

Genopolitics: A New Approach in Political Behavior

Genopolitik: Pendekatan Baru dalam Perilaku Politik

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Article History: Received 07 November 2021; Accepted 05 September 2022; Published Online 24 February 2023

Abstract

This study is about the influence of genes on political attitudes and behavior in the subfield of biopolitics. Genopolitics arose as a critique of the political science approach which was deemed insufficient to explain political attitudes and behavior both theoretically and methodologically. To find the origins of political attitudes and behavior, interdisciplinary studies are needed. It is genes that can explain the origin of individual preferences on which all rational choices are based. The method used in this study was a literature review to see the development of genopolitics, debates, and criticisms related to political attitudes and behavior from the point of view of political science and genopolitics. The literature used was derived from books, journals, magazines, and news on the internet. Regarding voter turnout, 32 different social factors can only be explained by 31% by differences in political behavior, while the remaining 69% of differences can be explained by genetic differences. This study concludes that genopolitics as a new approach used to see political attitudes and behavior can be applied in Indonesia to answer and complete the survey-based study of political behavior.

Keywords: political attitudes; biopolitics; genopolitics; political behavior; voter turnout

Abstrak

Studi ini membahas tentang pengaruh gen terhadap sikap dan perilaku politik, subbidang biopolitik. Genopolitik lahir sebagai kritik atas pendekatan ilmu politik yang dinilai tidak cukup bisa menjelaskan sikap dan perilaku politik baik secara teoritis maupun metodologis. Untuk mencari asal-usul sikap dan perilaku politik diperlukan kajian interdisipliner. Gen-lah yang bisa menjelaskan asal mula preferensi individu yang menjadi dasar semua pilihan rasional. Metode dalam studi ini menggunakan studi pustaka untuk melihat perkembangan genopolitik, perdebatan dan kritik terkait sikap dan perilaku politik dari kaca mata ilmu politik dan genopolitik. Literatur yang digunakan berasal dari buku, jurnal, majalah dan berita di internet. Terkait kehadiran pemilih di bilik suara (voter turnout) dari 32 faktor sosial yang berbeda hanya dapat dijelaskan sebesar 31% oleh perbedaan perilaku politik, sedangkan sebesar 69% sisanya dapat dijelaskan oleh perbedaan genetik. Studi ini menyimpulkan bahwa genopolitik sebagai pendekatan baru digunakan untuk melihat sikap dan perilaku politik bisa diterapkan di Indonesia untuk menjawab dan melengkapi kajian perilaku politik yang selama ini menggunakan metode survei.

Kata kunci: sikap politik; biopolitik; genopolitik; perilaku politik; voter turnout

Introduction

Survey methods have been used in research of political attitudes and behavior, particularly those linked to voting behavior in political science. With the expansion of survey institutes following the reformation, the study of voting behavior has expanded. Political surveys become increasingly important in the period of industrial democracy. However, the findings of political surveys in Indonesia do not accurately reflect public sentiment. There are also survey institutions that do not rigorously adhere to methodological guidelines, resulting in political survey results that do not correspond to reality. Worse, there are indications that survey institutions have modified their research results to accommodate the objectives of political parties or applicants seeking employment, thereby tarnishing the image of survey institutions and voting behavior studies. The survey results in Indonesia continue to differ from those in the United States. Gallup, a well-known survey agency in the United States, produces data that are usually a reference due to their excellent accuracy and precision.

According to the Indonesian Survey Institute (LSI) study, several factors influence survey findings. The first is survey accuracy or the degree to which the survey institution can accurately anticipate the victor of the election and the ranking structure (position) of the winning party. Second, precision, or the extent to which survey organizations can predict each party's vote acquisition. Third, a sample frame from Indonesia. In Indonesia, the sample frame is out of date and incomplete. Fourth, there are a large number of voters who have not made a decision (Undecided Voters). In the 1999 and 2004 elections, the average amount of undecided voters was roughly 25%. Elections during the New Order demonstrated that people did not have the right to express their preferences. People were still hesitant to express their opinions after the New Order.

Fifth is the heterogeneous population, where the Indonesian territory has a very diverse society in terms of education, occupation, and income. Sixth is the number of political parties running for office. The first post-New Order election, held in 1999, had 48 political parties participate in the general election. The 2004 election had 24 political parties, the 2009 election had 34 political parties, the 2014 election had 12 political parties, and the 2019 election had 20 political parties. Furthermore, no party has equal power in all regions of Indonesia. Some parties only win in some areas.

Political attitudes and behavior are fascinating topics not only in political science but also in Biopolitics (Somit & Peterson 1998) in general and Genopolitics (Plomin 2008) in particular. In the Political Science approach, it is presented as a critique and supplements the study of political attitudes and conduct. At least three approaches are used in the theoretical framework to explain attitudes and voting behavior: (1) a rational choice approach, (2) a sociological approach known as the Columbia school, and (3) a psychological approach known as the Michigan school. Biopolitical studies are critical for enhancing the study of political attitudes and behavior through an interdisciplinary approach (Masters 2001, Mezzadra et al. 2013). According to genopolitics, political beliefs and conduct are inherited from parents. As such, this genopolitical study is to enrich the study of political attitudes and behavior. Political attitudes and behavior can also be seen from another subfield of biopolitics, namely neuropolitics. Political attitudes and behavior are the result of biological products and are influenced by the structure and function of the brain.

Biopolitics arose as a critique of the social sciences' inadequate theoretical and methodological orientations. The premise that humans are fundamentally free beings underpins social science. This viewpoint places far too much emphasis on the process of learning and socialization. As a result, this viewpoint overlooks the fact that human conduct (politics) is essentially physiologically conditioned. Traditional social science study is thought to be one-sided and reductionist. A combination of biocultural or biosocial methodologies is required to provide more realistic human evaluations and to investigate human existence. This is consistent with what Thomas Lemke (2011) wrote in his book *Biopolitics: An Advanced Introduction*. Proponents of biopolitics usually do not assume a deterministic relationship but refer to the origin or biological factors that expressly shape the motives and spaces of political actors.

Biological research calls into question generally held hypotheses for human social behavior. Since Plato and Aristotle, there has been a disagreement between nature (behavior is determined by DNA) and nurture (behavior is impacted by the environment and life experiences). Plato (350 BC) believed that who we are and what we know are innate qualities. Rene Descartes, a scientist who examined the neurological system, had the same understanding as Plato. Meanwhile, Aristotle differs from Plato in that what we are and what we know are the outcome of our surroundings. Aristotle's supporters, like John Locke (1632-1704) and Jean-Jacques Rousseau (1712-1778), believed that the environment influenced behavior (Yu & Liu 2009).

Because rational choice theory is unable to explain the origin of individual preferences, which is the foundation of all rational choices, the source of preference remains a mystery. Genopolitics claims that it can tell us what is in this *black box*, and what factors produce our political preferences, namely genes. The genetic makeup of the individual is claimed to be the black box of rational choice theory. Rational choice is a reasonable choice model, but only if the "black box" of preferences allows for the genetic component and the theory relaxes the requirement that people be aware of their genetic preferences. In other words, genes can serve as a framework for assessing voting (Weiss 2016).

John Alford, Carolyn Funk, and John Hibbing published an article on genopolitics in the *American Political Science Review* in 2005 titled "Are Political Orientations Genetically Transmitted?" A year after its publication, this article received extensive media coverage. Since the journal's inception in 1906, this article has made significant contributions (Charney 2008). The paper's authors are all political scientists, not geneticists, attempting to demonstrate that the division of American society into liberals and conservatives is a phenotypic expression of the two main genotypes. Alford et al. (2005) discovered that genetics influenced political attitudes more than parental socialization.

Genetics accounts for roughly half of the variation in ideology in the overall index of political conservatism, while shared environment, including parental influence, accounts for only 11%. When it comes to differences in people's proclivity to hold political opinions at all, regardless of ideological orientation, genetics explains one-third of the difference, and the environment explains the rest (Alford et al. 2005). This allows for the study of political attitudes and behavior using interdisciplinary methods such as neuroscience and genetics (Hatemi et al. 2011, 2012, Ksiazkiewicz & Friesen 2017). It is hoped that genopolitical studies will supplement the limitations of the political science approach so far. As of now, surveys have been used to assess political attitudes and behavior. Information from the genome can be seen using methods that investigate genes, where all genetic information belongs to a single cell (Carmen 2007).

Research Method

This study used qualitative research to explain existing phenomena based on a literature review. In this literature review, the researchers comprehensively summarize primary sources such as books. A total of seventeen books on biopolitics that explain the relationship between biology and genes with political attitudes and behavior were used. This research's literature can also be found in research journals. Thirty research journals investigate whether political attitudes and orientations are inherited. The researchers used newspapers, magazines, internet news, and other relevant sources such as expert explanations on YouTube about genopolitics that affect political attitudes and behavior as library resources. Six newspaper articles, including those from the New York Times, CNN, and the Washington Post, three magazine articles, two online articles, and nine YouTube videos explaining genes and politics were used. The researchers summarized, objectively evaluated, and categorized previous research based on the existing literature.

The researchers then examined developments and existing debates to determine the strengths and weaknesses of the study of genopolitics. In addition, the researchers conducted data analysis by grouping data from books, journals, newspapers, magazines, online news, and YouTube. The existing data were then reduced to select data only related to genes and political orientation. The reduced data were presented in accordance with the study and the type of gene under investigation. The next step was to draw conclusions by reading various kinds of literature on genes and politics, as well as looking at the debate between supporters of nature (behavior is influenced by genetics) and nurture (behavior is influenced by the environment and life experience), in order to obtain a holistic and objective conclusion.

Results and Discussion

The use of genetic models to better understand political preferences, attitudes, and behavior is becoming more popular. Social scientists are combining these models and discovering that genetic differences explain individual differences in political beliefs, behavior, and responses to the political environment. In May 2010, the first Genetics and Social Sciences Integration Conference was held in Boulder, Colorado, USA. During the conference, scientists reviewed related research from the previous five years, explaining the methods, findings, and limitations of behavioral genetic approaches to exploring political preferences, such as the twin design (study on siblings) and genome-wide association studies (observational studies of a set of genomic genetic variants in different individuals to see if any variant is associated with a trait).

In the social sciences, there is growing interest in the possibility that genetic factors contribute to individual differences in political and social behavior (Fowler & Schreiber 2008). Clinical, developmental, medical, psychological, and now political research all use genetic approaches. Alford et al. (2005) developed and disseminated to the political science community the existence of genetic influences on social attitudes (Eaves & Eysenck 1974, Eaves et al. 1989). Their articles in the *American Political Science Review* received widespread praise in the mainstream media as well as the academic literature. Most of them ushered in a new era of genetic research in the social sciences.

Until recently, the majority of political science scholars believed that differences in behavior and preferences were solely due to environmental influences. Biological systems are thought to play little or no role in the countless and sophisticated conceptual differences in political behavior that exist in modern society. Nonetheless, the accumulation of behavioral research across the sciences suggests that our biological container remains central to how we interpret and react to the world around us and that it may play a significant role in shaping the structure of political preferences. This is a new (novel) development in the study of political attitudes and behavior. The method in political science is based on surveys. As of now, genotyping and sequencing are methods used in the study of genopolitics.

The view that preferences are almost entirely driven by the environment has eroded over the last 30 years of research. A new understanding has emerged, owing in large part to the clear recognition of the vast complexity and individual diversity that characterizes all human behavior (Eaves & Eysenck 1974, Lumsden & Wilson 2005). It was widely accepted in the 2000s that genetic factors contributed to individual differences in political and social behavior (Hatemi et al. 2011). Behavioral scientists tend to view increasingly complex attitudes or belief systems as genetically determined (or “inherited”).

One of the most difficult tasks in science is determining the interactions between genes and behavior. The discovery of the human genome more than a decade ago dispelled ideas about genes and behavior. To better understand the genome, political scientists can define a gene as a segment of a DNA molecule that encodes one or more proteins via three main steps: transcription, translation, and protein synthesis. Figure 1 shows a visual representation of genetics for people who are not trained in biology. The synthesis of messenger ribonucleic acid is determined by deoxyribonucleic acid (DNA), a systematically arranged nucleic acid polymer that is a carrier of genetic information passed down to offspring (RNA). Because RNA is the result of the transcription of a DNA fragment, it is much shorter as a polymer than DNA. The role of RNA in the process of gene expression is to store information and act as an intermediary between DNA and proteins. Messenger RNA regulates the synthesis of polypeptides, which are the building blocks of proteins. A variety of genetic and environmental factors influence transcription. The ‘promoter’ is the genetic component of this transcription factor.

Furthermore, enhancers are short regions of DNA (50-1500 bp) that can be bound by proteins (activators) to increase the likelihood of certain genes being transcribed. The promoter is the first to become active and is physically located before the operator’s area. These carrier regions are regulated by regulatory proteins, which can start or stop transcription via a series of chemical signals. Although these different DNA sequences are not usually included in the public understanding of what constitutes a gene, they are inherited along with the rest of the DNA. Not only are genes inheritable, but so appear to be the rules that govern them, such as transcription. The explanation for Gene Transcription, Translation, and Protein Synthesis is shown in Figure 1.

Figure 2 depicts illustrates the transition from transcription to translation, which is a long chain of genes to behavior. The first step in gene expression is transcription. While translation occurs, the genetic message is translated and polypeptides, which are linear chains or chains of amino acids linked together, are formed. Amino acids are the fundamental components of protein. The biological machinery that performs translation is made up of a large complex of numerous proteins. Translation takes place outside the nucleus in the surrounding cytoplasm, as opposed to transcription, which takes place within the cell nucleus. Thus, the cell environment and cell membrane have an impact on translation. Protein synthesis, on the other hand, is the process of forming a polypeptide chain from the combination of a single amino acid code in the cell.

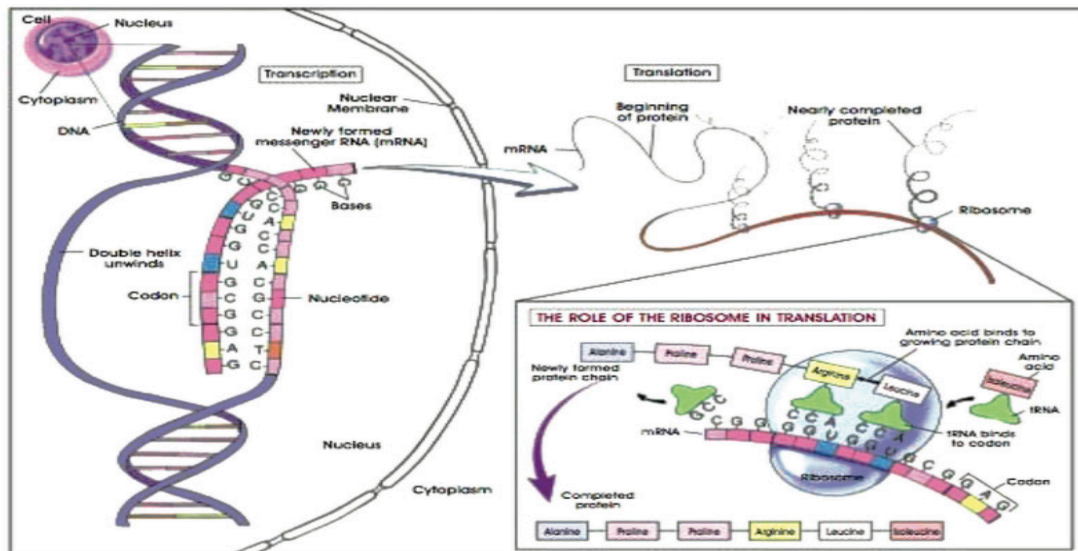


Figure 1.
Gene transcription, translation, and protein synthesis
Source: Hatemi et al. (2012)

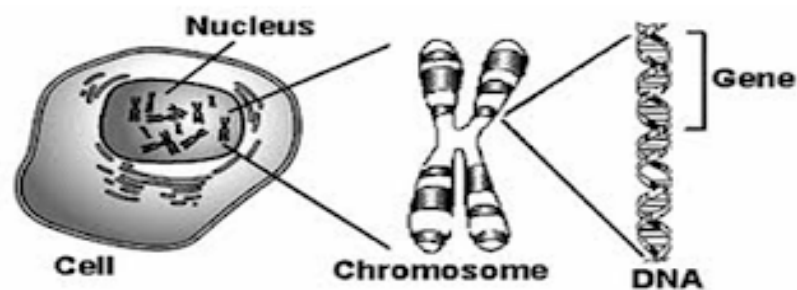


Figure 2.
Chromosomes, DNA, and genes
Source: Samin (2016)

Figure 3 depicts the arrangement of DNA and Gene Cells. The cell has a nucleus made up of chromosomes. Meanwhile, chromosomes are made up of a series of DNA sequences. The DNA genome is made up of genes. A gene contains a single unit of information about an observable trait.

The majority of genetic and political studies to date have relied on heritability models or the extent to which genetic similarity contributes to observed individual differences in behavior. Twins raised separately are referred to as genetically informative samples in the classic twin design (Alford & Hibbing 2008, Medland & Hatemi 2009). The transition from transcription to translation, which is a long chain of genes to behavior, is depicted in Figure 2. The first step in gene expression is transcription. While translation will translate the genetic message and build polypeptides, which are linear chains or chains of amino acids linked together, it will be possible to statistically distinguish which part of the differences between individuals can be attributed to genetic similarity or environmental influences.

Heritability is an estimate of the amount of variation in a given trait (phenotype) caused by genes in a given population at a given time (genotype). A heritability estimate of 0.50, for example, does not imply that any individual's genes account for 50% of the trait. Instead, it means that genotype differences account for 50% of the variation in a given trait across a population at any given time. As a result, heritability is a population-specific estimate; a heritability estimate within a given population does not indicate the cause of phenotypic variation between populations.

Genetics is linked to a neurotransmitter system, which is linked to cognitive and emotional processing tendencies, which are linked to values and personality traits, which are linked to orientation, and finally to certain political preferences (Smith et al. 2011). The links of this causal chain interact at different levels at each intermediate step between the gene and the final behavior, with the gene remaining the only ‘first mover,’ or origin of the causal chain.

The following is a series of models starting from Genes, Neurotransmitter, Cognition/Emotion, Personality, Principles, and Preferences on specific political issues.

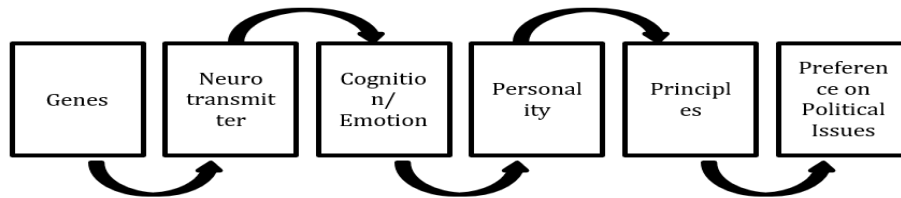


Figure 3.
Gene and behavioral model sequences
Source: Smith et al. (2011)

Sequence models such as Figure 3 above show that genes are understood as the origin and most influential factors of phenotypic phenomena, which are physical characteristics formed by a combination of genotype and environmental influences. According to political scientists James Fowler & Darren Schreiber (2008), genetics contributed more to explaining political beliefs and social behavior than political science during its development. Plutzer (2002) supports this viewpoint by studying voter turnout from 32 different social factors, which can only be explained by 31% by differences in political behavior. Plutzer estimated that genetic differences could explain the remaining 69% of the differences. It is a factor that is overlooked in the study of political science. According to a new study based on twin research, election participation is largely heritable, ranging from 53% to 60%.

According to the authors, certain alleles of the DRD4 gene, which play a role in the reception of the neurotransmitter dopamine, are responsible for the ‘openness’ personality trait but are only phenotypically expressed under the influence of certain environmental factors, specifically a large number of friends (Schmidt et al. 2000). An allele is a variant of a gene that affects the expression of a trait (phenotype). Therefore, the tendency to be open-minded is codified in the genes, but the expression of this disposition depends on the environment – the exact number of friends a person has. If a person has an open-mindedness gene, as well as many friends, they become open-minded. If they happen to have genes but few friends, they remain reclusive.

The results of research conducted by Hatemi & McDermott (2012), show the influence of genes on political attitudes and behavior. Figure 4 depicts the findings of 26 domains of research on the political nature of twin families and kinship as influenced by genetics and the environment from 1974 to 2012. Political knowledge/sophistication, ideology (liberal-conservative), right-wing authoritarianism, social beliefs, authoritarian attitudes, voter participation, and attendance are six of the 26 traits influenced by genetics. This study included twin pairs from the United States and Australia.

Politics is more than just attitudes and voting; it is also about political involvement, the ability to effect political change (efficacy), the role of expertise and information use in political sophistication, and participation. Although the influence of genetics on political attitudes is a new study, genetic research on basic elements of political participation such as trust, cooperation, and pro-sociality has a long history. According to Hatemi & McDermott (2012), genetics accounts for approximately 0.53 of the variances in the number of voters. Dopamine gene variants (DRD2 and DRD4), as well as the serotonin transporter (5HTT), have been found to influence voter turnout and political participation in general, according to molecular genetic studies.

Dopamine is produced in a variety of brain regions, including the substantia nigra (SN) and the ventral tegmental area (VTA). This is a neurohormone produced by the hypothalamus that aids in the transmission of stimuli throughout the body. This hormone influences a variety of human activities, including the ability to remember to move one's limbs. Dopamine is also known as the hormone of emotion control. When released in sufficient quantities, this hormone improves mood. As a result, people will become increasingly happy. A lack of the hormone dopamine will affect your mood and may increase your risk of depression. Dopamine plays an important role in our cognitive function, influencing mood, movement, and motivation. Dopamine receptor genetic variants influence addiction, neurological diseases, depression, psychosis, and aggression. Dopamine is produced in the substantia nigra and the ventral tegmental area (VTA) of the brain.

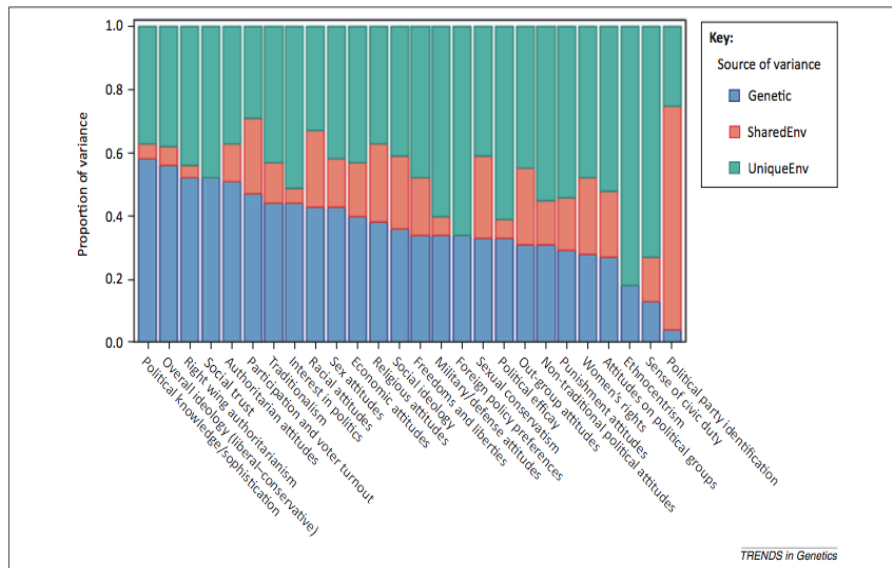


Figure 4.
Summary of relative genetic and environmental influences on political traits
Source: Hatemi & McDermott (2012)

Meanwhile, serotonin is a hormone that transports messages between brain cells. 5HTT is a serotonin transporter that transports serotonin to target nerves. Serotonin can also be found in the intestines and blood platelets, in addition to the brain. In humans, serotonin is the most important neurotransmitter. Serotonin is involved in a variety of major activities and functions that are important for emotional well-being and stability. Figure 5 shows the dopamine and serotonin pathways.

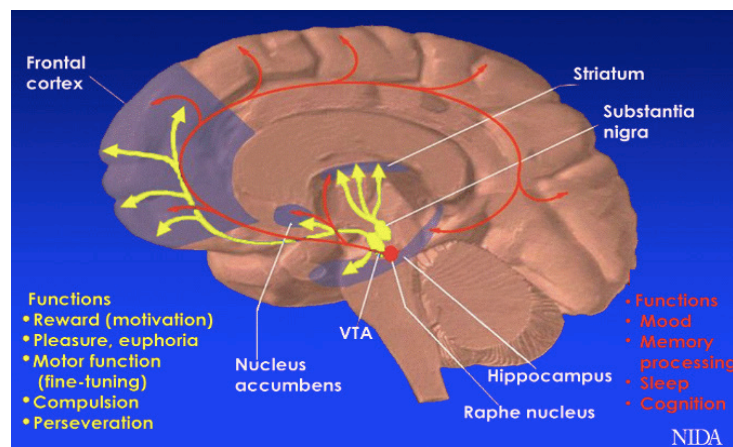


Figure 5.
Dopamine and serotonin pathways
Source: Health Portation (2012)

According to Fowler & Dawes (2008) in their journal entitled *Two Genes Predict Voter Turnout*, in addition to the 5HTT gene, the monoamine oxidase A (MAOA) gene affects behavior. These two genes are required for the brain's serotonin metabolism. Serotonin is a chemical that is released when a neuron 'fires' and is detected by receptors on the receiving neuron, passing an electrical potential across a gap known as a nerve synapse (the firing nerve is on the side of the 'presynaptic' cleft). Sequential discharges from one neuron to another across these synapses carry signals throughout the body. Stress causes an increase in neuronal activity, which stimulates the release of excess serotonin into the gaps between synapses. If serotonin is allowed to remain outside the cell, it can oxidize into a toxin that kills both presynaptic and postsynaptic neurons.

Presynaptic neurons carry nerve impulses toward the synapse, whereas postsynaptic neurons carry impulses away from the synapse. The synapse is the site of functional contact between neurons, as well as between neurons and muscle cells, and gland cells. An electrical signal (impulse) from the presynaptic cell is converted into a chemical signal that acts on the postsynaptic cell by synaptic function. The body's homeostatic response to excess serotonin is to reabsorb it into the presynaptic neuron via a cell wall transporter called 5HTT. Once serotonin reuptake is complete and back into the neurons, an enzyme called monoamine oxidase A (MAOA) degrades serotonin so that its components can be reabsorbed in cells. Genes are responsible for the transcription of 5HTT and MAOA. The 5HTT gene produces 5HTT and the MAOA gene produces MAOA. This process can be seen in Figure 6.

The relationship between MAOA and 5HTT and voting, on the other hand, may not be direct. The environment, on the other hand, can moderate the relationship between genes and turnout (Fowler et al. 2008). In the hypothesis developed by Fowler et al. (2008), MAOA and 5HTT were significantly associated with voter turnout when interacting with religious group activities. Individuals who are active members of their religious organization and have a "high" MAOA allele or a "long" 5HTT allele are more likely to vote than others.

The link between genes and political attitudes was also described by Smith et al. (2011) in their journal article entitled *Linking Genetics and Political Attitudes: Reconceptualizing Political Ideology*. They traced the path that genetics could eventually take to address issues of political attitudes and ideologies. Attitudes toward current issues can be influenced by genetics.

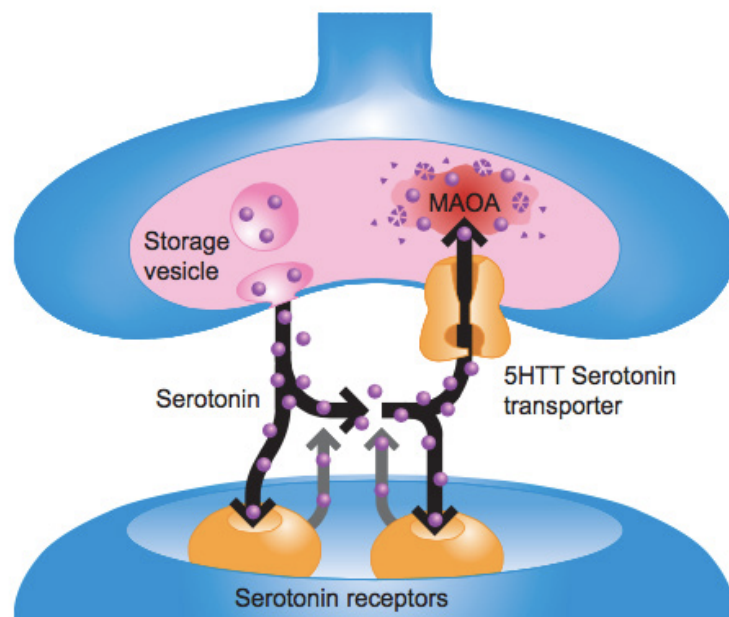


Figure 6.
Simple representation of the release, reception, and recycling of serotonin in neurons
Source: James & Dawes (2008)

Table 1.
Classification of gene types that affect political attitudes and behavior

Authors	Year	Title	Study	Findings and Gene Types
James H. Fowler and Darren Schreiber	2008	Biology, Politics, and the Emerging Science of Human Nature	Genes and Politics,	(1) Twin Studies, Monoamine oxidase A (MAOA), Serotonin Transporter (5HTT), Dopamine Receptor (DRD2, (2) Media prefrontal cortex & Medial Parietal cortex)
James H. Fowler, Laura A. Baker, and Christopher T. Dawes	2008	Genetic Variation in Political Participation	Genetic Variation	monozygotic (MZ) twins, Dizygotic (DZ) twins
James H. Fowler and Christopher T. Dawes	2008	Two Genes Predict Voter Turnout	Two Genes	MAOA dan 5HTT
Peter K Hatemi, Christopher T Dawes, Amanda Frost-Keller, Jaime E Settle, and Brad Verhulst	2011	Integrating Social Science and Genetics: News from the Political Front	Genetic differences	MZ, DZ
Peter K Hatemi, Emda Byrne, and Rose McDermott,	2012	Introduction: What is a 'gene' and why does it matter for political science?	DNA, Genes, Gene Expression	Twin and Kinship
Kevin B. Smith, Douglas R. Oxley, Matthew V. Hibbing, John R. Alford, and John R. Hibbing	2011	Linking Genetics and Political Attitudes: Reconceptualizing Political Ideology	Genotype and phenotype	Genetic affect attitude toward specific Political Issues
Hatemi, P. K. and McDermott, R.	2012	The genetics of politics: Discovery, challenges, and progress	Classical twin design	Monozygotic (MZ), Dizygotic (DZ)
Peter K. Hatemi, John R. Alford, John R. Hibbing, Nicholas G. Martin, and Lindon J. Eaves	2009	Is There a "Party" in Your Genes?	Twins Study and lingkungan, SEM	Monozygotic (MZ), Dizygotic (DZ)

Source: Processed from various journal sources by the authors

The classification of gene types that influence political attitudes and behavior is shown in Table 1. As a form of interaction between genes and the environment, there are several types of genes associated with voter turnout in elections, such as Monoamine oxidase A (MAOA) and serotonin transporter (5HTT), which are associated with the level of attendance. Meanwhile, Dopamine Receptor 2 (DRD2) is linked to political party membership. The classification in the Table 1 also explains how, in the classic study of twins where twins come from one egg or Monozygotic (MZ), 100% of the genes tend to be identical, whereas if the twins come from two eggs or Dizygotic (DZ), only 50% of the genes tend to be identical. Monozygotic (MZ) twins tend to be compact in terms of voting behavior. They will vote or they will not vote (abstain). This is consistent with the messages conveyed by Fowler et al. (2008), Hatemi et al. (2009), and Shultziner (2013).

The study of political attitudes and behavior related to genetics was not initially considered a variable that affects political attitudes and behavior, unlike parental socialization (Campbell et al. 1960, Jennings & Niemi 1968, Jennings et al. 2009), economic conditions (Fiorina 1981), socioeconomic status (Leighley & Nagler 1992), social context (Huckfeldt & Sprague 1995), and media influence (Iyengar & Kinder 1987).

According to the above-mentioned proponent, events and situations are regarded as the sole sources of political attitudes. Humans are born with no concept of politics or a political vacuum. Pinker (2005), on the other hand, refuted the assumption of political emptiness as well as the notion that phobias, choices, and behavior are innate. This can be traced back to the growing body of evidence that political attitudes and behaviors are partially inherited (Alford et al. 2005, Hatemi et al. 2010), as well as other studies reporting correlations between specific genes and political phenotypes (Fowler & Dawes 2008, Settle et al. 2010).

The complexities of gene influence on political attitudes and behavior allow for a debate about the influence of genes. According to Charney (2008), identifying genetic contributions to certain behaviors will not help much in explaining or predicting behavior because a trait's heritability can change with changes in environmental traits. A striking example is a person's height. Genetic factors are responsible for 90% of the variation in height. However, due to changes in diet, living conditions, and healthcare, the average Japanese height has increased since the war. While Americans were once a few inches taller than Europeans, they have now been surpassed in height.

Not only is Alford et al.'s (2005) concept of genetic determination problematic and simplistic, but their definitions of conservatism and liberalism have serious limitations. While sociologists struggle to understand the meanings of left and right in politics, biologists, or at least political scientists turned socio-biologists, appear to understand these terms by basing them on the concept of 'openness.' Leaving aside the fact that a person can be open to a wide range of things and behaviors, from same-sex marriage and abortion to torture and the death penalty, psychological traits such as 'openness' and 'quiet' emerge without further qualification.

Finally, the study conducted by Alford et al. (2005) has all of the flaws of traditional twin studies, most notably the inability to distinguish between genetic and environmental influences on human behavior in a way that would institutionalize a strict distinction between nature and nurture. However, they show findings from other experts such as Jennings & Niemi (1968) and Tedin (1974) that, if parents have the same political identification, their offspring are more likely to have the same political identification. Political identification is influenced more by parents' genetic inheritance than by political socialization literature, including family socialization carried out by the parents themselves.

Conclusion

As of now, the study of political attitudes and behavior in political science has sought to understand why and how voters make their decisions. So far, three approaches have been used to explain political attitudes and behavior, the first of which is a sociological approach known as the Columbia school. The second approach is the psychological approach known as the Michigan school. The third is the rational choice approach, and the method is a survey. Following the reform and direct election in Indonesia, the study of voting behavior has grown. One of them is distinguished by the number of political consulting firms.

However, as time passes in the era of industrial democracy, survey institutions face issues such as accuracy and precision because they do not strictly adhere to the methodology. The precision of survey results in several regional head elections exceeds the margin of error. Election results are frequently imprecise, and the results and order of electability of political parties differ from the results of the KPU RI recapitulation. When a survey agency alters the survey results at the tenant's request, the image of scientific voting behavior suffers. The results were announced, and the hope was that they would sway public opinion. As a result, the emergence of interdisciplinary studies represents a novel insight.

The incorporation of biological sciences such as neuropolitics and genopolitics into political science is expected to add new knowledge about the origins of one's political attitudes and behavior. The method is no longer a survey, but rather the use of laboratory equipment to test genes.

Genopolitics is the study of genetics as something inherited. Genetics can influence a person's political attitudes and behavior, as well as their political ideology. Individual preferences, on which all rational decisions are based, can be explained by genes. Genes can provide a framework for voting evaluation. Political knowledge/sophistication, political ideology (liberal-conservative), right-wing authoritarianism, social beliefs, authoritarian attitudes, voter participation, and participation are six of the 26 traits influenced by genetics. When it comes to political conservatism, genes account for roughly half of the ideological variance, while shared environment, including parental influence, accounts for only 11%. Meanwhile, according to Bell, Schermer, and Vernon, genetics, rather than society, education, or the environment, influence political behavior. Monozygotic twins raised together exhibit greater political congruence than dizygotic twins raised together. This is because genetic similarity has a greater impact.

Political scientists James Fowler and Darren Schreiber argue that genetic development contributes more to explaining political beliefs and social behavior than political science. Plutzer's research on voter turnout from 32 different social factors found that only 31% of the variance can be explained by differences in political behavior. Plutzer estimated that genetic differences could explain the remaining 69% of the differences. It is an aspect that is not considered in the study of political science.

According to a new study based on twin research, election participation is largely heritable, ranging from 53% to 60%. As a result, the study of political behavior in political science requires an interdisciplinary study to supplement previous studies of political attitudes and behavior. By incorporating biology (genes), it is determined that political attitudes and behavior are inherited from parents. Environmental factors influence political attitudes and behavior less than genetic factors (nature) (nurture). This study, which is an initial study of genopolitics in Indonesia, is expected to contribute to the study of attitudes and political science through an interdisciplinary approach. To date, the paradigm of political science in particular, and social science in general, has been more concerned with environmental factors as the primary determinants of political attitudes and behavior. This can undoubtedly enrich the study of political science, both theoretically and methodologically.

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