led to the treatment of POW's during America's two Gulf wars as 'terrorists', although these methodologies were learned by the US from the UK. Little is known in the US or UK about the original hooded men of the Irish in Northern Ireland as recounted by the US DIA in 1972:

> July 1972
> Section II - Current Events
> Part A - Events in Northern Ireland
> 1. (U) The following discussion is based on 1971 and 1972 literature dealing with the manipulation of human behavior. The events that have been reported to have occurred are not Soviet originated but provide an excellent example of the type of efforts that this report is expressing.
> 2. (U) Recently there has appeared in the press some discussion elaborating on the techniques and procedures for detaining, treating and interrogating prisoners in Northern Ireland (2,3). According to the report, once the detainees are in prison, they come under three types of regime which create in men a state of great confusion, suggestibility, and distress. The first regime contained various methods to produce sensory isolation. The men were made to stand still against a wall with their hands in the air for four to six hours at a time. The total length was 43 1/2 hours. Hoods were placed over the men's heads to further abolish visual input. Sensory input was further decreased by having loud noise generators turned on in order to mask meaningful sounds. The detainees were, therefore, isolated from their sensory world.
> 3. (U) The second sensory regime has the effect of increasing confusion and disorientation. Some men were rushed out, hooded and doubled up, past barking dogs, loaded into a helicopter, doors closed, engine revved up, then unloaded, then reloaded, with the procedure repeated three times. In another incident, detainees without shoes were made to move quickly over rough ground by military police.
> 4. (U) The third type of treatment has the effect of increasing stress and anxiety and reducing resistance to the disorienting effect on the two types described above. It appears the dietary intake was restricted to bread and water at six hour intervals. Maximum weight loss was achieved it appears. ONe detainee lost eight pounds in seven days. To accompany the diet restrictions, no sleep was allowed the first two or three days. Forty-eight hours sleep deprivation, in certain individuals, has been known to precipitate psychotic-like states.
> 5. (U) Psychological torture and physical abuse has been used on Catholic detainees in Northern Ireland. High-frequency sound waves (range not give in report) and sensory deprivation - research methods that have been outlawed for use on humans by the American Psychological Association - were being used to undermine the dignity and destroy the effectiveness of the Catholic minority in Northern Ireland. The case of one 40-year old released prisoner has been reported. Upon release, the man's mental and physical condition suggested senility - a condition inconsistent with his health at the time of his internment. The man walks like he is 65, whimpers in the dark and has an attention span so short he cannot carry on a conversation.
> 6. (U) The Northern Ireland procedure can be expected to greatly increase the pliability of detainees under interrogation since sensory deprivation increases suggestibility and lowers intellectual competence. Stress-isolation techniques can reach the extend of eliciting false confessions where both prisoner and interrogator are convinced the statement rendered are true. It is hoped that the above examples impart to the reader a feeling for the type of mind

manipulating procedures that will be discussed later in this report.
7. (U) since it appears that the research behind sensory deprivation has been put to current use on humans, the interested reader might peruse Biderman and Zimmer's 1961 publication entitled "The Manipulation of Human Behavior" (4). The book represents a critical examination of some of the conjectures about the application of scientific knowledge to manipulation of human behavior. The problem is explored within a particular reference: the interrogation of unwilling subject. Attention has been focused on interrogation because of the central position this topic has had in public discussions of prisoner of war (PW) behavior. (DIA, 1972, 2-3)

As one can see from the report above the purpose of 'pressure' is to increase suggestibility. Which is to say hypnotic suggestibility, which sometimes can just lead one to free one's conscience into a fake world where one will even confess to absolute delusions. A warfighter is going to want to understand how susceptible one is to hypnosis, not just to counteract the rare instances of being a POW but also to counter information or perception management attempts of the enemy at all times in all circumstances. In the following study I will be examining the issue of hypnosis from a physiological perspective identifying differences based in biology between biologically stratifiable individuals in terms of hypnosis.

**Introduction to Hypnosis**

What is hypnosis academically speaking:

Hypnosis can be defined as ''a procedure during which a health professional or researcher suggests that a patient or subject experience changes in sensations, perceptions, thoughts, or behavior'' [60]. Hypnosis is seen as a state of focused attention involving focal concentration, and inner absorption with a relative suspension of peripheral awareness and has three components [56]:

- absorption: tendency to become fully involved in a perceptual, imaginative, or ideational experience;
- dissociation: mental separation of components of experience that would ordinarily be processed together;
- suggestibility: responsiveness to social cues, leading to an enhanced tendency to comply with hypnotic instructions, representing a suspension of critical judgment.

We have shown that subjects in a hypnotic state reported a phenomenology of an altered state of consciousness: participants reported a higher degree of absorption and dissociation as compared to normal wakefulness and control conditions [See L.L. Vasilev Russian studies from 1930s]. Other studies have also shown that hypnosis produces alterations in aspects of consciousness and is characterized by modulation of properties of the phenomenal self-consciousness such as mental ease (i.e. easy flow of thoughts), absorption, reduction in self-orientation and automaticity (i.e. responses are experienced as being produced without deliberation and/or effort) [47]. (Vanhaudenhuyse et al, 2013, 344)

There is a differentiation between Highly Hypnotizable and Low Hypnotizables:

By studying coherence of the EEG signal, Kirenskay et al. [33] showed that baseline EEG differed in coherence between subjects with high and low hypnotizability. Indeed, highly hypnotizable subjects were characterized by higher distributed brain regions coherence within delta, theta, and alpha bands. A study conducted by Hinterberger et al. [25] showed the different states of consciousness that can be observed during a complete hypnotic procedure (relaxation-induction-suggestion-waking up) in one highly hypnotizable subject. The dominant pattern highlighted in this study can be summarized as follows:

- closed-eyes condition may be associated with increased bilateral parietal and occipital alpha, parietal sensory-motor and beta activities;

• hypnotic state seems characterized by increased frontal alpha, decreased central, frontal and parietal gamma bilaterally and increased occipital gamma;

• deep hypnotic state is characterized by distributed reinforcement of activity in all frequency bands;

• the awake state showed reduced activity on all frequency bands in central, frontal and parietal areas, while gamma increased in temporal and prefrontal areas (this last pattern is attributed by the authors to a highly relaxed but mindful wake state). (Vanhaudenhuyse et al, 2013, 346)

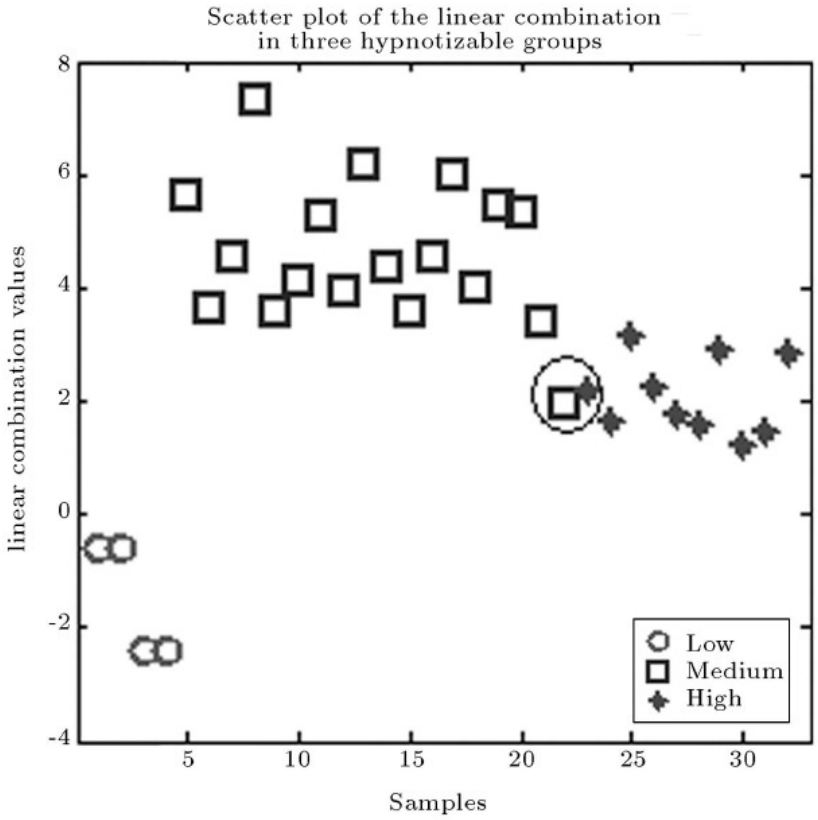


**Figure 3.** The scatter plot of the linear combination of the *RF*s values of the channels Fp2, Fp1, F8, F3, F7, C3, T3, T6, P4, Pz, P3, T5 and O1 in three hypnotizable groups.

(Baghdadi, 2005, 77)

As shall be shown below the Anterior Cingulate Cortex (ACC) plays a significant part in determining not just hypnotic susceptibility but also political ideology to a degree. The ACC is known from functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) to have found ACC hemodynamic activation in a wide variety of tasks involving reading, word generation, episodic recall, working memory, emotion (Phan et al., see below), and attention. ACC activation is related to the number of possible responses in a task, suggesting that it may contribute to response choice or "selection-for-action". This may reflect a basic contribution to motor control or a role in detecting situations that requires strategic intervention because of conflicting potential responses that may lead to errors.

Brain mechanisms underlying the modulation of pain perception under hypnotic condition have been investigated by a growing number of neuro imaging studies. In PET studies, the modulatory effect of hypnosis was shown to be mediated by the anterior cingulate cortex (ACC). In addition, studies have demonstrated increased modulation of the ACC and a large cortical and subcortical network, encompassing prefrontal, insular, and pregenual cortices, pre-SMA, thalami, striatum and brainstem in the context of hypnosis. In an fMRI study, painful stimulation in a normal alert state resulted in brain activation within a network encompassing cortical and subcortical brain areas (i.e. ACC, premotor, dorsolateral, prefrontal, primary somatosensory and bilateral insular cortices, thalamus, bilateral striatum and brainstem) while the same stimuli perceived under hypnosis failed to elicit any cerebral activation. We also demonstrated a hypnosis-related increase in functional connectivity between primary somatosensory cortex (S1) and anterior insular and pre-frontal cortices. These results are not limited to healthy volunteers but are also observed in pathological states, such as patients suffering from fibromyalgia or chronic pain. In a combined EEG and fMRI study, Rainville et al. reported a reduction of the hypnosis-related increases in occipital and delta activity when subjects were painfully stimulated.

According to theories of hypnosis, one characteristic of hypnotic procedures is the inhibition of afferent nociceptive [pain sensing] transmission. This inhibition can be explained by the dramatically decreased activity in the thalamus that is observed under hypnosis. The thalamus has also been shown to correlate with pain perception threshold while activation of the midline area (i.e. posterior cingulate cortex) correlates with intensity of the stimulation and ACC with unpleasantness of the stimulation . It has been proposed that the reported increased functional connectivity between mid-cingulate cortex, thalamus and brainstem might be related to pain-relevant arousal or attention mechanisms.These observations can lead to the hypothesis that hypnosis involves subcortical gating processes on cortical activation that underlies the decreased subjective pain perception reported by subjects under hypnosis. The basal ganglia are known to encode and initiate basic movement patterns expressed through premotor pathways and have also been proposed to support basic attentional mechanisms facilitating the calling up of motor programs and thoughts. In accordance with the reported decreases in premotor cortex activation in hypnosis, results of the different studies suggest that hypnosis may diminish anxiety, defensive and emotional reactions to pain by reducing activation of both cortical and subcortical areas. The increased modulation of insular activity is in line with role of this structure in pain affect and pain intensity coding. Modulation of frontal area activity may reflect disruption in cognitive attentional, appraisal and memory systems that can influence perception of environmental stimulation during hypnosis. Finally, ACC is a brain area reported in several studies on executive attention, detection of errors, monitoring of conflict between competing cognitive processes and was shown to correlate with the difficulty of the task performed as well as with relaxation state of subjects. Rainville et al. proposed that engagement of the cognitive and neurophysiologic processes implied in each of those accounts may be accompanied by subjective experience of increased mental absorption as reported by subjects under hypnosis. In addition, ACC has also been considered to be involved in the ‘‘suffering’’ component of pain and affective reactions associated with pain unpleasantness. Its decreased activity during hypnosis reflects the decreased unpleasantness of the stimulation reported by subjects under hypnosis. Finally, the observed reduction in occipital and delta activity during painful stimulation was proposed to reflect disruption of relaxation and/or imagery processes by pain during hypnosis. (Vanhaudenhuyse et al, 2013, 347)

We see in the previous that there are differences during hypnosis in brain waves. As well as some of the brain functions involved in hypnosis. There are identifiable elements based on physiological profiles or models that can explain the stratification in hypnosis which is known as ‘highly hypnotizable’ and ‘low hypnotizables’ as well as a mid-range which comprises 60% of any given population, whereas highs are 30% of any given population and lows are 10% of any given population. The Brain

patterns associated with Highs primarily engage the brain patterns associated with imagery in the visual cortex, whereas lows, are cognitively engaged with associated cognitive brain activity (Baghdada & Nasrabadi, 2010, 72). This has been explained to a certain extent according to researchers with rostrum size in the corpus collosum, which is involved in allocation of attention and transfer of information between prefrontal cortices, on the other hand low hypnotizables have a normal sized rostrum. The hypnotic process is not uniform but changes over a hypnotic session through time, "as one progresses through hypnosis, the altered consciousness deepens with time. The deepest hypnotic state is at the latter parts of a hypnotic session" (Baghdadi & Nasrabadi, 2010, 77).

Other researchers have found physiological stratification in Low and High based in the construction of the ACC, specifically the dACC, key to monitoring conflict in neural nets fMRI measured higher signals in ACC during conflict. Where in High Hypnotizables dACC (dorsal ACC) activation is higher then Low Hypnotizables.

> Recently, we used hypnotic suggestion as an attentional tool to manipulate conflict. Whereas earlier case reports and at least one esoteric study reported promising preliminary findings by using hypnotic suggestions, we used an experimental design using a posthypnotic suggestion, a condition wherein a subject complies with a suggestion made during the hypnotic episode after termination of the hypnotic experience. Although subjects may not remember being told to adhere to a specific instruction, the posthypnotic suggestion is usually summoned on a prearranged signal and can be effective in highly hypnotizable individuals. Posthypnotic suggestions, therefore, unlike hypnotic suggestions, take effect in a conventionally behaving person during common wakefulness. Earlier, we used this system in a laboratory setting and presented behavioral findings showing elimination of Stroop interference. We then replicated our results by using appropriate control for visual accommodation as well as eye movements . Together with other findings, these data led us to conclude that a top-down neural process, rather than optical degradation of the input stimuli, is responsible for this effect. (Raz et al, 2005, 9978)
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> Investigating the Stroop conflict by using fMRI, we compared brain activity with and without posthypnotic suggestion at the ACC both between and within groups. Fig. 1*A* shows significant interaction between group (highly vs. less-hypnotizable persons) and suggestion (absent vs. present) for Stroop conflict. Further comparisons revealed that whereas for the less-suggestible controls ACC activation was not reduced upon suggestion, within the highly hypnotizable group, suggestion elicited a significant reduction in ACC activation. In fact, although fMRI data from less suggestible individuals showed a significant increase in activation on incongruent trials, no difference in brain activity between congruent and incongruent trials appeared in highly hypnotizable persons given the posthypnotic suggestion. In addition to ACC activity reduction, we found fMRI signal reduction in posterior brain activity within an extrastriate visual area. (Raz et al, 2005, 9980)

Raz et al has studied the difference between lows and highs, lower pain induction gives lower activity in ACC lower activity in somatasensory cortex "suggestion wields a general dampening down effect on early visual activity [dominant in Highs]" (Raz et al, 2005, 9982)

> Positron emission tomography assays of pain show that specific modulatory hypnotic suggestions affect activation of different brain structures: whereas suggesting a drop in pain unpleasantness reduces specific activity in ACC, suggesting decreased pain intensity produces activity reduction in somatosensory cortex. A recent fMRI study extended these findings to illuminate the role of placebo in the context of pain. These collective accounts underline the influence that attention and suggestion can impart to conflict situations, top-down cognitive organization, self-regulation, and effortful control. Consonant with reports showing left and right lateralization for orthographic and non-orthographic stimuli, respectively, our ERP data show

> that in the absence of suggestion (at 179 msec), posterior brain activity was more left-lateralized (i.e., in line with orthography), whereas the presence of suggestion reversed this trend (at 234 msec [relate to Persinger finding in directionality, anisotropy]). Furthermore, the ERP findings show that suggestion likely influences attention-sensitive electrophysiological components. These results seem to indicate that suggestion wields a general dampening-down effect on early visual activity as indexed by electrophysiological components (i.e., P100 and N100), showing both a shift and a reduction in amplitude. Representative snapshots, captured from a time-course video showing cortical electrophysiological activity across the entire brain (Movie 1), illustrate these effects at their respective peaks. Notably, whereas suggestion attenuated earlier components, the P300 remained unaffected. Suggestion may instigate lowered visual system activation by reducing attention either to specific visual stimuli (e.g., words) or to the actual input stream (e.g., dampening down all visual stimuli). The paucity of fMRI signal differences between incongruent and congruent trials together with the ERP data of the highly hypnotizable individuals under suggestion seem to support the latter possibility….  (e.g., overall performance of the highly suggestible participants was 100 msec faster than that of the less-suggestible persons) may be important to consider.
>
> Our results show that in highly hypnotizable persons, a specific posthypnotic suggestion to construe Stroop words a nonsense strings reduced conflict, as indicated by both behavioral data and ACC activity reduction. Evidence of reduced ERP under suggestion proposes strong modulation of early occipital cortex activity. This altered visual processing probably affected downstream cognitive activity, including  ACC activation. Our results highlight the role of posthypnotic suggestions in altering cognitive processes. This knowledge may pave the road toward illuminating the neural correlates of other suggestion-based interventions. For example, a greater importance has been placed recently on trying to understand the placebo effect. It is important to compare hypnotic suggestions with other methods for modulating cognitive control, including placebo. (Raz et al, 2005, 9982)

In a more penetrating study that goes into the various neural networks in the Brain that are affected by Hypnosis Jiang et al (2017) studied the interaction of the Default Mode Network, the Salience Network and Executive Control Network.

Functional Connectivity:

**Executive Control Network ECN** - focused attention, working memory tasks

**Salience Network SN** - activated during tasks, joins dACC, when one is challenged or anxious, can be used for contextual understanding, [see Tarashenko on ‘Salience detection’ in computer algorithms.]

**Default Mode Network DMN** - during rest and rumination and de-activated as task engagement increases.

High Hypnotizable. - decreased DMN Activity, increased connectivity of left anterior aspects of the DLPFC of the ECN and the dACC of the SN; higher levels of the dopamine [see ‘dopaminargic’ Persinger] matabolite homovanillic acid in the cerebral spinal fluid. (Jiang et al, 2017, 4084)

- dACC deactivation is task dependent, with decrements in activation related to decreased negative affect. dACC activation is associated with appraisal and expression of fear and pain (Etkin et al 2011), as well as a sense of personal agency or will to persevere.

- increased connectivity b/w ECN and SN gives amplified task related activity reflecting increases or decreases in anxiety (Jiang et al, 2017, 4084) [relevant to Highs, higher anxiety, higher connectivity b/w ECN and SN]

The Following Key Points in terms of Hypnosis and the Brain:

1. Hypnotic state in highs- decreased low freq. amplitude in dACC (only in Highs)

2. Hypnosis invokes a suspension of critical judgement and ability to immerse oneself in a task while reducing awareness of alternatives [good counter RC necessitates exploration and alternatives].

3. ACC associated with 'will to persevere' reducing ACC activity decreased personal agency and contribute to heightened suggestibility as well as the ability to dissociate from distress and pain that are characteristic of hypnosis.

4. Highs displayed increased connectivity b/w bilateral DLPFC and the ipsilateral insula during hypnosis (Highs Only) [An important function of the DLPFC is the executive functions, such as working memory, cognitive flexibility, planning, inhibition, and abstract reasoning. However, the DLPFC is not exclusively responsible for the executive functions. All complex mental activity requires the additional cortical and subcortical circuits with which the DLPFC is connected. The DLPFC is also the highest cortical area that is involved in motor planning, organization and regulation. ]

- insula: processing body control and experience, emotion, empathy and time, spatial temporal aspects of pain control and empathy with others pain.

- sham mobile phone radiation in electrosensitive subjects caused somatic symptoms that were mediated through increased insular activity, (Jiang et al, 2017, 4089)

- Insula self-reflection, self-monitoring, self-regulation which are all thought processes that can be altered in hypnosis [In RC change the image of self] and in related dissociative states involving alterations in identity, memory and consciousness.

5. reduced connectivity between left DLPFC and PCC was notable during hypnosis in highs but not during memory, and it was the clearest state difference highlighting hypnosis. These DMN regions are involved in self-referential processing and episodic memory (Greicius and Menon 2004), while the ECN is involved in cognitive control (Seeley et al. 2007), and the two networks become anti-correlated during working memory tasks (Leech et al. 2011). Dissociation between ECN and DMN in response to hypnotic induction likely reflects engagement in the hypnotic state and associated detachment from internal mental processes such as mind wandering and self-reflection [in RC image of self is hijacked].

6. Taken together, our findings indicate that cross-network co-activation patterns are modulated by hypnosis. Decreased fALFF in the dACC may reflect reduced context comparison and decreased attention to the external environment, while at the same time connectivity between the DLFPC and the insula is up-regulated, which facilitates somatic surveillance. Further, the decoupling of the DLPFC from the DMN during hypnosis reveals another neural mechanism underlying hypnotic absorption and, potentially, hypnotic loss of self-consciousness and amnesia (Kihlstrom 2013).

> "Disengagement between frontal attentional regions and striatum-based procedural regions under hypnosis has been showed to improve procedural learning (Nemeth et al. 2013). Thus, effects of hypnosis may be due to separation of certain brain functions (ECN from DMN) as well as integration of others (ECN and SN). Increases in ECN–SN connectivity involving primarily DLPFC and ipsilateral insula occurred during hypnosis among high hypnotizables, who were at lower functional connectivity levels at baseline. In sum, the naturally occurring and clinically useful hypnotic state appears to be a product of reduced contextual vigilance (dACC activity) and disconnection from default mode resting activity, as well as enhanced coordination of networks engaged in task management and somatic surveillance.**"** (Jiang et al, 2017)

**Parasitic Consciousness, Partial Epilepsy and Disco Balls:**

It is not well known but some suffering some forms of epilepsy report hearing voices related to their seizures. Dr. Michael Persinger has studied this phenomenon performing metrics on the incidents of 'hearing voices' in epileptic patients. In his brain scans using sLORETA he has reported the right anterior insula is associated with aural hallucinations.

> In our opinion, from the perspective of treatment, the most important observation was the increased power in the delta range within the medial frontal and anterior cingulate region as inferred by sLORETA when the pinwheel was moving as verified by an external observer in her vicinity. Although increased activity in the latter region, particular the right anterior insula is

> associated with disembodied hallucinatory voices and auditory hallucinations, which Ms. S experienced and attributed to her invisible friends, the involvement of the prefrontal region suggests organization, intent, and an awareness that some process was occurring. This was reflected in her reports that 'something' was about to happen in a manner similar to a preictal state. The antecedents of these experiences are likely to have occurred within the right temporal lobe for two reasons. First, there was a marked increased coherence within the 6–7-Hz band between the two regions in the temporal lobes, one of which was near the source of the chronic anomaly. Secondly, she responded with intense sadness and emotion, very similar to what happens after the 'spontaneous' display of these experiences, when she was exposed without her knowledge to a 7-Hz amplitude modulated experimental magnetic field with intensities similar to those associated with increased geomagnetic activity. Her profile was similar to people who are easily entrainment by weak applied, physiologically patterned magnetic fields (Persinger et al., 2009). In fact her presentation clinically was quintessentially representative of Bear's (1979) temporal lobe syndrome of sensory-limbic hyperconnectionism that is frequently seen in subclinical and clinical complex partial epileptic patients with foci within right temporal lobe (Bancaud, Brunet-Bourgin, Chauvel, & Halgren, 1994).

Persinger and Roll found similar findings dealing with hearing voices, hallucinations in people with closed head injuries:

> In our experience, many patients with closed head injuries have reported sensitivity to weak magnetic fields. We have shown this effect with single cases. Subsequent analyses of Ms. S.'s reports for weeks after she left the laboratory showed that the report of the unusual experiences occurred during the 10-minute period after increases greater than approximately 25 nT intensity in geomagnetic activity. A similar threshold has been reported for report of bereavement apparitions and for vestibular experiences during partial sensory deprivation in the normal population. Our experiments with other forms of cerebrally applied magnetic fields may help explain why the rotation of the pinwheel diminished [also see strobe effect] when she listened through earphones to music. Many of these small solenoids (of the earphones) applied upon the ears, which are immediately adjacent to the temporal lobes, can generate magnetic field energy levels that are equivalent to the mechanical patterns that generate sound. Whether or not this strategy could be used therapeutically to control unwanted experiences remains to be established. We have counseled patients, who experience terrifying nocturnal sensed presences subsequent to closed head injuries, to quickly activate an acoustic source and to listen to music containing lyrics. This simple temporal lobe stimulation eliminates the experience of a sensed presence. (Persinger & Roll, 2012)

Experiences of pain are also associated with altered activity in the anterior cingulate the same region that is associated with emotional bonding, the feeling of well being, and the cerebral responses to ‘‘unconscious’’ changes in the environment. (Persinger, 2013, 512) In another study where he studied the effect of sensed presence in the form of a common test for hypotizability, the tingle test, he found brain measurements that correlate with other findings mentioned:

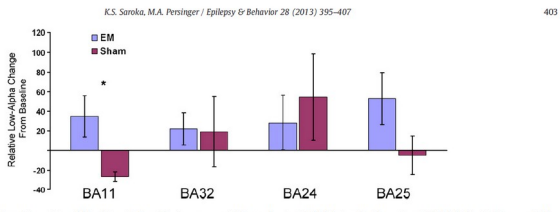


Fig. 7. Relative changes in low alpha activity within different inferred Brodmann areas (BA) according to sLORETA during the "dopaminergic" EM field. Vertical lines are SEMs.

> The “chill and tingling” response by a specific and new pattern of magnetic field was observed. The analysis demonstrated that those who received the electromagnetic pattern designed to

simulate “dopaminergic burst firing” reported significantly more tingles (F1,9 =6.48; p b .05; eta2 = .42) than those exposed to the sham field. In fact, not a single participant in the sham condition reported this experience. To discern whether the field or simply sitting in the chamber influenced activation of the brain in any systematic way, source localization was completed on the data extracted from each raw record. The analysis indicated that there was a significant decrease (p b .05) in delta (1.5–4 Hz) activity within the posterior cingulate and a region encompassing the medial frontal gyrus (BA 11), the dorsal and ventral regions of the anterior cingulate (BA 32 and 24), and the ventromedial prefrontal cortices (BA 25) for individuals who did not receive a magnetic field, i.e., the sham field condition. These areas were identified as regions of interest (ROIs), and activations within these regions were extracted for further analysis. Relative scores from baseline at 10, 20, and 30 min of field exposure were computed on the sLORETA activation scores pertaining to the above mentioned regions-of-interest. These scores were subsequently entered into separate multilevel analysis of variance with one between-subjects factor (condition) and 3 within-subject factors (time, region-of-interest, and hemisphere) for the delta (1.5–4 Hz), theta (4–7.5 Hz), low alpha (7.5–10.5 Hz), high alpha (10.5–13.5 Hz), low beta (13.5–20 Hz), high beta (20–30 Hz), and gamma (30–40 Hz) bands.

The analysis demonstrated a significant condition by ROI interaction (F3,27 = 3.10; p b .05; partial eta2 = 26). Post hoc analyses utilizing four separate one-way analyses of variance indicated that Fig. 5. (Top) There was a statistically significant increase in gamma-band (>35 Hz) bilateral coherence approximately 10–15 minutes after the initiation of the Thomas [pulsed modulation] pattern. (Bottom) The increase was accompanied by an increase in gamma power within the right prefrontal region as well as the anterior portions of the temporal lobe.
Fig. 6.

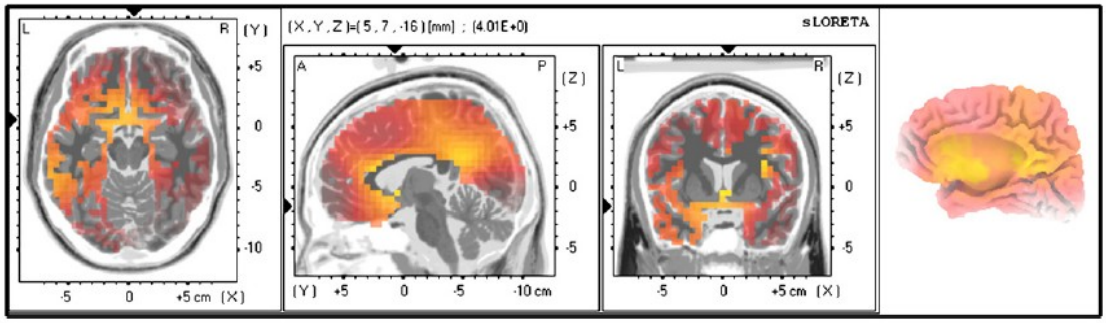



Fig. 6. Low alpha activation within the medial frontal gyrus was increased significantly upon exposure to the “dopaminergic”-patterned electromagnetic field.

individuals exposed to the “chill-generating” magnetic field displayed statistically significantly higher (F1,9 = 6.75; p b .05; eta2 = .43) low alpha activation within the medial frontal gyrus (BA 11), whereas participants within the reference field condition showed a decrease
(Fig. 7).

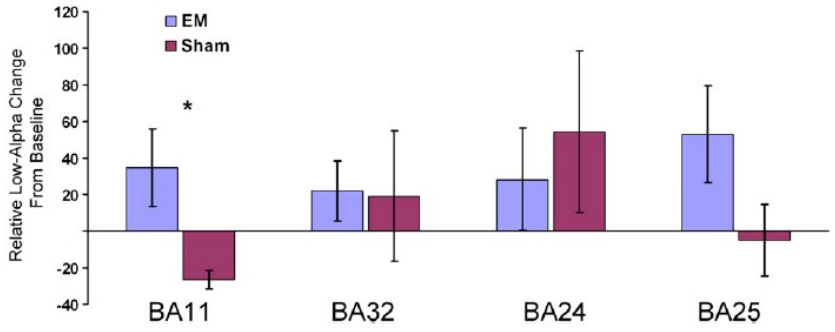



Fig. 7. Relative changes in low alpha activity within different inferred Brodmann areas (BA) according to sLORETA during the "dopaminergic" EM field. Vertical lines are SEMs.

[24- ACC, EM applied to this area activation goes down, similar to High Hypnotizable profile]

> Because the current experiment did not allow us to assess brain activation at the exact time that the chill sensation was experienced, the relative scores at each time period were averaged together to produce a general activation score for each region-of-interest. Spearman rank-order correlations were then completed between these activation scores as well as the report of a tingly sensation. The analysis revealed that the experience of "vibrations" and "tingling" was positively correlated with activation scores within the medial frontal gyrus (rho = .81, p = .002) as well as the ventromedial prefrontal cortices (rho = .83, p = .002). (Persinger, 2013b, 402-3)

> Recent biomolecular studies [29] have shown that the same field patterns and intensities by which the sensed presence and out-of-body experiences are generated influenced T-type calcium channels and correlative changes in molecular pathways such as slowing of proliferation of cancer cells within cultures. (Persinger, 2013b, 396)

Increasing suggestibility:

> In the St-Pierre and Persinger 2006 review, some of the experiments had involved groups who had been administered a norm-referenced interactive suggestibility scale (Hypnosis Induction Profile [see Baghdadi 2010 on EEG Profile of Hypnosis Induction replacing subjective tests, would also allow for data deep mining to identify susceptibles]) developed by Spiegel and Spiegel. Although some studies had shown that greater stimulation by these physiologically-patterned magnetic fields over the right hemisphere but not the left definitely increased suggestibility, this elevation was not associated with the occurrence of the sensed presence (Persinger, 2013b, 397)

> In our studies, the magnetic fields were created by transforming a series of numbers, each between 0 and 256, to a voltage between −5 V and +5 V (127 = 0 V). The point or "pixel" duration was either 1 ms or 3 ms. This value is the duration of each voltage that composes the pattern…. Accurate and precise point durations are essential for producing the sensed presence. Similar "temporal sensing" [rhythmic] sensitivity for cells has been shown for frequency-modulated weak magnetic fields . (Persinger, 2013b, 397) [amygdala in conservatives are more sensitive to rhythms, perhaps more efficiently hypnotisable]

Persinger in studying one subject who had suffered a epileptic related voices, when applying EM fields:

> [Subject] ...exhibited persistent and conspicuous enhanced power in the low beta-range over the temporal lobes and specific changes in current source densities within the left inferior temporal gyrus and right parahippocampal region (Persinger, 2013b, 1)
>
> For those patients who are actively experiencing, according to their verbal reports, inner voices application of these physiologically patterned fields with equal intensities across both temporal lobes markedly attenuates the numbers of "different voices" or eliminates their occurrence. Asymmetrical application with greater intensity over the right hemisphere enhances or initiates the experiences (Persinger, 2013b, 2)

In an interesting report of changing speech during the intrusion of auditory hallucinations her speaking style changed:

> The patient had some control over the occurrence of the intrusive voices, although at times they could occur spontaneously. When she "heard" these voices her verbal behaviour would become more monotonic ("machine-like") and her pronoun usage shifted from "I" to "we". QEEG indicated a persistent (measured on different days) 21–23 Hz higher amplitude (~70 μV) activity over T3 and T7 when she referred to "I" at which times she exhibited normal prosody. (Persinger, 2013b, 5)

> When the "we state"[extrinsic influence] was reported there was marked fast, high amplitude 17–23 Hz activity from both T3 and T4 as shown in Figure 1. In addition she reported "transmissions" which usually involved more complex information from these voices as well as series of numbers. When this occurred there was a "normalization" of the EEG (Figure 2). When the "transmissions ended", the unusual profile of T3 and T4 enhancements returned. There was additional similar activity over F7 and F8 which was transient. She was not talking during this period (after panel 1623). (Persinger, 2013b, 5)
>
> During the experiences that would be classically labeled as "intrusions" the activation score for the low beta power within the right parahippocampal region more than doubled. This area and related hemispheric discrepancy are similar to that associated with "panics" that can occur suddenly in this group of patients. (Persinger, 2013b, 6)
>
> Our interpretation is that the lowered base power within the delta range (upon which higher frequencies can be strongly dependent) within the left temporal lobe facilitates the conditions for inter-temporal lobe coherence and the experiences of "others". The enhancement of power within the left inferior frontal region, traditionally associated with expression of overt language, could encourage the amplification of the person's own array of "articulemes". They are the neurocognitive patterns accompanying discrete neural activity that initiate sequences of stylopharyngeal and laryngeal muscle contractions. Anomalous organizations within the right prefrontal could increase the probability that the reconstruction of experiences would be attributed to non-self sources. (Persinger, 2013b, 6-7)

**Red Pill or Blue Pill?**

You awaken in the Matrix and you are offered the chance to attack the Machine or take the blue pill and go back to sleep. Though it seems an binary choice cliché, which seems to be a recurring pattern in cybersecurity, the choice you make actually may reflect your brain physiology more then anything

else. In the following section we look into the role of brain physiology in political values, and it's correlation to hypnosis.



TABLE 1. Reported Brain and Behavior Affiliations for General Conservative Versus Liberal Orientation With Implications for Political Ideology[a]

| Brain and Behavior Affiliations | High Conservatism | High Liberalism |
|---|---|---|
| Personality | Stability; opposition to change | Novelty |
| | Conformity | Unconventional; self-expression |
| | Tradition | New experiences and sensations |
| | Order, structure, and closure | Flexibility and variability |
| | Favor less complexity; harder categorization | Tolerance for uncertainty and ambiguity |
| | Purity | Minimization of harm |
| | Authority | Equality |
| | Conscientiousness | Empathy |
| | Distinctions with out-groups | Universal community |
| | Expressions of power | Expressions of warmth |
| Cognitive | Negativity bias | No clear bias |
| | Greater sensitivity to threat or loss | Greater sensitivity to cues for altering habitual response patterns |
| | Sensitivity to disgust | |
| Physiological | Greater activation of right amygdala | Greater conflict-related anterior cingulate cortex activity |
| Neuroimaging | Increased gray matter volume in right amygdala and other right anterior structures | Increased gray matter volume in anterior cingulate cortex |

(Mendez, 2017)

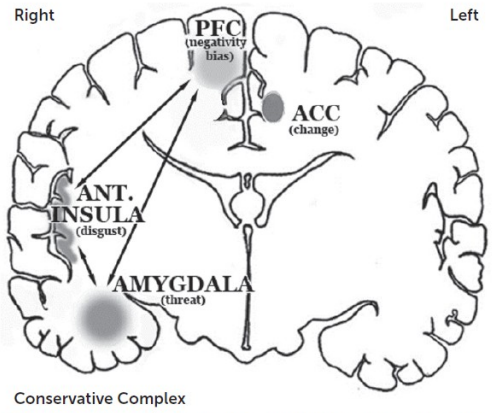
Some research has suggested there is a genetic basis to the difference between 'liberal' and conservative':

> Although most political orientation is not directly inherited, twin studies and the dopamine D4 receptor (DRD4) gene have linked personality traits and evolutionary intuitions with political ideology. In a sample of more than 12,000 twin pairs, the development of political attitude was about 40% dependent on genes,47 and, in another large twin study, the heritability of political conservatism was 64.5% for men and 44.7% for women. A few studies have reported an association between specific genes and conservative-liberal behavior or with political attitudes. Genes encoding certain receptors to dopamine, specifically the DRD4 gene on chromosome 11, were associated with variations in conservative liberal personality traits. Two large studies have linked variations in the DRD4 exon III tandem repeats to political ideology putatively based on the sensitivity to dopamine uptake and the need for higher dopamine. Among 1,771 students in Singapore, those with two copies of the 4-repeat allele on the DRD4 gene were more politically conservative, and among another group of 1,941 individuals, those with 7R+tandem repeats, in the context of having more friends, were more politically liberal.
>
> These two theories from evolutionary psychology, the parasite-stress theory and the moral foundation theory, plus the limited genetic studies, converge in their deductions. The parasite-stress theory concludes that there are relationships between increased conservative social and sexual attitudes, reminders of cleanliness, and increased physiological responses to disgusting images.37,55 The moral foundation theory concludes that people with strong conservative views are most sensitive to violation of sexual and body purity, and those with more liberal views are sensitive to violation of harm or fairness.56 Together with the genetic evidence, these findings support an underlying neurobiological basis for conservative-liberalism effects on political ideology. (Mendez, 2017, 88)

Some of the effects, though not directly related to the genes mentioned before, are seen in the physiology of specific brain areas in the neurobiology of the human.

**Physical Differentiation of Amygdala (Red) and ACC (Blue) between Red/Blue Polarities:**

FIGURE 1. Schematic Diagram of the Conservative Complex on the Right, More Active in Conservatives Than in Liberals, and the Anterior Cingulate Cortex (ACC), More Active in Liberals Than Conservatives[a]




Conservative Complex

[a] Various regions of the prefrontal cortex (PFC) contribute to political thought and ideology, including the ventromedial prefrontal cortex (VMPFC), dorsomedial prefrontal cortex (DMPFC), and dorsolateral prefrontal cortex (DLPFC). Laterality is not as established for the PFC contribution, but at least for the DLPFC suggests greater right than left involvement.

Neuroscientists have studied the difference between the two polarities of 'liberal' and 'conservative' which we will study later under Reflexive Control in Lefebvre's two poles of morality. In a study from 2011 Kanai et al studied the physiological measurements between 'conservatives' and 'liberals'. In these findings they present results that pinpoint specific brain physiological differences between the two.

**Brain Physiology of Liberalism:**

> Psychological differences between conservatives and liberals determined in this way map onto self-regulatory processes associated with conflict monitoring. Moreover, the amplitude of event-related potentials reflecting neural activity associated with conflict monitoring in the anterior cingulate cortex (ACC) is greater for liberals compared to conservatives. Thus, stronger liberalism is associated with increased sensitivity to cues for altering a habitual response pattern [the opposite of effective RC] and with brain activity in anterior cingulate cortex. Here we explored this relationship further by examining whether political attitudes correlated not just with function but also with anatomical structure of these regions. To test the hypothesis that political liberalism (versus conservatism) is associated with differences in gray matter volume in anterior cingulate cortex, we recorded structural magnetic resonance imaging (MRI) scans from 90 healthy young adults (61% female) who self-reported their political attitudes confidentially on a five-point scale from "very liberal" to "very conservative". We then used voxel-based morphometry (VBM) analyses to investigate the relationship between these attitudes, expressed as a numeric score between one and five, and gray matter volume. We found that increased gray matter volume in the anterior cingulate cortex was significantly associated with liberalism (Figure 1A) ($R = 22.71$, $T(88) = 2.633$, $p = 0.010$ corrected; see Experimental Procedures for full details of analyses). We regressed out potential confounding variables of age and gender in our analysis (see Experimental Procedures). Therefore, our findings are not attributable to these factors. (Kanai, 2011)

Menendez (2017) has found a similar correlation to liberal brain physiology:

> Neuroimaging studies suggest that political ideology involves conservative-liberal differences in the amygdala, insula, and ACC. Just being interested in politics has increased activity in the amygdala and the ventral striatum, and encoding party preference activates bilateral insula and the ACC. An MRI study of 90 young adults shows that political conservatives, compared with political liberals, have greater gray matter in the right amygdala, and an fMRI study involving a risk-taking task shows that political conservatives have greater activity in the right amygdala. The association of political conservatism with the right amygdala a structure that is bilaterally sensitive to emotional saliency, especially fear, suggests an increased processing of potential signals for threat. Although the anterior insula has a prominent role in the experience of disgust, brain responses to disgusting stimuli may show a more distributed pattern of differences between political conservatism and liberalism, consistent with a differential sensitivity for disgust among political conservatives. The unexpected association of political liberalism with activity in the left posterior insula in one study may reflex an additional role of the insula in the expression of interpersonal trust. Finally, political liberals have greater gray matter and increased ERP activity in the ACC, consistent with a sensitivity for processing signals for potential change. (Mendez, 2017, 88-9)

Remembering earlier that ACC in Hypnosis has the following correlations, in Highs the ACC decreases it's low frequency amplitude in the dorsal area, critical judgement, task management, awareness of the environment is reduced. ACC reduction reduces will to persevere and heightened suggestibility. A difference in the ACC that has a correlation to liberalism or 'openness' are open to explore pathways whereas in a diminished ACC one's exploration or learning is minimized. We shall read about the impact of the Amygdala on learning later below. Correlating this connection in the ACC in Hypnosis with the political profiles of the ACC we see the similarity between Highly Hypnotizables and Conservative differences in the ACC which has lower amplitude in activation. "Moreover, the amplitude of event-related potentials reflecting neural activity associated with conflict monitoring in the anterior cingulate cortex (ACC) is greater for liberals compared to conservatives. (Kanai, 2011)"

[Event-related potentials (ERPs) represent a series of EEG events that reflect the progressive activation of neuronal sub-populations in the course of cognitive processing. ]

**Brain Physiology of Conservatism:**

> Conservatives respond to threatening situations with more aggression than do liberals and are more sensitive to threatening facial expressions [also see Norseen 1996 discussion of recognition of 'authoritarian' faces by infants, relating it to the amygdala]. This heightened sensitivity to emotional faces suggests that individuals with conservative orientation might exhibit differences in brain structures associated with emotional processing such as the amygdala. Indeed, voting behavior is reflected in amygdala responses across cultures. We therefore further investigated our structural MRI data to evaluate whether there was any relationship between gray matter volume of the amygdala and political attitudes. We found that increased gray matter volume in the right amygdala was significantly associated with conservatism (Kanai, 2011)

Menendez (2017) has shown a role in the previously mentioned DLFPC and political conservatism:

> Although not consistent, the right DLPFC may have a greater role in resolving good versus bad biases, partisan differences, or conflicts between fairness and self-interest, and, in one fMRI study, there was a clear association of right DLPFC activation with political conservatism. Another fMRI study of depressed patients showed left rather than right DLPFC activation with heightened preferential processing of negative information, and a positron emission tomography study showed left middle frontal gyrus (DLPFC) activation during a negativity bias condition. Finally, noninvasive stimulation of bilateral DLPFC during the incorporation of political campaign information has resulted in a significant increase in politically conservativ values, and transcranial magnetic stimulation of the right, but not left, DLPFC has reduced the rejection of unfair offers when they are in conflict with self-interest. Ultimately, the right DLPFC may have a greater role in mediating emotion-based conflicts and may interact with the right VLPFC, amygdala, and anterior insula in forming the neuroanatomical substrates of a conservative complex. (Menendez, 2017, 90)

As we shall read later regarding Reflexive Control and other forms of biological influencing, in these findings Liberal structure is designed to break RC Control, whereas Conservative structure is designed to be controlled, as Fast Reflexion in RC Theory is facilitated by the Amygdala, it is a system based on manipulating the Fear responses of controlled subjects.

> "The amygdala is a collection of nuclear groups and is located deep in the temporal lobe. The amygdaloid complex in rat consists of thirteen regions. As per 'Price's' nomenclature, amygdala nuclei are categorized in to three major groups such as, the basolateral group, the cortical group and the centromedial group. The different nuclei can be very well distinguished on the basis of cytoarchitecture and are referred as amygdaloid complex. This complex regulates memory, attention, emotions etc. However, the most studied and the best understood function of amygdala is its contribution to the detection of emotional events and the production of appropriate responses (emotional processing)." (Narayanan et al, 2017, 2)

Additionally, it is important to note how Fear/Anger is used in systems designed for military simulations such as Lockheed-Martin's SCREAM platform, see Chapter 'Lessons from an American Weapons Designer'. Hypnosis is involved in manipulating the ACC, but in the opposite manner as what is natural to Liberals, whereas liberalism would create more resistance to Hypnosis and Hypnotic suggestion the altering of the ACC by Hypnotism of Highly Hypnotizables would be in line with conservative physiology.

The key element physiologically speaking is that of the Grey Matter Volume (GMV) of the Amygdala, other researchers have noted the significance of GMV in the Amygdala:

> In contrast, structural magnetic resonance imaging (MRI) studies relying on the measurement of cortical thickness and/or voxel-based morphometry (VBM). have only focused on frontotemporal circuits as neuroanatomical correlates of music processing. While the role of the amygdala in music processing is largely ignored in structural MRI studies, there is abundant evidence showing that the anatomical structure of the amygdala is correlated with emotional processing. For example, amygdala gray matter volume (GMV) or density is correlated with magnitude of stress and anxiety in the normal population, and the change of amygdala volume is a neural signature of a variety of emotion-related disorders, such as major depressive disorder, bipolar disorder, borderline personality disorder, post-traumatic stress disorder, and autism. Finally, lesions of the amygdala severely impair emotional processing, such as emotion recognition, emotion arousal, and emotion judgment. (Li et al, 2014)

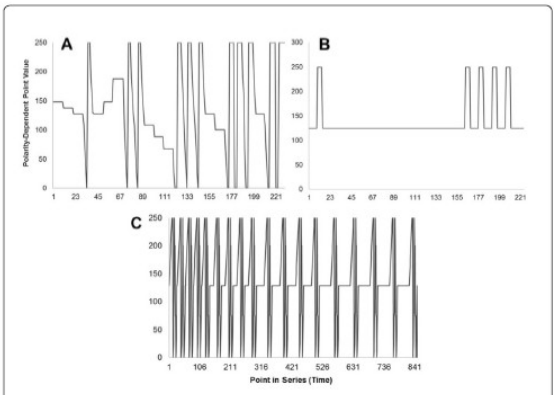



Figure 1: The Burst X (A), LTP (B), and Thomas (C) electromagnetic field patterns. The Y-axes represent polarity-dependent point values ranging between 0 and 250 whereas the X-axes represent the points within each series or, implicitly, time.

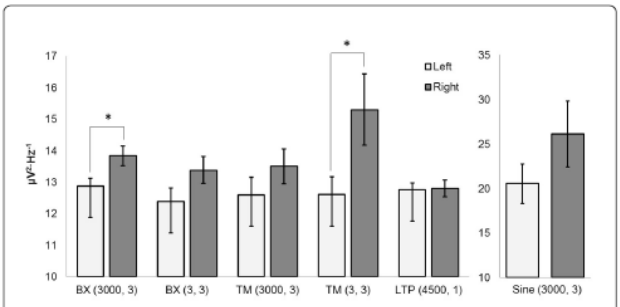



Figure 4: Alpha-beta1 (7.5 Hz – 20 Hz) power within the left and right hemisphere of a full, unsectioned human brain as a function of the electromagnetic field exposure pattern. Burst X (BX), Thomas (TM), long-term potentiation (LTP), and sine (Sine) patterns are shown where significant differences between hemispheres are indicated ($p<0.05$).

(Persinger & Rouleau, 2017)

Persinger studies the impact of EM waves on a biopsy of human brains in these studies he found that the right amygdala was affected more then the left amygdala.

> The right amygdala, accessed by way of the uncus, generated increased alpha-beta power within the right hemisphere (M=15.32, SEM=0.54) relative to the left hemisphere (M=12.52, SEM=0.66), $t(4)=3.30$, $p<0.05$, $r2=0.73$ (Figure 5). This right-left difference emerged within 10 to 20 s after the onset of the field exposures ($p<0.05$). ANOVAs revealed statistically significant alpha-beta1 power differences across structures within the right hemisphere, $F(5,17)=3.56$, $p<0.05$, $\eta2=0.60$. Homogeneous subsets were revealed. Where the major source of the variance was due to a difference between the right amygdala and right orbital frontal gyrus ($p<0.05$). There were no statistically significant changes in the left hemispheric structural differences after accommodating for multiple comparisons. Power differences within other frequency bands were not significant during exposures to the Burst X (3000, 3) pattern. Together, these results suggested that the right amygdala was most responsive to the Burst X

(3000, 3) electromagnetic field pattern relative to its contralateral paired structure in a fixed, unsectioned human brain. (Persinger & Rouleau, 2017)

What the relation that Persinger has found with the difference in the Amygdala between right and left will need further research, as well as the relationship with the conservative (closedness) aspect of the right amygdala's larger size.

Another way to analyze the relationship of the Amygdala to stress, anger and fear is it's interaction with the cannabis molecule THC, which has been studied by Phan et al (2008) showing that the Amygdala:

> ….our data demonstrate a significant and selective impact of THC on amygdala reactivity to social signals of threat in humans. The findings extend the accumulating evidence on cannabinoid modulation of anxiety in humans and nonhumans, and provide evidence for a neuroanatomical site of action for the anxiolytic effects of THC. The current data could prompt the development of new therapies that act on cannabinoid systems to modulate fear behaviors in neuropsychiatric disorders such as social phobia, autism, and schizophrenia, in which social fear or withdrawal, and aberrant reactivity to threat are cardinal features (Phan et al, 2008, 2317) [lorazapam is suggested as another treatment aside from THC to anxiety in the amygdala]



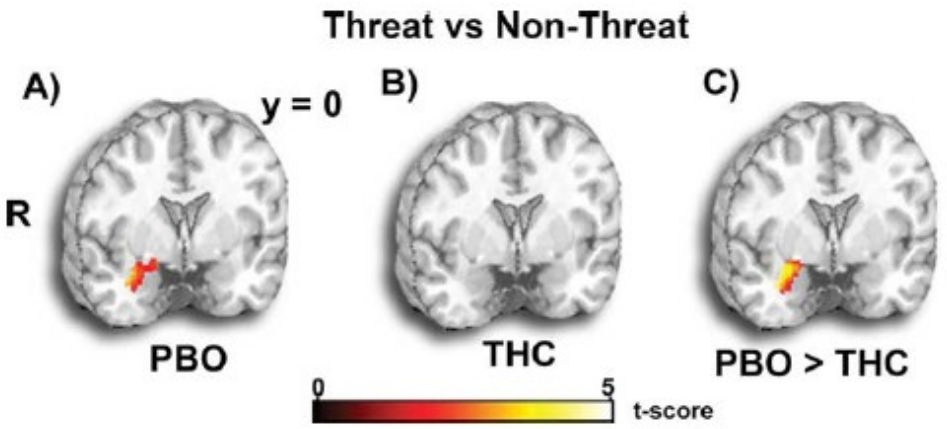



**Figure 2.** THC effects on amygdala activation. *A*, *B*, Statistical *t* maps overlaid on a canonical brain rendering (MNI coronal *y*-plane = 0) showing right lateral amygdala activation to threat (>nonthreat) faces is present during the PBO session but absent during the THC session. *C*, Statistical *t* map overlaid on a canonical brain rendering (MNI coronal *y*-plane = 0) showing greater threat-related amygdala reactivity in the PBO relative to the THC session (PBO > THC). For additional information, see Results. Statistical *t* score scale is shown at the bottom of the brain rendering. R, Right.

As can be seen from this figure on the left we have a brain scan of the Amygdala without THC, we see that the activation is on for fear responses, etc, while on THC the Amygdala does not become activated for fear responses, is an anti-anxiety effect, Lozapram is recommended as a pharmacological agent to fight anxiety similar to THC (Phan et al, 2008).

Another anti-anxiety component of the Amygdala is a peptide, as explained by Persinger:

> Neuropeptide Y within the amygdala, which has been associated with decreasing anxiety, has also been associated with suppression of neurotransmission in single hippocampal cells as well as with electrical seizures. Autopsy results for temporal lobe epileptic patients indicated that the numbers of neurons expressing this peptide within very specific nuclei of the amygdala was about one standard deviation lower in the patients compared to the reference group. (Persinger, 2010)

**Dog Whistling the Amygdala Response**

In the study of fear conditioning the Amygdala plays a major role. Le Doux studied the Amygdala and fear conditioning providing this brief overview:

> In Pavlovian fear conditioning, an emotionally neutral conditioned stimulus (CS), usually a tone, is presented in conjunction with an averisve unconditioned stimulus (US), often footshock. After one or several pairings, the CS acquires the capacity to elicit responses that typically occur in the presence of danger, such as defensive behavior (freezing or escape responses), autonomic nervous system responses (changes in blood pressure and heart rate), neuroendocrine responses (release of hormones from the pituitary and adrenal glands), etc. The responses are not learned and are not voluntary. They are innate, species-typical responses to threats and are expressed automatically in the presence of appropriate stimuli. Fear conditioning thus allows new or learned threats to automatically activate evolutionarily tuned was of responding to danger. The ease of establishment, rapidity of learning, long duration of the memory, and stereotyped nature of the responses all speak to the value of the Pavlovian learning as an approach to the study of fear mechanisms and account for the success achieved with this procedure. Studies from many labs have led to the conclusion that damage to the amygdala interferes with the acquisition and expression of conditioned fear (LeDoux,2003).

Contextual fear conditioning involves the Amygdala (LeDoux, 2003). LeDoux explains the role of the Amygdala in the dual conditioning of a audio signal along with a physical conditioning, where the generation of just the signal gives also chemical reactions absence of a physical threat, the audio signal triggers the contextual fear condition. LeDoux explains the systems involved in this effect:

> Areas of the ventral hippocampus (CA1 and subiculum) project to the basal (B) and accesory basal (AB) nuclei of the amygdala (Canteras and Swanson, 1992), which are also known as the basolateral and basomedial nuclei (Pitkanen *et al.*, 1997). Damage to these areas interferes with contextual conditioning (Majidishad *et al.*, 1996; Maren and Fanselow, 1995). Hippocampal projections to B and AB thus seem to be involved in contextual conditioning. The central nucleus of the amygdala (CE) is the interface with motor systems. Damage to CE interferes with the expression of conditioned fear responses (Gentile *et al.*, 1986; Hitchcock and Davis, 1986; Iwata *et al.*, 1986; Kapp *et al.*, 1979; Van de Kar *et al.*, 1991), while damage to areas that CE projects to selectively interrupts the expression of individual responses. For example, damage to the lateral hypothalamus affects blood pressure but not freezing responses, and damage to the peraqueductal gray interferes with freezing but not blood pressure responses (LeDoux *et al.*, 1988). Similalry, damage to the bed nucleus of the stria terminalis has no effect on either blood pressure or freezing responses (LeDoux *et al.*, 1988) but disrupts the conditioned release of pituitary-adrenal stress hormones (Van de Kar *et al.*, 1991). Because CE receives inputs from LA, B, and AB (Pitkanen *et al.*, 1997), it is in a position to mediate the expression of conditioned fear responses elicited by both acoustic and contextual Css. The direct projection from LA to CE seems to be sufficient for conditioning to an auditory CS, since lesions of B and AB have no effect on fear conditioning to a tone (Majidishad *et al.*, 1996). The exact manner in which LA and CE communicate is not clear (Royer *et al.*, 1999), but the intercalated cell mass located between LA and CE may be involved (Royer *et al.*, 1999). (LeDoux, 2003)

Another relationship from LeDoux's research between the Amygdala in both Hypnosis and in Politics is the question of learning, whereas, hypnosis interferes with finding novel pathways and problem solving, we see the role of the amygdala in it's relation to learning, finding novel pathways not previously experienced or stored in muscle memory:

> That the amygdala is indeed important for learning is suggested by studies showing that inactivation of the amygdala during learning prevents learning from taking place (e.g., Helmstetter and Bellgowan, 1994; Muller *et al.*, 1997). Further, if the inactivation occurs immediately after training, then there is no effect on subsequent memory (Wilensky *et al.*, 1999), showing that the effects of pretraining treatment is on learning and not on processes that occur after learning. The amygdala thus seems to be essential for fear learning, and does not modulate its own learning.

Inactivation of the Amygdala leads to non-retention of learning, we see non or less activation in 1. Hypnosis and 2. people with enlarged right Amygdala's, who also test along a more 'conservative' category speaking in terms of social politics and culture.

**Fat Rats and Politics**

Another interesting note is that of the obesity epidemic that is affecting England and the United States (UKUSA) which roughly correlated to a problem with the Amygdala being hammered by constant EM fields in the last 4 decades or so, which is also when the obesity epidemic in these societies began, one could argue that with scientific experimental findings of Loscher et al (2003) and Persinger (2014) that there is a direct connection to obesity and the amygdala receiving excess EM waves and energy.

> Excessive weight gains in female rats have been induced by extended kindling of the basolateral amygdala (Persinger 2014)

Persinger has also noted that the central nucleus of the amygdala (which is disinhibited by lithium/pilocarpineinduced seizure damage) are important regulators of ingestive behaviors. Other research also speaks of the amygdala's role in regulation of food intake.

Loscher et al:

> Previous lesion studies have indicated a role of the amygdala in the central regulation of food intake. In the present experiments, twice-daily electrical stimulation of the basolateral nucleus of the amygdala in female Wistar rats was found to be associated with a significant body weight gain compared to unstimulated controls. On average, significant increases in body weight were observed after 25 amygdala stimulations, using a kindling paradigm for stimulation. Compared to kindled rats, in which amygdala stimulations were terminated after about 20 stimulations, extended kindling of the amygdala with up to 280 stimulations led to progressive weight increases and compulsive hyperphagia [over eating even when not hungry] …. The extensive weight gain over extended amygdala kindling provides an interesting new model for experimentally induced obesity. (Loscher et al, 2003)

Loscher here established that kindling, adding signals to the Amygdala, leads to obesity in mammals such as rats. Persinger (2014) has further studied this phenonomena and related it to energy being sent at the Amygdala:

> Weekly (1.5 hr) exposures to physiologically-patterned magnetic fields over 36 wks had no effect on weight gain while continuous periseizure exposure to 50 Hz fields above about 1 μT facilitated mild weight gains and protracted aggression. Perinatal exposure to a very weak, a 7 Hz magnetic field or a nitric oxide inhibitor retarded the weight gain induced by the obesity procedure. These results indicate that synergisms during a single episode between neuronal electrical lability and pharmacological states can initiate a process of weight gain that progresses to extreme obesity. We suggest that at least a component of the global "epidemic of obesity" could be related to a synergism between the insidious emergence of amplitude modulations within biologically compatible electromagnetic frequencies from the proliferation of communication systems and the pervasive utilization of pharmacology to treat transient disorders of ontogeny within the human population. (Persinger, 2014)
> Persinger notes that the most effect is in the basolateral amygdala which mediate specific Pavlovian-instrumental transfer, a phenomenon in which a classically conditioned stimulus modifies operant behavior.The primary function of the basolateral complex is stimulating fear response. The fear system is intended to avoid pain or injury. For this reason the responses must be quick, and reflex-like. To achieve this, the "low-road" or a bottom-up process is used to generate a response to stimuli that are potentially hazardous. The stimulus reaches the

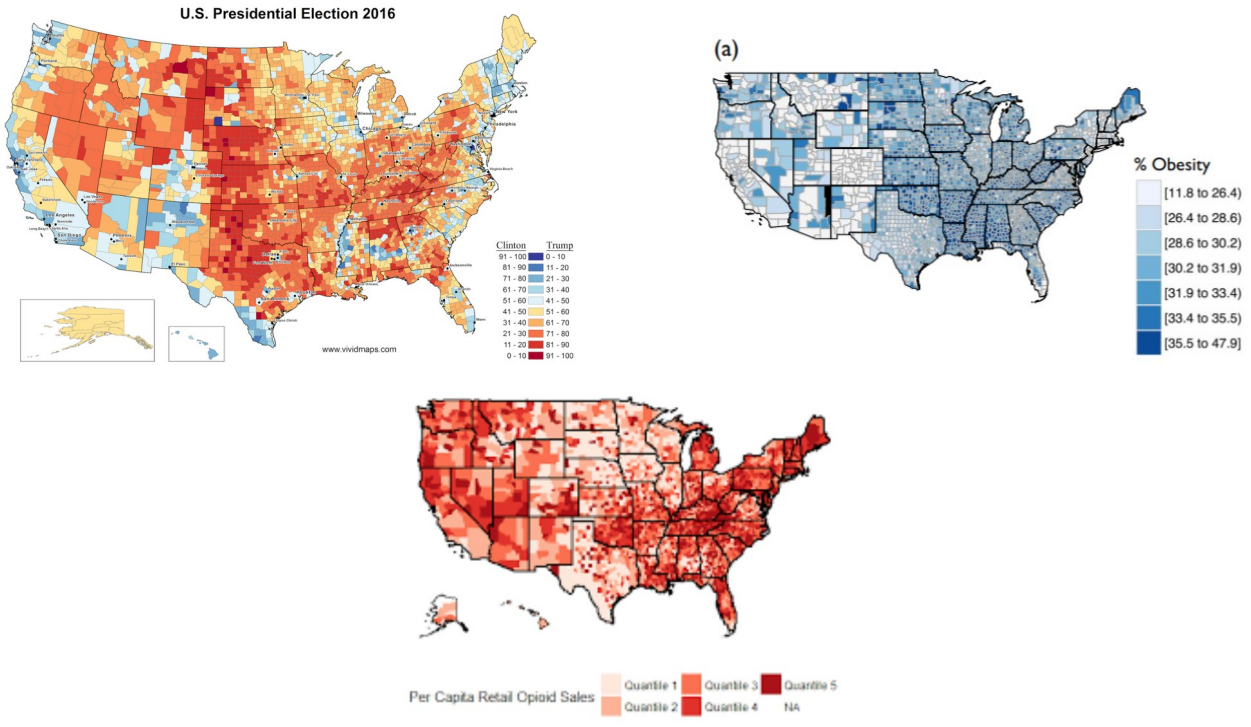
> thalamus, and information is passed to the lateral nucleus, then the basolateral system, and immediately to the central nucleus where a response is then formed. There is no conscious cognition involved in these responses. Other non-threatening stimuli are processed via the "high road" or a top-down form of processing.[4] In this case, the stimulus input reaches the sensory cortex first, leading to more conscious involvement in the response. In immediately threatening situations, the fight-or-flight response is reflexive, and conscious thought processing doesn't occur until later.

Persinger concludes his study with finding that suggests there is a direct correlation between weight gain, the amygdala and EM energy in the environment or directed at a subject:

> Assuming complete penetrability of the skull, the energy within one typical neuron with a diameter of 10 micrometers would be within the range of a picoJoule per s. This is the same quantity of energy associated with local (intracellular) glucose utilization. Whether or not such juxtaposition of electromagnetic sources and metabolic derivations of quantum energies would generate an emergent condition that would constitute the "limbic" sensitivity of the type required to produce the insidious obesity measured reliably in our experiments requires further study. However we suggest that the escalation of electromagnetic densities from Western civilization that are now transglobal in nature is conspicuously coincident with the "epidemic" of obesity and the remarkably increased dependence upon pharmacological consumptions for a wide variety of normal challenges associated with ontogeny. Although we do not have direct measurements for the entire population, our clinical experience with a local sample indicates that the proportion of pre- and early post-adolescent females who have been prescribed psychotropic medications at least once exceeds at least about 25%. This value approaches the shift in the distributional curve towards larger body masses. (Persinger, 2014, 279-80)

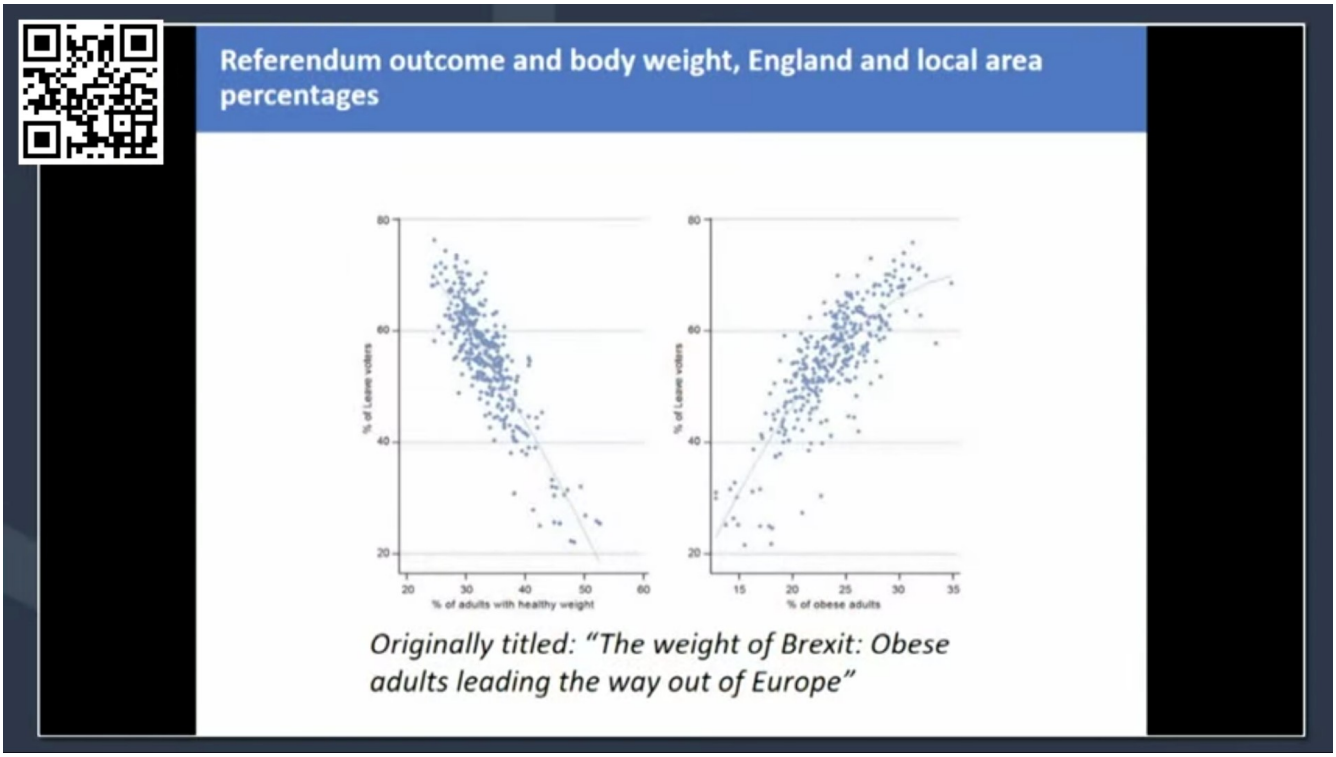
**Obesity and Election Maps from the USA**

(elections red = conservative, blue= liberal)




It is obvious that there is a broad and general correlation between conservative voting states and states with higher obesity, as well as diabetes, and from above we can even see a similar trend in opiod sales, remembering that Nazi scientists created meth-amphetamines and Germans during the

Nazi regime were addicts to a commercial version of meth, of course I could even go into the Boston Brahmin and English sale of opiods to the Chinese as Opium. However, each state should be viewed on it's own and analyzed at a much more granular level then these broad correlations, for instance Navajo areas have high obesity and diabetes due to non-Native diet, though largely liberal in political viewpoint. Each area has unique characteristics to be investigated further no single factor ever seems to convey anything too meaningful.




The more obese you are in the UK the more likely you were to vote for leaving the EU, 'Brexit' (Dorling, 2019)

**Red and Blue Physiological Threats to Security**

As has been seen from above, political physiology is a reality. What are the implications of liberal and conservative diversities to security protocols? Since each has it's own attributes, we may ask can a liberal be expected to follow orders or go off to seek another solution? Can a conservative that is susceptible to hypnotic manipulation be trusted with covert missions, high command or situation management with rapidly changing variables? The answer of course is that being conservative or liberal has little to do with the complex that is trust in military organizations. Trust being a complex concept within human consciousness, again when we try to over atomize any particular attribute we will always be making statistical dead ends, as most of natural existence, including who to trust in the military, are ensembles of varying moving biological parts. Though, of course, it is good to weigh the obvious physiological differences between the two binary simplifications which again are merely a toy model of the divergent topology of any domain in nature. With knowledge of physiological differences

between the binary poles we can anticipate what challenges staff may encounter if they identify as conservative or liberal.  Perhaps, a better categorization is ‘openness’ and ‘closedness’ or as Karen Haney would term it outward looking or inward looking.  The answer is to find people that the community can trust to be professional and to do their jobs with the highest moral and technical acuity, possessing self-awareness not just of their limitations but also their unique gifts, with a imagination that is eager to learn.

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## Glossary:

The **Brodmann area 32**, also known in the human brain as the **dorsal anterior cingulate area 32**, refers to a subdivision of the cytoarchitecturally defined cingulate cortex. In the human it forms an outer arc around the anterior cingulate gyrus. The cingulate sulcus defines approximately its inner boundary and the superior rostral sulcus (H) its ventral boundary; rostrally it extends almost to the margin of the frontal lobe. Cytoarchitecturally it is bounded internally by the ventral anterior cingulate area 24, externally by medial margins of the agranular frontal area 6, intermediate frontal area 8, granular frontal area 9, frontopolar area 10, and prefrontal area 11-1909. (Brodmann19-09).

The dorsal region of the anterior cingulate gyrus is associated with rational thought processes, most notably active during the Stroop task.

In the human this area is known as **ventral anterior cingulate area 24**, and it refers to a subdivision of the cytoarchitecturally defined cingulate cortex region of cerebral cortex (area cingularis anterior ventralis). It occupies most of the anterior cingulate gyrus in an arc around the genu of the corpus callosum. Its outer border corresponds approximately to the cingulate sulcus. Cytoarchitecturally it is bounded internally by the pregenual area 33, externally by the dorsal anterior cingulate area 32, and caudally by the ventral posterior cingulate area 23 and the dorsal posterior cingulate area 31.

Francis Crick, one of the co-discoverers of the structure of DNA, listed area 24 as the seat of free will because of its centrality in abulia and a motivational syndromes[*citation needed*].

Kindling: The word *kindling* is a metaphor: the increase in response to small stimuli is similar to the way small burning twigs can produce a large fire.[3] It is used by scientists to study the effects of repeated seizures on the brain.[1] A seizure may increase the likelihood that more seizures will occur; an old saying in epilepsy research is "seizures beget seizures".[1]Repeated stimulation "lowers the threshold" for more seizures to occur. ]