ABSTRACT

Background
Genes and environment shape personality and behavior. Environment effects seem harder to pin down, but genetic effects may be studied with some precision and used to understand behavior better. So in looking at political behaviors and attitudes, genes can be helpful. The current political change in the US is toward more liberal policies heightened by the most recent national elections. Observation of the well-studied gene ABO in populations and their political voting behavior suggests that ABO A may be higher in caucasians that vote liberal politics than in caucasians that vote conservative. ABO A is high in frequency in populations of western Europe and especially eastern Europe, and socialism is more prevalent in those countries thus raising the suggestion that ABO A could be relevant in understanding liberalism in the US.

Methods
Since the US president and thus administration of the government is elected by state electoral votes, surveying the frequency of ABO A in each state population was done through review of the medical literature.

Results
Caucasians have a significantly higher frequency of ABO A than other ethnicities. Minorities historically vote significantly higher for liberal policies, but the Caucasian majority vote, theoretically more status quo and thus conservative would be necessary to have some voters choose liberal if liberals have a chance at winning an election. Since caucasians are in the majority in US population and since ethnicity of ABO frequencies in each state is not readily available information, an adjustment for ethnicity was applied by dividing each state’s frequency of ABO A blood type by the frequency of caucasians in that state’s population thus ABO A among caucasians in the red states (conservative) vs the blue states (liberal).

Conclusion
Higher ABO A frequency in caucasians in states that vote liberal was thus inferred.

Keywords: political, ABO blood groups, personality, ethnicity, caucasian

Introduction

Background
World populations vary significantly in frequencies of the ABO types. South American, African, the Mideast Arab subpopulations and Asia have lowest ABO A percent while Europe has highest. So one sees the liberal and socialist tendencies found more prominently in Europe and not in other regions of the world where conservatism prevails.

The most frequent type worldwide is type ABO O followed by type A, type B and type AB though in some populations ABO A is the highest and in some ABO O is the highest and in some areas such as India and China all blood types are found in more equal frequencies.

The first human gene identified and studied is ABO and it continues to be studied and to reveal associations with health and behavior. Although agreement prevails as to many health risks of the ABO alleles, consensus regarding links with personality and behavior traits has not been reached. ABO gene has three common alleles that
manifest as an individual’s ABO blood type, whether type O, type A, type B or type AB. Non-human primates also have these blood types, but the original human blood type or the ancestral allele is thought by most researchers to have been type ABO A. Evolution has led to the current world frequency distribution of high ABO O, medium ABO A and low ABO B and lowest ABO AB. So since ABO A is the ancestral allele and ABO O the current highest frequency allele, evolution seems to be selecting ABO O allele.

The current political divide in western culture and especially in the US seems to correspond to a conservative/right and a liberal/left dichotomy. Given the tendency of an ethnic majority of any population to choose the status quo, current question in US political events is why there is increasing power moving toward liberal/left wing ideas such as increasing migration, decreased nationalism, and increased government control of society. Portions of the non-Hispanic white majority vote has joined minorities in support of liberalism. Political opinion is linked to influence of family and other environmental influences and experiences but also to genes. Thus one answer to this question could lie in a hypothesized genetic/personality factor which causes liberal viewpoints in a part of the non-Hispanic white majority population instead of a conservative viewpoint expected given their position as a member of the majority.

Based on the prevalence of liberal thought in regions of the world of high ABO A gene frequency, a genetic influence in US Caucasian majority populations on that divide is the ABO A gene. Those Caucasians with that gene are more likely to support leftist or liberal viewpoints while other Caucasians are less likely. So the vote for liberal government comes from the coalition of this portion of ethnically majority Caucasian voters with genetic tendency to liberalism and minority voters with pragmatic plus or minus genetic tendency to liberalism.

Thus the gene pool of a country sheds light on the political structure of a country including whether liberal/left or conservative/right views are more widespread. And ABO A is a candidate gene for that. Because ethnic majorities tend to support status quo conservative views, when a majority of conservatives loses an election to liberals, reasons are asked. In the US, liberalism won in the last election cycle. Population stratification in ethnic majority and thus conservative group seems to be part of the explanation. Red (Republican party) states (right leaning) have higher Caucasian and thus majority group in population so why did red states lose the recent election to blue states since blue states have lower Caucasian populations and thus are more liberal (Democratic party) leaning and voting contrary to the majority status quo conservative view.

**Methods**

Tables 1 and 2 list of blue (left leaning) vs red states (right-leaning) shows the ABO A frequency in general population of each state and suggests that ABO A frequency may be higher in red states than in blue states. Table 1 and 2 However, since this hypothesis relates to Caucasian ABO A data and since data that separates population by ethnicity and ABO blood type in all states is not readily available on line or by other avenues this paper approximates this information by adjusting for the percent Caucasians in each state. Since ABO A is significantly less than ABO O in non-caucasian population and since ABO A frequency in each state is an average of these stratified populations, dividing each state’s ABO A frequency by the percent Caucasian in that state allows a comparison of the red states with the blue states as to the ABO A frequency in Caucasians.

**Results**

So correction for ethnicity is useful where population stratification by ethnicity is prevalent. But is the correction used here of dividing the ABO A frequency in each state by caucasian percent of population in that state useful in an understanding of how the ABO A frequency in Caucasians affects the choice of politics of liberal vs conservative? This appears to be the case. Looking at the ABO A percent of each state’s population seems to show higher ABO A percent in red states. However, dividing the ABO A frequency of each state by the percent Caucasian in that state’s population, shows that ABO A frequency (in Caucasians) is actually higher in the blue states. Though only an approximation, this adjustment supports the hypothesis that Caucasians in blue states are of higher ABO A frequency than are Caucasians in the red states since ABO A frequency is largely a function of the Caucasian population frequency and if ABO A frequency is higher, that means that the ABO A frequency is higher in Caucasians in that state.[12-48]

Here are shown some tables and charts that illuminate the ABO A frequency in a population effecting the political choice of liberal vs conservative.

Figure 1 shows the tendency for conservative political party (red states) to be majority ethnicity of Caucasian. Figure 2 shows the ABO A percent in red states vs blue states. Figure 3 demonstrates the adjustment using ABO A percent divided by caucasian percent. Thus because caucasian populations have significantly higher ABO A percent, when correction for caucasian percent in each state population is made, it is more supportive that ABO A type is more frequent in Caucasians in the blue states compared to the red states. While it is clear that dividing any parameter by percent of caucasian will lower that parameter in red states more than in blue states, the result will change the relative difference between red and blue states only if the parameter is a function of the caucasian frequency as is the case for the difference in ABO A frequency in red states compared to blue states.

**Discussion**

As noted by our analysis, population frequencies support the association of ABO A gene with liberal political belief. Further, personality research, historical assessments and consequences of other ABO A health associations support the ABO A association with leftist views.

First in comparing ABO blood groups of non-Hispanic whites in the US, one can see the European ancestry of ABO A in Caucasians in Democrat or left-leaning areas such as northern part of Midwest, New York State, California, and the Pacific Northwest. On the other hand, the Scots Irish ancestry and that of the British Isles in general with higher ABO O can be seen in the Republican or right-leaning areas such as Texas, Tennessee, Florida and all the states of the Southeast US and most of the states of the Midwest and Western states. Tables 1 and 2 Population frequencies of the ABO blood groups in the regions of the US show close association with political choice of Democrat (or left wing) vs Republican (or right wing). Because African American and Hispanic populations and recent immigrants are overwhelmingly of Democrat voting choice and because they are of predominantly ABO O, they are an exception. Non-Hispanic white population frequency distribution of ABO A gene is used to understand the left wing vs right wing choice since that group being the ethnic majority is choosing a political viewpoint.
based more on family traditions and personal choice instead of on group needs and identities as may be the case with a more vulnerable minority group such as African American, Hispanic and other ethnic minority groups who would find liberal left wing politics more supportive of them and their needs. Thus the current liberal political control in the US represents a coalition of hypothetically genetically liberal Caucasians and minority groups.

So adjusting for ethnicity has meaning in the case of ABO A and political choices perhaps more than in most other genetic and environmental parameters. For a comparison, look at the effect of adjusting for ethnicity in maternal mortality rate comparisons between red states and blue states.

Dividing the maternal mortality rate of each state by its percent caucasian lowers the number in red states relatively more than in blue states. However, the relative difference between the group of red states vs the group of blue states doesn’t change much in the case of maternal mortality rate comparison since maternal mortality rate while related to ethnicity is a function of a larger set of parameters. However since maternal mortality is also related loosely to ABO blood groups among other factors including many environmental factors, and since ethnicities have significantly different MMR and since ABO blood groups vary significantly in ethnicities in the US, and since ABO blood groups vary in their MMR, there is an ethnicity function in MMR that can be demonstrated to vary between red states and blue states. And in the case of maternal mortality rate, adjustment for ethnicity does shift the comparison and thus blue states appear to have slightly higher maternal mortality rate compared to red states instead of being lower in this parameter if assessed by maternal mortality rate alone. Figures 4-5

Maternal mortality rate does illustrate how the correction for ethnicity used here clarifies risk factors. Maternal mortality rate here also is a proxy for ABO O since hemorrhage risk is the most common cause of maternal mortality and ABO O has a higher hemorrhage risk. [1-11]

Minority population (Black and Hispanic) is found in all the states’ maternal mortality reviews to have two to five times the maternal mortality rate of Caucasians. Black and Hispanic population compared to Caucasian population has significantly higher ABO O frequency. Caucasians in red states are hypothesized by this paper to have higher ABO O frequency compared to Caucasians in blue states, and red states have higher maternal mortality rate before adjustment for ethnicity. This seems to contradict the significantly higher maternal mortality rate found in non-caucasian populations within each state. But when an adjustment for ethnicity is made by dividing each state’s maternal mortality rate by its percent of Caucasians, it is clearer that blue states having a lower Caucasian percent population probably have a similar if not slightly higher maternal mortality rate as state mortality review committees have actually documented.

Political viewpoint is complex with determinants including family influences, peer influences, economic influences and innate characteristics such as personality traits. Research shows that liberal viewpoint is held more by those with political affiliation since personality trait of extraversion is associated with left wing political choice. And extraversion is associated with ABO A blood group. Left wing philosophy is supportive of group decisions in societal organization. Involvement in groups and activism would be consonant with extraversion personality trait. Anxiety is a trait associated with ABO A. Anxiety would promote a desire to have governmental power involved in more areas of life to provide protection and a solution to anxiety. [49-64]

A few historical examples may be relevant in support of this hypothesis that ABO A frequency in caucasian populations associates with liberal political opinions. Western examples include liberal ascendancy in the Russian Revolution occurring in an ABO A plurality society as did the French Revolution. The American Revolution was an upshot of the European Enlightenment with, based on ancestry in southern England, probable ABO A types in the leadership. After all, Americans rebelled against the King of England, a very conservative government. Other historical examples include the plurality of ABO A gene in Germany in the 1930’s and that of the Jews in the formation of Israel in the 1940’s. Socialism though it be totalitarianism was adopted by Germany and later democratic socialism by Israel.

China, India, and Japanese countries with more equal frequencies of the ABO blood types though Japan has plurality of ABO A. Chinese cultural revolution and the Indian separation from English rule and the upshot of the formation of Pakistan societies and the Japanese adjustments after WWII did not feature liberal ideas such as welcoming of immigration and are though one a communist and the other two democracies, still conservative countries that restructured in recent history. So there may be an association of ABO O frequency with conservative politics in non-caucasians as well as in Caucasians. As can be seen from the historical summaries above, liberalism or socialism can be democratic or authoritarian even totalitarian in effect.

Thus, ABO A being higher in blue states would explain the Caucasians who being in the majority and presumed to vote more conservative in those states actually vote with minorities for liberal policies.

Surveys of voters would demonstrate Caucasians voting for liberal candidates to have higher ABO A than other Caucasians. Because ABO A is the ancestral allele and ABO O is the most prevalent allele it appears that trend would continue. While liberal inroads will be made in societies, their promotion of immigration will accelerate the homogenization of countries and the increase in ABO O in all countries thus ensuring that
conservative views that are conditioned by genetics will be more prevalent. This homogenization is demonstrable in the US in the last half a century with lessening ABO A in the population as immigration increased the total population by nearly doubling it and increased the ABO O frequency.

It is well to keep in mind that the US situation illustrates how relative the terms liberal and conservative are since they refer to the status quo. So for example though liberalism emanating from the European enlightenment established the current US constitution, conservatives are more likely than liberals to support the US constitution. The prediction based on increased ABO A frequency in caucasians who vote liberal and thus their support of immigration is then that ultimately the increased ABO O population mix supported by the liberals would only increase thus ensuring paradoxically a conservative status quo of any new order that may be ahead.

The genetic or personality underpinnings of ABO A support of liberalism appears to be the ABO A personality correlation with such traits and genes that are consonant with empathy for others while the ABO O personality correlation would be with conscientiousness.

More genetic understanding of personality and political feelings would bring more understanding of diverse viewpoints

So for a time left wing is the path for the US. But because a majority of the world population is ABO O, time and the exercise of choice by all members of the population will eventually move the country away from this liberal path. Since ABO A is the ancestral allele and ABO O the current highest frequency allele, evolution seems to be favoring ABO O allele. And that supports the prevalence most of the time of conservative political viewpoints and the intermittent appearance of liberal viewpoints.

Surveys of voters’ ABO blood type and their choice of liberal or conservative can be done that could directly support or refute this inference though admittedly this type of personal data would be hard to come by given privacy concerns that everyone shares. Since ABO O is the most prevalent ABO blood type, this would predict that conservative politics will always return and be the baseline with intermittent surging of liberalism.

More knowledge of why individuals biologically have the political viewpoints that they do can help further rational social life. Liberals may genetically favor liberalism in hopes that their empathy for others and their anxiety can be benefited. Conservatives may favor conservative policy out of conscientiousness in creating orderly societies.

Table 1

<table>
<thead>
<tr>
<th>States: Blue, considered Liberal</th>
<th>#electoral votes(2024)</th>
<th>%caucasian (2020 census)</th>
<th>%ABO A from medical research online in References</th>
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Blue States, electoral votes, %caucasian, %ABOA
States Red (considered conservative) | #electoral votes (2024) | % caucasian (2020 census) | %ABO A in online medical research in references
--- | --- | --- | ---
TX | 40 | 50 | 40
FL | 30 | 58 | 39
OH | 17 | 77 | 39
NC | 16 | 62 | 38
TN | 11 | 72 | 40
IN | 11 | 77 | 39
MO | 10 | 77 | 40
AL | 9 | 64 | 39
SC | 9 | 63 | 40
KY | 11 | 82 | 39
OK | 7 | 64 | 40
UT | 6 | 79 | 39
KS | 6 | 76 | 40
IA | 6 | 85 | 42
AR | 6 | 70 | 40
LA | 8 | 57 | 40
MS | 6 | 56 | 40
NE | 5 | 78 | 40
WV | 4 | 90 | 39
ID | 4 | 82 | 39
MT | 4 | 85 | 34
WY | 3 | 85 | 34
SD | 3 | 81 | 34
ND | 3 | 83 | 34
AK | 3 | 59 | 34

Table 2

Red States, electoral votes, % Caucasian, % ABO A

Figure 1 red (conservative) and blue (liberal) %caucasians: left to right highest to lowest # electoral votes

Figure 2 ABO A% red (conservative) vs blue (liberal): left to right highest to lowest # electoral votes
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