

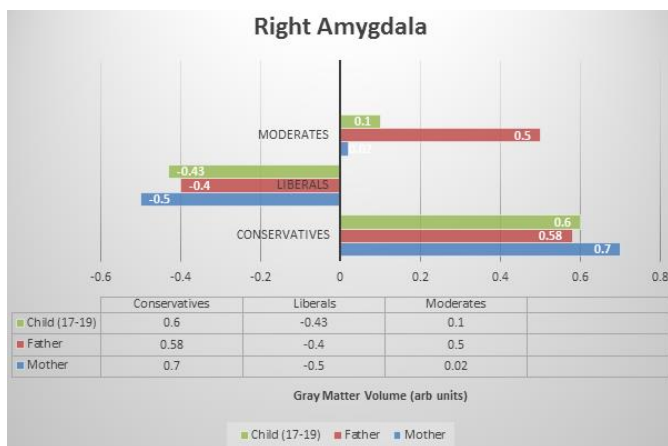
Factors That Influence Conservatism vs. Liberalism

Cassidy Jones (E-mail: cjones16@u.westcoastuniversity.edu)^a, Melissa Cueto (E-mail: meCueto@westcoastuniversity.edu)^b

^a West Coast University

^b West Coast University

Graphical Abstract



Abstract

Recent studies have shown that genetics have been linked to the influence of conservatism and liberalism in the United States. Evidence has shown that conservatives present more brain matter volume within the anterior cingulate cortex, and liberals present more brain matter volume within the right amygdala. Despite other social and scientific factors that may influence conservatism and liberalism, such as morals, culture, demographics, personality traits, etc., the study conducted determines a correlation between brain structures and conservatism and liberalism. The study conducted consisted of brain studies using MRI evaluations of conservative, liberal and moderate families. These families include a mother, father, and child between the ages of 17 and 19. Results suggest that conservatism and liberalism is influenced by the brain structures of individuals. These results also indicate that conservative and liberal parents have strong influences on the brain structures of their teenage children.

Note: This paper was an assignment for a nursing school General Education Capstone course. The student writer did not conduct a real study; she rather simulated a study to demonstrate writing/research skills, creativity, scientific knowledge, and an understanding of how to generate and analyze data. The corresponding author is the student's instructor, who guided the student on each section of the scientific paper, providing feedback on how to "conduct" the study and on how to revise the writing.

Introduction

Literature Review: Scientific

Liberals and conservatives show cognitive differences (Anyaso, 2016). Neuroscientific and genetic studies have shown that conservatives have more structured and perpetual cognitive styles while liberals are less structured and more flexible (Anyaso, 2016). MRI scans have been used to detect gray matter in certain areas of the brain that show different results in conservatives and liberals (Feilden, Firth, Kanai, & Rees, 2011). The excess gray matter that is found in the part of the brain in liberals is associated with understanding complexity (Feilden, et al., 2011). The area of the brain where fear is processed is found to be bigger in size in conservatives (Feilden, et al., 2011). High amounts of gray matter in the brain are found within the anterior cingulate cortex in liberals, and high amounts of gray matter in the brain are found within the amygdala in conservatives (Feilden, et al., 2011). To support that gray matter is present in different parts of the brain in conservatives and liberals, MRI scans were recorded from 90 young adults who reported their political stances (Feilden, et al., 2011). Results showing greater amounts of gray matter in parts of the brain in conservatives and liberals also show increased brain activities in those areas and can link to different cognitive styles (Feilden, et al., 2011).

The study of brain structures, and the study of brain activity are two different concepts (Feilden, et al., 2011). There are greater brain activities in the areas associated with excessive gray matter within conservatives and liberals. (Feilden, et al., 2011). Not only do liberals show high amounts of brain matter within the anterior cingulate cortex, but they also show occurring responses within the anterior cingulate cortex (Feilden, et al., 2011). The right amygdala, left insula, right entorhinal cortex, and anterior cingulate cortex are the four brain regions that are associated with conscious decision-making (Dawes, et al., 2013). These four brain regions have proven differences between conservatives and liberals when it comes to their physiological responses (Dawes, et al., 2013). Liberals show obvious activity within the left insula (Dawes, et al., 2013). Being able to correlate ideological processes with physiological responses will explain differences in behavior (Amodio, 2011). To determine different brain functions in conservatives and liberals, 82 candidates were chosen from public voter records, and performed a risk-taking task during functional imaging (Dawes, et al., 2013). During the study, the risk-taking behavior of conservatives and liberals did not differ, but their brain activity did (Dawes, et al., 2013). Conservatives showed increased brain activity in the right amygdala, and liberals showed increased brain activity in the left insula (Dawes, et al., 2013). These results suggest that conservatives and liberals possess different cognitive responses when dealing with similar situations (Dawes, et al., 2013). Liberals and conservatives show differences in brain activity when they are dealing with risks, and threatening situations (Dawes, et al., 2013). Studies have shown that liberals use their anterior cingulate cortex when dealing with conflict (Feilden et al., 2011). Conservatives show more aggression than liberals when involved in threatening situations, this is one reason why they show occurring responses within the amygdala of the brain as it is responsible for emotion and survival instincts (Feilden, et al., 2011). Liberals show different psychological characteristics than conservatives when reacting to situations as they make impulsive and uncertain decisions while conservatives express greater aggression (Dawes, et al., 2013).

Political attitudes are influenced by genetics and its connection with environmental factors (Feilden, et al., 2011). Genes determine physiology and biological mechanisms that can influence the behaviors, attitudes that link to the preferences of a conservative or liberal (McDermott, 2013). Studies using functional magnetic resonance imaging were used to record brain activity of the conservative and liberal participants responding to disgusting images (Feilden, et al., 2011). Measuring a person's strength to revolting images can predict their political ideology (Feilden, et al., 2011). When a disgusting image is presented, neural responses show a person's reaction, and can dictate information about that person such as political ideology (Feilden et al., 2011). During the study, participants were exposed to several disgusting pictures as well as neutral and pleasing images while their brains were being scanned (Feilden, et al., 2011). Conservatives have more magnified responses to the disgusting images in comparison to liberals (Feilden, et al., 2011). After the brain scan, participants were given a political ideology survey in which the responses were 95 to 98 percent accurate based on their reactions to the disgusting images (Feilden, et al., 2011). These results suggest that neural responses are

genetic and can be passed down from our ancestors that are associated with protection against environmental threats (Feilden, et al., 2011). Dopamine is released in the brain from a gene, the presence or lack thereof can influence conservatism or liberalism (Physorg, 2015). Dopamine plays a role in behavior (Physorg, 2015). Political preference and beliefs may be linked to genetics due to research studies that study fraternal and identical twins (Morin, 2013). Studies involving twins are practices that are used to test nature vs. nurture controversies (Morin, 2013). Using twins to conduct research regarding whether genetics are linked to political preference is presumed to be constant, because with twins, all variables are the same, such as upbringing, culture, morals (Morin, 2013).

It is human nature to be ideologic (Amodio & Jost, 2011). To support that ideologic is human nature, social cognition and neuroscience studies are conducted (Amodio & Jost, 2001). Political ideology is a form of comfort and security (Amodio & Jost, 2011). People naturally affiliate themselves with a group such as social and political groups to better cope with life situations, it becomes a need (Amodio & Jost, 2011). The differences between conservatives and liberals is their psychological preferences towards uncertainty, threat, and conformity (Amodio & Jost, 2011). Neural responses indicate that political ideology is linked to cognitive and emotional processes (Amodio & Jost, 2011). The choice between conservatism and liberalism is partially influenced by a person's interests, and needs (Amodio & Jost, 2011). A person leaning toward conservatism more likely holds a need for coping with uncertainty and threat (Amodio & Jost, 2011). A person leaning toward liberalism has low needs in managing uncertainty and threat, and are uncertain with social changes (Amodio & Jost, 2011).

Literature Review: Cultural

Conservatives and liberals differ in the sources they choose to rely on for news and information about politics and government (Gottfried, Kiley, Matsa, & Mitchell, 2014). Strong liberals rely on an array of news sources such as CNN, MSNBC, NPR, and NYT, as opposed to strong conservatives who mainly rely on one main source for information which is Fox News (Gottfried, et al., 2014). The news media, social media, and conversations between friends and family are the different ways in which people get information regarding government and politics (Gottfried, et al., 2014). Conservatives and liberals are politically divergent when it comes to the patterns of social media sharing (Duggan, & Smith, 2016). Social media influences political discussions and opinions which highly impacts the conservative and liberal parties (Duggan, & Smith, 2016). Based on a Pew Research Center survey of partisanship and political animosity, statistics have shown that 61 percent of Americans find that they have less in common when they talk to others on social media regarding politics (Duggan, & Smith, 2016). Out of the 61 percent, 36 percent of those people find themselves being influenced to agree with political opinions that they initially disagreed with (Duggan, & Smith, 2016).

Trusting and distrusting in different media outlets influences conservatism and liberalism (Gottfried, et al., 2014). The Media is biased, journalists and editors dictate what type of news they want to cover, they interpret information and topics in a way that they want to represent it; as a result, this influences conservatives and liberals to rely on the source outlets that they believe are true or right (Beder, 2004). Research has shown that liberals choose to get their information on government and politics from more reliable sources as opposed to conservatives (Gottfried, et al., 2014).

Conservatives and liberals have different moral judgements, and disagree on an array of moral issues (Cushman, Hannikainen, & Miller, in press). Liberals value care and fairness as opposed to conservatives who place greater values in loyalty, authority, sanctity, and purity (Cushman, et al., in press). The moral foundations theory hypothesizes that there are differences in moral values among conservatives and liberals that influences their political views. (Graham, Haidt, & Noek, 2009). Conservatism and liberalism is influenced by moral concerns about what is right and wrong (Day, Downing, Fiske, & Trail 2014). To prove that moral foundations can influence conservatism or liberalism, if one's moral foundations were altered, then that person's political attitudes could possibly result in at least two outcomes; they could be persuaded in another direction, or ingrained in their original political ideology (Day, et al., 2014). It is questioned whether conservatism or liberalism is chosen first and moral concerns follow that belief, or whether moral concerns are initially instilled and

that plays a role in one's preference in being conservative or liberal, or whether it is a mixture of both (Graham, et al., 2009).

Statistics have shown an increasing rate of educated college students becoming liberal over the past ten years (Kurtzleben, 2016). Going to college allows Americans to become more aware and educated on social issues such as gender equity (Kurtzleben, 2016). Attending college allows a student to grow mentally, socially, and individually (Suls, 2016). College curriculum has veered away from traditional values due to the social issues and controversies that we deal with in the 21st century (Suls, 2016). College campuses and classes are made up of a variety of social differences giving college students the opportunity to be more open to different attitudes and perceptions (Suls, 2016).

Conservatism and liberalism could be influenced by religious practices (Davis, & Ritter, n.d.). During campaigns, the governors openly accept religion, they travel to different churches, perform speeches, and link their political views with religion beliefs to persuade (Davis, & Ritter, n.d.). Religion has impacted U.S. politics (Davis, & Ritter, n.d.). Based on U.S. history, during the 70's, America experienced governmental hardships, entering the 1980s, the Reagan Revolution incorporated Christian Right and witnessed growth and change (Davis, & Ritter, n.d.). Starting in the 20th and 21st centuries, campaigns purposely involved religion and churches so that candidates can accumulate more votes (Davis, & Ritter, n.d.). This later influenced other religious groups to stand up and fight for rights that they believed were right and wrong based on their religion such as abortion, marriage and prayer in public schools (Davis, & Ritter, n.d.). These public issues and moral beliefs are what shape conservatism and liberalism (Davis, & Ritter, n.d.). Religious groups base their political ideology on what God would think is right (Davis, & Ritter, n.d.). The bible is filled with laws, commandments, and judgements that are incorporated in the government and cause social issues, controversy, and opinions (Davis, & Ritter, n.d.). The difference between liberals and conservatives is that conservatives are stricter while liberals tend to be more lenient, this also applies the perceptions of religion (DiDonato, 2015). Conservatives are more likely than liberals to judge immoral and moral behaviors (DiDonato, 2015). Liberals are more likely to accept forgiveness in religion (DiDonato, 2015). These conclusions were made by surveying a liberal clergy and a conservative clergy about political perception (DiDonato, 2015).

A Cognitive Reflective Test is used to test whether conservative and liberals process information differently (Deppe, Gonzalez, Hibbing, Jacobs, Neiman, Pahlke, & Smith, 2015). The Cognitive Reflective Test is a three-question test that measures individual differences using instinctive but invalid responses and reflective, and correct responses for each item (Deppe, et al., 2015). The CRT is a reliable test that predicts cognitive biases (Kahan, 2013). The Cognitive Reflective Test is associated with psychological traits, values, and beliefs (Deppe, et al., 2015). The Cognitive Reflective Test shows a correlation between thinking styles and political orientations with social attitudes (Deppe, et al., 2015). The correlation between reflection and intuition, and political attitudes may be more resistant to manipulation (Deppe, et al., 2015). The Cognitive Reflective Test concludes that conservatives are less reflective, and liberals are more reflective (Deppe, et al., 2015). Studies using the CRT have shown that conservatives are more intuitive than liberals (Deppe, et al., 2015). This indicates that conservatives rely on heuristics associated with implicit reasoning (Deppe, et al., 2015). Public issues on policies is associated with heuristic driven information processing (Kahan, 2013).

Materials and Methods

Brain structures are likely to explain conservatism and liberalism, and conservative or liberal parents are likely to influence political orientation and brain structures on teenage children. The study involved 60 families in total, and were broken down into three groups; 20 liberal families, 20 conservative families, and 20 moderate families. Each family consisted of a mother, a father, and a teenage child between the ages of 17-19. This study is made up of 180 participants in total.

The moderate family group was the control group. All individuals in each group were given an MRI scan that measured the volumes of matter in the anterior cingulate cortex, and the right amygdala. This research was conducted to see whether teenage children's brain structures and political orientations are influenced by their parent's conservative or liberal associations. The moderate group is

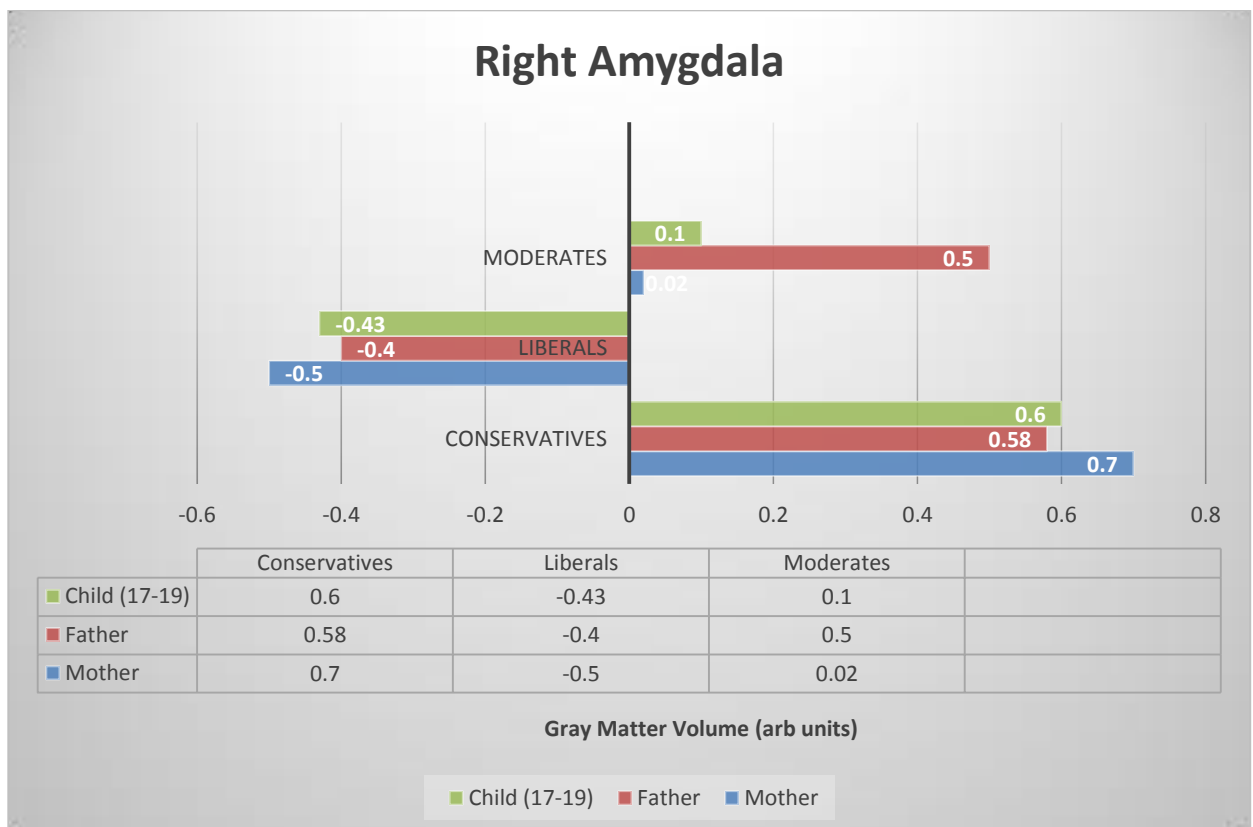
set to compare whether there is a difference in liberal and conservative children vs the influence that moderate parents have on their children.

These families were volunteers and were thoroughly evaluated before being selected. Each parent had to take three separate evaluations that determined their strong political orientations. The first evaluation was based on a 10 question ideologic consistency scale. These 10 questions were strategically chosen as they offer mostly conservative or mostly liberal views regarding political issues and beliefs. These questions had a traditional “left/right” association with conservatism vs liberalism. The second evaluation was a self-report questionnaire which asked each participant what political orientation they associate themselves with. This simple self-report questionnaire has been used in previous genetic studies dealing with political values, and is a reliable measure of political orientation. The third evaluation consisted of a morals foundations questionnaire which evaluated each parents’ moral judgement which also correlates with political ideology. This three-step evaluation was placed to make sure that the participants were sure to have strong political views of conservatism, liberalism, or moderate. Participants were also demographically and culturally diverse.

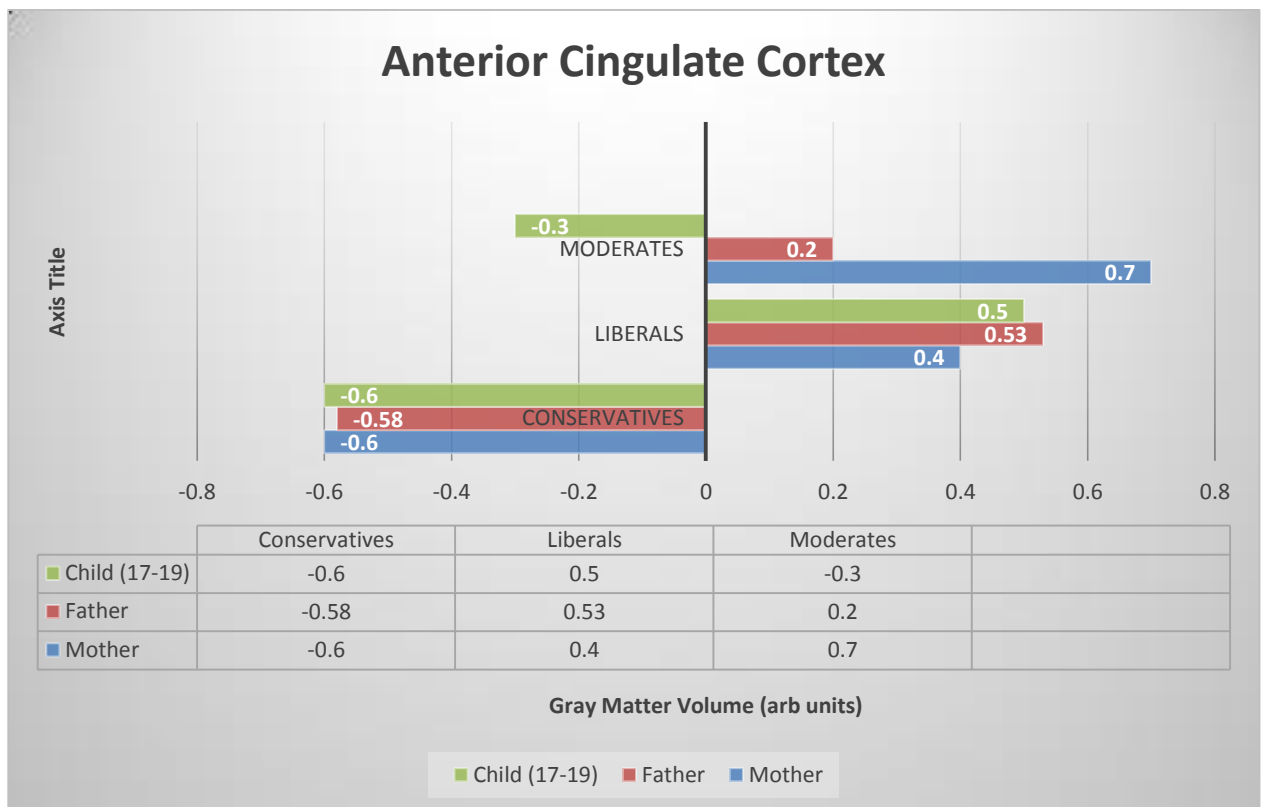
Magnetic resonance imaging is a safe and painless test that provides detailed pictures of organs and structures within the body. This study examines the brain structures of participants, specifically focusing on the right amygdala and anterior cingulate cortex of the brain as those two regions of the brain mainly correlates with conservatives and liberals. MRIs were obtained with a 1.5-T Siemens Sonata MRI scanner. This scan produced high resolution images of the brain. A voxel-based morphometry analyses was used to measure the difference of gray matter within the anterior cingulate cortex and right amygdala between the conservative, liberal, and moderate groups.

All participants underwent pre-scanning paperwork and safety protocol. Once the MRI scans were conducted, the participant’s brains were segmented into gray matter based on the intensity at each voxel. The VBM analyses was used to warp each participant’s image of gray matter into a space to average them together. Two bar graphs were made based on the MRIs, and VBM analyses to show the relations of brain structures between the groups by showing the gray matter values on an arbitrary unit scale.

Results



This graph displays the amount of gray matter volume that is obtained in the right amygdala of the brain for each political group. Each political group is divided into the average amounts of gray matter volume within the mothers, fathers, and children of each political party. The bars on the graph measure the arbitrary units of gray matter volume. The moderate children on average had a value of 0.1 arb unit gray matter volume in the right amygdala, the moderate fathers on average had a value of 0.5 arb unit gray matter volume in the right amygdala, and the moderate mothers on average had a value of 0.02 arb unit gray matter volume in the right amygdala. The liberal children on average had a value of -0.43 arb unit gray matter volume in the right amygdala, the liberal mothers on average had a value of -0.4 arb unit gray matter volume in the right amygdala, and the liberal fathers on average had a value of -0.5 arb unit gray matter volume in the right amygdala. The conservative children on average had a value of 0.6 arb unit gray matter volume in the right amygdala, the conservative mothers on average had a value of 0.7 arb unit gray matter volume in the right amygdala, and the conservative fathers on average had a value of 0.58 arb unit gray matter volume in the right amygdala.



The graph above represents the amount of gray matter volume that is obtained in the anterior cingulate cortex of the brain for each political group. Each political group is divided into the average amount of gray matter volume within the mothers, fathers, and children of each political party. The bars on the graph measure the arbitrary units of gray matter volume. The moderate children on average had a value of -0.3 arb unit gray matter volume in the anterior cingulate cortex, the moderate mothers on average had a value of 0.7 arb unit gray matter volume in the anterior cingulate cortex, and the moderate fathers on average had a value of 0.2 arb unit gray matter volume in the anterior cingulate cortex. The liberal children on average had a value of 0.5 arb unit gray matter volume in the anterior cingulate cortex, the liberal mothers on average had a value of 0.4 arb unit gray matter volume in the anterior cingulate cortex, and the liberal fathers on average had a value of 0.53 arb unit gray matter volume in the anterior cingulate cortex. The conservative children on average had a value of -0.6 arb unit gray matter volume in the anterior cingulate cortex, the conservative mothers on average had a value of -0.6 arb unit gray matter volume in the anterior cingulate cortex, and the conservative fathers on average had a value of -0.58 arb unit gray matter volume in the anterior cingulate cortex.

Conclusions

Brain structure is one of the main factors that influence conservatism and liberalism. Based on the study, there was a correlation with the brain structures of the liberal and conservative families. Liberal parents who presented brain matter within the anterior cingulate cortex also had children who presented the same volumes of matter within the same region. Conservative parents who presented brain matter within the right amygdala also had children who presented the same volumes of matter within the same region. However, there was a significant difference in the MRI results with the moderate families. Moderates did not show any correlation in the volumes of matter that was found in their brains, and the MRI results also showed no correlation between the moderate parents and their children.

These results indicate that conservatism and liberalism is influenced by the brain structures of individuals. These results also indicate that conservative and liberal parents have strong influences on the brain structures of their teenage children. The significant evidence presented implies that excess brain matter volumes in different regions of the brain in individuals influences conservatism and liberalism. Conservative and liberal views are so closely related to brain structures and genetics that these same brain structures can be passed down from parents to teenage children as the results imply. Conservatives are associated with brain matter volumes within the anterior cingulate cortex, and liberals are associated with excess brain matter volumes within the right amygdala.

Many factors can influence conservatism vs liberalism. Due to these factors, there were limitations on the current brain study on the political families. To support the theory that conservative and liberal parents influence the brain structures of their teenage children, other studies regarding the relationships of brain structure and families of other political ideologies may strengthen the hypothesis. The results of other associated political parties can better support that brain structures and genetics in fact play a role in politics. The current brain study on political families could also be strengthened by studying and comparing the brain activities of conservative and liberal families during similar reactions or when put in similar life situations.

Some current social issues that are associated with conservative and liberal affiliation include the influence that social media and news outlets have on one's personal opinions and choices on political views. The perceptions that the population receive on political views influence their way of thinking and decision making which then impacts their upbringing, morals and brain structures. There is a lot of power and control involving conservatism and liberalism. The majority political parties have more power than minority political parties. This gives them the ability to control the government and political issues that they agree with. Social media outlets, and the government also control issues and events that are presented to the general population. Social media and news outlets are also biased, and this influences conservatism vs liberalism. There are also ethical issues that are associated with conservative and liberal affiliation. Morals, beliefs and the moral judgements that people possess can also influence conservatism and liberalism. There are social issues such as marriage and abortion laws that are controversial, individuals support their beliefs based on moral judgements which correlates with the different beliefs and views that conservatives and liberals have.

Currently, there are no specific laws that govern political parties, which include conservatism and liberalism. However, there should be laws that govern ways in which political issues are presented to the public, there should not be a filter or block that prevents the public from knowing certain information regarding government and politics. These limitations allow conservatives and liberals to associate themselves with their political ideologies without sufficient knowledge. Voting and affiliating with a political party should be governed and regulated. Individuals should be assessed and required to have knowledge of what is going on with the government, political issues, and differences in political parties to avoid social and behavioral factors that may influence conservatism and liberalism.

To help raise awareness about political affiliation, information regarding conservatism and liberalism should be shared with the public, classes should be taken and required as citizens to inform the public on the different factors that may influence political choices, as well as being aware of the different behaviors that may influence conservatism and liberalism. The government has a lot of power to control some of the factors that may influence conservatism and liberalism. The government has the power to control the way the public perceives political ideology. Some social factors such as

demographics, social media, and behavioral and moral judgements can all be regulated and become less of an influence on conservatism and liberalism.

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