

## REVIEW ARTICLE

# The Biopolitical and Neuropolitics Intervention in Election Studies: A Lesson from Indonesia

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### ABSTRACT

A preliminary study of biopolitics in Indonesia, which there are not many and even no one has studied political attitudes and behavior which is more determined by the structure and function of the brain. This study using a literature review. The study of political science to see political attitudes and behavior uses surveys. After the Reformation, the study of voting behavior through surveys was very developed but over time in the era of industrial democracy there was a lot of criticism because political consultants did not apply a strict methodology and some survey results were adjusted by the customer. This is the criticism and actually there are other studies that can look at political attitudes and behavior, namely neuropolitics (looking at the structure and function of the brain) and genes (political orientation is inherited).

**Keywords:** Biopolitics, Election, Neuropolitics, Political Attitude, Political Psychology

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### INTRODUCTION

Biopolitics is a scientific study that combines two fields, Biology and Political Science. Traditionally, political science closely relates to other disciplines like economics, history, and sociology (1). While political science is interdisciplinary in nature, this multidisciplinary approach has been expanded to cover biology, psychology, and neuroscience in the last few years. Interests in humanities have resulted in the development of new subfields in political science, including biopolitics, political psychology, and neuropolitics (2).

The theoretical framework to explain voting attitude and behavior during elections applies at least three approaches. The first one is a sociological approach known as the Colombian Model. The second is a psychological approach referred to as the Michigan Model. The third approach is the rational choice. Studies on voting behavior commenced at the end of the eighteenth century (3).

In 1968, Paul F. Lazarsfeld, Bernard Berelson, and Hazel Gaudet published their book entitled *The People's Choice: How the Voter Make Up His Mind in a Presidential Campaign*. These Colombian scholars examined their survey respondents in Ohio from May to November during the presidential election of 1940. They found that the exposure to election campaigns had two effects: strengthening initial voters' choice of their vote and motivating uncommitted voters' latent tendency. Vincent L Hutchings and Hakeem J Jefferson argued this predisposition is associated with three types of social characteristics: 1) the class status of the citizens; 2) the racial or religious identity of the citizens; and 3) the country territory where the citizens live and whether they live in urban or rural areas. The social characteristics activated by the campaigns are illustrated as the Index of Political Predisposition (IPP).

The Michigan Model focuses on the individual behavior of voters and their identification with one of the biggest political parties. This is in line with what Campbell et al. (1960) stated in their book *The American Voter*. According to Campbell et al., attitude toward the candidates, issues, and parties predicts the next vote.

The rational choice approach is adopted in economics, where the community tries to get a maximum value by

minimizing costs. In politics, the community will vote for a candidate who will provide the full benefits and not vote for a candidate who does not seem to give any help. Two classical texts of political economics concerning the voters and elections are *Social Choice and Individual Values* by Kenneth Arrow (1951) (4) and *Individual Values* by Anthony Downs (1957) entitled *An Economic Theory of Democracy* (5).

Voting behavior of elections in political science applies survey methods. Individual surveys on voting intention or voting decisions in the past were started at the end of the 19th century(6). Surveys gained popularity as shown by the surveys of quarter million respondents from twelve midwestern states tabulated by Chicago newspapers for the presidential contest of 1896 between McKinley and Bryan (7). In the 1920s, surveys carried out by newspapers and magazines became commonplace. Modern survey research appeared in the 1930s and 1940s (8).

In Indonesia, many survey institutions were established post-New Order. During the New Order, the institution often conducting surveys was Lembaga Penelitian, Pendidikan dan Penerangan Ekonomi dan Sosial (LP3ES) established in 1992. LP3ES does surveys of various themes. At first, LP3ES did not carry out any surveys in political fields. Research and Development of Kompas since the 1990s has also actively conducted surveys by phone regarding issues on public policies.

LP3ES has conducted surveys on elections since 1997 with precise results. The Election of 1999 added the number of survey institutions (9). In addition to LP3ES, there are four other survey institutions: Resource Productivity Center (RPC), International Foundation for Election Systems (IFES) and R&D of Kompas and the Committee of Voter Empowerment (KPP)-Politics Lab of the Faculty of Social and Political Sciences (FISIP) Universitas Indonesia (UI). During the Election of 2004, the number of survey institutions increased (10), including the Institute of Research and Development of PDIP, Danareksa Research Institute (DRI), International Republican Institute (IRI), Indonesian Survey Institute (LSI), and Soegeng Sarjadi Syndicated.

In the Election of 2019, survey institutes in Indonesia flourished even more. There were 36 institutes (11) enlisted in the Association for Public Opinion Surveys in Indonesia (Persepi). Meanwhile, the institutes registered in the General Election Commission of the Republic of Indonesia (KPU RI) reached 33 institutes. Some survey institutes were not listed in KPU RI and Persepi.

In the United States, surveys are used to provide the public proof that the sampling techniques they apply can be accounted for scientifically. Meanwhile, in Indonesia, distrust in the accuracy of survey institutes

remains high. The survey results are considered a trusted measurement tool for discovering public opinion. According to the report of LSI, the Election of 1999 is one of the examples of the survey institutes which could not capture each vote, including the rank of the party's votes. IFES and LP3ES are the only ones with an average margin of error under 5 percent. KPP-Lab FISIP UI holds the highest margin of error of 9.31 percent. Compared to Social Weather Stations of the Philippines, this prediction error is still considered high, especially as opposed to the survey institute such as Gallup, whose average prediction error is under 2%.

Several matters can influence the quality of survey results to predict the results of elections. The first is the accuracy of survey results—how far survey institutes can precisely predict the winner of elections and the rank (position) of the winning party. The second is preciseness—how far survey institutes can predict the votes received by each party. The third is the sample frame in Indonesia which is not updated wholly and timely. The fourth is the high rate of undecided voters. The average number of undecided voters for the Elections of 1999 and 2004 was 25 percent. The elections during the New Order restricted the community from freedom of choice. Therefore, in the Post New Order, the community remained afraid of expressing their opinion. The fifth is a heterogeneous population. The vast regions of Indonesia contain heterogeneous communities ranging in education, work, and income. The sixth is the number of political parties participating in elections. The election of 1999, the first election post-New Order, listed 34 political parties. Twelve political parties participated in the election of 2014, and so did 20 political parties in the election of 2019. No parties possessed equal power in all regions of Indonesia. Some parties won their votes only in several areas.

Biopolitical studies are essential to be developed in Indonesia, as the political science approach to survey methods remains problematic to the extent of affecting the survey results. Besides the method problems above, the tendency of elections in Indonesia, especially the Presidential Elections of 2014 and 2019, is colored with issues of hatred and fear of the candidates. Jokowi was attacked with issues of communism, foreign minions, and blasphemy on ulama. Meanwhile, Prabowo was criticized for issues of militarism; Islamic fundamentalist support; violation of human rights; New Order; and unfair treatment of different ethnicity, religion, race, and inter-group relations. This triggered the fright of each rival supporter, so the candidates' work programs were not highlighted. Concerning this, Biopolitical studies are widely open, especially the one associated with neuroscience. Neuropolitics tries to find out the origin of political attitude and behavior by examining the brain structures and functions.

## RESEARCH METHODS

This study uses a literature review as an initial study related to neuropolitics in Indonesia. This aims to show that political attitudes and political behavior (political orientation) can be seen by combining other sciences, namely neuroscience. Researchers search, read, understand, and select relevant articles from various books, journals, and other articles related to neuropolitics (12). The results of the review of books, journals, and articles, researchers look at early developments in the relationship between the natural sciences and social sciences, such as the influence of neuroscience in political science, the debates of political scientists and neuroscientists, and the potential for future neuropolitical studies (13). By using a literature review, researchers can also see the state of the art of neuropolitics (14).

Neuropolitics to see which brain structure or brain part dominantly influences political attitudes and behavior using fMRI, MRI, and EEG. While Genopolitics looks at political attitudes and behaviors that are inherited by genetic sequences.

### Ethical Clearance

This study was approved by Lembaga Inovasi, Pengembangan Jurnal, Penerbitan dan Hak Kekayaan Intelektual, Universitas Airlangga.

## RESULTS

### Understanding Biopolitics Intervention: Major Theoretical and Methodological Advancements

Biopolitics rose as criticism of social science's theoretical and methodological orientations perceived as insufficient. Social science is guided by the assumption that humans are creatures with free will. This view puts so much significance on the processes of learning and socialization. Therefore, it fails to perceive that humans' behavior (politics) is mainly conditioned in biological ways. Conventional social research is deemed to be unilateral and reductionistic. To produce a more realistic evaluation of humans and study the life of humans, a combinative approach of biocultural and biosocial is needed. This is per the statement of Thomas Lemke in his book *Biopolitics: An Advanced Introduction*. Proponents of Biopolitics usually do not assume deterministic relations but refer to the biological origins or factors which assertively form motives and space for political actors.

The term "biopolitics" was coined by Swedish Professor of Political Science Rudolf Kjell n in 1905 in his two-volume work entitled *The Great Powers and The State as a Form of Life* in 1916. His theory of biopolitics regarding countries is considered a form of 'vitalism' or 'organism' in contemporary literature on biopolitics due to the organicist analogies used. Kjell n's concept

of biopolitics is significantly close to Michael Foucault's concepts, such as the rationality of state measures to interfere, maintain, repair, and secure population stocks. Kjell n's writings also showed the further development of biopolitical study minors in Nordic contexts, especially the rise of the country's social welfare of the democrats and social manipulation of population aspects since the 1930s.

The population is a combination and aggregation from individuals' existential patterns to new political forms. Sometimes, Foucault also mentioned Biopolitics as Biopower. Biopower is a form of power that organizes, follows, interprets, absorbs, and rearticulates social life with its interior. Power can reach effective commands on the residents' whole life only if the power becomes vital and integral functions embraced and reactivated by every individual upon their wish. Foucault put stress on discipline and control. They are not independent entities but define each other.

Researchers of various disciplines created biopolitics to evaluate the sociopolitical implication of contemporary biology. In the conference of researchers incorporated in the Association for Politics and the Life Sciences, the studies cover Bioterrorism, Biological Weapons, Food Safety, Policy for the End of Life, Gene, and Politics. However, in the American Political Science Association (APSA), biopolitical studies do not receive much attention.

The brain structure, especially its responses (amygdala and insula) which can be reflected by political attitude, can be studied with brain image through Electroencephalogram (EEG) to observe electrical activities in the brain by using small metal discs (called electrodes) attached to the scalp. Besides EEG, parts of the brain which respond to political stimuli more dominantly can be observed through more precise visualization with Functional Magnetic Resonance Imaging (fMRI) which can measure tiny changes in the bloodstream during brain activities.

Neuropolitics is focused on applying methods and theories of neurology on brain structures and functions to understand better how people make decisions on politics. This field is closely related to political psychology, an interdisciplinary field focusing on the interaction between individual psychology and political behavior. The increasing interest in the brain follows the line similar to psychology, while the impacts of neurology have been increasing from time to time. This approach is the most relevant to studying decision-making in politics at the level of individuals, as an opposite or method in political sciences focusing on tracing aggregate votes (15).

At the beginning of the 2000s, scholars started to discuss the potential relation between political psychology

and social neuroscience by focusing on the strength and limitations of this interdisciplinary approach. For instance, some of the scholars were (16).

Although neuropolitics is a relatively new scientific field, it has focused its research on how people are involved in processing political information and decision-making. Reviews on the latest research over the last two decades have been focused on the contribution of neuropolitics to various topics, including racial attitude, motivated reasoning, political ideology, political attitude, political cognition, and emotion, as well as the differences among other individuals in their political behavior. According to Hass, Warren and Lauf, there are three main areas or studies of neuropolitics: (1) political ideology, (2) political candidate evaluation, and (3) voting and political participation.

### **Voting Behavior and Political Participation**

Political scientists have devoted themselves for a long time to understanding political participation and voting behavior (17). Many theories have tried to explain why people vote and participate in politics (or choose not to vote). The received voting model has widely focused on social and psychological factors which influence the voters' decisions and broader political decisions; however, a number of researchers have examined the biological processes and mechanisms underlying the motivation of political participation and voting behavior.

Political interests are often related to political participation, and neuropolitics has explained how interests can motivate participation (18). Recruited individuals with high and low interests in politics and asked them to evaluate their agreement and disagreement with political statements during fMRI (19). They found that the individuals with higher interests in politics showed greater activation in an area of the brain related to appreciation (ventral striatum) and emotion (amygdala) when they agreed with the statements they supported.

In addition to neuropolitics, another approach that can answer the origin of political attitude and behavior in biopolitics is genopolitics (20). Empirical genopolitics claims having found the lost theoretical bases of rational choice (21). The rational choice theory cannot explain the reason for individual preferences, which becomes the basis of all rational choices, so the source of preferences literally remains a black box (22). Genopolitics claims that it can tell us what is inside this black box: the factors resulting in our priorities in political fields(23). In other words, the black box of the rational choice theory, as claimed here, is individuals' genetic structures.

Rational choice is a plausible voting model, but only if "the black box" of preferences allows genetic components and only if the theory eases the requirement that people be aware of their genetic preferences. In other words,

genes can provide a framework to evaluate voting (24) and the political ideology of individuals. An article about genopolitics was written by John Alford, Carolyn Funk, and John Hibbing in 2005 in *American Political Science Review* entitled "Are Political Orientations Genetically Transmitted?" This article received massive media coverage a year after its publication and became a significant contribution since its first publication in 1906 (25). The authors were political scientists but not geneticists. They tried to reveal that the division of American citizens into liberal and conservative is a phenotypic expression of two main genotypes.

Political attitude tends to be affected by genetics more than parental socialization. For the overall index of political conservatism, genetics contributes about a half of the ideological variants, while the surrounding environment, including parents, contributes only 11%. In the case of differences in people's tendency to have a political opinion despite their ideological side, genetics explains that a third of the differences and the surrounding environment are not significant (25).

## **DISCUSSION**

### **Possibilities and Constraints of Applying Biopolitics in the Case of Indonesia**

Surveys on voting behavior in the political science approach have captured why and how one decides their vote. Meanwhile, biopolitics perceives biological aspects clearly form the motive and space of political actors (26). Attitude and behavior result from biological elements. Biopolitical studies in Indonesia remain scarce. There are some articles related to biopolitics, but they tend to study Foucault's governmentality theory. As mentioned by Nurul Maulina (2012) in her writing entitled *Implementasi Program Penanggulangan Gizi Buruk di Kota Surabaya: Kajian Biopolitik* (27), the government regulates the population health through the Republic of Indonesia Minister of Health Decree (PERMENKES RI) Number: 226/MENKES/PER/XI/2011 concerning Clean and Healthy Living Behavior (PHBS). The government established PHBS to regulate the healthy living behavior of the community by suggesting a healthy diet.

Another article related to the country's role in controlling the population was written by Siti Aminah (2021), entitled *Pandemi dan PPKM dalam Perspektif Biopolitik*. To reduce the number of Covid-19 cases in Surabaya and Gresik, East Java, the government issued policies to restrict the community activities through Large-Scale Social Restriction (PSBB) and Public Activity Restriction (PPKM). Another form of governmental control was the mandatory vaccination to narrow down the spread of Covid-19 contamination.

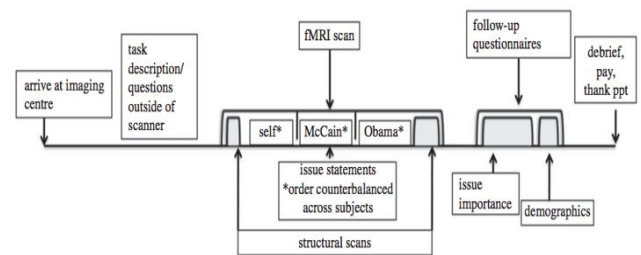
A governmentality policy, Family Planning (KB), was also applied during the era of Soeharto. The

government's idea to control the population by limiting the number of births in a family has been weighed up since the 1950s by a number of doctors in Indonesia (28). During the governance of Soekarno, talking about limiting the number of births was still perceived as taboo because it was regarded as a violation of Article 534 of the Criminal Code with two months of imprisonment and a fine of IDR 200. Meanwhile, in the era of the New Order, limitation on the number of births was highly supported. Therefore, Soeharto approved the National Family Planning Agency (LKBN) to be a non-department governmental agency under the National Family Planning Coordination Board (BKKBN) in 1970, according to the Presidential Decree No. 8 of 1970.

Biopolitical studies on political ideology, political orientation, and attitude and behavior correlating neuroscience and politics are sparse or have not been conducted (29). Indonesian political scientists have been applying survey methods to study voting behavior. However, most of the time, surveys in Indonesia have not been made the primary reference for public opinion. Some people remain doubtful of the survey results because of frequently inaccurate and unprecise results (30). In addition to the methodological problems, the survey results often come out far from the margin of error due to the large number of undecided voters and swing voters. These gaps open an opportunity for neuropolitical studies. The method of brain imaging showcasing the dominant part of the brain can involve Computerized Tomography (CT) Scan, Positron Emission Tomography (PET) Scan, Magnetic Resonance Imaging (MRI), Functional Magnetic Resonance Imaging (fMRI), and Electroencephalograph (EEG).

Figure 1 below shows the process of brain imaging from the beginning to the end. Before the brain imaging was carried out, the participants were given an explanation of their tasks. Then, their brain was scanned, and they were given questions to reveal their attitude to specific issues. After being scanned, they were asked to answer a list of questions to deepen special and significant issues. Picture 1 below shows how the origin of political attitude could be observed through a trial in the United States Presidential Election of 2008. The participants were scanned five weeks prior to the presidential election of 2008. During the fMRI scanning, the participants responded to various issues relevant to the election of 2008 from the perspectives of their own and each of two well-known presidential candidates. The participants could also quickly see the photos of each candidate (31). After being scanned, the participants also explained how each issue was personally significant to them. Towards the presidential election of 2008, the supporters of Democrats and Republicans were scanned with fMRI from D-34 to D-1. The participants were shown a problem statement in every test, such as an issue on abortion which must be legally available worldwide. In another test, the participants were asked to show to

what extent Barack Obama, John McCain, or they agree with the statement. This research separated "ingroup" and "outgroup" processes. The researchers categorized the participants as an affirmative and opposite side of the candidates. The hypothesis of this research focused on the moderator of nerve response to the statements that made the participants have different perspectives of the candidates towards the election. Studies on social cognitive neuroscience regarding individual attitude or the relation of problem-based attitude and ingroup or outgroup members remain few. The most highlighted part of the previous study on



Source: Falk, E. B., Spunt, R. P., & Lieberman, M. D. (2012)

**Figure 1 Stages of Neuroimaging with fMRI in the United States Presidential Election of 2008**

ingroup and outgroup processes has shown stronger activation of social cognition in the ingroup members than in the outgroup ones. Therefore, the neuroimaging research on the United States Presidential Election of 2008 predicted that the social cognitive area would show greater ingroup activation changed by each moderator variable. In this case, motivation was inferred from the significance of the issues evaluated continuously until the election day through relevant personal motivation. The results showed that when the participants evaluated their candidates themselves (ingroup), there was activation in the posterior cingulate cortex (PCC). PCC was activated when there was either positive or negative emotional stimulation. Meanwhile, when they evaluated the rival candidates (outgroup), the part of the Temporal-Parietal Junction (TPJ) and insula got activated more. TPJ has three functions: (1) the theory of mind in which the brain can understand its activities such as evaluating self-behavior, making predictions and moral assessment, being involved in other forms of perspective-taking, (2) social cognition such as empathy, sympathy, and ability to understand other people, especially the right side of TPJ, and (3) language processing, especially the left side of TPJ which takes signs from external environments (oral and written language) and connects them with knowledge, memory, and emotion. Meanwhile, one of the insula's functions is related to perception and emotion.

The contestation of the 2019 election presented two pairs of candidates: (1) Jokowi-Ma'ruf Amin and (2) Prabowo-Sandiaga Uno. Those two candidates resulted

from the presidential threshold—the threshold of the votes received by a political party in an election to nominate a presidential candidate. In accordance with Article 222 Law No. 7 of 2017 concerning elections, the provision of the presidential threshold establishes 20 percent of the valid votes in the national level of legislative elections or 25 percent of seats in the House of Representatives (DPR). Consequently, those two pairs of candidates made the contestation so much more powerful that it reached the grassroots. The intense polarization of both sides even resulted in the labeling of each supporter. Jokowi's supporters were called "Cebong" (tadpoles), and Prabowo's supporters were named "Kampret" (meaning "asshole" made from the wordplay of "Koalisi Merah Putih," the coalition of parties supporting Prabowo) and "Kadrun" (desert lizards). Mentions of "Cebong" and "Kampret" were widely found and discussed on social media, especially on Twitter.

According to Ismail Fahmi, the founder of Drone Emprit, which maps social media chat networks, the trend of the term "Cebong" and "Kampret" appeared on social media Twitter early in 2018. Meanwhile, the word "Kadrun" popped up in 2019. The term "Cebong" was mentioned the most at the beginning of 2019, with 2.58 million mentions. It was followed by "Kampret" with 2.43 million and "Kadrun" with 1.88 million mentions. According to Drone Emprit, some influential accounts stood behind the term "Kadrun." Among them were @Dennysiregar7 in the top position with 27,258 engagements, @ChusnulChotimah (19.349), @Candraasmara85 (10.388), @mochamadari (10.146), and @AnakKolong\_ (9.363). This shows that the competition between the two sides of the presidential candidates' supporters was tight. There was even an indication that those parties spread hoax news to put down their rival.

In addition to the stigmatization of each supporter of the presidential candidates, issues related to each candidate were also widely spread. The matters tended to take on the negative ones about each candidate. This increased the emotion (fear) of each party supporter. The issues related to Jokowi were about communism, ulama criminalization, and minions for foreign parties. Meanwhile, the ones labeled to Prabowo were militarism; New Order; violation of human rights; unfair treatment of different ethnicity, religion, race, and inter-group relations; and support from fundamentalist groups who longed for the caliphate. Each supporter made the narration of fear in the presidential election of 2019. Every supporter was equally afraid of the issues hitting each presidential candidate. Therefore, they attacked their rival candidate.

Emotion and hatred in the presidential elections of 2014 and 2019 got more substantial due to the development of post-truth politics. The presidential candidates contesting

in the presidential elections of 2014 and 2019 were the same, Joko Widodo and Prabowo Subianto. As a result, the competition between the two parties got tenser. The tension of each supporter of Joko Widodo and Prabowo Subianto even reached the grassroots. Both supporters attacked each other by spreading issues whose truth was not clear yet. The development of post-truth politics made public opinion dominated by personal emotion and beliefs. Voters believed only in their group with the same mind rather than a different one. Consequently, hoax and negative campaigns were more prominent.

Based on the Model of Primary Voter Behavior by Newman and Sheth (1985), a number of consumer approaches are suggested to predict and explain voting behavior with cognitive beliefs. Seven components of the Model of Primary Voter Behavior are (1) Issues and Policies, (2) Social Imagery, (3) Emotional Feelings, (4) Candidate Image, (5) Current Event, (6) Personal Event, (7) Epistemic Issues. Out of those components, only 4-5 components are associated with voting behavior. According to Newman and Sheth, it is difficult to measure one's beliefs.

However, the problem of biopolitics, especially neuropolitics, is that it is not developed in Indonesia due to certain issues. (1) the paradigm of social scientists in general and political scientists in particular in Indonesia still views environmental factors tend to determine political attitude and behavior, as proposed by Aristotle, John Locke, and Jean-Jacques Rousseau. Political attitude and behavior tend to be influenced by demography, political socialization, and maximized utility. (2) Neuropolitical brain imaging methods need the tools to be operated by an expert (32). Therefore, not just anyone can operate them without prior training. (3) Compared to surveys which can take up to thousands of samples, the samples in neuropolitical studies are limited because the participants' brain has to be scanned. (4) The cost of brain imaging is relatively high. Among the brain imaging tools, including MRI and fMRI, EEG is relatively the cheapest tool.

### **Prospective Applicative Approaches to the Case of Indonesia**

The existing biopolitical studies can be further developed to complete studies on voting behavior through the political science approach. The first is biopolitics proposed by Foucault regarding the structure of knowledge and power within the scope of political techniques. The objects of biopolitics are not only humans but also their biological characteristics measured and collected at the level of population (33). Foucault emphasized the discipline and control of the country (governmentality). Foucault commonly used the term "biopower" to replace "biopolitics". The country disciplines its citizens to carry out the Family Planning (KB) program by controlling the birth interval. Al Syahrin et al (2020) conducted a similar study entitled *Analisis Biopolitik dan Kontrol Populasi Penduduk melalui*

## *Program Keluarga Berencana di Kota Samarinda.*

Country discipline could also be observed during the pandemic of Covid-19 when the country had to use its power to oblige the community to apply the health protocols of 5M (Wear Your Mask, Wash Your Hands, Keep Your Distance, Stay Away from Crowds, and Restrict Mobility). The government even involved other stakeholders such as the national police, military, and municipal police to ensure compliance with the health protocols. Another country's discipline was requiring the community to get vaccinated. The community had to be vaccinated with dosages 1 and 2. This aimed to decrease the spread of Covid-19 exposure. Other countries also applied the policy of Public Activity Restriction (PPKM) to reduce resident mobility.

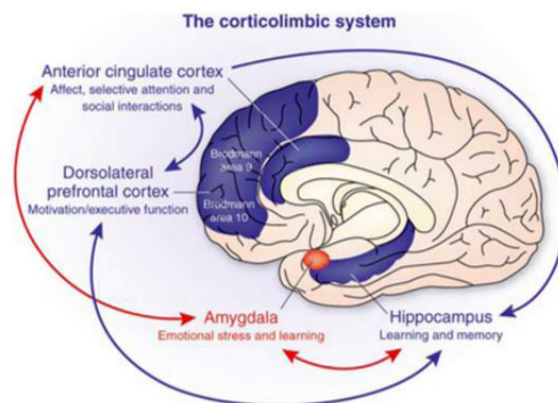
Second, the potential of studies on biopolitical subfields in Indonesia is neuropolitics. The prominence of post-truth politics which put forward emotion in the Presidential Elections of 2014 and 2019 can also be a prospective study on neuropolitics in Indonesia(34). The supporters of both Jokowi and Prabowo equally perceived that their rival group spread issues of hatred leading to hoaxes. Consequently, each group considered themselves correct. For instance, the supporters of Jokowi deemed they chose Jokowi because of his excellent performance and experience in the government since he was Mayor of Solo and Governor of DKI Jakarta (35). The supporters of Jokowi regarded that Prabowo politicized religion in his campaigns and was backed up by radical groups. As a former army officer, Prabowo was accused of kidnapping pro-democracy activists and being involved in violation of human rights. On the contrary, the supporters of Prabowo recognized him as resolute and attentive to the national sovereignty (nationalist), while Jokowi was regarded as a minion of foreign countries and a criminal on ulama.

Each supporter's emotion (fear) of not letting the rival win in the presidential election could be examined through brain imaging to find out where the origin of their political attitude and behavior is, which part of the brain is more dominant, and whether an emotion is more prevalent than rationality in voting a presidential candidate. The role of emotion in decision-making is often ignored, as emotionality equals to being less rational. However, this approach has been revised fundamentally in the last decades, and studies on emotion and decision-making are currently one of the most vibrant fields of research. According to research over the end of the 20th century, decision-making by humans cannot be understood without taking emotion into account because the emotional reaction is an uneliminated part of how people respond to an event and the process of attitude formation (36). In the case of political-decision making, "politics is about emotion" and also about thought. As cited in Drew Westen's book entitled *The Political Brain: The Role of Emotion*

in *Deciding the Fate of the Nation*, in the United States, the Republican Party represents the marketplace of emotions, while the Democrat Party represents the marketplace of ideas (37).

Neuropolitical studies as a sub-study of biopolitics can also view the voters of presidential candidates from the aspects of their ideology (38). For example, whether Jokowi voters were dominantly liberal or conservative can be observed, and so can Prabowo voters. This can be found out through brain imaging. The difference in the brain structure indicates liberalism and conservatism. Research showing the difference in the liberal and the conservative brain structure has been done by Kanai et al. (2011) by using structural MRI to examine the volume of grey matter. It was found that the liberal groups had an increase in their anterior cingulate cortex (39). In contrast, the conservative groups had an increased volume in the right amygdala, the left insula, and the right entorhinal cortex.

The anterior cingulate cortex (ACC) is interconnected



Source: FM Benes, 2010

**Figure 2 The Corticolimbic System**

to the prefrontal cortex, amygdala, and hippocampus within the corticolimbic system responsible for one's behavior and cognition, including motoric controls and programming, decision making, mnemonic functions (memory), and emotional regulation(40). Various research has shown that ACC has a central role in processing emotion at the cortical level and involving a more extensive lobar network (41). Kanai et al. (2011) showed the relation between political ideology and brain structure. The anterior cingulate cortex (ACC) of liberal groups increased more than the conservative group (39). Meanwhile, the conservative groups showed an increased volume in the right amygdala, which was relatively higher than the liberal (42). Both ACC and the amygdala are considered to serve a lot of functions, but ACC is often associated with conflict detection(43), while the amygdala is associated with the processing of negative and positive emotional information. The finding of ACC is consistent with the discovery of the

EGG, as ACC is also activated more in liberal groups during conflict detection (44).

The third is Genopolitics. There is an increasing interest in social science on the probability that genetic factors contribute to individual differences in political and social behavior(45). Social scientists have shown that essential political attitude such as liberalism and conservatism tends to be inherited (46).

The genetic approach has been an integral part of clinical, developmental, medical, psychological, and even political research. The results of the fundamental piece identifying the inheritance of genetics to social attitude over 25 years ago (47), were developed further and widely spread to the political science community. Their article in the American Political Science Review is commonly acknowledged in mainstream media and academic literature. A new era in the exploration of genetics for social sciences is launched chiefly.

To date, the majority of political science scholars adhere to the assumption that environmental factors cause entirely different behavior and preference(48). The biological system is perceived as playing a minor role or nothing at all in making infinite differences and advanced conceptual differences in political behavior, which seems to be true in the modern community. In this way, the body is viewed only as a means of transportation for the continuity of self-aware political choice instead of a journey's navigator. Nonetheless, the peak of behavioral research in all sciences shows that our biological receptacle remains a center for how we interpret and react to the world around us and may have a significant role in forming political preference structure and guiding us into the environment that significantly influences our behavior.

For the last 30 years of research, the view that preference is almost exclusively motivated by the environment has been eroded. New perception, primarily resulting from the explicit recognition of the overall complexity and individual variation which becomes the characteristic of human behavior, has risen (49). Since around 2005-2006, it has been widely accepted that genetic factors contribute to individual differences in political and social behavior (46). There is a tendency among behavioral scientists to view behavior or belief systems that get more complex as a matter determined genetically (or "inherited").

The first wave of research on behavioral genetics focused on the fundamental findings, and it managed to outline the fundamental characteristics of genetic effects on political attitude. Meanwhile, the second wave started to link the conclusions in genetics with broader political behavior aspects. Every emotional or physical action or thought we experience, even the invisible, such as the ways our body's immune system

reacts to bacterial infection, the effects of one's touch and smile, or the warm feeling from the sunlight on our face, is initiated by the combination of some stimuli and genetical expression at the same time in our cells. This leads to reciprocal action of other cells producing signals which control the expression of genetic and other neurobiological systems, resulting in the inspiration of feeling, thought, and behavior(46).

Political scientists James Fowler and Darren Schreiber stated that genetics contributes to explaining political beliefs and social behavior more than political science in its development (45). This argument is supported, who studied voter turnouts. Of 32 different social factors, only 31 percent could be explained by the political behavior differences. Plutzer argued that the remaining 69 percent could be explained by genetic differences, which are not considered in political science studies (50). New studies based on the research on twins proved that voter turnouts in elections were mostly inherited (53-60 percent).

Principally, biological studies are very prospective to be developed in Indonesia, as scientific development in the future tends to involve many scientific disciplines (interdisciplinary), including political science. Biopolitics related to governmentality has been frequently studied in Indonesia. Meanwhile, the subfields of biopolitics such as neopolitics and genopolitics have not been much developed in Indonesia to examine political attitude and behavior but are significantly prospective to observe the origin of political attitude and behavior. This is expected to enrich and complete studies on political attitude and behavior. Indeed, neopolitics cannot be applied with large samples as in surveys because it is used only to observe the tendency of small groups. In addition, neopolitics and genopolitics need experts to operate the tools and a quite high cost. After all, tools which many people can operate are needed such as artificial intelligence (AI).

## CONCLUSION

Biopolitical studies which combine biology and political science try to view that political attitude and behavior are biological products. To date, in social science studies, it is environmental factors which affect the most. However, in their development, interdisciplinary studies are inevitable. Political science itself applies approaches from various disciplines, especially to explain political attitude and behavior. The Sociological Approach is derived from sociology, Psychological Approach is from psychology, and Rational Choice is from economics. Some social scientists argue that environmental factors affect the most. However, some others also link political attitude and behavior to life science as in the long debate on nature (biologically-affected behavior) and nurture (environmentally-affected behavior) since the era of Plato and Aristotle.



Biopolitics related to Foucault's governmentality, also known as Biopower, in Indonesia has been frequently applied to analyze the country's role in controlling the body such as the policy of New Order related to Family Planning (KB) programs. In the era of the Covid-19 pandemic, the government also utilized its power to make the community comply with the health protocols and make vaccination mandatory. National Police, Military, Municipal Police, and even some influencing figures were involved. The subfield of Biopolitics potential to complete studies on political attitude and behavior is Neuropolitics, a combination of Neuroscience and Political Science. Neuropolitics presents to explain the origin of political attitude and behavior. The development of post-truth politics in the Presidential Elections of 2014 and 2019 leaked to the grassroots.

With neuropolitics, we can see the origin of the political attitude and behavior of each presidential candidate's supporter. It is observable whether voters of Jokowi and Prabowo tend to put forward fear or rationality from the brain structure and function. The dominant part is made visible through brain imaging by MRI, fMRI, or EEG. Geopolitical studies in Indonesia have not been developed much. It can be said that they are a new sub-study, having never been touched by any political scientists in Indonesia. Many of them have not studied molecular biology, genetics, or functional genomics as the basics in interdisciplinary research. Those who study political attitude and behavior tend to be "convenient" with survey methods. The development of surveys in Indonesia post-New Order shows fresh air to the freedom of democracy, resulting in studies on voting behavior. Nevertheless, over time, everyone can do surveys even without any educational background in Political Science and Statistics. Survey institutes emerge as if they were mushrooms during the rainy season. One of the reasons is that they can receive material benefits from political surveys. However, some of them often pay less attention to the methodological aspects, so the results are less accurate and less precise. There was even an indication that survey institutes published political survey results as their clients wished. This act ruins the dignity of studies on voting behavior. Even in the latest phenomenon in the era of the democracy industry in Indonesia, survey institutes are indicated to be colluding with the election organizer to secure or set up the votes received by political parties or candidates who pay for them. Therefore, voting behavior science is distorted by material interests.

Voting behavior needs to be studied in an interdisciplinary manner such as biopolitics with the subfields of neuropolitics and genopolitics. Biopolitical studies are not to eliminate the previous work on voting behavior studies but to complete and enrich them. Therefore, this journal should be insightful for neuropolitical and genopolitical studies, especially

in Indonesia. Moreover, general elections or local elections in Indonesia accentuate fear/hatred of rivals more than their programs. This could be observed from the DKI Jakarta local election of 2017 to the Presidential Elections of 2014 and 2019.

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