

# THE NEURAL CORRELATES OF POLITICAL BEHAVIOR

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## ABSTRACT

It may seem like neuroscience has little relevance in the world of politics. In reality, however, brain imaging and other neuroscientific approaches can lend insights into the biological basis of political phenomena such as voting behavior, party affiliation, impressions of candidates, and political views. This paper will summarize how brain anatomy and function affect political behavior. It will explore the role of brain areas such as the orbitofrontal cortex and amygdala and explain how studies have shown a link between the size or function of these structures and various political factors. While we cannot directly predict someone's political views or actions from observing a single brain region, we can use holistic anatomical and functional observations to at least partially understand the neural basis of political behavior.

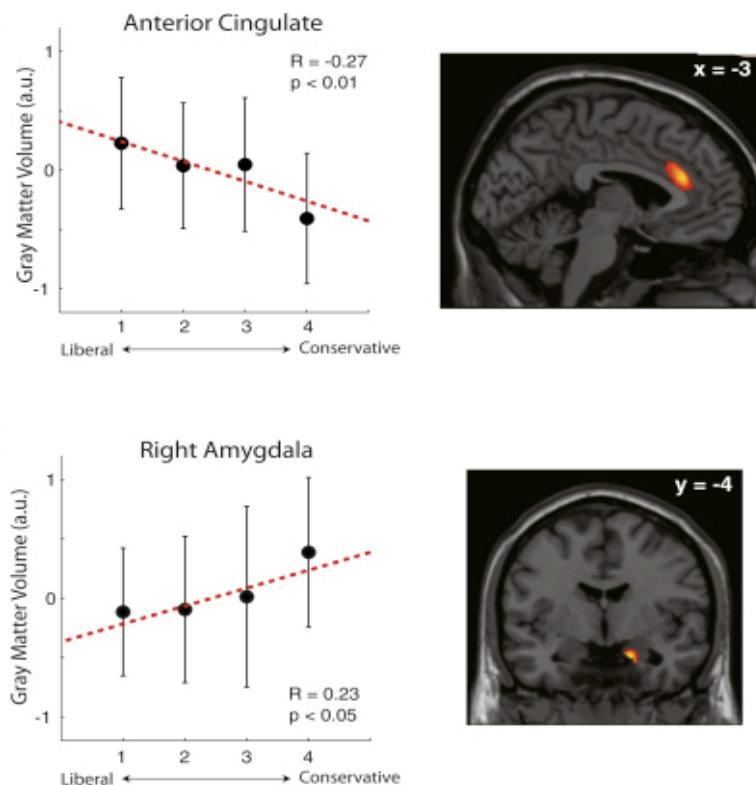
## HOW BRAIN STRUCTURE AND FUNCTION AFFECT POLITICS

Political behavior and voting decisions have been particularly relevant and contentious topics in recent years. To many, the motives for the political actions of others may seem illogical and inexplicable. This may be because many of our political thought processes are at least partially under unconscious neural control and are affected by anatomical and structural factors that we cannot willfully change—and of which most of us are not even aware.

Neuroimaging studies use functional MRI to show a basis in brain activity for the different attitudes held by liberal versus conservative voters. Conservatives' brains are more likely than those of liberals to activate in response to clear distinctions between “insider” and “outsider” groups<sup>1</sup>. Conservatives' brains are also more responsive to negative emotions such as fear or disgust and are more prone to automatic emotional processing. This is reflected in higher activity in the amygdala, a brain region associated with emotions such as fear.<sup>1</sup> Additionally, as shown in Figure 1, liberal voters tend to have higher gray matter volume in the anterior cingulate cortex—a brain region associated with emotional processing—whereas conservative voters tend to have higher volume in the right amygdala.<sup>2</sup> This suggests that not only do liberals and conservatives differ on an anatomical level, but that these anatomical differences affect how certain kinds of campaign messages may be successful in targeting certain people. Candidate statements that reinforce divisions between groups and induce sentiments of threat or fear may be more likely to resonate on a neural level with conservative voters than with liberal voters.

Research also shows a brain basis for political impressions and attitudes. Neural activity in the lateral orbitofrontal cortex (LOFC)—a brain structure that has been shown to be crucial in integrating different types of information—may play a role in forming judgments about candidates, as well as in applying those judgments to inform one's voting decisions.<sup>3</sup> In fact, if the LOFC is damaged, people tend to base their votes on simpler information, like the candidates' physical appearance.<sup>3</sup> Additionally, the brain produces a negative reactivity signal in response to candidates that a person deems undesirable. Negative reactivity involves brain activity that is associated with or caused by negative emotions like fear or anger. In the case of anger, this negative reactivity not only makes a person less likely to vote for a given candidate, but also usually more likely to vote for the opposing candidate, according to research subjects' responses.<sup>1</sup> In the case of other negative or conflicted emotions, this negative reactivity can make people less likely to vote at all

because they associate those unpleasant emotions with the voting process in general, which has a devastating impact on voter turnout.<sup>1</sup>



**Fig. 1:** Conservative ideology is associated with increased gray matter volume in the amygdala, while liberal ideology is associated with increased gray matter volume in the anterior cingulate. **Retrieved from:** Kanai, R., Feilden, T., Firth, C. & Rees, G. Political Orientations Are Correlated With Brain Structure in Young Adults. *Current Biology* 21, 667-680 (2011).

Other studies have found two competing networks—interconnected brain regions that work together—that have opposing effects on political attitudes.<sup>4</sup> In one network, activity between the front-most part of the brain and the amygdala is positively correlated with measures of implicit bias and how strongly people feel about candidates.<sup>4</sup> This means that more activity in this area is associated with stronger unconsciously-held associations regarding the candidates and more vehement opinions about them. The activity in this network thus facilitates the rapid formation of stereotyped, emotional impressions<sup>4</sup>. Meanwhile, the competing network—which processes information about politicians in a more deliberate, fact-based way—involves a negative correlation between lateral prefrontal cortex (LPFC) activation and the strength of political party affiliation.<sup>4</sup> In other words, the stronger one's adherence to a political party is, the less active the LPFC is. These findings imply that our impressions of candidates are largely impacted by the involuntary biases that result from our neural activity, but that these impressions can still be influenced by more carefully crafted impressions based on candidates' ideas, character, and policies.

## FUTURE STEPS: COMBATting THE BRAIN

Since many anatomical and structural factors play a significant role in political behavior, it may seem that there is nothing that can be done to combat these natural brain processes. However,

there are several ways that we can still exert conscious influence over our own political decisions and actions. For one thing, individuals can deliberately work to acknowledge, reflect on, and reshape their own inherent biases to increase their awareness of their own political decision-making process. This cognitive retraining could involve citizens critically questioning their own personal motives, asking themselves whether their political preferences and opinions are grounded in fact or in some less objective basis, and opening an intentional dialogue with those who hold different views. The hope is that this self-awareness will lead voters to make more informed, fact-based decisions and recognize the need to overcome their natural biases when forming impressions of candidates, developing political opinions, and choosing a party affiliation.

Another possible solution is to ensure that elected officials and government leaders are more informed about the cognitive processes that underlie political decision-making. This more profound understanding of voters would help politicians determine effective campaign tactics that appeal to citizens' values, needs, and civic pride rather than to their primal fears and subjective biases. This would also aid political figures in improving voting infrastructure; if they are more informed about what motivates voters, they will hopefully be better equipped to amend the voting process in a way that encourages the most engagement and participation.

## CONCLUSION

It is evident that the structural and functional features of brain structures like the amygdala, cingulate cortex, and orbitofrontal cortex—all three of which have been known to mediate emotion and emotional reactions to stimuli—play a large role in determining which candidates we prefer, which party we affiliate with, and how we vote. It is also clear that our underlying brain characteristics do not have to be the sole determinants of our attitudes and actions; we can choose to put in the mental work to exert cognitive control. Each of us can start by questioning our own inherent biases, being more aware of how and why we form our political opinions, and adjusting our political behaviors if they do not align with our conscious values. By taking these steps, we can ensure that we elect our leaders based on identification with their values and ideas, rather than on fear-mongering, stereotyped first impressions, or appeals to our base emotions. This will help foster a political system that includes more engaged and informed voters, as well as higher-quality candidates that work for the public good.

## WORKS CITED

<sup>1</sup> Lindemann, Katherine. Could neuroscience explain what Trump voters are thinking? *ResearchGate* (2016).

<sup>2</sup> Kanai, R., Feilden, T., Firth, C. & Rees, G. Political Orientations Are Correlated With Brain Structure in Young Adults. *Current Biology* 21, 667-680 (2011).

<sup>3</sup> Xia, C., Stolle, D., Gidengil, E. & Fellows, L.K. Lateral Orbitofrontal Cortex Links Social Impressions to Political Choices. *Journal of Neuroscience* 3, 8507-8514 (2015).

<sup>4</sup> Knutson, K.M., Wood, J.N., Spampinato, M.V. & Grafman, J. Politics on the Brain: An fMRI Investigation. *Social Neuroscience* 1, 25-40 (2006).