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Research Article

High-Tech Research on National Security and Election Processes - to Study Manipulations of the Political PR with Neurofeedback and Biofeedback Devices

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Abstract:

Through the, I would like to share with you the ultra-modern research, which was conducted for the first time in the world, in Georgia, in framework of the fundamental grant of the Caucasus International University. The research is important for those interested in politics, as well as for experts in any field and students who actively use the research component; for those who have often become victims of manipulations: lies, propaganda and for State institutions that constantly face challenges due to manipulations, misinformation, and their influence. Considering that the results brought unprecedented information on the impact of lies in the context of election research, its scope and dangers, as well as the role of propaganda in view of Georgian potential voters. I believe the use of the device itself will become relevant in the field of national security. I hope that these devices will be actively used in impact research processes in Georgia in the near future. Also, neurofeedback and biofeedback can be incorporated to achieve mental resilience and stability in the military/critical units, civil servants, politicians, and leaders. In addition, this type of high-tech researches can be successfully used in the process of creating and forming text of a message, slogan, political addresses. Before discussing the research, I would like to introduce readers to these two devices, which were simultaneously tested to observe psychological and political PR manipulations.

Keywords: security, neurofeedback, biofeedback, elections, PR.

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INTRODUCTION

Through the, I would like to share with you the ultra-modern research, which was conducted for the first time in the world, in Georgia, in framework of the fundamental grant of the Caucasus International University. The research is important for those interested in politics, as well as for experts in any field and students who actively use the research component; for those who have often become victims of manipulations: lies, propaganda and for State institutions that constantly face challenges due to manipulations, misinformation and their influence. Considering that the results brought unprecedented information on the impact of lies in the context of election research, its scope and dangers, as well as the role of propaganda in view of Georgian potential voters. I believe, the use of the device itself will become relevant in the field of national security. I hope that these devices will be actively used in impact research processes in Georgia in the near future. Also, neurofeedback and biofeedback can be incorporated to achieve mental resilience and stability in the military/critical units, civil servants, politicians and leaders. In addition, this type of high-tech researches can be successfully used in the process of creating and forming text of a message, slogan, political addresses. Before discussing the research, I would like to introduce readers to these two devices, which were simultaneously tested to observe psychological and political PR manipulations.

Neurofeedback was developed by two researchers Dr. Joe Kamiya at the University of Chicago and Dr. M. Barry Sterman at the UCLA. In 1950s-1960s, Dr. Joe Kamiya discovered that by using a simple reward system people could control their own brainwaves. He trained people to achieve the alpha state by rewarding them with the sound of a bell. This was the first time that people were given real-time feedback based on their EEG monitoring - a few years later, Dr. Barry Sterman conducted an experiment for NASA on whether rocket fuel caused seizures, and he used cats as experiment subjects. During this study, he found that cats that underwent SMR training experienced significantly fewer seizures than other cats. Dr. Sterman then applied this technique to people with epilepsy, where he found that 60% of the test subjects were able to reduce their epileptic seizures by 20-100% and that the results were long-term.

In the 1970s, Dr. Joel F. Lubar was the first to conduct controlled study in children, adolescents and adults using neurofeedback training to treat attention deficit hyperactivity disorder (ADHD). Since then, emerged significant portion of researches on the effectiveness of neurofeedback therapy for ADHD, with many studies showing significant and long-term improvements following neurofeedback training. Since the 1970s, substantial research into neurofeedback therapy for ADHD has shown significant and lasting improvement.

¹ In framework of a fundamental grant, the Caucasus International University funded ultra-modern research on neurofeedback and biofeedback devices, which

There are five types of brain waves (delta, theta, alpha, beta and gamma); they are associated with different states of consciousness, including alertness, relaxation, as well as sleep, able to provide information about your current mental state. For example, they can indicate when you are feeling tired, focused, or relaxed. So, when you are calm, measurements of your brain activity are likely to show increased alpha brain wave activity. On the other hand, if you are stressed and overwhelmed, high beta is more likely to be the dominant frequency of your brain waves. Now imagine playing a video game while your brain wave activity is measured by EEG. In this game you drive a car and you have to keep calm in order to stay on the road. When you enter a state of relaxation, sensors measure your brain activity and the game displays the activity with real-time feedback. The calmer you are, the faster the car goes. On the contrary, the more anxious you get, the slower the car goes. This way, the game rewards relaxation, helping to train the brain to stay calm. This two-way approach means that neurofeedback teaches you to better regulate your brain function.

The second device which research was conducted with, is biofeedback. The term biofeedback first appeared in 1939, during World War II and is a kind of "real-time physiological mirror". It perceives the sympathetic and parasympathetic nervous systems and records emotions in real time. Before, it was believed that changes in physiological functions could occur only as a result of involuntary or reflexive processes. Scientist Neal Miller's series of experiments on animals showed that various functions of the ANS can be operationally conditioned. Thus, biofeedback is an alternative form of therapy in psychology, creating voluntary control of physiological needs in the patient.

The so-called "lie research"¹ was conducted by me, under the direct observation and supervision by my supervisor, Professor Vakhtang Maisaia, throughout the year and each unit consisted of four parts:

1. The subject signed a confidentiality document and filled out a mood questionnaire
2. The subject looked at the screen without a frame and had both devices attached to head and hand (for 8 minutes)
3. The subject watched a marketing product: propaganda videos and politicians' speeches (for 8 minutes)
4. At the very end, they filled the questionnaire with detailed questions. (17 questions on the watched videos)

The topic of integration into the European Union and the chronology of important events of Georgia-EU relations were used in the research. The subjects saw a total of nine materials, three of which were propaganda videoclips, and six were speeches by various political figures.

Promotional video clip:

allowed me to studied opinion leaders, a hundred test subjects, on the influence of PR manipulations.

1. Clip of the US Embassy - "That which seems unattainable separately,² - Is possible to be achieved together! You unite Georgia!" Duration - 1.47 min; views on social networks - 1.6 million; publication date - May 16, 2022. Leading text: "Georgian people have repeatedly faced difficult challenges on the way to building an independent and sovereign state. Many did not believe in Georgia's capabilities, many still prefer to remain on the skeptical side. However, fortunately, history shows us that no matter how difficult the challenge is and how far away the goal may seem."¹
2. TBC Bank videoclip - "100 years since the establishment of the First Democratic Republic of Georgia."² 100 years told by 100 authors. Music by Gia Kancheli, Nika Machaidze; 5000 views on social media; duration - 1.38 min; May 26, 2018 Publication date
3. Propaganda videoclip of the Bank of Georgia,³ "Congratulations on Georgia's Independence Day". Duration - 1.48 min; May 25, 2020 publication date; 1.3 million views on social networks

I also used 6 political addresses in the research:

1. Zurab Zhvania - "I am Georgian, therefore I am European"⁴
"I am Georgian and, therefore, I am European!" - These words were spoken by the late Prime Minister of Georgia Zurab Zhvania at the 1999 session of the General Assembly of the Council of Europe.³ Source - YouTube channel; 2014. 27.06 publication date
2. Mikheil Saakashvili - the third President of Georgia - about the death of Zurab Zhvania - "I loved Zurab very much, his name is sacred to me"⁵; source - *Info9*; 17.10.2023 publication date
Saakashvili's comment on the re-investigation of the death of Zurab Zhvania. The President of Georgia, Mikheil Saakashvili, made a comment in connection with the re-investigation of Zurab Zhvania's death, in Samegrelo. He claims that Zhvania's death was an accident.⁶ "I don't know who is saying what. Zurab Zhvania was my close friend. Everyone knows very well what happened there. There was an accident. It was a tragedy that happened, but there is a detailed report from the Federal Bureau of Investigation; and the family is familiar with that report. We did not publish this conclusion for understandable reasons; because it deals with many deep and human personal details. For me, Zurab's name was sacred. If it is not inviolable for someone, including a family member, let it be on their conscience. I loved Zurab Zhvania very much and his reputation, his name and his memory are sacred to me. Everyone knows what happened, so they call tell fairytales to each other and the journalists of *Asavali Newspaper*.⁷
3. Ivane Merabishvili - briefing on the death of Zurab Zhvania; source - Radio Liberty; 03.02.2016; *Studio Reporter*, Radio Liberty" - "This is the fact of natural gas poisoning; I was in that room, (corrects) an Iranian natural gas heater was installed in that room, it probably happened accidentally, because Mr. Zurab Zhvania was sitting in the chair."⁸

4. Kelly Degnan – US Ambassador Plenipotentiary to Georgia - "I want to be clear that “the “insidious narrative” in Georgia that the United States is dragging the country into Russia’s war against Ukraine, “seems straight out of an FSB disinformation book”,”⁹ - This statement was made by the US Ambassador to Georgia, Kelly Degnan. According to her, the United States is doing everything to stop the war in Ukraine and the USA does not want to expand the war in any way. Kelly Degnan's statement was evaluated by the governing party emphasizing the importance of the relationship with the strategic partner - USA. According to them, in today's geopolitical situation, for the sake of Georgia's security and well-being, we have to take special care for the relations with the USA and the European Union. According to Maka Bochorishvili, Russia is the threat to Georgia's security, which we have all been witnessing for the last 30 years. 30.06.2022 publication date.¹⁰
5. Alt Info - source – *TIA.ge*; topic: European Union Questionnaire has been publicized"; "Those who are in favor of joining the European Union; it start today, it was like that before too. From today it is has become official. Anyone who is in favor of membership is a gay activist. We have no other way."¹¹ 16.04.2022 publication date
6. Alt Info - the fifth video is also of a political context. It is a short frame shot by Alt Info, which is running without sound and is captioned as "You can shove the EU up your rare".¹²
The research is conducted in several stages. At first, test subject fills out a questionnaire to identify the test subject's age, gender, social status and city of residence; as well as the mood with which they came to the clinic. The test subject fills out a consent form and signs agreeing to participate in the study and that their data will be processed for the purposes of the study in accordance with the confidentiality rules. Neurofeedback¹³ and biofeedback¹⁴ imaging of the subject's brain is then performed simultaneously, in order to find out the subject's mood, level of excitement, level of concentration before the test; in this process test subject does not watch a video material, but has eyes fixed on an empty space and remains only with own self, with own thoughts and emotions.
Next, we show the test subject an eight-minute video, including the three propaganda videoclips and short video clips of six political speakers. After, the questionnaire is filled out again; in the questionnaire we asked in detail, specifically which material or detail attracted or irritated the test subject. It is noteworthy that since both materials were of the same duration (eight minutes), a detailed observation was possible and we can judge how the human peripheral nervous system behaves at the moment of watching a video and when not watching anything.
After that, we sent the brain and peripheral imaging unit of the test subject to the Neurofeedback Materials Research Center in the United States. From there, we received back the processed, a kind of brain maps, which includes both the primary image and the results after watching the material. I cannot submit the materials as

an attachment, because it is confidential and I have undertaken as a researcher that personal information will not be published anywhere. In order to give the reader an idea of the volume of work performed, we will digitally inform you of the number of pages of the material: test subject consent application - 100 pages; test subject primary questionnaire - 200 pages; secondary test subject secondary questionnaire - 300 pages; central and peripheral records - 200 files; files processed by Eeg professional – one unit - 44 pages; total - 4400 pages.

We determine the excitement increase by observing the peripheral nervous system and the moods by studying the positive emotion expressed in the peripheral nervous system. The main data was given by the peripheral nervous system, because we could not rely on the central nervous system, as we considered it possible that during the research process there could be many external factors influencing the person: fatigue, discomfort or other events that could have affected the central nervous system, although, this data would not be immediately reflected in the recording or it would reflect with a delay and would mislead us.

Research hypothesis: (H1) Political PR manipulations have the significant impact on the electorate of Georgia; (H2) Political propaganda has a positive influence on Georgian opinion leaders;

The provided materials were processed and four potential groups were identified, which have been given conditional names:

High excitement; high positive emotion; - Research
Low excitement; low positive emotion; -Neutral
High excitement; low positive emotion - High Emo
Low excitement; high positive emotion; - Low Emo

I. RESULT AND DISCUSSION

After the groups were identified and the results of records were compared with the questionnaires, it was revealed that:

96% of participants were affected by the videos: the level of both excitement and positive emotion in the peripheral nervous system increased or decreased. Based on this data, we can justify the first hypothesis and we can safely assume that in the case of both propaganda and public speeches, the impact on the test subjects is 96%, which we can consider as an important result. Here, it should also be said that in the case of the remaining 4%, there was impact in different parts, but not in all variables. There were a total of 4 people in which excitement did not change and remained the same, although the peripheral nervous system underwent a change.

Political propaganda videos showed only 2% negative sentiment, while reaction to political speeches showed 98% negative sentiment. Based on the aforementioned, we can conclude that propaganda in Georgia does not have a negative impact and that in political processes it is better to use propaganda videos for political PR purposes. Videos that remind a person of positive experiences, youth times, childhood, family, victorious

country and certain sentiments, have a positive effect on the psyche and it is shown that the negative mood decreases. This finding confirms the second hypothesis and it is clear that in case of Georgia propaganda is a really necessary tool among the political PR techniques.

I consider it the most important finding that from the materials revealed in framework of the research, it was also clearly seen that all test subjects lie on average by 30% when filling out the questionnaire. If the peripheral nervous system shows a positive emotion, negative content is written in the questionnaire: fear, anxiety, irritation, unacceptability, influence, etc. Such a difference appears in at least six questions out of seventeen, so, if we generalize and calculate the overall percentage, on average 30% is lies. It should also be noted here that the test subjects were not strangers, outsiders, they were friendly and ready to help, which makes me think that in the case of a neutral group, where the mood would be completely neutral towards the author of the study, as a result, an even higher lying component might have been detected. The situation makes me think that the questionnaire-based studies cannot be relevant, because instead of an average of nine percent, at least 30% of them are lies, which cannot give us a real picture in any way and the study will also be irrelevant. However, I have the opinion that online research (social media research), where personal information is not recorded, may be more appropriate in Georgia. The same cannot be said for telephone surveys, because the majority of citizens believe that their telephone connections are not secure. Such a situation is highly conditioned by those publicized reports where sound is recorded are broadcasted uncut, there is no regulation of recordings' authenticity; nobody is held responsible even when recordings are made secretly and then publicized, when they obtain compromising facts and etc., voice recordings about famous people, the so-called "deep fake", which is a global challenge to fight against and not a local problem, but it still creates strong sense of insecurity. The whole world is investigating lies and misinformation, especially since we are facing the real threat of the Third World War. Ukraine is researching and preparing a relevant website,¹⁵ which solely serves the detection of false information. There is no similar portal in Georgia. The fact is that this webpage has a very extensive resource and in case of good promotion, it gives the best results, because from all over the world, a person who is registered on this page can "report", i.e. with just simple registration procedure, tell his mutual friends and online (various) networks' administrations that certain information is false. This action has quite a powerful resource and I would welcome it if it existed in Georgia. The media, as a political spectrum and the society are polarized, which significantly increases threats at the national security level. On August 10, 2023, the Parliament of Georgia started discussing the Censorship Law, which caused the irritation of media organizations and non-governmental organizations. The same year, the draft law On Agents of Foreign Influence appeared, which also caused a strong negative reaction. Whether the public should

have information about the sources of funding and whether it should be obligatory to implement certain ethical norms. We cannot cover these issues within this topic, however, I think that asking a question at this stage is also a step forward, because if we judge based on the research, since 96% of the masses is influenced by information, the question of its regulation must also arise, on the one hand, to mandatorily protect its freedom, on the other hand, at the same time, regulating this freedom, but without violating human rights. A total of 100 test subjects participated in the study and 30% of them were experts.

The majority of subjects were irritated by such details as lipstick color, quick shot, eye color and were attracted to youth, university, family shots; while Noe Zhordania's video-shorts were liked by 70% of test subjects. The topic of the European Union was not touched upon, it was not highlighted as an interesting moment, none of the respondents found it attractive; and 40% expressed a negative attitude towards Kelly Degnan. Test subjects did not find it difficult to express personal negative attitude, although the same 40%, likely, did not support the EU-related narrative; did not express this towards the propaganda video. Therefore, should be limited public speeches on acute, global topics and the public must be addressed at scale, with products that match personal emotions, such as propaganda.

As mentioned above, the study aimed to observe PR manipulations. That is why the test subjects watched political speakers and propaganda video material during the process. I found it impossible to research political and PR manipulations without the use of special technologies and this gave us valuable results.

The research revealed that the role of propaganda in Georgia is one of the leading in PR manipulations and it is mostly seen during the confrontation of election subjects and election processes. Propaganda, as a tool, was constantly used in Georgia by both governmental and oppositional and hostile countries. As far as propaganda is practically impossible to stop, block and manage, because it works on and affects large masses of people, has a brand, has a goal, has a target and sometimes a specific object or a group or a political party or a government to discredit. Therefore, there is a need to have a specific document at the State level, which will be periodically updated and will enable the planned action and response by the State. Similar strategic documents exist in almost all countries, based on which advance plans are developed. Obviously, if the ruling party does not use unethical propaganda tools, a high enough standard of information dissemination is established, which, both the State and the average citizens adhere to. The fact that political materials directly affect the brain and that 96% of the test subjects showed to be fully impacted, while the remaining 4% are partially influenced, indicates that political material is a product with a powerful psychological influence and in my opinion, research has shown that political PR has a direct correlation with national security. This is

confirmed by experts and our situational analysis, which clearly shows the role of PR in the process of receiving and disseminating information and the importance of an incorrectly or unethically managed PR campaign in the context of national security. For example, in the processes of the Covid pandemic, in the context of the Lugar Laboratory or the war in Ukraine.

During the research process, a new term - "Security Marketing" and/or "National Security Marketing" emerged, which includes monitoring and tracking, eliminating or informing relevant agencies of marketing products that are harmful to the country's security.

In order to facilitate the observation of issues and the adoption of preventive measures, within the article, as an additional argument, I offer the definition of the terms presented by me in framework of my PhD topic, which I think has the right to exist: "**Security Marketing**" is a term that defines the importance of marketing products in national security; its type, their supervision and monitoring; identifies and studies it. It is a kind of control to prevent the distribution of counterfeit products, which in the future could create a threat at the national level. Another term is also offered: "National Threat of Mental Ecology" - a threat that affects both the individual and the group, is among asymmetric threats and is a powerful, biological weapon at the psychosomatic level, especially in such small nations as Georgia.

Term: "National Threat of Paradoxical/Contrasting Influence of Information", which is a symmetrical tool of managing masses.

Term: "Media Security/or Communication Security" - The tempo of information spread and the irreversible threat of cover-up could become a threat of such magnitude that management without prevention would constitute a national-level threat.

Term: "Mental Ecology National Threat" - The threat that affects both the individual and the group; is an asymmetric threat and represents a powerful, biological weapon at the psychosomatic level, especially in such small nations as Georgia.

It is also noteworthy that, along with the intellectual property protection mechanisms, the cultural values protection strategy and other developed schemes, there should be a mechanism for studying and protecting the facts of distortion of historical facts, country's flag, map, historiographical, archeological and, of course, personal information at the level of national security. A common standard of communication should be established by the State, through active propaganda against hate speech, foreign language terms and copying, in order to purify and discourage such forms of communication. All these approaches will limit the surge of aggression in the field, from which we independently receive enormous negativity. Because the readiness of an aggressive citizen to be encouraged to aggressive action is much

greater than that of a calm and balanced one, which is generally considered at the level of national security. It should also be noted that the already accumulated negative feedback implies the information necessary for

observation, which in the hands of the right State propaganda and ethical PR will be used for the development of a perfect, viable and effective strategy.

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