Electric current to the brain 'Boosts Maths Ability'

Trans-cranial GSR Biofeedback Stimulation Increases Math, Insight and Language Memory on the Indigo - 2014

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Permission of the Hungarian Ethics Committee and the Ethic Committee of the University of Bucharest Faculty of Psychology
Institution: International Medical University
Sponsor: Mandalay kft

Dates: February thru June 2014   Place: Budapest, Hungary
Abstract:
23 subjects male and female were measured for basic Math skills, Insight and Language Memory.

Three GSR Cybernetic systems were compared to a placebo group. The Indigo 2014 with a signal generator setting were compared to placebo control testing. Cybernetic autofocusing of micro-current stimulation and biofeedback correction is used to maximize the effect.

We analyzed speed, accuracy and stress during math problem solving and learning new words in a new language. Once a base-line was established, the trans-cranial GSR Biofeedback cybernetic operation was turned on. After stimulation there was a significant noticeable increase in accuracy and speed of the math and word skills.

Many new studies have shown the safety and efficacy of GSR trans-cranial stimulation inducing improved performance in mental acuity. These devices showed superior effect largely due to the autofocused cybernetic loop technology first developed in the 1980's by Desire' and first clinically proven in 2002. And proven again in several studies over the last two decades.

The technology has used a single wave form generator for CES since first registered with the US FDA in 1989. After over 35,000 such devices with not one reported significant risk, safety is obvious. Hundreds of studies have shown this technology to be effective, and now a second wave form generator will be tested.

Introduction:
IT IS OUR BASIC HYPOTHESIS THAT A SMALL DC PULSED MICRO-CURRENT APPLIED TO THE CRANIUM CAN STIMULATE OSMOSIS AND THUS IMPROVE SYNAPTIC ACTION, MEMORY AND LEARNING. THIS EFFECT CAN BE MAXIMIZED WITH AN AUTOFOCUSED CYBERNETIC PULSE. THIS HAS BEEN PROVEN WITH THE EPFX, QXCI, SCIO AND A HOST OF OTHER RESEARCHERS HAVE MADE SUCH TECHNOLOGY. NOW WE ARE TESTING THE NEWEST ADVANCE THE EDUCTOR WHICH HAS AN EXTRA TWO SIGNAL GENERATORS.

WE FIRST USE THE EDUCTOR DEVICE TO MEASURE THE BODY ELECTRIC FOR VOLTAGE, AMPERAGE, RESISTANCE, HYDRATION, OXIDATION AND ACID ALKALINE BALANCE PLUS OUTPUT OF DISSIMILAR CONDUCTION MATERIALS. AND ONCE WE KNOW THE BODY ELECTRIC FACTORS WE CAN APPLY AN APPROPRIATE TAILORED ELECTRO-POTENTIAL SIMILAR SIGNAL TO THE BODY. THEN WE MEASURE THE ELECTRO RESPONSE AND USE IT TO MAKE THE NEXT STIMULATION. THIS MAKES AN AUTO FOCUSED CYBERNETIC LOOP WHERE THE BODY ELECTRIC CAN GUIDE THE DEVELOPMENT OF THE STIMULATION OF THE SYNAPTIC FUNCTION. THIS HAS BEEN SHOWN TO BE ABLE TO INCREASE MENTAL ACUITY.
Brief History:

Micro-current Cranial Electro Stimulation MCES is a new advance in Cranial Electro Stimulation CES and energetic medicine. "Electrotherapy" has been in use for over 2000 years, as shown by the clinical literature of the early Roman physician, Scribonius Largus, who wrote in the Compositiones Medicae of 46 AD that his patients should stand on a live black torpedo fish for the relief of a variety of medical conditions, including gout and headaches. Claudius Galen (131 - 201 AD) also suggested using the shocks from the electrical fish for medical therapies. There is evidence of electro-therapy in ancient Babylon and Egypt. The body works on electro signals and electro stimulation of low current helps homoeostasis.

Low intensity electrical stimulation is believed to have originated in the studies of galvanic currents in humans and animals as conducted by Giovanni Aldini, Alessandro Volta and others in the 18th century, Aldini had experimented with galvanic head current as early as 1794 (upon himself) and reported the successful treatment of patients suffering from melancholia depression using direct low-intensity currents in 1804.

Modern research into low intensity electrical stimulation of the brain was begun by Leduc and Rouxeau in France (1902). In 1949, the Soviet Union expanded research of CES to include the treatment of anxiety as well as sleeping disorders.

In the 1960s and 1970s, it was common for physicians and researchers to place electrodes on the eyes, thinking that any other electrode site would not be able to penetrate the cranium. It was later found that placing electrodes on the forehead was far more convenient, and quite effective.

CES was initially studied for insomnia and called electro-sleep therapy; it is also known as Cranial-Electro Stimulation and Transcranial Electrotherapy.

One of the mechanism of action for CES is that the pulses of electric current increase the ability of neural cells to produce serotonin, dopamine DHEA endorphins and other neurotransmitters stabilizing the neurohormonal system. Since a slight stimulation of a pulsed milliamp current increases osmosis it is shown that neurrhormones work better from the increased osmosis.

It has been demonstrated that through CES, an electric current is engrossed upon the hypothalamic region; during this process, CES electrodes are placed near to the face with the ground at the lower body.

Current research shows an increase of the brain's levels of serotonin, norepinephrine, and dopamine, and a decrease in its level of cortisol. After a MCES treatment, users are in an "alert, yet relaxed" state, characterized by increased alpha and decreased delta brain waves as seen on EEG.

In 1972, a specific form of addiction release CES was developed by Dr. Margaret Patterson, providing small pulses of electric current across the head to ameliorate the effects of acute and chronic withdrawal from addictive substances. She named her treatment "NeuroElectric Therapy (NET)".

I worked with Margaret and treated rock star Pete Townsend for drug addiction. This is why the SCIO system has had the MCES capacity built in.

The SCIO is a descendent of the EPFX system US FDA registered in 1989 still in registered for sale in America. Since 1989 we have sold over 31,000 such systems under the registered name of EPFX, QXCI, and SCIO. There have been well over 500,000,000 patient visits with all getting some MCES, and not one reported case of any significant risk. Over 200 studies and articles have been written and published on
these systems and no report of any risk. It has passed all safety tests since 1989 and all risk analysis has proved it to be insignificant risk.

The systems outlined have a potential of 0-4 volts which is beneath the human threshold of perception, and 0-7 milliamps which makes it safe and for most subtle and undetectable.

For over 26 years reports of stress reduction, relaxation, anxiety reduction, emotional balance, addiction release, insomnia reduction and sleep induction have been reported from the users and doctors.

The Eductor has a second wave form generator that can further intensify the CES effect. All this was done with a cybernetic loop technology guided by the patient body electric reactions to the stimuli. Thus we can further intensify the CES effect over older antiquated non-cybernetic technology.

**Method:**

All subjects are volunteers who gave informed consent in writing. We used ages from 17 To 72 Male and female. Subjects with extreme disease were excluded.

We first established a control reference group of ten subject reactions by asking them to solve the math problems or remember the words with no device. We observed practice effect and just how much time and effort normal subjects used to solve the problems.

Then the same researcher asked the questions to the subjects. The subjects were read an example, then asked to solve with no stimulation, then with a single generator and then with two signal generators.

**There are samples of the questions used:**

Two numbers added together make \_A\_ and Multiplied by each other make \_B\_

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>2-2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3-1</td>
</tr>
</tbody>
</table>

Start control Pre Test

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>12</td>
<td>3-3</td>
</tr>
<tr>
<td>8</td>
<td>12</td>
<td>2-6</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
<td>6-6</td>
</tr>
<tr>
<td>16</td>
<td>48</td>
<td>4-12</td>
</tr>
<tr>
<td>15</td>
<td>56</td>
<td>7-8</td>
</tr>
</tbody>
</table>

Start stimulation tell them to relax with eyes closed wait one minute while getting one channel of CES

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>20</td>
<td>4-5</td>
</tr>
<tr>
<td>11</td>
<td>30</td>
<td>6-5</td>
</tr>
</tbody>
</table>
Next we tell them to relax with eyes closed wait one minute while getting two channels of CES.

### Part two word memory retention

<table>
<thead>
<tr>
<th>English</th>
<th>Japanese</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>いち</td>
<td>どうして？ (doushite?) = Why?</td>
</tr>
<tr>
<td>two</td>
<td>二</td>
<td>なに？ (nani) = What?</td>
</tr>
<tr>
<td>three</td>
<td>三</td>
<td>時間 (jikan) = Time</td>
</tr>
<tr>
<td>four</td>
<td>四</td>
<td>だれ (dare) = Who.</td>
</tr>
<tr>
<td>five</td>
<td>五</td>
<td>いつ (itsu) = When.</td>
</tr>
<tr>
<td>six</td>
<td>六</td>
<td>人 (hito) = Person.</td>
</tr>
<tr>
<td>seven</td>
<td>なな</td>
<td>(doko) = Where.</td>
</tr>
<tr>
<td>eight</td>
<td>はち</td>
<td>(nihon) = Japan.</td>
</tr>
<tr>
<td>nine</td>
<td>九</td>
<td></td>
</tr>
<tr>
<td>ten</td>
<td>十</td>
<td></td>
</tr>
</tbody>
</table>
Indigo Athlete wins Gold

Dorian's Story
Effects of TRNS Math Stimulation can Last 6 Months

The brain stimulation technique could help children who struggle with arithmetic, say researchers.

Applying high-frequency electrical noise to the brain can boost math skills up to six months later, say Oxford University researchers.

A small study in Current Biology suggests the brain stimulation technique makes neurons function more efficiently. It could help those suffering with neurodevelopmental disorders, Attention Deficit Hyperactivity Disorder (ADHD), and learning difficulties. An expert said the technique could have local applied impact. Transcranial random noise stimulation (TRNS) involves applying random electrical noise to targeted areas of the brain by placing electrodes on the surface of the scalp. It is a relatively new method of brain stimulation that has not yet reached mainstream acceptance.

Our neuro-imaging results suggested that TRNS increases the efficiency with which stimulated brain areas use their supplies of oxygen and nutrients.

Dr. Roi Cohen Kadosh, University of Oxford
Results of the math studies:
Results of the „words” studies:
With Machine: Much better result with machine:
Better result:
Same result:
Worse result:
In the test there were no reported significant risks. Two small headaches were reported on treatment that passed after several minutes. Of the 23 test subjects 90% had improvement in the word memory performance and the same in mathematical performance. The comparison to our placebo control group shows the effect of stimulation of the mental cognition similar effect to recently quoted research in the literature. Our hypothesis has been confirmed in this research.

![Placebo Control Group of 10 subjects]

**Discussion:**
There were no reported risks during the study.

There was approximately a 12% increase in Performance with the Indigo lasting for hours and that lasts longer after additional therapies. After 5 therapies the effect can last for months.

The study showed clearly that the CES can stimulate math ability and memory retention. The history of micro-current CES positive effects on learning dates back decades. There have been no safety issues in the literature. There has been subtle but positive effects demonstrated on thousands of research documentation. This research shows the extra boost of positive effects of the second wave form generator.

**References:**

1. ^ a b 21CFR882.5800, Part 882 ("Neurological Devices")

2. ^ a b Smith RB, Cranial Electrotherapy Stimulation: Its First Fifty Years


13. doi:10.1300/J184v09n02_02


15. DOI: 10.1007/s11940-008-0040-y


19. doi:10.1300/J184v09n02_02


29. Smith R et al. The use of transcranial electrical stimulation in the treatment of cocaine and/or polysubstance abuse, 2002

30. FDA medical device classifications


Superlearning with the Indigo

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Abstract:

The Indigo is a biofeedback device that sends a small DC pulsed current to the forehead to measure skin resistance. The Indigo can stimulate osmosis and thus improve synaptic action. This has been proven with the EPFX, QXCI and SCIO technology. We first use the Indigo device to measure the body electric for amperage and voltage output of dissimilar conduction materials. And once we know the body electric factors we can apply an electro-potential signal to the body very similar to the original body electric. Then we measure the electro response and use it to make the next stimulation. This makes an auto focused cybernetic loop where the body electric can guide the development of the stimulation of the synaptic function. This will increase osmosis and increase mental acuity to enhance learning.

In 2009 we used 35 subjects ages 11 to 45 solve math problems by subjects while on the SCIO device. The SCIO device was set either on or off for placebo control. Subjects were asked questions like two numbers added together make 8 and multiplied by each other make 16.

In our study there was significant improvement of over 20% in the learning skill versus Placebo. This shows the ability for the autofocusing micro-current stimulation to increase brain functioning.
Memory Enhancement with the Indigo

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In 2009 we asked 35 subjects ages 11 to 45 to remember a series of numbers first forward then backward. Subjects were asked remember a series of three one digit numbers and then a number is added to the series till they cannot readily remember the number series. The number of the series forward and backward is found then they are asked again to perform the task while on the Indigo and compared to a control group.

In our study there was significant improvement of over 20% in the memory skill versus Placebo. This shows the ability for the autofocusing micro-current stimulation of the Indigo to increase brain functioning.