



## First Ultramodern, Neuromarketing Research on Lying and Propaganda to Study Brain Impulses with Neurofeedback and Biofeedback Devices

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**Abstract:** Modern challenges of psychological warfare and the role of PR and marketing in the process of psychological war were focused on in my work. I will also describe my attempt to use such an important method as neurofeedback. I will share aspects of my research. First time in Georgia I will conduct the first ultra-modern research in study and propaganda to study brain impulses. Simultaneously, remote research has been conducted, which I named "research of fake" that has already involved 1760 participants and that becomes the subject for discussion.

On the other hand, I will pay attention to the importance of information-psychological warfare, consider various terms, try to introduce the new term "security marketing" and touch upon it in terms of the national security dimension.

The essence of fake will be considered, the definition of fake and its importance, I will provide the information on neurofeedback and its achievements, and talk about fake as the essence of the creative process.

Thus, it is common knowledge, that there is a constant risk of using the information as a weapon in the modern technology world, since incomplete communication of the event, providing part of the story or purposefully untrue information equals "abuse" of the information. Therefore, it is of utmost importance whether the content is perceived free from emotions, via facts, with the participation of the parties, who will provide information and what kind of information will be provided. It goes without saying that everybody is biased having a subjective view of any issue. If there is an instruction coupled with this subjective view (for example, in the case of media, political parties, elites, etc) it makes the situation more severe and doubles the risks.

Fake is a challenge of our century, it has different manipulation tools and creates a real threat in our epoch. I think the insight I will provide to the audience will be interesting and probably there will be those willing to participate in the current research.

There are different definitions of information-psychological warfare in scientific circles. On the one hand, informational war is a media war and on the other hand psychological war is a propaganda war. Together, these two directions represent an information-psychological "arsenal" during the war, although there are often cases when they act in collaboration. Where there is informational war, there is also propaganda, that is, psychological war. Here I would like to draw attention to the terms. The term informational war is the open and closed purposeful informational impact of social, political, ethnic and other systems on each other to profit. Also, informational war means using armed forces and other organizations to gain an informational advantage over the adversary to harm them." For example, the United States of America has had an informational warfare squadron since 1980, and they actively use this resource in military operations. They use various computer programs and devices. In order to confuse the adversary, they often disable electronic networks and need be, enable. A similar method was first used in the war against the Iraq, Persian Gulf. In the same war Dutch hackers stole information, revealing the location of US soldiers. They offered the loot from

the Defense Department to the Iraqis. However, the Iraqis thought it was another trick of the Americans and did not agree.

**Keywords:** Psychological Warfare, Lying Research, Neurofeedback, Brainmaster, Neuro Research on Marketing, Neuro Research on Psychology, Neuro Research on Politics, First Scientific Paper on Neurofeedback, Political PR, political marketing

**Methodology:** neurofeedback, biofeedback, online research, case study.

My research paper aims to study the influence of lies and propaganda on people's behavior. I conducted sociological inquiries on 1750 people for the first phase. According to the results, it is obvious that I should continue the research with devices. For that, I have chosen a method that has never been used yet in marketing and security research scientific experiments. It is essential to mention that in the Caucasus, the device is only in Georgia, and only here are two experienced and certified specialists. NASA created the device. It is used to refine cognitive skills and mental research abilities for improvement and also to help addicts to give up harmful habits. The device is unique and may have more resources than the devices that explore the quality of marketing materials and perception. The research paper aims to study brain reaction to the moment of lying and reveal active and passive words and content, study how we transform the lie into truth in our mind and how the receptiveness of information, propaganda, and lying increases. Furthermore, the work aims to study apprehension of lies and people's attitude to falsification, assessment, and dependence, the intensity of lying according to gender, the aspect of guilt, what field a person is more tolerant or less tolerant of, the steadiness and succession toward lies, for example, "how do you react when you hear a lie for the first time?" Or another, "how do you react when you hear the lie for the second time?" Assumed answers can be: 1. I will check with my acquaintances 2. I believe it is true 3. I do not pay attention 4. I deny 5. I have trouble answering. So, the video materials we intend to present to the respondents are modified according to this fragment. Bio and neurofeedback is a therapeutic method when physiological processes in patients' organisms are measured with sensors; afterward, the information goes back to the patient by optical, acoustic, and tactile signals. The method enables us to gain conscious and unconscious control over the physiological processes in our bodies. Neurofeedback is the process of study by operant conditioning, which directly affects the functioning of the neuro system. During biofeedback, essential information is delivered from the peripheral neuro system, and neurofeedback is the biofeedback of brain activities. Neurofeedback is considered one of the new methods, and it is still developing. Its development begins from Edward Thorndike's "Effect of Law" and Skinner's "Theory of behaviorism".

In 1929 Hans Barger first recorded EEG of a human brain; he also identified Alpha and Beta waves. In 1958 Josep Kamiya created Alpha wave training. In 1967 Barry Sterman performed EEG research on cats about epileptic waves. In 1975 Joel Lubar conducted EEG research in patients with epilepsy and attention deficit hyperactivity disorder syndrome. In 2006 Tomas Collura printed a Z-score about training multi-variation. I want to mention that a sample of each research and brain map is sent to an expert in America and processed material of the central neuro system and peripheral neuro system comes back. In the research framework, we will have primary (before-research picture), after-research, and peripheral neuro system maps on each unit; later I will describe the analyzed data in my scientific paper.

Herewith "Informational war" is reviewed as the main factor of military security. Currently, the military-political organization, "NATO," has been operating the plan, according to which it is planned to cooperate with partner countries and organizations. Therefore, Cooperation is strongly associated with improving a secure environment for Georgia, says "Hybrid war and international security problems of the 21st century" by Guguli Magradze and Vakhtang Maisaia.

What is for the term physiological warfare is the use of various methods, means, and measures on the population to change their physiological characteristics (ideas, opinions, values, mood, motives, behavior), group norms, mass attitude, and social awareness in the desired manner".

In October of 1998 Department of Security of the U.S.A. started the joint doctrine "Information Operations" (Joint Pub 3-13 "Information Operations", DOD OS, 1998, December). The definition of "information Operations" says: "Information Operations are actions taken to affect adversary information and information systems while defending one's information and information systems". The 1999 year guidelines by NATO define Information Operations as "Information Operations is a military function to provide advice and coordination of military information activities to create desired effects on the will, understanding and capability of adversaries and potential adversaries by protecting your informational systems."

The main types of Informational Operations are the object of attack (human, group of people, or system of machine), informational-physiological operations, and cyber-attacks. These all make the basis of informational Warfare.

"Psychological Operations" PSYOP is a kind of Informational Operation. PSYOPs are the main elements of Psychological Warfare. Its use can be coordinated and interconnected according to missions, time, things, procedures, types, forms, methods, and psychological influence techniques. Psychological Warfare aims to change the behavior and influence the group of people or adversaries. The military side is coordinated with the activities of the relevant state departments. If we want to view it on a more narrow side, it is used for demoralization and disorientation of the enemy.

The definition of the word -propaganda is the dissemination of information-facts, arguments, rumors, half-truths, or lies- to influence public opinion. Propaganda is more or less a systematic effort to manipulate other people's beliefs, attitudes, or actions using symbols (words, gestures, banners, monuments, music, clothing, insignia, hairstyles, designs on coins and postage stamps, and so forth) Deliberateness and a relatively heavy emphasis on manipulation distinguish propaganda from casual conversation or the free and easy exchange of ideas. Propagandists have a specific goal or set of plans. To achieve these, they deliberately select facts, arguments, and displays of symbols and present them in ways they think will have the most effect. To maximize impact, they may omit or distort pertinent facts or simply lie, and they may try to divert the attention of the reactors (the people they are trying to sway) from everything but their propaganda. That is what the encyclopedia "Britannica" says about propaganda.

I want to mention the lie itself as the biggest threat and challenge to politics. Its researcher was Paul Ekman, who used to explore the phenomena even in psychiatric clinics. In his work "Psychology of Lie," he shares his impressions. He thought he would use the phenomena of lies only to treat mentally ill patients. I want to highlight the fact that the topic of his study focused on gestures and mimicry as one of the essential components of lies

Paul Ekman once asked the question at the session: if a gesture is individual and subcultural for any country, what is mimicry, and is it possible to guess someone's lying by his mimicry? A doctor needs nonverbal research very often, for instance, when he wants to find out if a patient is ready to be released from the hospital, especially if the patient insists that he is well and doesn't want to stay there any longer. For example, if the doctor has to deal with a suicidal patient who was hospitalized after a poisoning attempt or wrist cutting and there still is the real threat of a repetition of the precedent. First, a patient's psychological adequacy and body possession, skills, concentration, and so on. should be assessed. Here lying is very likely; that is why a doctor needs a device to understand whether the patient's behavior is a lie or truth. The author remembers a patient Mary who was able to deceive the doctor and repeated the suicidal attempt. The doctor was deciphering video recordings and, with other doctors, was trying to detect lies. He saw and described many micro gestures, which could have helped to understand lying, shrugging the shoulders, shaking the head, slight gestures, unfinished gestures, numb face, changing voice tone, and so on. Consequently, justice and police forces became very interested in the research results and offered to explore lies in the aspect of crime; they also asked the doctor to teach the identification of falsity to the representatives of the Intelligence Service. In his work, Paul Ekman compares Patient Mary and Hitler, who was able to deceive Chamberlen during negotiations.

He says that Hitler is far more trained and he lies to those who want to be lied to. Sometimes the victim does not acknowledge the purpose of the liar because he subconsciously does not want to unmask the truth, so he somehow protects himself. For example, by neglecting the fact that his wife has a lover, a man saves himself from disgrace. If everybody knew about infidelity, divorce would be inevitable, creating a chain of lies until the information is not declared it has not happened and a person feels safe. He mentions that not everyone is deceived so easily, and some professions require exposure e.g., bankers or investigators. Paul Ekman explains the importance of attitude in the process of lying, patient Mary, who frankly believes in doctors, their support, and kindness, and Hitler, whose moral brake is loose, and he is free from the sense of guilt.

"It is far easier to detect the signs of lies in the behavior of suicidal patients or betrayer spouses than in the behavior of diplomats or double agents. However, not every diplomat, criminal, or agent is a good liar, and sometimes they make mistakes. The essence of my work is for everyone interested to unmask the lies, especially in the spheres of forensics and politics. I want not only to assist in revealing the lie, especially in cases when there are no clear behavioral actions, but also to beware and take into account their strengths and weaknesses."- says Paul Ekman in his work.

The author says that research on lies is not only for those who risk their lives but for people with everyday, chronic problems, whose life barriers are created from childhood patterns and scenarios. Identification of lies is necessary for sailors, police officers, diplomats, politicians, and ordinary citizens. However, Intelligent Service agents and special persons are among the first as they are responsible for the country's safety.

Based on the research, I can offer four images of lies, as creative processes: intentional, unintentional, mechanical and protective. To my mind, in creating a lie, the following items participate: the brain as a decision-making and innovative organ, creative scenarios, patterns, and micro topics. On the other hand, lies can also be compulsive and can be repeated mechanically. I want to explain each of them.

Intentional lies are lies that people deliberately make up beforehand and then use. Unintentional lies are lies that slip out. Mechanical lies are lies that people say repeatedly with various plots. Finally, Protective lies are lies when the author hopes to regulate the situation and establish peace.

However, I want to mention that in the case of lies, we can unite all those components and present them together or in pairs. That is why we have to discuss every issue in this section

Eight years after leaving the presidential position Richard Nixon denied that he lied but confessed that sometimes he had to conceal the truth. "This is necessary to obtain and keep the position -said he; you cannot say everything that you think about people because someday, you may need them. You cannot express your opinion about world leaders because you may have some issues with them in future."

Lies may have justification or may have no explanation at all. Lying is an action, or is it characteristic of a person, and should we call him a liar? Or is it a kind of illness and it needs applying relevant code?

The author distinguishes two types of lies, implied and distorted. In the first case, it covers the information and does not express it; it is always easier to justify such lies. In the second case, it distorts and disseminates. The masks of lying are: laughing, smiling, and inappropriate eyebrow movement.

There is one more kind of lying when one says the truth in a way that no one should believe it. We can define the action as giving the information to the receiver in a way that he neglects or regards it as lying. This action is very close to half-truth because when someone does not say the whole truth, it does not mean that he declares the basic information; what one covers might be far more important than what he says.

The other form of lying is not to say the truth; covering the truth is a crime, and information does not reach an addressee. Catching someone while lying can be an information leak for the author, but to the catcher, it may give a sense of triumph

*“Hiding the emotions is not easy, but it is more difficult to falsify them. It is not necessary to hide the real with false emotions. It needs more than just saying: I am angry or frightened. If a liar wants someone to believe him, he should look natural, and his voice should sound angry or frightened. For successful falsification, emotions, gestures, and voice tones are essential, though they are not so easy to falsify. Moreover, very few people can control facial expression: to express sorrow, fear, and anger requires mastering mimicry”. Reasonable fear of failure can even strengthen a liar and motivate him, but great fear can betray and reveal his lies.*

*One of the principal components of Psychological Warfare is “Social bullying”; it is the means of mass discreditation of a country or a person based on social discreditation. In the 21st century, social networks gained such a significant influence that it is becoming more and more difficult to rule them. They profoundly influence a person’s consciousness, intellect, and fantasy, fears and phobias, imagination and experience. The victim of social networks can be an ordinary person or a celebrity. There are cases of transformation of a person, changing impression and imagination about him, making him a hero or disgracing or destroying him*

*Why did social media and social networks gain so much influence? It spreads through “hotline”, or advertisements. Lately, information distributed by “Boosting” does not make an impression, and people rely more on data disseminated by people in their circle. What attracts people? It isn't easy to say because it is the decision taken in a particular moment and situation. The result can be different in different times and cases.*

I have conducted social inquiries for my doctoral paper. The research objective was to research lying with any communication channels in Georgia. The research aims to study brain reaction to the influence of lies and reveal active and passive words and contents, study how the lies transform into truth in our mind and grow the receptiveness of information, propaganda and false information. Study the perception of lying, people's attitude to it, their evaluation, and their relationship. The intensity of lying according to gender. Lies and aspects of guilt. In what field a human being is more or less tolerant, steadiness, and concession toward lying.

The second part of the questionnaire is dedicated to a politician as an aspect of the subject. A politician as a public speaker, a politician as a brand, a politician as an influential figure.

The third part of the paper is dedicated to researching the frame of the word lying, what society regards as lies: personalities, diplomacy, PR or politics. Furthermore, The aspects of the intensity of falsehood and propaganda and their reactions. For example: what do you do when you first hear the lies? What do you do when you hear the lies repeatedly? Assumed answers can be: 1. I will check with my acquaintances 2. I believe it is true 3. I do not pay attention 4. I deny 5. I have trouble answering.

In the last open questions, we ask the testee to advise and share

1. Please, share with us the last lie you heard and believed and the lie you did not believe or believed only after the repetition.
2. What would you recommend to Georgian politicians during their public speaking, what terminology to use, how to dress, what facial expression to take, what kind of communication they should have with the society, and so forth.

On the one hand, this will enable us to bring to light the last active lies that the participants did not believe in; on the other hand, we will get the recommendations they will give to the politicians.

It has to be mentioned that the research indicates political aspects, as it is crucial for us to accentuate the lies that reveal political nuances. I conducted confidential sociological research online and asked 1750 people, dividing them into age, regional, educational and city sections. I have also highlighted the percentage of employed and unemployed respondents, their fields of employment and their

position. The questionnaire consists of 36 questions. Among them 34 questions are closed and two questions are open.

The research is still in process. I have asked 1750 people already and I hope to increase the number of respondents till the end of the year.

Concerning Bio and Neurofeedback inclusion into the research, I have to mention that it is a therapeutic method. During the method sensors measure physiological processes in a patient's body. Afterwards the information comes back to the patient through optical, acoustical and tactical signals. The method gives us the possibility to gain conscious and unconscious control over the physiological processes in our bodies. Neurofeedback is the process of study by operant conditioning, which directly affects the functioning of the neuro system. During biofeedback, essential information is delivered from the peripheral neuro system, and neurofeedback is the biofeedback of brain activity.

Recently, I have been working on research and will share my results later. The study is realized by a grant funded by the Caucasus International University and will be tested on 100 people through the prism of age, social background, gender and education

### Conclusion

It is natural to have a desire to increase the research or increase the number of testees. Still, for the first stage, it is a unique study as a study like that has never been done in the world yet, neither in marketing nor PR, politology and psychology. In my opinion, studying fake news and propaganda through perception will be of utmost importance and may give impressive results. However, I acknowledge that discussion about that is an exaggeration until the results are present. I hope online research, which was quite immense, showed the effect that enables us to believe that such kind of complex study will result in a new vision with various perspectives and will show how the brains of people of different social and educational backgrounds react to lying as a social phenomena

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