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POTENTIAL USE OF NEUROIMAGING AS A TOOL TO MONITOR BRAIN IMAGING CHANGES IN POLITICIANS RELATED TO UNETHICAL DECISION MAKING

ABSTRACT

Introduction. Political neuroimaging is an emerging field investigating neurological roots of political behavior, while many brain imaging techniques such as magnetic resonance imaging (MRI) and functional MRI provide quantifiable information. However, the literature is scarce on its practical applications in political sciences since it's unclear how it impacts political sciences. Put it simply, how the developments in neuroimaging can be used as a tool in politics, especially to monitor and assess their decision-making related to criminal acts such as corruption, is unclear. In addition, there are potential ethical limitations preventing investigators from using brain imaging to evaluate and monitor the behavior of politicians.

The aim of the study was to discuss the potential role of neuroimaging as a political tool. Neuroimaging tools can help us demonstrate specific abnormal behavior associated with politically unethical behavior, such as corruption or deceptive behavior. However, documenting brain imaging findings specific to such deviant behavior may be challenging. Here, we suggest that the practical use of political neuroimaging can improve transparency in the political field. It can be recommended to analyze and have insights into the decision-making process of politicians. Furthermore, neurofeedback tools such as electroencephalography can be used to improve politicians' decision-making.

Methodology. This study is not a systematic review as the literature is not wide on neuroimaging as a political tool. We have used Google Scholar to search relevant articles to provide background to support it.

Review and Discussion. In this study, we have speculated on the potential of measuring politically inappropriate behavior such as corruption and deceptive conduct. To investigate it, we have discussed measuring psychological stability before and after being a politician. More studies are needed to help politicians have stable psychology and improve their decision-making. Therefore, it may help to improve productivity. However, some many confounding factors and limitations prevent achieving such a goal.

Conclusion. In conclusion, political neuroimaging can be used to create beneficial tools to improve and ensure the psychological stability of politicians. However, it is controversial

how it can be implemented to assess the political behavior of politicians. Thereby, more studies are needed to elucidate the decision-making process related to politicians' decision-making. Such advanced tools can help select better politicians and improve their decision-making by providing feedback

KEYWORDS

political corruption; political psychology; ethics; neuroimaging; functional magnetic resonance imaging.

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INTRODUCTION

Understanding political behavior can be improved by combining the various theories of cognitive science and decision-making using neuroimaging (Lieberman, Schreiber, & Ochsner, 2003), while neuroimaging methods can provide information to allow producing quantifiable data. There are many patterns of political behaviors, including leadership, group behavior, ethnicity, and war (Cottam, Mastors, Preston, & Dietz, 2015). Moreover, research in political neuroscience has included candidate evaluation, political participation, and ideological differences (Haas, Warren, & Lauf, 2020). However, those previously investigated factors cannot give much information about the behavior of politicians. Demonstrating unethical or unstable decision-making can help to monitor politicians and may provide quantifiable parameters although there are many challenges, such as the hardships of defining corruption and its relationship with decision making. As personal corruption is based on different decision-making strategies (Köbis, van Prooijen, Righetti, & Van Lange, 2016). it is vital to have tools to demonstrate other decision-making processes while using neuroimaging data to predict criminal behavior is investigated by many researchers (Delfin et al., 2019). However, it is unclear how to dissect features associated with politically unethical behavior, such as emotionally biased decision-making or deceptive behavior. Some psychological problems can give insights concerning potentially biased decision-making. For example, certain addictions may impact cognitive skills related to complex decision-making processes, as previous studies claimed that decision-making processes are

dysfunctional in addiction (Koffarnus & Kaplan, 2018). Furthermore, the repeated use of drugs may lead to dysfunction in the cognitive mechanisms related to decision-making (Verdejo-Garcia, Chong, Stout, Yücel, & London, 2018). Moreover, a study investigated several honest and dishonest behaviors and demonstrated that many brain regions previously implicated in dishonesty may be related to general cognitive processes (Sai et al., 2021). On the other hand, it is unclear when to test politicians and their potential decision-making processes. They can be monitored before their candidacy to be a politician and their future decision-making since their decision-making may deteriorate in time.

On the other hand, neuroscientific documents in trials have given rise to fears that neuroimages presented by an expert witness may impact jurors' evaluations (Schweitzer & Saks, 2011). Because those neuroimages cannot certainly predict individuals. In this context, defining politically inappropriate behavior is a challenging task since it may impact the brain by a variety of factors such as cultural, psychological, and biological differences. However, targeting dishonesty requires understanding the complex neurocognitive processes (Speer, Smidts, & Boksem, 2020). Similarly, investigating deceptive behavior using noninvasive brain stimulation is not sufficient to determine deceptive behavior (Luber, Fisher, Appelbaum, Ploesser, & Lisanby, 2009). Clinical psychology generally investigates pathologic behavior, and in this context, signs of pathologic behavior can indicate deteriorated decision-making.

Furthermore, ideological systems may be structured according to a left-right dimension for psychological reasons related to variability to diminish uncertainty (Jost, Nosek, & Gosling, 2008). Similarly, a different study mentioned that threat causes may lead liberals to think like conservatives (Nail, McGregor, Drinkwater, Steele, & Thompson, 2009).

PURPOSE

The aim of the study was to discuss the potential role of neuroimaging as a political tool. Neuroimaging tools can help us demonstrate specific abnormal behavior associated with politically unethical behavior, such as corruption or deceptive behavior. However, documenting brain imaging findings specific to such deviant behavior may be challenging.

Here, we suggest that the practical use of political neuroimaging can improve transparency in the political field. It can be recommended to analyze and have insights into the decision-making process of politicians. Furthermore, neurofeedback tools such as electroencephalography can be used to improve politicians' decision-making.

METHODOLOGY

This study is not a systematic review as the literature is not wide on neuroimaging as a political tool. We have used Google Scholar to search relevant articles to provide background to support it.

REVIEW AND DISCUSSION

In this study, we have speculated on the potential of measuring politically inappropriate behavior such as corruption and deceptive conduct. To investigate it, we have discussed measuring psychological stability before and after being a politician. More studies are needed

to help politicians have stable psychology and improve their decision-making. Therefore, it may help to improve productivity. However, some many confounding factors and limitations prevent achieving such a goal.

1.1. Measuring psychological stability before being a politician

Recently, results from neuroscience have attracted attention from leadership (Boyatzis, 2014) as politicians have the power to decide for other individuals. Therefore, they should be psychologically stable, and further brain imaging findings should support their honesty and logical decision-making. Thereby, it is vital to monitor their behavior before becoming a politician. Furthermore, it is essential to assess their candidacy using brain imaging methods to ensure that they can take responsibility. On the other hand, one previous study (1983) claimed that political stability could not be quantified (DOWDING & KIMBER, 1983). Also, some behavior that brain imaging might consider deceptive can benefit other individuals. Therefore, it is crucial to distinguish between pragmatic and ethical behavior.

1.2. Measuring psychological stability after being a politician

Psychological assessment is how different methods are used to test hypotheses (Sartori, Costantini, & Ceschi, 2020). In addition, brain imaging methods can help specify skills needed in task performance (Hannula & Lehtinen, 2010). Furthermore, brain imaging findings give information related to the cognitive functions that humans harness to create thought (Illes, 2007). Thus, it is crucial to develop new methods concerning brain imaging to give feedback about the psychological stability of politicians.

1.3. Improving decision-making using advanced brain imaging methods

Neurofeedback designates a collection of techniques that train the brain and improve its function (Robert T. Thibault, Lifshitz, & Raz, 2016). Many studies have mentioned electroencephalography-neurofeedback as a viable treatment for psychological problems (Robert T Thibault, Lifshitz, Birbaumer, & Raz, 2015).

A previous study suggests that attention can be trained with timely feedback regarding neural signals (deBettencourt, Cohen, Lee, Norman, & Turk-Browne, 2015). A different article introduces the principles of feedback systems and their applications to electroencephalography and fMRI signals and subsystems for rtfMRI that may enhance solutions for clinical interventions (Sokunbi, 2017) and decision making. Further, A new field called neuroeconomics has been created due to the success of applications of brain imaging techniques in decision-making (Xue, Chen, Lu, & Dong, 2010). On the other hand, one study claimed that neurofeedback strategies might help due to their placebo effect (Robert T Thibault, Lifshitz, & Raz, 2017).

CONCLUSIONS

In conclusion, political neuroimaging can be used to create beneficial tools to improve and ensure the psychological stability of politicians. However, it is controversial how it can be implemented to assess the political behavior of politicians. Thereby, more studies are needed to elucidate the decision-making process related to politicians' decision-making. Such advanced tools can help select better politicians and improve their decision-making by providing

feedback

CONFLICT OF INTEREST

The Authors declare no conflict of interest.

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МОЖЛИВОСТІ ВИКОРИСТАННЯ НЕЙРОВИЗУАЛІЗАЦІЇ ЯК ІНСТРУМЕНТУ ДЛЯ МОНІТОРИНГУ ВІЗУАЛЬНИХ ЗМІН МОЗКУ ПОВ'ЯЗАНИХ З НЕЕТИЧНИМ ПРИЙНЯТТЯМ РІШЕНЬ У ПОЛІТИКІВ

АНОТАЦІЯ

Актуальність. Політична нейровізуалізація – це нова область, яка досліджує неврологічні коріння політичної поведінки, тоді як багато методів візуалізації мозку, такі як магнітно-резонансна томографія (МРТ) та функціональна МРТ, надають кількісно вимірну інформацію. Проте в літературі мало інформації щодо їх практичного застосування в політичних науках, оскільки незрозуміло, як вони впливають на політичні науки. Простіше кажучи, незрозуміло, чи розвиток нейровізуалізації можна використовувати як інструмент у політиці, особливо для моніторингу та оцінки прийняття рішень, пов'язаних із злочинними діями, такими як корупція. Крім того, існують потенційні етичні обмеження, які заважають дослідникам використовувати зображення мозку для оцінки та моніторингу поведінки політиків.

Метою дослідження було обговорити потенційну роль нейровізуалізації як політичного інструменту. Інструменти нейровізуалізації можуть допомогти нам продемонструвати специфічну ненормальну поведінку, пов'язану з політично неетичною поведінкою, наприклад корупцію або оманливу поведінку. Однак документування результатів візуалізації мозку, характерних для такої девіантної поведінки, може бути складним. Тут ми припускаємо, що практичне використання політичної нейровізуалізації може покращити прозорість у політичному полі. Можна рекомендувати аналізувати та мати уявлення про процес прийняття рішень політиками. Крім того, інструменти нейрозворотного зв'язку, такі як електроенцефалографія, можуть бути використані для покращення прийняття рішень політиками.

Методологія. Це дослідження не є систематичним оглядом, оскільки доступна література не містить багато інформації про нейровізуалізацію як політичний інструмент. Ми використовували Google Scholar для пошуку релевантних статей, щоб надати довідкову інформацію для його підтримки.

Огляд та обговорення. У цьому дослідженні ми міркували про потенціал оцінки політично невідповідної поведінки, такої як корупція та оманлива поведінка. Щоб дослідити це, ми обговорили вимірювання психологічної стабільності до та після того, як стати політиком. Потрібні додаткові дослідження, щоб допомогти політикам мати стабільну психологію та покращити прийняття рішень. Тому це може допомогти підвищити продуктивність. Однак багато факторів і обмежень, що збивають з ладу, заважають досягненню такої мети.

Висновки.Таким чином, політична нейровізуалізація може бути використана для створення корисних інструментів з метою покращення та забезпечення психологічної стабільності політиків. Однак є суперечливі питання, як це можна реалізувати для оцінки політичної поведінки політиків. Таким чином, необхідні додаткові дослідження для з'ясування процесу прийняття рішень. Такі передові інструменти можуть

допомогти вибрати кращих політиків і покращити прийняття ними рішень шляхом надання зворотного зв’язку.

КЛЮЧОВІ СЛОВА

політична корупція; політична психологія; етика, нейровізуалізація; функціональна магнітно-резонансна томографія.