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Abstract

This is a synopsis of recent studies concerning the neurobiological developments of the adolescent brain, the functions of the amygdala and anterior cingulate cortex, and the derived implications that the brain has in shaping political ideologies found post-pubescent. During this impressionable period of one's life, it is crucial that skills such as empathy and compassion are stressed to help mold adolescents into capable adults with the ability to communicate and resolve conflict among each other. As a consequence of understanding these aforementioned brain regions and their responsibility for our problem-solving and personality traits, the political community may be able to dissolve the tensions between highly differentiated political views, nationally and globally.

Introduction

Of all of the mysteries still yet to be explored, the human brain is typically underrated in comparison to phenomena like our expansive universe or the biological wonders of our planet's oceans. However, our brain is often regarded as one of the few remaining uncharted territories that continues to perplex mankind (Numan, 2000). Although it is the benchmark of all known forms of technology and is solely responsible for the intelligence characteristic to our species, this organ is often taken for granted. It is easily assumed that most of us do not give this tool or its limitless abilities a second thought. From those rare individuals who do ponder on the implications of the human brain on our everyday lives come the fields of neurobiology, psychology, political science, and others

(Hatemi, 2012). The implications of these ground-breaking sciences are limitless, and with understanding comes congruence. Even though the current American political system is oftentimes described as polarized, studying the neurological differences between the conservative and liberal thought processes will arguably ease the tensions created by differing viewpoints, ideally leading to a more cooperative, empathetic political mindset.

Use of Technology

The turn of the twenty-first century brought leaps in technology that helped scientists push the boundaries of scientific understanding. Magnetic resonance imagery (MRI) technology particularly aided the efforts to better understand the brain. Before this development, scientists had no feasible way of observing the structures and activities of a living brain. This new technology, categorized into two types of MRI, debunked past assumptions that the majority of human brain development occurred within the first few years of adolescence (Blackmore, 2012). The first kind of MRI, known as structural MRI, yielded incredibly detailed images of the brain, which were notably utilized in locating tumors and other foreign bodies (Hatemi, 2012). Functional MRI, or fMRI, was used instead to provide real-time glimpses into the surges of brain activity while performing different tasks, such as thinking, listening to music, or solving simple arithmetic problems (Blackmore, 2012). The latter of these two technologies comprises the majority of all scientific understanding on the functions of the many brain regions, and has led scientists to the conclusion that the brain continues to develop well into ones late twenties and early thirties (Mayer, 1999).

MRI technology has many practical applications: doctors can screen for potentially-malignant foreign masses in the human body, for example (Hatemi, 2012). Neurologists have even begun to conduct studies on the human brain and its reactions to certain stimuli, in which MRI technology provides revolutionary, concrete results. Whereas political science was once a field of charisma and predicting how a population would react to certain political stimu-

li—such as a candidate's wardrobe or the approval of a controversial policy—it has evolved into a quantitative science of action and scientifically-predicted reaction (Dolan, 2012). Now, however, scientists are only beginning to delve into this intricate organ, and as scientific progress continues to be made, we can expect the interest in neuroanatomy—the science of thinking style as result of collective brain functions—to increase exponentially (Dolan, 2012).

Growth of Adolescent Brain

From the use of MRI technology, scientists have made great progress in mapping the growth of regions of the adolescent brain, helping to advance to understanding we have of our species' intricate cognitive processes. Legally, adolescence is the period of time between puberty and when the individual turns eighteen years old. For scientific purposes, adolescence is said to begin with puberty and end when the individual reaches maturity, presumably in the form of a self-sustaining societal role—for example, a career (Blackmore, 2012). Reaching this stage in life marks the growth of several fundamental brain regions, one of which is the prefrontal cortex, located in the forehead-area of the human brain. This particular region is responsible for decision-making, social interactions, planning, self-awareness, inhibiting inappropriate behaviors, and understanding others, all of which are skills crucial to mental and social growth (Blackmore, 2012). These sophisticated traits are part of what distinguishes humans from other primates, without which we would no longer be a species capable of partaking in a political science system. It is therefore understandable that the prefrontal cortexes of humans are far larger than those found in any other species (Mayer, 1999).

The rapid growth of the prefrontal cortex is then marked by a sudden increase in grey matter volume, followed by a gradual decrease during the years after (Blackmore, 2012). It was commonly believed at one point that one's grey matter volume determined their intelligence or served as indication of their mental aptitude. However, this recession of grey matter does not signify a loss of intelligence; rather, during this process the brain is strengthening

its most-used connections—called synapses—and trimming away frivolous or unimportant connections (Blackmore, 2012). This process of reinforcement is a survival technique used to heighten brain performance in critical, routinely-used areas, and is influenced heavily by one's environmental factors. Individuals during adolescence are effectively adapting to fit their environment, which justifies concerned parental claims that pre-teens are among the most impressionable demographic. We should not berate adolescents for their lack of understanding; the malleability of one's beliefs, thought patterns and identity is what makes adolescents so impressionable, but this ephemeral quality is vital to guaranteeing survival of the next generation of the human species (Blackmore, 2012). However, this characteristic of the brain is also responsible for the divide in ideals and values between generations, making it sometimes difficult to relate to those outside of one's age group. This is yet another reason that studying the minds of the emerging generation is so vital to our success as a nation; by observing the changes is brain structure—such as the size, activity, and roles or certain brain regions—we will, in theory, be able to accurately predict the ideologies of the next generation.

Shaping of Adolescent Brain

In a similar regard, Sarah-Jayne Blackmore described in her TED presentation—"The Mysterious Workings of the Adolescent Brain"—the automatic and instinctual responses carried out by a large number of individuals at any given social situation in response to a common stimuli, such as a raised fist prompted by a victory soccer goal. This social connection that we humans have—the need that we subconsciously feel to be a part of the masses to ensure survival—brings scientists to emphasize the importance of social sciences concerning young adults. One of the most critical functions of the developed human brain is the ability for one to ascertain the mental, physical and emotional state of others—to understand and empathize with our comrades (Blackmore, 2012). We see this social skill in development among adolescents in school; the pressure that pre-teens and young adults feel around the time of

puberty to "fit in" is indeed a justifiable mental process out of concern for one's own preservation. Skills such as empathy and compassion are stressed to help mold impressionable adolescents into functioning adults with the capacity to communicate and resolve conflict among each other. Many scholars believe that the majority of these common social cues stem from deep-seeded survival instincts dating back to Prehistoric days, when being an outcast meant a significantly decreased chance of survival and reproduction (Mayer, 1999). This human characteristic explains the innate desire to conform to popular voting methods and political ideologies. The day and age where individuals decide their opinions with no outside influence has regretfully come to an end. Nowadays, adolescents are bombarded with external stimuli—media of all imaginable content—and often resort to trivial factors such as party popularity or parental opinion when forming their political beliefs (Numan, 2000). Understanding the malleability of the adolescent brain and the biological processes responsible for this increased impressionability—rather than attributing it to teen angst—should be a primary focal point for political scientists hoping to predict voter attitudes or for scientists seeking to predict an individual's political ideology from an MRI scan (Blackmore, 2012).

Relevance to Political Science

The study of the adolescent brain is a logical approach for political scientists hoping to further understand and appeal to the masses of voters, taking the concept of "candidate popularity" to an entirely new level (Dolan, 2012). Current methods behind heightening candidate popularity include appealing to the voters through sensible wardrobe, composed speech and neutral characteristics (Numan, 2000). Studies have shown that these factors are influential in voter decisions (Hatemi, 2012). Regrettably, uninformed individuals tend to rely solely on factors such as candidate appearance, mannerisms, facial expressions, gender, and race when voting; similarly, it is a fact that political ideology and party preference are no longer as clear-cut as they once were (Spezio, 2012). It is sensible to study the adolescent brain to further understand the next gen-

eration of voters; as the science of neuropsychology continues to improve, professionals in related fields may hope to identify factors responsible for the formation of political ideologies in adolescents, which later become decisive in the political parties and candidates one identifies with (Spezio, 2012).

Functions of Specific Brain Regions

The study of the human brain has limitless implications, as each region of the brain is responsible for specific life functions. Although identifying these unique functions is an ongoing and fairly-recent pursuit, scientists studying neuroanatomy have found that certain structures, such as the amygdala and the anterior cingulate cortex, vary in both size and activity among individuals (Mooney, 2011). The anterior cingulate cortex (ACC) is believed to be primarily responsible for error detection, emotional regulation, choice evaluation and a neurological processes called "executive function." This task, also known as "cognitive control" is what determines an individual's response to emotional stimuli, as well as their efficiency in assigning relevancy to seemingly-ambiguous information (Mooney, 2011). Individuals with increased levels of cognitive control are often successful analytical thinkers, aiding in problem solving and objective rationalization. The Amodio study revealed that individuals with larger, more active ACCs possessed a higher level of cognitive control and were able to facilitate rational behavior amid high-stress, emotional situations, which is useful in professions such as law and medicine, among others (Amodio, 2007). According to the study, these traits tended to be more concentrated among liberal-minded individuals (Amodio, 2007).

In contrast, those observed to have increased grey matter volume of the right amygdala in the Kanai study tended to reference stored memories and emotional impressions of past events when making decisions, showing decreased levels of cognitive control as individuals relied upon experience rather than purely analytical thought (Kanai, 2011). This study paralleled with the efforts of the Amodio study to identify the function of the human brain's many regions and ascertain that a larger amygdala is characteristic

of conservative-minded individuals.

These key anatomical characteristics are one of many factors that political scientists consider when differentiating between conservative- and liberal-minded individuals (Mooney, 2011). This does not mean, however, that every self-identified liberal or conservative possesses these neurological traits, or that subjecting everyone to an MRI scan will reveal their political opinions; rather, these studies are instrumental in helping scientists understand why people use these two polar-opposite decision-making processes. The science of neuroanatomy, although incomplete, is accurately paralleled with political science by Kanai's summation of his participation in the 2011 study:

Political attitudes reflect differences in self-regulatory conflict monitoring and recognition of emotional faces by showing that such attitudes are reflected in human brain structure. Although our data do not determine whether these regions play a causal role in the formation of political attitudes, they converge with previous work to suggest a possible link between brain structure and psychological mechanisms that mediate political attitudes. (p. 677)

Furthermore, the simple acknowledgement of anatomical differences among political ideologies allows for the rational mediation of disputes common in the American political system. By handling conflicts logically rather than emotionally, politicians may begin to rethink the priorities and binding allegiances set by the party system. It is arguable that, for the sake of the efficiency of this country's political system, crossing the aisle and bridging the gap between conservatives and liberals be encouraged.

Conclusion

Overall, the correlation between politics and the scientific endeavors concerning pubescent youth and the influential regions of the brain is far too evident to ignore. It would be in our best interest as a species to take notice of this relationship and act upon it, learning as much as we can about the young minds of the upcoming generation in efforts to better understand our species' brains and tendencies as a whole. Furthermore, in accepting this

knowledge, we can derive political applications, improving the efficiency of social sciences and revitalizing the pursuit of an informed political opinion. Speaking long-term, instilling these responsible traits in the adolescent population of our nation will doubtlessly yield positive outcomes in coming generations and transform the political scene of our country and the world for the better.

References

Amodio D., Jost J., Master S., Yee C. (2007). Neurocognitive correlates of liberalism and conservatism. *Nature Neuroscience.* 10(1): 1246-1247.

Blackmore, Sarah-Jayne. (2012). The mysterious workings of the adolescent brain. *TED.com*. TEDGlobal.

Dolan R., Sharot T. (2012). Neuroscience of preference and choice: Cognitive and neural mechanisms. *Academic Press*. 360.

Hatemi P., McDermott R. (2012). The political psychology of biology, genetics, and behavior. *Political Psychology*. 33(3): 307-312.

Kanai R., Feilden T., Firth C., Rees G. (2011). Political orientations are correlated with brain structure in young adults. C*urrent Biology*. 21(8): 667-680.

Mayer R. (1999). The prefrontal cortex: Anatomy, physiology and neuropsychology of the frontal lobe. *Journal of Nervous and Mental Disease.* 187(2): 122-123.

Mooney Chris. (2011). Your brain on politics: The cognitive neuroscience of liberals and Conservatives. *The Intersection*. Discover Magazine.

Numan R. (2000). *The behavioral neuroscience of the septal region* (1st ed., p. 426). New York: Springer-Verlag.

Spezio M., Loesch L., Gosselin F., Mattes K., and Alvarez R. (2012). Thin-slice decisions do not need faces to be predictive of election outcomes. *Political Psychology.* 33(3): 331-341.