
Some Remarks on the Genetic Explanations of Political Participation

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ABSTRACT

Political participation is a key political phenomenon. Each year, we see the publication of many analyses describing and explaining the behaviours through which citizens nowadays seek to influence politics. Typically, researchers focus on the environmental conditions for the behaviours in question, ignoring the effects of genetic factors. The resulting knowledge gap is filled by genopolitical research. This line of research is highly controversial and deals primarily with candidate gene studies. The aim of this article is to present key theoretical and methodological issues concerning genetic explanations of political participation. The paper analyses selected studies suggesting a genetic base for political behaviours, identifies methodological difficulties faced by researchers bringing together knowledge from the fields of molecular genetics, behavioural genetics and political science, and discusses non-scientific arguments against genetic explanations of political participation. Despite numerous doubts, of both scientific and non-scientific nature, expanding our knowledge base regarding political behaviours requires research combining different theoretical and methodological perspectives. For effective interdisciplinary cooperation to become a reality, it is necessary to aim at bridging the tra-

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ditional divisions and animosities between representatives of different scientific disciplines and to develop institutional mechanisms for the more effective formation of interdisciplinary research teams.

Keywords: *political participation, genetic explanations, genopolitics, genes, social sciences.*

INTRODUCTION

The attempts to explain the participation of citizens in politics date back to the beginning of systematic reflection on politics and other political phenomena, supported by a solid research methodology.¹ Kaase (1992: 158) rightly pointed out that the participation of individuals in politics is not determined by itself in a ‘socio-political vacuum’ but is dictated by various factors. Therefore, the question of why some citizens seek to influence politics, while others are passive, concerns researchers from various scientific disciplines, particularly political science, sociology, economics, law and psychology. In the literature, we find several models postulating alternative explanations of political participation. The best-known and most frequently used models include the rational choice model, the civic voluntarism model, the mobilisation model and the social-psychological model.²

The foundations of the rational choice theory were laid by Arrow (1951), Downs (1957), Riker (1962) and Olson (1965). According to the basic assumption of the rational choice theory, rational individuals strive to maximise their utility functions. Before making a decision, they calculate the profits and losses that may result from certain activities. The reference system takes the form of individual preferences, stable in time. The essence of the economic approach to political behaviours is briefly reflected in the axioms formulated by Downs (1957: 6):

A rational man is one who behaves as follows: (1) he can always make a decision when confronted with a range of alternatives; (2) he ranks all the alternatives facing him in order of his preference in such a way that each is either preferred to, indifferent to, or inferior to each other; (3) his preference ranking is transitive; (4) he always chooses from among the possible alternatives that which ranks highest in his preference ordering; and (5) he always makes the same decision each time he is confronted with the same alternatives.

In the model of civic voluntarism by Verba, Schlozman and Brady (1995), three factors were particularly emphasised: resources (time, money, and civic skills), psychological engagement (individual sense

of political efficacy) and the activity of recruitment networks composed of co-workers, fellow believers, relatives, friends and acquaintances. As the authors noticed:

We focus on three factors to account for political activity. We suggested earlier that one helpful way to understand the three factors is to invert the usual question and ask instead why people do not become political activists. Three answers come to mind: because they can't; because they don't want to; or because nobody asked. In other words, people may be inactive because they lack resources, because they lack psychological engagement with politics, or because they are outside of the recruitment networks that bring people into politics (Verba, Scholzman and Brady 1995: 269).

The importance of calculating the costs and benefits of political engagement and recruitment networks is evident in the mobilisation model. Rosenstone and Hansen (1993: 10–36) presented two general hypotheses, according to which we should look for the reasons behind participation in politics in the individual characteristics of citizens and in the mobilisation activities of political leaders. Therefore, individuals participate in politics: (1) when the anticipated benefits are worth the costs of participation; (2) when political leaders convince them to do so. Political mobilisation means those actions by which candidates, political parties, activists and social groups encourage other individuals to participate. It can take two forms: direct and/or indirect. The former, as the name suggests, is based on direct contact between political leaders and citizens, and the latter on indirect contact through family, friends, neighbours or acquaintances.

The relevance of social-psychological factors is emphasised, among others, in the expectations-values-norms model by Finkel, Muller and Opp (1989). Political participation is explained by two categories: the expected benefits of taking a specific action in politics and the effect of social norms. From this perspective, individuals seek to maximise benefits (both private and collective), while being entangled in complex networks of social norms and beliefs that provide various incentives for political participation.

The described models are very strongly rooted in the paradigm of environmental influences, which dominates social sciences. Therefore, they ignore the impact of genetic factors. Concepts formulated within the field of so-called 'genopolitics' are an attempt to fill the existing knowledge gap. What is genopolitics? What are the theoretical and

methodological assumptions underlying the studies suggesting genetic foundations of political participation patterns? What kinds of criticism are genetic explanations of political participation subject to? We address these questions in the following sections of the article.

THE ESSENCE OF GENOPOLITICS

Due to theoretical and methodological similarities, genopolitics can be treated as a branch of behavioural genetics. Genopolitical studies are concerned with the genetic basis of political behaviours (Fowler and Dawes 2013: 362). The twin method is commonly applied to estimate the impact of genetic and environmental factors on political behaviours. This consists in a comparison of the differences in behaviour in pairs of monozygotic twins (sharing the same genotype; hereinafter: MZ) with the differences in the same behaviour in pairs of dizygotic twins (with different genotypes; hereinafter: DZ). In one variant of the method based on studying twins raised together, it is assumed that: (1) behavioural differences between MZ twins are due to environmental impacts, while behavioural differences between DZ twins may be due to genetic as well as environmental impacts; (2) if there is a greater similarity in behaviour between MZ twins compared to DZ twins, the lower degree of similarity between DZ twins is due to the differences in their genotypes; (3) the selection of parents in both groups of twins is random; (4) the environment affects the tested characteristic in both groups of twins to the same degree. Another variant of this method is the study of twins raised separately. This study compares twins who were raised separately for many years with twins who grew up together. High phenotypic similarity between MZ twins raised separately indicates the genetic foundation of the analysed trait (Medland and Hatemi 2009: 191–214; Książkiewicz and Friesen 2017: 86–92).

Some researchers go one step further, seeking to demonstrate the relationship between the analysed traits and the polymorphisms of specific genes. Molecular methods, such as genetic linkage analysis and genetic association studies, are typically used to seek and identify the so-called candidate genes. Linkage analysis provides information on whether a given DNA marker and trait is more frequent in the family than could be expected under Mendel's second law. Genetic association studies then provide information on whether a given allele occurs more often in a group displaying the trait we are interested in (*e.g.*, among protesters) than in groups where this trait is not manifested (*e.g.*, among non-protesters) (Oniszczenko and Dragan 2008: 18–24).

The turning point for genopolitics was 2005, when the *American Political Science Review* published an article by Alford, Funk and Hibbing entitled ‘Are Political Orientations Genetically Transmitted?’ The authors suggested the heritability of liberal and conservative attitudes. Since then, the development of cross-disciplinary studies combining political science, genetics, molecular biology, psychology and statistics has been accelerated. Currently, apart from political attitudes (Oniszczenko and Jakubowska 2005; Bell, Schermer and Vernon 2009; Hatemi *et al.* 2009; Hatemi *et al.* 2011; Smith *et al.* 2011; Benjamin *et al.* 2012; Ksiazkiewicz and Krueger 2017; Kleppesø *et al.* 2019; Ksiazkiewicz and Friesen 2019), various forms of political participation are subject to genopolitical research, for example, voting, contacts with politicians, political protests, political violence, *etc.* (Fowler, Baker and Dawes 2008; Fowler and Dawes 2008; Dawes and Fowler 2009; Klemmensen *et al.* 2012; McDermott *et al.* 2013; Deppe *et al.* 2013; Dawes *et al.* 2014).

GENES AND POLITICAL PARTICIPATION

We are the most complex structures in the known universe. In terms of the ability to survive and reproduce in different environmental conditions, cognitive capacity and complexity of social systems, we definitely stand out from other species. Over the last 12,000 years, humankind has experienced many significant changes. It has moved from hunter-gatherer communities to a technologically advanced civilisation that generates nuclear energy, explores the Solar System, manipulates singular genes and performs foetal surgery.³ Thanks to discoveries in medicine, the development of bio- and nanotechnologies, as well as the constantly expanding use of information and communication technologies (ICT) or artificial intelligence (AI), our living conditions have been significantly improved (Grinin and Grinin 2015).

For the first time in history, more people die today from eating too much than from eating too little; more people die from old age than from infectious diseases; and more people commit suicide than are killed by soldiers, terrorists and criminals combined. In the early twenty-first century, the average human is far more likely to die from bingeing at McDonald’s than from drought, Ebola or an al-Qaeda attack (Harari 2017: 2).

One of the prerequisites for the incredible evolutionary success of our species was a large and complex brain. Over the last three million

years, the brains of the *Hominidae* have increased their volume by over 250 per cent. A significant part of this increase has taken place over the last 500,000 years and mainly concerned the neocortex (Flinn, Geary, and Ward 2005: 11). In order to visualise better the rate of these changes, we should note that the average capacity of the neurocranium in *Australopithecus afarensis* was 435 cm³, in *Homo erectus* in East Africa 980 cm³ and in *Homo sapiens sapiens* 1506 cm³ (Holloway 2015: 1970). The capabilities of the human brain are also associated with the large number of neurons and connections between them. The number of nerve cells in the adult brain is estimated at 86,060,000,000 ± 8,120,000,000 (Herculano-Houzel *et al.* 2015: 154).

A significant acceleration in the evolution of the human brain led to the initiation of the cultural evolution some 100,000 years ago. This process was primarily phenotypic, based on genetic potential accumulated over millions of years of evolution (Wilson 1998: 290–291). This suggests that genes (replicators), although to a limited extent, influence the behaviour of the organisms spreading them. Can replicators though directly influence our behaviour? Dawkins (2006: 52–53) provides an answer in a colourful metaphor:

The genes, too, control the behaviour of their survival machines, not directly with their fingers on puppet strings, but indirectly like the computer programmer. All they can do is to set it up beforehand; then the survival machine is on its own, and the genes can only sit passively inside. Why are they so passive? Why don't they grab the reins and take charge from moment to moment? The answer is that they cannot because of time-lag problems.

Genes determine the process of protein production, and proteins affect the structure and functioning of cells.⁴ Various genes are subject to transcription and translation into protein products in cells of multiple types. Cells interact with one another, deciding for example eye colour, length of limbs, aggressiveness of behaviours and – in some species – cultural abilities. These phenotypic effects may, of course, be modified. One change (mutation) in a DNA record usually implies subsequent changes at each stage of the process, ultimately contributing to an increase or decrease in the probability of replication (Stone, Lurquin, and Cavalli-Sforza 2007: 64–70).

Suggestions regarding the relationship between genetic factors and political participation have been present in the literature for several decades. For example, Merelman (1971) criticised the disrespectful

attitude of social scientists to genetic explanations of political participation, while pointing out that both the environment and genes are probably significant. Such hypotheses, however, remained untested until the study by Fowler, Baker and Dawes (2008). They cross-checked the data from the Los Angeles County voter registration records with the Southern California Twin Registry. The sample consisted of 878 same-sex twin pairs (535 MZ and 343 DZ). The results showed that 53 per cent of the variance in voter turnout can be explained by genetic factors, 35 per cent are probably affected by the shared environment, while the remaining part of the variance, that is 12 per cent, is related to the unshared environment. Fowler, Baker and Dawes replicated their study using nationwide data from the National Longitudinal Study of Adolescent Health (Add Health; Bearman, Jones and Udry 1997). The results of the replication confirmed the original findings and showed that other behaviours in politics may also be heritable.

Fowler, Baker and Dawes focused exclusively on estimating the extent to which genetic and environmental factors affect political participation, without identifying specific genes. In the case of selected phenotypic traits, researchers are able to indicate specific gene variants responsible for these traits. Some diseases (*e.g.*, Huntington's disease and phenylketonuria) belong to this category of traits. In studies of complex social behaviours of *H. sapiens sapiens*, however, such as political participation, molecular identification of candidate genes becomes much more problematic. Nevertheless, attempts are being made to link individual alleles to different forms of political participation. Genes analysed in this type of studies include those with relatively well-known effects on the processes taking place in the body. These are the genes that determine brain development, hormone production, the synthesis and uptake of neurotransmitters, as well as transcription factors. One of the analyses most frequently cited in the literature, which linked single alleles to political behaviours, was conducted by Fowler and Dawes (2008). Among the potential genetic components of electoral participation, they indicated the serotonin transporter (5-HTT) gene and the monoamine oxidase A gene (MAOA).

Serotonin is an important neurotransmitter. Studies show correlations between its concentration in the central nervous system and pro-social attitudes and behaviours, as well as anxiety-depressive disorders and aggressive behaviours (*e.g.*, Owens and Nemeroff 1994; Stanley *et al.* 2000; Krakowski 2003). The 5-HTT transporter and the MAOA enzyme play an important role in the regulation of serotonin

metabolism. Excess serotonin located in the synaptic gap is subject to reuptake to a presynaptic neuron by means of the 5-HTT transporter. The MAOA enzyme degrades serotonin, so that its components can be absorbed by the cell (Nordquist and Orelund 2010: 2). Fowler and Dawes analysed the data from Wave 3 of Add Health (Bearman, Jones and Udry 1997). The sample included twin pairs, half siblings and unrelated siblings raised together. Researchers hypothesised that individuals with more transcriptionally efficient alleles of the 5-HTT and MAOA genes vote more often. The hypothesis was based on the assumption that since these genes are related to pro-social behaviours, they will also affect electoral participation. The results showed that individuals with a 'high' version of MAOA and a 'long' version of 5-HTT are more likely to vote. In the case of the second gene, the observed correlation was found with individuals who regularly attend religious services.

METHODOLOGICAL DIFFICULTIES

Genetic explanations of political participation raise several important methodological issues. This remark applies mainly to identification tests for candidate genes. Replication attempts of the Fowler and Dawes analysis (2008) were inconclusive. Deppe *et al.* (2013), and Fowler and Dawes (2013) only confirmed the links between the polymorphism of the 5-HTT gene and electoral participation. The postulated dependence in the case of the MAOA gene was probably a false positive. Charney and English (2012; 2013) pointed out other possible methodological problems. One of them is the underestimation of ethnic diversity within the studied population and the resulting differences in political engagement; the other is excessive reductionism, manifested by narrowing the research down to only two genes. Given a behaviour as complex as voting, it would be more appropriate to talk about many interacting genes that affect expression for one another and interaction with the environment, rather than about individual alleles:

The cogency of the search for single main-effect genes in complex human behaviour must be reconsidered. Proteins encoded by at least 266 genes are involved in variation in aggression in fruit flies, yet at the same time, the heritability of aggression is less than ~ 0.1 because of the high level of environmental variance (even though the researchers assumed the environments were identical). If such is the level of genetic complexity and the importance of environmental interaction implicated in behavioural variation in fruit flies, why should

we assume that, when it comes to human behaviour, things are any simpler? We would expect all of the factors influencing political behaviour to be several orders of magnitude more complex, at least on the order of the difference between the brain of the fruit fly, with ~100,000 neurons, and the human brain, with ~100 billion (Charney and English 2012: 30).

Genetic explanations of political participation are an example of the use of mechanistic reductionism in social sciences. The described studies imply an epistemic gap between genes and political behaviours. Critics of genopolitics, referring to arguments of epistemological character, declare that physical and non-physical facts are cognitively distinct, and that it is possible for them to occur independently from one another, which in consequence leads to the thesis of the independent existence of the physical and the non-physical. In other words, there is no fundamental level of explanation. Therefore, even if we had full knowledge of genetic processes, we would still not have been able to derive the knowledge of political participation from it, just as we would not be able to gain knowledge of the sense of pathos and beauty experienced when listening to Tchaikovsky's First Piano Concerto from the analysis of the flow of signals between neurons (*e.g.*, Charney 2008; Weiss 2017).

The focus on a few genes, while ignoring many other factors, typical for candidate gene studies does not seem to be methodologically flawed. Finally, in every scientific model, entire sets of counterfactual assumptions are adopted. These sets are not given once and for all. As research progresses, models can be concretised by gradually incorporating the previously omitted actual parameters. There is nothing to prevent the development of research from taking into account subsequent genes, as well as environmental factors in simple baseline models. There is no doubt that it would be difficult to imagine science without a procedure of dividing phenomena into primary elements in order to carry out more detailed analyses, even if today we are unable to solve the problem of the epistemic gap between genes and politics. It should be kept in mind that reductionism is a valid research strategy 'employed to find points of entry into otherwise impenetrably complex systems. Complexity is what interests scientists in the end, not simplicity. Reductionism is the way to understand it. The love of complexity without reductionism makes art; the love of complexity with reductionism makes science' (Wilson 1999: 59).

The disputability of the results obtained by Fowler and Dawes (2008) does not call into question the legitimacy of exploring the genetic basis of political participation *in genere*, but only shows what methodological difficulties researchers may encounter in identifying candidate genes, and how important the replicability of results is for well-functioning science. In particular, the requirement of replicability becomes a victim of the destructive tendencies found at universities at the beginning of the twenty-first century. This primarily concerns institutional pressures on researchers exerted in order to increase a particular definition of effectiveness in scientific activity. The pressure takes different forms. One of them is the absolutisation of such superficial criteria for the evaluation of scientific work as the number of publications, impact factor or the number of statistically significant results. Trends of this type may affect the methodological quality and cognitive values of the conducted studies (*e.g.*, Fanelli 2009; Biagioli 2016; Baker 2016).

NON-SCIENTIFIC CRITICISM

Genetic explanations of political participation, like all theories implying a mechanistic vision of life, are also exposed to criticism outside the scope of science. Its causes should be found in the undermining of the key assumption of social sciences by life sciences and, at the same time, of one of the foundations of liberal democracies – the image of humans as a fundamentally free being, conscious of their own choices and subjectivity.

Ideologically motivated notions about the uniqueness and individuality of humans had a significant impact on the development of social sciences in the twentieth century.⁵

In the opinion of critics, consciousness, which is one of the pillars of human cultural autonomy, and the intentionality of human activity are the traits that fundamentally distinguish human beings in the animate world. As a result, the sphere of intellectual life in humans clearly escapes analysis, Darwinian descriptions and socio-biological interpretations. This conviction has created a mental barrier against using the achievements of natural sciences in explaining social phenomena since the Darwinian theory was announced (Nocoń 2018: 350).

Concepts of this kind, at the methodological level, have found their legitimacy in anti-naturalism proclaiming the peculiarity of the subject

of social science studies. In the opinion of anti-naturalists, the differences between humans, gifted with consciousness and will, and mechanistic and causal nature result in significant methodological consequences. As a result, the methods appropriate to the research of the human world are interpretation and understanding, while nature is subject to explanation and predictions (Grobler 2006: 222–224). This is why research into such complex social phenomena as political participation should not be carried out using methods appropriate to life sciences.

Objections to the use of the knowledge base of life sciences in the study of social phenomena are not only due to the fear of objectifying humans and reducing them to the role of an impersonal causal force, functioning on the basis of a set of strictly defined algorithms. The basis for these objections may be much more trivial. Very often, misunderstandings between social sciences and life sciences result from insufficient understanding by political scientists or sociologists of the research methods and techniques used by geneticists or neurobiologists. The problem lies in the lack of implementation of courses regarding the biological constitution of humans in social studies university curricula (Hatemi and McDermott 2012: 528). As a result, some representatives of social sciences have a misleading idea about the research conducted by life scientists. Insufficient knowledge combined with the relatively strong exposure of social scientists to extreme ideologies generates artificial divisions and mutual animosities that hinder, and in many cases prevent, the exchange of experiences and the creation of interdisciplinary research teams.

The notion of man as a free deciding agent is, furthermore, one of the dogmas of liberalism. As Harari noted (2017: 283):

Liberals value individual liberty so much because they believe that humans have free will. According to liberalism, the decisions of voters and customers are neither deterministic nor random. People are of course influenced by external forces and chance events, but at the end of the day each of us can wave the magic wand of freedom and decide things for ourselves. This is the reason liberalism gives so much importance to voters and customers, and instructs us to follow our heart and do what feels good. It is our free will that imbues the universe with meaning, and since no outsider can know how you really feel or predict your choices for sure, you shouldn't trust any Big Brother to look after your interests and desires.

It is not surprising, therefore, that research suggesting the biological predetermination of human decisions is also met with criticism from various social groups. At its root, lies a concern for the preservation of the essential values that constitute liberal democracies and, in a much broader sense, concern for the future of our species. The fear of technologies based on the latest discoveries in genetics and neurobiology, and the prospect of a return to the infamous past, that is to eugenic and racial concepts, is heightened, especially in the face of irresponsible actions by (pseudo-)scientists, which undermine public confidence in science.⁶

CONCLUSIONS

Why do some individuals participate in politics and others display far-reaching political passivity? Why do some citizens engage in political activities that are consistent with legal and/or customary norms governing complex social networks within a political regime, while others engage in activities that go beyond those legal and/or customary norms? These and other questions related to the phenomenon of political participation are answered by social scientists. They usually highlight the relevance of environmental factors while neglecting or marginalising the effect of biological factors. A new research trend, referred to as genopolitics, was launched several years ago. Its aim is to fill the existing knowledge gap regarding political behaviour. In this paper, we focused on genetic explanations of political participation. The main conclusions from the completed analyses are as follows:

1. The impact of genetic factors on complex human behaviours is not a subject of dispute in mainstream science. This also applies to political behaviours. Divergences appear only in attempts to estimate the magnitude of the effect, in the description of its mechanisms and in the identification of specific genes. Therefore, scientific criticism of genetic explanations of political participation primarily touches upon: excessive reductionism, manifested by narrowing the analysis down to only a few genes, and the existence of an epistemic gap between genes and political behaviours.

2. In addition to scientific criticism, genetic explanations of political participation are also frequently challenged by non-scientific criticism. This is based on the ideologically motivated opposition to the undermining of views that attribute free will to humans.

3. Genetic explanations of political participation do not in any way deny the impact of environmental factors. They are only com-

plementary to models emphasising the relevance of demographic, social, psychological and institutional variables.

4. In order to obtain more comprehensive knowledge of political participation, greater theoretical and methodological pluralism is required in research. Therefore, researchers of political participation should apply the achievements of many disciplines, and not limit themselves to the theoretical approaches, methods and techniques prevailing in the literature. In this context, the exchange of experience between representatives of different scientific disciplines and specific institutional support for interdisciplinary projects are essential.

5. Even if the attempt to map out political attitudes or political behaviours based on specific genes proves a dead end, it is still worth exploring. After all, science grows by trial and error.

NOTES

¹ We define political participation as the psycho-physical activity of individuals affecting politics. It can take many different forms: from voting, membership to political parties or donations to a party or candidate, through collecting signatures on petitions, participating in illegal demonstrations and blocking traffic, to destruction of property, political assassinations or participation in civil wars and revolutions. This definition is an expansion of the definition proposed by van Deth (2014: 351).

² Political participation is a highly complex phenomenon, manifested in a number of different behaviours and subject to local social, economic and historical conditions. Thus, the explanatory power of the presented models may vary depending on the society in question.

³ The growth of complexity of human societies is not linear. This process does not show any universal pattern (see Bondarenko, Grinin and Korotayev 2002).

⁴ This applies to protein-coding DNA. About 98.5 per cent of the human genome does not contain protein-coding genes.

⁵ In its extreme form, resistance against the biological-deterministic theories of social phenomena manifested itself in the turbulent discussions regarding sociobiology in the 1970s and 1980s. These showed how difficult it is to reconcile traditional humanism with science (Buss 2004: 18–19).

⁶ The crossing of ever more boundaries by genetic engineering is particularly troubling. At the end of 2018, the world learned that the first children with modified DNA were born in China (Kolata, Wee and Belluck 2018).

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