The dual evolutionary foundations of political ideology

Scott Claessens¹

Kyle Fischer¹

Ananish Chaudhuri^{2,3}

Chris G. Sibley¹

Quentin D. Atkinson^{1,4}

¹School of Psychology, University of Auckland, New Zealand

²Department of Economics, University of Auckland, New Zealand

³CESifo, Poschingerstrasse 5 81679 Munich, Germany

⁴Max Planck Institute for the Science of Human History, Jena, Germany

Corresponding author:

Quentin D. Atkinson

School of Psychology

University of Auckland

Auckland, 1010

New Zealand

Email: q.atkinson@auckland.ac.nz

ORCID linked to account on Manuscript Tracking System

Abstract

What determines our views on taxation and crime, healthcare and religion, welfare and gender roles? And why do opinions about these seemingly disparate aspects of our social lives coalesce the way they do? Research over the last 50 years has suggested that political attitudes and values around the globe are shaped by two ideological dimensions, often referred to as economic and social conservatism. However, it remains unclear why this ideological structure exists. Here, we highlight the striking concordance between these two dimensions of ideology and two key aspects of human sociality: *cooperation* and *group conformity*. Humans cooperate to a greater degree than our great ape relatives, paying personal costs to benefit others. Humans also conform to group-wide social norms and punish norm violators in interdependent, culturally marked groups. Together, these two shifts in sociality are posited to have driven the emergence of large-scale complex human societies. We argue that fitness trade-offs and behavioural plasticity have maintained strategic individual differences in both cooperation and group conformity, naturally giving rise to the two dimensions of political ideology. Supported by evidence from psychology, behavioural genetics, behavioural economics, and primatology, this evolutionary framework promises novel insight into the biological and cultural basis of political ideology.

Keywords: politics, ideology, evolution, cooperation, conformity, norms

In recent decades, the concept of political ideology has enjoyed a resurgence in the social sciences¹. Political ideology is defined as a set of stable interrelated beliefs and attitudes that organise views on political and social issues. While scholars have previously attributed only a minor role for ideology in shaping political behaviour^{2,3}, it has since become clear that political ideology both motivates voting and coherently structures views on a wide range of social issues, from taxation and welfare to crime and religion⁴. Traditionally, ideology has been conceptualised as varying along a unidimensional spectrum, with liberalism on the left and conservatism on the right⁵. Broadly, liberalism emphasises equality, social change, and system reform, while conservatism emphasises hierarchy, conventionalism, and tradition. This left-right distinction dates back at least 200 years to the 1791 French Legislative Assembly (monarchists sat on the right) but remains the primary means of describing political opinion in social science and public discourse (Figure 1).

Despite the popularity of this unidimensional model, political views cannot be neatly summarised by a single liberal-conservative spectrum⁶. Recent events in US politics have highlighted how divergent political views can be within left or right discourse, such as the disagreements of Hillary Clinton and Bernie Sanders within the Democratic Party, or the opposition to Donald Trump from within the Republican Party. In the electorate itself, many people express conflicting political beliefs that cross party lines⁷. Libertarians are a classic case of this misalignment, harbouring ‘liberal’ views on social issues but ‘conservative’ views regarding economic policy. It is perhaps not a surprise, then, that unidimensional self-report scales of political ideology often have low internal consistency⁸, low external validity⁶, and frequently produce more than one latent variable in factor analyses⁹. In short, a single left-right dimension cannot explain important features of the political landscape.

Figure 1. The number of articles mentioning unidimensional and multidimensional approaches to political ideology from three sources: the peer-reviewed literature database Scopus and two US newspapers, the Wall Street Journal and the New York Times. For our review of Scopus, we selected the top 100 highest-cited articles from the last 20 years under the search term “political ideology”. For our review of the US newspapers, we selected the top five most relevant articles in every year from 1999-2018, under the search term “political ideology”. If the articles contained the terms *left-right ideology*, *liberal*, *conservative*, *Democrat*, *Republican*, or variations thereupon, we coded them as mentioning unidimensionality. If the articles contained the terms *social dominance*, *authoritarianism*, *social conservatism*, *economic conservatism*, or variations thereupon, we coded them as mentioning multidimensionality. Full dataset for this review and code to reproduce this plot at <https://osf.io/gckw7/>

43 By contrast, scholars from many disciplines have converged upon two dimensions of
 44 political ideology. This two-dimensional structure has repeatedly emerged in the literature
 45 over the last 50 years (Table 1), despite researchers using very different methodologies to
 46 capture ideology. Some researchers have focused on the attitudes that people hold about
 47 political and social issues, clustering these into correlated categories using factor analytic
 48 methods^{10,11}. Others have defined core universal human values (*e.g.* benevolence, tradition,

security) and then determined how they influence ideology¹². Lexical approaches have abstracted even further, using ratings of dictionary-based “isms” (*e.g.* Machiavellianism, traditionalism) to reveal the underlying structure of political attitudes¹³. Moral psychology has identified clusters of moral values and noted how they strongly predict political ideology¹⁴. And cross-cultural approaches have validated scale items across many different societies, finding that the same dimensions recur¹⁵. Across this myriad of methodologies, researchers have found very similar two-dimensional ideological structures, strongly suggesting that the scales in Table 1 are all capturing the same underlying psychological phenomena.

How should we understand these two dimensions of political ideology? The first dimension, often referred to as economic conservatism or social dominance, predicts stances on issues like taxation, government-funded healthcare, welfare programs, and free education¹¹. Economic conservatives view the world as a ‘competitive jungle’, in which dominance, inequality, and power imbalances are commonplace. The second dimension, often referred to as social conservatism or authoritarianism, predicts stances on issues like traditional social values, criminal justice, patriotism, national security, same-sex marriage, and religion^{8,11}. These social conservatives view the world as more ‘threatening, dangerous, and unpredictable’⁹.

It remains unclear why political attitudes tend to be structured along these two particular ideological dimensions, and why the two dimensions associate with particular worldviews. Here, we argue that an evolutionary approach to political ideology can shed light on both questions. Emerging evidence suggests that variation in political ideology is heritable^{16–20}, remains stable over long periods of time²¹, and covaries with basic neurological^{22–26} and physiological^{27–31} differences. The two dimensions of ideology are also repeatedly observed across a wide range of cultures^{15,32,33}, suggesting that they may be

universal. This recurrent pattern of ideological variation across cultures, together with heritable, stable individual differences, raises the intriguing possibility that the two dimensions are not merely self-interested responses to immediate socio-cultural environment³⁴ or historically-contingent cultural constructions^{2,3}, but are at least partly grounded in biology. An evolutionary approach can explain how both genes and environment shape these individual differences in human social behaviour. While promising evolutionary approaches to political ideology have begun to consider the dimensions in Table 1, they have tended to focus on a single dimension^{35,36}, a particular domain^{35,37}, or some broader putative set of dimensions^{38,39}. Furthermore, the ubiquity of the liberal-conservative model has meant that biological accounts still largely treat ideology as a single left-right spectrum^{20,24,27,40–42}.

In this Perspective, we propose that the two basic dimensions of political ideology captured in Table 1 correspond to individual differences in two basic human social drives: *cooperation* and *group conformity*. Cooperation is defined as a willingness to pay personal costs to benefit others⁴³. Group conformity is defined as a commitment to group viability via adherence to group-wide social norms, punishment of in-group norm violators, and identification with one's cultural group. Below, we review the current state of theory on how and why these two social drives evolved in humans. We then outline how fitness trade-offs and behavioural plasticity act to maintain strategic individual differences in cooperation and group conformity, and argue that these individual differences naturally give rise to the two basic dimensions of political ideology.

Table 1. Various definitions for the two dimensions of political ideology. Adapted and extended from ref ⁹.

Dimension 1	Dimension 2	Reference
Economic conservatism	Social conservatism	44
Social Dominance Orientation	Right-Wing Authoritarianism	9
Tough vs. tender	Conservatism vs. liberalism	45
Humanism	Normativism (conservatism)	46
Equality	Freedom	47
Power distance	Collectivism vs. individualism	48
Liberalism (<i>i.e.</i> humanism-egalitarianism)	Conservatism	49
Idealism (altruism/social concern)	Relativism (<i>i.e.</i> group orientation)	50
Humanitarianism/egalitarianism	Protestant ethic	51
Economic conservatism vs. equality	Cultural conservatism vs. openness	52
Hierarchy vs. egalitarianism	Group loyalty vs. individualism	53
International harmony	National strength and order	54
Self-enhancement vs. transcendence	Conservation vs. openness	55
Vertical vs. horizontal values	Collectivism vs. individualism	56
Unmitigated self-interest (“beta-isms”)	Tradition-oriented religiousness (“alpha-isms”)	13
Competition vs. compassion	Moral regulation vs. individual freedom	15
Egalitarianism	Conservatism	57
Humanitarianism	Religiosity	58
Capitalist vs. socialist	Religious vs. secular	59
Tolerance of inequality	Opposition to change	10
Individualising (care/harm, fairness/reciprocity)	Binding (authority/respect, in-group/loyalty, purity/sanctity)	14

Two key shifts in the evolution of human group living

The socio-political lives of great apes are complex⁶⁰. Chimpanzee social groups, for example, are organised by dominance hierarchies. Owing to the fitness benefits of higher status within these hierarchies, rank positions are hotly contested and change dynamically over time⁶¹, with individuals frequently engaging in Machiavellian social strategies to contest the status quo⁶⁰. Chimpanzees also patrol territorial borders to defend their group against outsiders⁶². Much like humans, then, the political lives of great apes are spent dealing with the challenges of group living.

Human group living shares much of this complexity, but is unique in two key ways. First, humans cooperate to a much greater degree than do great apes. While some reports suggest that chimpanzees band together to form hunting parties⁶³, their ability to coordinate with conspecifics is limited⁶⁴. Furthermore, chimpanzees prefer to benefit themselves over others⁶⁵ and dominants will often monopolise food rather than share with subordinates⁶⁶. Even bonobos, the socially tolerant great ape, show preferences for exploitative over cooperative individuals⁶⁷. In contrast, humans effectively communicate with one another to solve coordination problems^{68,69}, are spontaneously prosocial⁷⁰, show greater preference for egalitarian division of resources^{71,72}, and favour cooperative over exploitative individuals⁷³.

Second, unlike great apes, humans conform to potentially arbitrary group-wide social norms and actively enforce those norms on other group members. Several species, including our great ape cousins, exhibit majority-biased learning (*i.e.* copy the most common trait)^{74–76}. However, this conformity is not normative⁷⁷. While chimpanzees engage in second-party punishment of conspecifics when they have been personally affected, they do not punish third-parties who violate group-wide social norms⁷⁸. Further, great apes do not appear to discriminate between in-groups and out-groups based on cultural markers or behavioural traditions⁷⁹. In contrast, humans naturally conform to group-wide social norms⁸⁰, harbour a

range of self-conscious emotions dedicated to normativity (*e.g.* shame and guilt)⁸¹, and punish third-parties who violate group norms⁸². Humans also use these norms to discern group membership, attending to cultural markers like religion⁸³, language⁸⁴, and accent⁸⁵.

The human social drives for cooperation and group conformity are the result of two key shifts in sociality that occurred after the divergence of the hominin lineage from great apes^{79,86–88}, and are thought to have allowed early humans to overcome several important challenges of group living. First, cooperation is argued to have solved problems related to obtaining food and defending territory. Collaborative hunting and tolerated co-scavenging encouraged foraging for rarer but higher-value calorie-dense foods⁷⁹. Meat sharing pooled the risk inherent to this mode of foraging, buffering against shortfalls⁷¹. Coordinated coalitions also defended the group against intruders⁸⁸. In all these endeavours, cooperative individuals are thought to have been at an advantage as they developed good reputations and were thus chosen more often for later social interactions^{79,89} and repaid by third-parties⁹⁰.

Second, group conformity is argued to have solved problems related to interacting with strangers and competition between rival groups. As groups grew in size, humans were required to undertake joint activities with relative strangers for whom reputational information was unknown. Group-wide social norms helped solve this problem by creating the conventions, common knowledge of conventions, and shared meta-knowledge necessary for group-wide joint action⁹¹. Human groups also frequently faced competition from rival groups, be it passive competition for resources or active warfare⁷⁹. Greater reliance on the ingroup and increased competition between groups fostered high fitness-interdependence within groups⁹² whereby individual fitness became tied to group viability. This selected for parochialism (*i.e.* in-group favouritism and out-group hostility)⁹³ and punishment of in-group norm violators⁹⁴ to promote group cohesion in the face of external threats.

Thus, the two basic social drives for cooperation and group conformity transitioned human group life from the small kin bands of great apes to the larger, more complex societies of ancestral hunter-gatherers⁷⁹. These societies were uniquely organised by both a relatively egalitarian socio-political structure⁹⁵ and deeply-embedded norms, conventions, and institutions⁹⁶. Later, cooperation and group conformity continued to mutually reinforce one another; cultural group selection favoured cooperative group norms that solved large-scale collective action problems, which in turn favoured further genetic selection for cooperative proclivities⁹⁷. Together, these changes resulted in an ultrasocial species that depended entirely on their social group and cultural know-how to survive.

Today, modern humans show the hallmarks of the strong social drives for cooperation and group conformity. Toddlers as young as 12 to 18 months of age are sensitive to equal allocations of resources⁹⁸, prefer to interact with fair individuals⁹⁹, and actively cooperate with conspecifics in order to achieve joint goals^{70,100}. Later, between 2 to 6 years of age, children begin to conform to their group's social norms¹⁰¹, punish third-party group members who do not abide by these norms^{102,103}, and show concern for the reputation of their group¹⁰⁴. By the time we reach adulthood, all normally functioning adults possess drives for cooperation and group conformity that structure variation in social behaviour. Research in behavioural economics has shown that 79% of the variation in social preferences across a suite of experimental economic games can be explained by two factors: a willingness to pay a cost to benefit others (cooperation dimension) and a willingness to pay a cost to punish norm-violators (conformity dimension)¹⁰⁵. Subsequent studies have replicated this two-factor structure^{106,107} across multiple cultures¹⁰⁸, and such individual differences are heritable^{109,110}, remain stable over long periods of time^{105,111}, and covary with basic neurological differences^{112,113}.

Individual differences in cooperation and group conformity

As well as explaining how cooperation and group conformity came to be species-typical human social drives, an evolutionary approach provides a natural framework and set of mechanisms for understanding variation in such traits¹¹⁴. Here we consider two mechanisms that predict strategic individual differences in cooperation and group conformity in human populations: fitness trade-offs and behavioural plasticity.

Fitness trade-offs exist when extreme levels of a trait confer both benefits and costs to individuals. Such trade-offs can lead to the evolution of functional variation via fluctuating selection¹¹⁵. In other words, variation in a trait is preserved if different levels of the trait provide different benefits at different times. For example, researchers have attributed personality variation in both humans¹¹⁵ and non-human animals¹¹⁶ to fitness trade-offs. In humans, high levels of extraversion are associated with a greater number of sexual partners, but also with greater risk of accident or illness¹¹⁷. This trade-off results in an extraversion spectrum along which individuals can vary. In a similar vein, we expect fitness trade-offs to have shaped variation in both cooperation and group conformity in human populations. Cooperators benefitted from good reputations, but were often vulnerable to exploitation from free-riders. Conformists benefitted from adaptability to the group's local conditions and increased group viability, but sacrificed possibilities for individual learning and innovation¹¹⁸. Thus, trade-offs between competition and cooperation and between individuality and conformity are expected to maintain strategic individual differences in both cooperation and group conformity within human populations.

In addition to heritable individual differences, variation in cooperation and group conformity is also expected as an adaptive response to changes in the social environment. Behavioural plasticity refers to the expression of different phenotypes in different environments, either on-the-fly or canalized in early development¹¹⁹. There is reason to

believe that both humans and non-human animals titrate their levels of cooperation and group conformity based on feedback from their social environment. Individuals cooperate less if they perceive their social environment to be hierarchical or competitive. Chimpanzees, for example, are less likely to distribute benefits throughout their group equitably if they live in unequal social networks¹²⁰. Similarly, humans are less likely to cooperate in Public Goods Games with unequal endowments¹²¹ or hierarchical arrangements¹²² and are less likely to give in Dictator Games if they live in neighbourhoods with high antisocial behaviour (*e.g.* littering)¹²³. Individuals also conform more if they perceive their social environment to be threatening or unpredictable. Nine-spined sticklebacks⁷⁴, rats⁷⁵, and humans¹²⁴ all exhibit a copy-when-uncertain rule, engaging in conformist social learning when environments are unpredictable. Moreover, as predicted by recent evolutionary game theoretic models¹²⁵, humans are more norm-adhering and norm-enforcing with increasing threats to group viability (*e.g.* high pathogen load, intergroup conflict)^{126,127}. Thus, individual differences in cooperative and conformist behaviour result not only from heritable differences, but also from functional behavioural plasticity in response to local social environments. We expect less cooperation in a social environment perceived to be more hierarchical or competitive, and more group conformity under conditions of uncertainty or threats to group viability.

Here, we propose that individual differences in cooperation and group conformity, resulting from both fitness trade-offs and behavioural plasticity, underlie political ideology in humans. Just as the social drives of great apes result in rudimentary political behaviour⁶⁰, we suggest that the social drives of humans result in two dimensions of political ideology. The first dimension reflects an individual's willingness to cooperate with others. The second dimension reflects an individual's commitment to group viability via adherence to group-wide social norms, punishment of in-group norm violators, and parochialism. Structured by an evolved psychology designed to deal with the challenges of group living, these two

dimensions of political ideology shape values, voting, and political behaviour in modern humans.

Cooperation, group conformity, and the two dimensions of human political ideology

This evolutionary framework explains why scholars have repeatedly converged upon two dimensions of political ideology, one referring to cooperation and the other referring to group conformity (Table 1). A closer look at some exemplar items from these self-report scales reveals this pattern more clearly (Table 2). The scale items in the left column of Table 2 measure the drive to cooperate at a personal cost. Some items refer to helping, empathy, and prosocial concern, qualities that would have been crucial prerequisites for any collaborative efforts in early human groups. Other items emphasise egalitarianism, equality, and fairness, reminiscent of the kinds of problems early humans would have faced when sharing the spoils of cooperation⁷⁹. The reverse-coded scales (Social Dominance Orientation and the Beta-isms) describe opposing competitive tendencies, such as self-interested or dominating behaviour. The scale items in the right column of Table 2 measure adherence to group-wide social norms, punishment of in-group norm-violators, and parochialism. Many items focus on traditionalism, obedience, and deference to authority, which can be understood as outcomes of psychological predispositions for majority-biased and prestige-biased conformist learning within groups¹²⁸. Several items emphasise strict laws, justice, and penalties for offenders, which clearly relate to norm-enforcing punishment. Other items refer to patriotism and the need for national security, reflecting parochial in-group favouritism and concern for group viability.

Table 2. Item exemplars from a subset of scales measuring the two dimensions of political ideology.

Dimension 1	Dimension 2
<i>Economic conservatism (core issues)</i> ¹¹	<i>Social conservatism (core issues)</i> ¹¹
... there should be a government insurance plan which would cover all medical and hospital expenses for everyone.	Do you think gay or lesbian couples, in other words, homosexual couples, should be legally permitted to adopt children?
... the government should provide fewer services even in areas such as health and education in order to reduce spending.	... a woman's place is in the home.
... the government in Washington should see to it that every person has a job and a good standard of living.	... abortion should never be permitted.
<i>Social Dominance Orientation</i> ¹²⁹	<i>Right-Wing Authoritarianism</i> ⁸
Some groups of people are simply inferior to other groups.	What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.
It's OK if some groups have more of a chance in life than others.	The "old-fashioned ways" and the "old-fashioned values" still show the best way to live.
It's probably a good thing that certain groups are at the top and other groups are at the bottom.	God's laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.
<i>Unmitigated self-interest (beta-isms)</i> ¹³	<i>Tradition-oriented religiousness (alpha-isms)</i> ¹³
Machiavellianism: Craft and deceit are justified in pursuing and maintaining power in the political world.	Legalism: I adhere strictly and literally to a code of religion and morality.
Materialism: Physical well-being and worldly possessions are the greatest good and highest value in life.	Ecclesiasticism: I am devoted to the principles and interests of the church.
Solipsism: The self is the only reality.	Traditionalism: I adhere to tradition, especially in cultural and religious practice.
<i>Self-enhancement vs. self-transcendence</i> ¹²	<i>Conservation vs. openness</i> ¹²
Equality (equal opportunity for all).	Obedient (dutiful, meeting obligations).
Social justice (correcting injustice, care for the weak).	National security (protection of my nation from enemies).
Helpful (working for the welfare of others).	Respect for tradition (preservation of time-honoured customs).

<i>Individualising (care/harm, fairness/reciprocity)¹⁴</i>	<i>Binding (in-group/loyalty, authority/respect, sanctity/purity)¹⁴</i>
Compassion for those who are suffering is the most crucial virtue.	People should be loyal to their family members, even when they have done something wrong.
When the government makes laws, the number one principle should be ensuring that everyone is treated fairly.	Respect for authority is something all children need to learn.
I think it's morally wrong that rich children inherit a lot of money while poor children inherit nothing.	Whether or not someone's action showed love for his or her country.

Our evolutionary framework also makes sense of the political stances that these ideological scales predict. Scales in the left column of Table 1 (*e.g.* economic conservatism) predict stances on issues like government-funded healthcare, welfare programs, and free education¹¹. Though far removed from the cooperation problems faced by early human groups, these issues can all be framed as social dilemmas, in which an individual's short-term self-interest is at odds with the group's long-term collective interest¹³⁰. For such social dilemma issues, people's basic drive to either cooperate or compete influences their political views. For example, individuals with a greater drive to cooperate are more likely to support extra taxes to fund a publicly accessible healthcare system (a social dilemma). Scales in the right column of Table 1 (*e.g.* social conservatism) predict stances on issues like traditional social values, criminal justice, national security, and religion^{8,11}. Group conformity underlies all these political stances. Social conservatives are more likely to conform to their group's traditional social norms (*e.g.* family structures, gender roles, and marriage norms), support policies that increase the influence of these norms in the public sphere⁸, and endorse punitive rather than rehabilitative action towards criminals and other in-group norm-violators^{131,132}. They often support tougher borders and military intervention abroad, as they are keenly aware of cultural group boundaries and are motivated to maintain a viable in-group in the

presence of perceived out-group threats. Norm-adherence and norm-enforcement in social conservatives is also often tied up with religion⁸. Anthropologists have long recognised religion as partly functioning to enforce sacred group norms and thus create moral communities¹³³. Similarly, evolutionary theorists have argued that religions are culturally group selected packages of norms outlining which behaviours are permissible and how norm-violators should be punished¹³⁴.

As well as explaining political stances predicted by economic and social conservatism separately, our framework also accommodates political stances predicted by both dimensions, such as intergroup prejudice, ethnocentrism, and immigration⁹. For example, economic conservatives oppose immigration because they believe that, once assimilated into their group's culture, immigrants will compete for status and jobs within the group, while social conservatives oppose immigration because they believe that immigrants will fail to assimilate¹³⁵. Our framework understands these differential routes to anti-immigration sentiment as outcomes of the cooperation and group conformity dimensions, respectively. Competitive individuals are more sensitive to the possibility that successful immigrants will compete with them for resources, while conformists are more concerned with the potential for cultural deviance and incompatibility of social norms, threatening group viability.

With its emphasis on social norms, our framework acknowledges that the attitudes of social conservatives should differ depending on the particular norms present in their society. However, this account does not reduce to cultural constructivism. Social norms are not entirely arbitrary; they often govern fitness-relevant behaviours (*e.g.* pathogen avoidance, mate choice, and reproduction) and group viability. For example, Fijian food norms which forbid pregnant women from ingesting toxic marine species are cultural adaptations that avoid deadly foetal poisoning⁹⁶. Likewise, religious norms surrounding infidelity, abortion, and same-sex marriage are cultural adaptations that encourage successful reproduction and

promote the growth and stability of the group¹³⁴. Thus, this framework explains why social conservatives can become focused on particular behaviours, such as marriage, contraception, prayer in school, and alcohol and drug use^{8,11}: they are adhering to and enforcing social norms that govern fitness-relevant behaviour and group viability.

Cooperation at a personal cost is itself a fitness-relevant behaviour that social norms can govern. Fairness norms across cultures prescribe how one should divide the spoils of cooperation¹³⁶, and variation in these cooperation norms can explain cross-cultural differences in the relationship between economic and social conservatism. In developed Western democracies with *Laissez-faire* economic systems¹³⁷, economic and social conservatism are weakly to moderately positively correlated with one another¹³⁸. However, recent work suggests that this relationship is the exception to the rule: in most cultures around the world, economic and social conservatism are negatively correlated¹³⁹. This is expected under our account if people readily interpret more egalitarian norms as in the interests of the group. The enforcement of egalitarian norms can also explain cases like *left-wing authoritarianism*, often found in post-communist Eastern European countries^{140,141}. Though once branded a myth¹⁴², this political ideology fits naturally within our framework: left-wing authoritarians are highly conformist individuals who enforce norms of egalitarianism, equality, and fairness as promoters of group viability.

An understanding of the fitness trade-offs associated with the evolution of cooperation and group conformity makes sense of stable individual differences in economic decision-making, personality traits, and neurophysiology, and explains why this variation reliably correlates with political ideology. People show stable individual differences in both cooperation and norm-enforcing punishment in experimental economic games^{105–108} and these individual differences correlate with social values related to taxation and helping (cooperation) and revenge (norm-enforcing punishment) in real world settings¹⁰⁵. People also

exhibit stable variation in personality traits like Machiavellianism and openness to experience, and these traits correlate with economic and social conservatism, respectively^{143,144}. Individual differences in basic neural and physiological processes also covary with ideology. When viewing images of others in distress, people higher in economic conservatism show less activation in brain regions associated with empathic concern¹⁴⁵. When presented with threatening stimuli, people higher in social (but not economic) conservatism show greater galvanic skin conductance, heart rate, and startle response³¹. Our framework explains these individual differences and subsequent correlations with political ideology as resulting from fitness trade-offs in cooperation and group conformity.

Similarly, an understanding of behavioural plasticity in cooperation and group conformity sheds light on existing data in political psychology. Studies suggest that the two dimensions of political ideology are influenced by socio-environmental context⁹. Our framework explains this socio-environmental contingency as resulting from behavioural plasticity in cooperation and group conformity. We expect that people will adapt their levels of cooperation based on the amount of competition they perceive in their environment. Consistent with this prediction, individuals who view the world as a ‘competitive jungle’ score higher on measures of economic (but not social) conservatism. Similarly, we expect that people will adapt their commitment to group viability through norm-adherence and norm-enforcement based on the amount of uncertainty and threat they perceive in their environment. Consistent with this prediction, those who view the world as ‘threatening, dangerous, and unpredictable’ score higher on measures of social (but not economic) conservatism⁹.

Discussion and future directions

We propose that cooperation and group conformity are the basic social drives underlying the two repeatedly identified dimensions of political ideology in humans. It is possible that these two dimensions alone are not sufficient to capture the full breadth of political views. Several evolutionary approaches have claimed the existence of three^{38,146}, five³⁹, or even six¹⁴⁷ dimensions. However, frameworks with more dimensions can often readily be reduced back down to two core factors^{38,148}. Other promising approaches in political psychology have attempted to carve the two dimensions into distinct sub-dimensions^{149,150}. For example, Right-Wing Authoritarianism has been split into authoritarian submission, conventionalism, and authoritarian aggression¹⁵¹. Consistent with our framework, these can be understood as an evolved commitment to group viability via conformity to existing group norms, conformity to traditional group norms, and punishment of norm-violators, respectively³⁶. While such approaches add nuance, the strong and reliable positive correlations between these sub-dimensions^{149,151} suggest that they represent two coherent packages of social motives that act together to organise cooperative and conformist behaviour.

It is also possible that ideology is not as important for political behaviour as we have made it out to be. Some scholars claim that since most people in the electorate are unable to articulate why they harbour particular beliefs and attitudes², political views are better attributed to self-interest than ideology³⁴. We acknowledge that not everyone is politically knowledgeable, aware, and engaged. However, a lack of political sophistication in the population should not be touted as evidence against individual variation showing an underlying structure⁴. Much like the use of language without the metacognitive awareness of its grammatical rules, people can hold ideologically consistent political views without any explicit awareness of their structure. Moreover, ideology explains political behaviours that

directly contradict self-interest, such as when wealthy individuals support economic redistribution and disadvantaged individuals oppose welfare policies¹⁵².

Future research should empirically test novel predictions of our evolutionary framework. First, individual differences in cooperation and group conformity should predict the two dimensions of political ideology. While there is already suggestive evidence that cooperation and norm-enforcing punishment in economic games can predict social values¹⁰⁵, researchers have not yet systematically examined how social preferences relate to variation across both ideological dimensions within the same individuals. Second, building on findings on personality variation early in life²¹, individual differences in children's cooperative and conformist behaviour should predict the two dimensions of political ideology decades later. Specifically, sharing and helping behaviour will negatively predict economic conservatism, and focus on norms, feelings of guilt, and enforcement of rules will positively predict social conservatism. In line with heritable individual differences, we also expect that parents' political ideologies will predict their children's cooperative and conformist behaviour. Third, competitive and threatening socio-environmental conditions should differentially predict the two dimensions of ideology. Previous work has shown that high-profile events like terrorism can increase conservatism^{153–156}, but this work has largely considered only a single dimension of ideology. Our framework makes more nuanced predictions. Acute events invoking competition (*e.g.* tax evasion scandals) should induce short-term increases in economic but not social conservatism, and acute events invoking threat (*e.g.* disease outbreaks), particularly group threats (*e.g.* terrorism, warfare), should induce short-term increases in social but not economic conservatism. Furthermore, chronic conditions, either actual or perceived, invoking competition (*e.g.* high economic inequality, income resulting from effort rather than luck¹⁵⁷) or threats to group viability (*e.g.* high pathogen load, political unrest, and criminality) will predict economic and social conservatism, respectively. Fourth, across a wide range of

cultures including non-WEIRD societies¹⁵⁸, local social norms and threats to group viability should predict the political views that social conservatives hold. Just like their Western counterparts, small-scale societies should express the two dimensions of cooperation and group conformity. However, social conservatives in these societies should adhere to and enforce local norms and taboos, the content of which will differ from culture to culture, and be sensitive to threats to the viability of their social group. Fifth, more research is needed into why, in contrast to other cultures, Western countries such as Great Britain and the United States are outliers in showing a positive correlation between the two dimensions¹³⁹. Do capitalist social norms and party politics in these countries suppress cooperation and encourage competition among social conservatives? Why have capitalist norms emerged in these countries and not others?

To conclude, we hope to encourage a fruitful dialogue between evolutionary scholars and political scientists to progress our understanding of the foundations of political ideology. Political scientists have made great complementary strides in studying the two-dimensional structure of ideology, but have yet to reach a satisfactory consensus on why this particular structure exists. Evolutionary theory provides the metatheoretical tools to reach such a consensus. Not only does the framework presented here shine new light on decades of existing work in political psychology, but it also makes sense of much of the volatility in our current political climate. To return to a previous example, many of the within-party disagreements in the 2016 US presidential election can be understood as outcomes of the two dimensions of ideology. Hillary Clinton and Bernie Sanders diverged on egalitarian issues like taxation, healthcare, and free higher education. Before running for office, Donald Trump differed from other Republicans in his less-than-stringent approach to traditional social norms regarding abortion and same-sex marriage. Thus, in both political science and everyday

403 public discourse, this multidimensional evolutionary framework promises a deeper and more
404 nuanced understanding of the politics that both unite and divide us.

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S.C. and Q.A. drafted the manuscript, with significant input from K.F, A.C., and C.S.

Competing Interests

The authors declare no competing interests.

Data Availability

Dataset for the literature review in Figure 1 is available at <https://osf.io/gckw7/>.

Code Availability

R code to reproduce Figure 1 is available at <https://osf.io/gckw7/>.