Emotional and Synesthetic Test of Hypnosis Induction with Video to relieve the patient from psycho-physical pain

Dr. Veronica Deysi Genoveva Colombo¹*, Dr. Dario Vassallo², Prof. Stephen Mark Shore³

¹Pediatrician & Criminology Psychology in ASST BG WEST, USA.
²Psychology Student & IT Engineer, USA.
³Education in Adelphi University, USA.

*Corresponding Author

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Abstract

Introduction: Emotions consist of patterns of physiological changes associated with behaviors. The urgency of putting them into action accompanied by emotional sensations that determine behavior and adaptive functions have guided the evolution of our brain. Emotions are also called "response frames" and their neuronal and hormonal control affects moral judgments and social behaviors. Historically, their expressions and recognitions have also been addressed to examine the nature of the sensations that accompany the different emotions [1]. With Multidisciplinary Team ABA, we have done two Tests on Emotions and Synesthesia in Google Tool and Video-EBT-CVS test to induce in a gradual state of hypnosis, patients properly evaluated and in the management of emotions during the Covid and post-pandemic Covid. With the aim of teaching him to recognize and manage emotions with a gradual induction to a pseudo-hypnopompic state to tell us spontaneous story of their memories that, with a meditative music, lets flow and induce first an initial induction of emotions and final recognition of their emotions and others.

Clinical study: The dissemination of the Tool Emotional/Synesthesia Battery Test among adults and students at Italian schools is in an early stage, but the partial data received until now, with informed consensus, are only 19 in total and among these only 5 patients have, for health reasons that we specify in detail below, have agreed to perform the preliminary evaluation tests after the EBT/CVS Tool of 90 minutes maximum with the aim to complete the Video induction EBT-CVS with hypnosis and training to management/ treatment emotions for a total time of 1 hour 14 minutes and 40 seconds.

Materials and Methods: The sample was taken after a presentation of the research made in collaboration between Private Medical Study and ASST Bergamo West/East with a total of patients who performed Tool Test on Emotions and Synesthesia. The study sample that performed Tool Test remotely with Quilgo, 19 patients performed the Tool in Google, among them 5 also performed the Test of emotions and hypnotic induction in video EBT-CVS program. Only the Video–Emotional induction/synesthetic test with evaluation of the 5 subjects, already known for years, evaluate their neuro-endocrinal and psychological pathology conditions, as described above, with 3 preliminary tests for stable their psycho-intellectual state of departure in sufficient well-being, the respective tests are: Mini Mental state examination (Italian) by MF Folstein, Raven's standard Matrices, Test to evaluate the Hypnosis Induction Profile or Hypnotic Induction Profile of Spiegel (HIP), the Program with Tool Emotional/ Synesthesia Battery Test (EBT-CVS) and Video Test with Emotion Induction Test/Synesthesia Colombo-Vassallo-Shore or EBT-video CVS.

Data analysis: The Google Test Tool EBT-CVS was sent to 44 patients in charge, of which 19 completed and sent within the 90 minutes required as the maximum time of performance. Of the 19 patients who performed it correctly. The data of the 19 tests performed have for age a range of 10-84 years, average 41.78 of years old and an average score of EQ (Emotional Quotient) of 56%, median of 54,02% and a range of 38,98%-91,10% at the EBT or Emotional Battery Test standard in Google Tool. 5 out of 19 patients tested by means of preliminary assessments, inherent our Video-Test of induction of emotions up to hypnosis, induced by the same associated video, and music in the final part of the test of recognition related also to facial expressions own and others. We analyzed the data with Anova-Mongomery 2001 to perform a variance analysis of the Tool Emotional Battery Test attended by 19 patients (Attachment 1-2, tables and graphics).

Conclusions: Considering the data collected, I think it is appropriate to reflect on the tests available to us to evaluate the Emotional Quotient (Emotional/Synesthetic) of 19 persons to better understand the conscious and unconscious behavior of our patients. They can do this test in Google Tool and/or Video-Test of the Emotional Battery Test. The aim of EBT-CVS is to induce emotions with 5 senses.
Keywords: Physiological Changes, Emotions, Galvanic Skin Response, Advanced Spectrum Analyzer, Emotional Battery Test, Hypnosis.

Introduction

Emotions consist of patterns of physiological changes associated with behaviors. The urgency of putting them into action accompanied by emotional sensations that determine behavior and adaptive functions have guided the evolution of our brain. Emotions are also called "response frames" and their neuronal and hormonal control affects moral judgments and social behaviors. Historically, their expressions and recognitions have also been addressed to examine the nature of the sensations that accompany the different emotions [1].

The Galvanic Skin Response (GSR) is a device for skin electro-dermal response or skin conductance that was discovered in 1849 by Dubois-Reymond in Germany by immersing a frog’s limbs in a solution of zinc-sulphate and discovered that this electric current flowed between one limb with contracted muscles and another that was relaxed and attributed this electro-dermal observation to a muscular phenomenon. In 1878, in Switzerland Hermann demonstrated that electrical effects were stronger in the palms of the hands, suggesting that sweat was an important factor. In 1878, in France Bigoroux began working with patients emotionally "Distressed" and was the first clinical researcher to relate Electro-dermal Activity (AED) with psychological activity. In 1888, also in France, Féré demonstrated that the resistance activity of the skin could be modified by emotional stimulation and that activity can be inhibited by drugs. In 1889 the Russian Ivane Tarkhnishvili observed variations in the electric potential of the skin in the absence of external stimuli and developed a tool to observe variations when they appear in real time [2].

The MindField eSense Skin Response is a small sensor to measure skin conductance using the microphone input of your smartphone or tablet (Android or Apple iOS). Skin conductance directly depends on your state of relaxation or stress, making it a commonly used and very precise stress indicator. With eSense Skin Response, you can accurately identify your stress level, alone with your smartphone or tablet. The eSense provides accurate feedback on the momentary stress level in various ways, with measurement curves, video display and audio feedback functions. With all these features, you can use eSense in combination with the app to create and practice your biofeedback workout, a guide for meditation and measure and reduce your stress level [3].

The frequency of the vocal tone is a detection with transduction of the tone of the voice in frequency, the fundamental frequency of a speech varies between: 70-150 Hz for a male voice and 150-250 Hz for female and in children from 250 to 350 Hz. To make an accurate study we need to detect all audible frequencies by human ear that are represented by the speech emission spectrum [4]. The NRC or National Research Council gives a definition of the spectrum of the continuous signal by transducing the waves with the FFT or fast Fourier converter [5].

The Advanced Spectrum Analyzer (ASA) performs real-time FFT or fast Fourier transform, as an audio spectrum analyzer for the Android device. The advanced spectrum analyzer is real-time and is a powerful audio tool to view and analyze signals from the microphone of your Android-like device in the frequency domain. FFT resolution reaches up to 2.7 Hz. Sample size with 512-16384 samples and a range of 44,100-48,000 Hz for peak detection. Selection of input sources with different functions to minimize the effect of leakage and increase the accuracy of signal peaks, realizes linear and logarithmic scales whose data produce the average of the FFTs with the maintenance of the peak with two markers called independently that are the frequency of sampling; or the number of samples [6].

In 1954, Paul Ekman American psychologist, began researches on expressions of emotions to finish with the coding of the system FACS (Facial Action Coding System) that he realized between 1972-1978. FACS defines an anatomically based and comprehensive system for the description of all discernible and visible facial movements. In this system, facial expressions are divided into individual components given by muscle movement and called Action Units (AUs), are used by researchers to encode them [7].

The profession of "hypnotist" is supported by some countries such as: Switzerland and Great Britain that with the British Medical Association in 1955 officially rehabilitated hypnosis. In France, famous studies of Dr. Jean-Martin-Charcot, founder of the Psychiatric Clinic at the Salpetrière Hospital in Paris, was the first to use hypnosis as a cure in the phenomenon of "grand hypnotisme" in hysterics. The work done by the student Pierre Janet "La Médecine Psychologique", later was the alternative version of Hippolyte Bernheim, the founder of the School of Nancy who intended hypnosis as: a sort of sleep or altered state of consciousness produced by psychological or neurological suggestion and therapeutic implications.

In USA, 1958, the American Medical Association included hypnosis in medical therapy, spelling out conditions of extensive use, and recognizing the independent profession of hypnotherapist since 1979. The American Medical Association has decided that, as of January 1, 2004, nontherapeutic hypnotists may also operate in the health sector. The current principle of free movement of persons in the European Member States, infers that in the absence of
an Italian regulation of the profession of hypnotherapist, it is necessary to the link to the achievement of a diploma and membership of a certain professional order has been obtained with the pass for "hypnotists". In addition to the English, Swiss and Italian qualifications, there is no further training in Italy. The relative insurance of professional indemnity, soon produces a confusion harbinger of serious legal effects, from the drastic ones of which to art. 348-Penal Code-Italian that provides, for anyone who illegally exercises a profession for which a specific qualification of the State is required is punished. The Court of Cassation has clarified that he/she incurs in such crime "who is without the required qualification of degree, diploma and/or has not fulfilled the formalities prescribed such as registration in the register or has been suspended/prohibited". The same judge has clarified, with Italian sentence n. 34200 of 2007, that it does not matter for the purposes of the configurability of the crime, that the patient is more/less aware of the lack of the qualification. This is why from specialized Pediatric Surgeon Doctor to Criminology Cognitive Behavioral Analyst; I approach this matter with purely research purpose and with a Multidisciplinary Team ABA. We have done two Tests on Emotions and Synesthesia in Google Tool and Video-ETB-CVS test to induce in a gradual state of hypnosis, patients properly evaluated and in the management of emotions during the Covid and post-pandemic Covid. With the aim of teaching him to recognize and manage emotions with a gradual induction to a pseudo-hypnopompic state to tell us spontaneous story of their memories that, with a meditative music, lets flow and induce first an initial induction of emotions and final recognition of their emotions and others.

Clinical Study
The dissemination of the Tool Emotional/Synesthesia Battery Test among adults and students at Italian schools is in an early stage, but the partial data received until now, with informed consensus, are only 19 in total and among these only 5 patients have, for health reasons that we specify in detail below, have agreed to perform the preliminary evaluation tests after the EBT/CVS Tool of 90 minutes maximum with the aim to complete the Video induction EBT-CVS with hypnosis and training to management/treatment emotions for a total time of 1 hour 14 minutes and 40 seconds.

Clinical case 1: A.O. 16 years old, born on 3/1/2007 and living in Misano of Gera D'Adda near Milan, affected by Epilepsy from the age of 3 years with absences noted for the first time by a teacher, similar episodes had occurred at the age of 10-11 years. At the age of 12, on 5/18/2019 there was an episode of pallor with headache and momentary loss of contact, not responding to maternal calls; she was taken to the Emergency Department. On 6/3/2019 at the EEG he highlighted diffuse wave tips and poly-tips with greater frontal expressiveness perhaps critical for delay in response. The patient after psychological assessment had not diagnosis of dyslexia. For the concomitant onset of frontal headache performs MRI brain on 7/15/2019 negative. On 8/28/2019 at the EEG shows epileptiform abnormalities PPO in Hp bilateral projection and synchronous, collected in short sequence, not photosensitivity. On 9/19/2019 she had a first tonic-clonic crisis in sleep and began therapy with Etosuccimide 500mg, suspended for behavioral modification in signs of mood deflection, then she took Valproic Acid that still taking in follow-up at Besta Institute in Milan. Where she is in therapy with Depakine Chrono 3 tablets a day and Lamotrigina one 1 tablet 25mg a day to be replaced gradually with Valproic Acid. While, for the recent panic attack, she is advised a psychotherapy towards which the patient is resistant, and initially accepts, only to sleep "Calmi" with 5 drops in the evening or in case of anxious in the morning to need before going to school. For this reason, she is taken in charge by our Team with written and attached authorization of both parents and subjected to a therapy of management of positive and negative emotions, after induction, stage of hypnosis and recognition of her own emotions and others.

Clinical case 2: V.M. 38 years old, born on 6/29/1983 and living in Cividate al Piano, near Bergamo, after plastic surgery for suspected breast nodule with mastoplasty and liposuction with scar reduction from previous cesarean section, the patient for irreversible surgical lesions to the pectoral muscles and other limits by 2 years suffering from post-traumatic stress disorder after surgery at private clinic. The patient is currently in criminal proceedings for multiple personal injuries to the pudendo and urethra, where it has developed a consequent diurnal and nocturnal incontinence for which it needs a bladder catheter with limitation to raise the right arm higher than the left arm for injury to the pectoral extensor muscles.

Clinical case 3: D.V. 42 years old born on 2/15/1981 lives in Treviglio, Bergamo, for 10 years suffering from panic attacks in a deconstructive family context was put by the psychiatrist in therapy with Olanzapina from 10 mg/day for 6 months then 5 mg/day for 8 years up to 2.5 mg/day for 18 months. For reasons of strong work stress in mobbing presents in 8 months, appeared during Covid period with 6 episodes of Exploding Head Syndrome in a patient already known to fall asleep for Restless legs syndrome and currently in charge at Besta Institute of Milan.

Clinical case 4: V.C. aged 83, born on 6/15/1939 and living in Cusano Milanino, Milan, from the age of 20 years has recurring syncopal episodes in patients defined at psychosomatic times and for 30 years known to suffer from hypogonadism in Klinefelter Syndrome, obesity, ulcerative rettocolitis and coronary heart disease in therapy with anticoagulants of new generation and only at 60 years performed diagnosis for atrial sinus disease for which it has been carrying bicameral pacemaker by 20 years.

Clinical case 5: D.C. of 44 years, born on 4/18/1979 and lives in Treviglio, Bergamo, from 3 months of age was affected by epilepsy and mitochondrial myoclonic disease for which she is today in therapy with Rivotril 3 mg/day and Nooptril 1,200 gr/day, and in experimental therapy with Ubiquinone 1,600 gr/day and Ubiquinol 60 mg/day in vials since 2019. This treatment has had a marked improvement in the clinical picture with reduced epileptic seizures such as absences and partial seizures upon awakening and neuro-motorial autonomy with experimental therapy in place and being adjusted. Practice from the age of 14 years frequent meditation, music and control of breathing and heart rate.
The sample was taken after a presentation of the research made in collaboration between Private Medical Study and ASST Bergamo West with a total of patients who performed Tool Test on Emotions and Synesthesia. The study sample that performed Tool Test remotely with Quilgo, 19 patients performed the Tool in Google, among them 5 also performed the Test of emotions and hypnotic induction in video EBT-CVS program. Only the Video-Emotional induction/synesthetic test with evaluation of the 5 subjects, already known for years, evaluate their neuro-endocrinal and psychological pathology conditions, as described above, with 3 preliminary tests for stable their psycho-intellectual state of departure in sufficient well-being, the respective tests are:


2-Raven’s standard Matrices (with rating scale by age) measures fluid intelligence and the creator are by Jhon Carluye Raven and were published for in Britain in 1983

3-Test to evaluate the Hypnosis Induction Profile or Hypnotic Induction Profile of Spiegel (HIP), which is a hypnotizability test that quantifies both the biological disposition to hypnosis and the subject’s ability to perform it.

At the end of the evaluation, described above, we started on a Video-Test our Emotional Battery Test or method of investigation on emotions and synthetic capacity of the patient with:

4-The Program with Emotion Induction Test/Synesthesia Colombo-Vassallo-Shore or EBT-CVS, where there is a first part identical to the Tool with images and sounds and for each you have to answer with question and answer on 5 senses, 7 emotions and 7 colors (with video and paper data collection) and simultaneous recording of Galvanic Skin Response (GSR) with skin electrodes and Frequency Vocal Tone (FVT) with recording during the Video-Test of the vocal frequencies emitted by the subject following video images. Gradually inducing him/her into a generally hypnopompic state that occurred regularly in four out of five cases; and hypnotagic in only one case, since after the test of inductions of emotions/synesthesia immediately he/she falls asleep and in the semi-aware phase continued the test up to the stage of treatment and recognition of emotions; being able to give us answers also on personal emotions in the phase of pre-covid, covid and post-covid pandemic (2019-2023). Since the psycho-physical symptoms of these subjects have often reappeared in these 3 years of pandemic, which have put a strain on their state of psycho-physical balance. With the Test of recognition of their emotions in the final part we have, in a scientific way, able to detect the description of the emotions experienced by the patient throughout the duration of the video and collect his demonstrable emotional state from video and data collected and recorded. According to the recognition and sharing of facial microexpressions by Paul Ekman to be able to better express and recognize them in relationships with family members and in the social and working environment. For the execution of the entire Assessment of the Emotional Battery Test, we first of all asked informed consent to parents for all underage patients, who were subjected to the EBT-Tool Colombo-Vassallo-Shore and to the Video-Test Colombo-Vassallo-Shore, and all adult patients that are psychically and cognitively adapted, based on age and years of study to support the EBT-CVS or test of induction of the emotions and the hypnosis that the test of recognition of the emotions.

**Data Analysis**

The Google Test Tool EBT-CVS was sent to 44 patients in charge, of which 19 completed and sent within the 90 minutes required as the maximum time of performance. Of the 19 patients who performed it correctly. The data of the 19 tests performed have for age a range of 10-84 years, average 41,78 of years old and an average score of EQ (Emotional Quotient) of 56%, median of 54,02% and a range of 38,98%-91,10% at the EBT or Emotional Battery Test standard in Google Tool. 5 out of 19 patients tested by means of preliminary assessments, inherent our Video-Test of induction of emotions up to hypnosis, induced by the same associated video, and music in the final part of the test of recognition related also to facial expressions own and others. We analyzed the data (Table 1) before in Excel transported by the Tool Emotional Battery Test (EBT) see Graphs 1-2 and Table 1 and 2 and by the devices of the Galvanic Skin Response (GSR) and Advanced Spectrum Analysis (ASA) to compare them simultaneously with glasses recording in 4K resolution to verify and monitor the behavior during the Video-Test; that includes the part of Test of induction of emotions, hypnosis or stage of pseudo hypnagogic or hypnopompic state of consciousness. EBTTest-CVS of recognition of the seven emotions learned during the training or feedback of the Arousal. In the 5 patients that have become available so far we have (from Table 1) evaluated the score of the emotional inductive test, average is 60,6% (49-72%) and recognition of emotions, average of 67,6% (48-78%) from which it emerges that the Tool overestimates the Emotional Quotient or EQ of the 5 subjects examined with an average of 69% in the 5 subjects who had adhered to the epidemiological test. With Anova-Mongomery 2001, it is possible to perform a variance analysis of the Tool Emotional Battery Test performed by 19 patients (Attachment-1). The significance of the data collected analyzed with Pearson’s r is 0.089 and has a Fisher high p<0.0001 for total EQ with synthetic emotional ability significantly related to age and associative emotional state. The analysis of the data collected with EB Video-Test shows a correlation with the total score of the Video-Test and Google-Tool with Fisher of p<0.03 respect to induction emotional test in correlation with the Mini Mental p<0,02 and WAIS IQ or Raven Matrices p<0,02, and with inductive part of emotional Test compared to the post-hypnosis part of the final emotional training of the test with p of 0.41, then moderately significant. From the analysis of countless data collected on the 5 patients mentioned, above, we have values of cutaneous conductance with the relevant GSR with p<0.001 from Student’s test 7,17 (among 19 patients in total relax). While the frequency spectrum of the tone of voice of the patients has a significance between 0.005-0.0002 (both 5 patients); maybe even depend on environmental interference from ambient noise (Attachment-2).
### Table 1: Study data.

**Graph 1:** Descriptive Graph and Tool Table EBT-2.

<table>
<thead>
<tr>
<th>Patients</th>
<th>Mini Mental Standard</th>
<th>Raven Matrices/ WAIS IQ</th>
<th>Induction Hypnosis Spiegel: reduced/extended</th>
<th>Tool EBT-CVS</th>
<th>T. Induction Emotions</th>
<th>T. Recognize Emotions</th>
<th>EBT with VIDEO-TEST Score Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-A.O. 16 years</td>
<td>26</td>
<td>100</td>
<td>9,5</td>
<td>12,5</td>
<td>52,54%</td>
<td>87/170=51%</td>
<td>36/50=72%</td>
</tr>
<tr>
<td>2-V.M. 38 years</td>
<td>28</td>
<td>125</td>
<td>6,5</td>
<td>8,5</td>
<td>58,05%</td>
<td>102/170=60%</td>
<td>24/50=48%</td>
</tr>
<tr>
<td>3-D.V. 42 years</td>
<td>31</td>
<td>127</td>
<td>6,5</td>
<td>9,5</td>
<td>74,58%</td>
<td>120/170=71%</td>
<td>39/50=78%</td>
</tr>
<tr>
<td>4-V.C. 83 years</td>
<td>24</td>
<td>95</td>
<td>5</td>
<td>7,5</td>
<td>53,81%</td>
<td>84/170=49%</td>
<td>31/50=62%</td>
</tr>
<tr>
<td>5-D.C. 44 years</td>
<td>31</td>
<td>130</td>
<td>7,5</td>
<td>11</td>
<td>91,10%</td>
<td>122/170=72%</td>
<td>39/50=78%</td>
</tr>
</tbody>
</table>
Conclusion
Considering the data collected, we think it could be appropriated to reflect on the tests available to us and to evaluate the Emotional Quotient (Emotional/Synesthetic) of 19 persons to better understand the conscious and unconscious behavior of our patients. They can do this test in Google Tool and/or Video-Test of the Emotional Battery Test. The aim of EBT-CVS is to induce emotions with 5 senses analysis tests (taste, smell, hearing, touch and sight) and 7 emotions (fear, disgust, contempt, anger, surprise, sadness, happiness). In this way, we study them Arousal and correlate it with Galvanic Skin Response or Analyzer Vocal Tone before and after Video Test of EBT-CVS in our 5 psychological patients with standard ability.

In case 1: A.O. 16 years old performed the Video Test between 18:58-20:27 hours and at the data collection with GSR has an average of 5.42µs (microsiemens) with a range between 4.84-6 (95%CI) and the variation from the sample is 0.27µs with a significant Student’s test with p < 0.0001. The Vocal Tone Analyzer has an average of 1603.78Hz with a range between 173.4-372Hz (95%CI) and Student’s t test p<0.0002. The standard deviation from the sample is 0.44µs from GSR and 138.9hz with Vocal Tone. In this case, the patient had a high but non-stressed Arousal for 3.68% of the total time with a peak of 1-2µs in the post-hypnosis phase during the recognition of emotions and 5µs for 5 seconds at the end of the video test.

In case 2: V.M. 38 years old the patient performed the Video Test between 18:54-20:10 hours and at the data collected with GSR has an average of 2.17µs with a range between 1.85-2.49µs (95%CI) and Student’s test p<0.0002. The Vocal Tone Analyzer has an average of 272.7Hz with a range between 173.4-372Hz (95%CI) and Student’s t test p<0.0002. In this case, the patient had a high but non-stressed Arousal for 3.68% of the total time with a peak of 1-2µs in the post-hypnosis phase during the recognition of emotions and 5µs for 5 seconds at the end of the video test.

In case 3: D.V. 42 years old the patient performed the Video Test between 19:20-20:27 hours with an average GSR of 12.38µs for 95.20% hypo-activation and 4% of elevated stress greater than 16 SCR/min (6.61-18.16µs) with Student’s t test p<0.0006. Vocal Tone FFT detection, post-hypnosis phase and emotional recognition test with 254.5hz average with very high stress detection with Student’s t test p<0.0001.

In case 4: V.C. 83 years old the patient performed the Video Test between 11:48-12:53 hours with an average GSR of 1.39µs with a range of 0.99-1.88µs (95%CI) and Student’s t test p<0.0053. The Vocal Tone Analyzer with an average of 227Hz (107-347Hz) with statistical t of 0.435 and p=0.0025; 100% calm and well-being during the test.

In case 5: D.C. 44 years old the patient performed the Video Test between 11:48-12:53 hours with an average GSR of 1.39µs with a range of 0.99-1.88µs (95%CI) and Student’s t test p<0.0053. Vocal Tone Analyzer with an average of 227Hz (107-347Hz) with statistical t of 0.435 and p=0.0025; 100% calm and well-being during the test.

The study aims to show how Arousal with Galvanic Skin Response (GSR) and voice tone change, with Advanced Spectrum Analysis (ASA) of FFT in different stages as pre-hypnosis phase with in-
ductive emotion testing, hypnosis status and finally post-hypnosis with emotion recognition training. The last step is a feed-back that enables us to train the subject, to consciously express his/her thoughts and emotions. These steps determine the possibility to learn and recognize EQ in themselves and others. It’s useful to better relate and behave with the rest of the world.

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