

The dual evolutionary foundations of political ideology

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1 **Abstract**

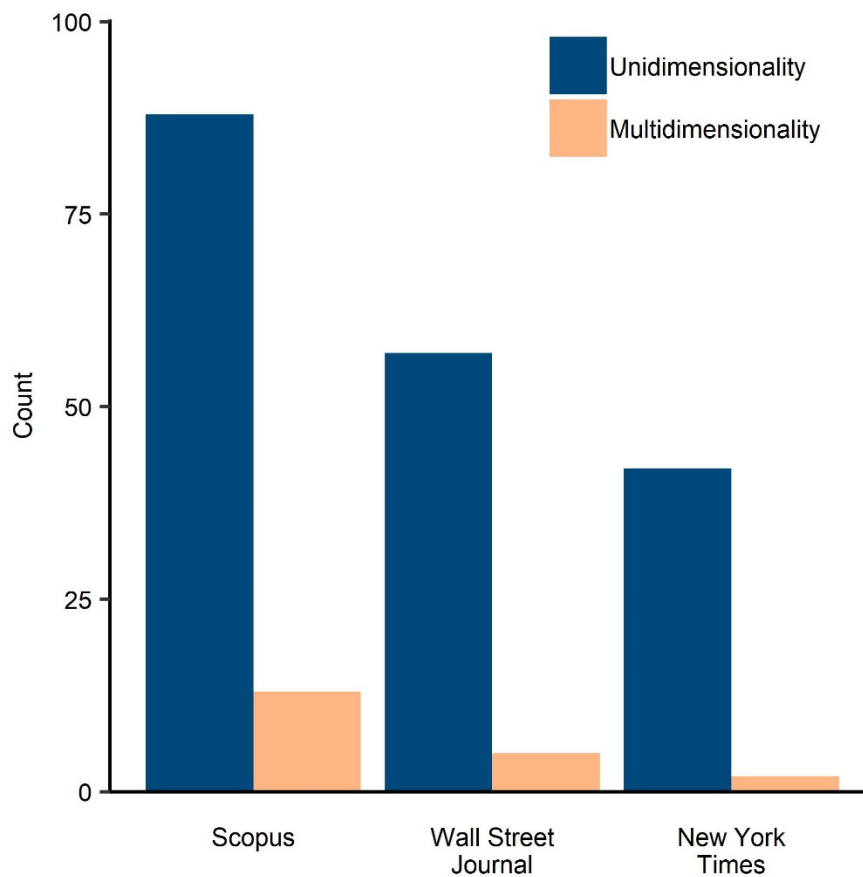
2 What determines our views on taxation and crime, healthcare and religion, welfare and  
3 gender roles? And why do opinions about these seemingly disparate aspects of our social  
4 lives coalesce the way they do? Research over the last 50 years has suggested that political  
5 attitudes and values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

18

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

20 In recent decades, the concept of political ideology has enjoyed a resurgence in the social  
21 sciences<sup>1</sup>. Political ideology is defined as a set of stable interrelated beliefs and attitudes that  
22 organise views on political and social issues. While scholars have previously attributed only a  
23 minor role for ideology in shaping political behaviour<sup>2,3</sup>, it has since become clear that  
24 political ideology both motivates voting and coherently structures views on a wide range of  
25 social issues, from taxation and welfare to crime and religion<sup>4</sup>. Traditionally, ideology has  
26 been conceptualised as varying along a unidimensional spectrum, with liberalism on the left  
27 and conservatism on the right<sup>5</sup>. Broadly, liberalism emphasises equality, social change, and  
28 system reform, while conservatism emphasises hierarchy, conventionalism, and tradition.  
29 This left-right distinction dates back at least 200 years to the 1791 French Legislative  
30 Assembly (monarchists sat on the right) but remains the primary means of describing  
31 political opinion in social science and public discourse (Figure 1).

32 Despite the popularity of this unidimensional model, political views cannot be neatly  
33 summarised by a single liberal-conservative spectrum<sup>6</sup>. Recent events in US politics have  
34 highlighted how divergent political views can be within left or right discourse, such as the  
35 disagreements of Hillary Clinton and Bernie Sanders within the Democratic Party, or the  
36 opposition to Donald Trump from within the Republican Party. In the electorate itself, many  
37 people express conflicting political beliefs that cross party lines<sup>7</sup>. Libertarians are a classic  
38 case of this misalignment, harbouring ‘liberal’ views on social issues but ‘conservative’  
39 views regarding economic policy. It is perhaps not a surprise, then, that unidimensional self-  
40 report scales of political ideology often have low internal consistency<sup>8</sup>, low external validity<sup>6</sup>,  
41 and frequently produce more than one latent variable in factor analyses<sup>9</sup>. In short, a single  
42 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<sup>10,11</sup>. Others have defined core universal human values (*e.g.* benevolence, tradition,

49 security) and then determined how they influence ideology<sup>12</sup>. Lexical approaches have  
50 abstracted even further, using ratings of dictionary-based “isms” (*e.g.* Machiavellianism,  
51 traditionalism) to reveal the underlying structure of political attitudes<sup>13</sup>. Moral psychology  
52 has identified clusters of moral values and noted how they strongly predict political  
53 ideology<sup>14</sup>. And cross-cultural approaches have validated scale items across many different  
54 societies, finding that the same dimensions recur<sup>15</sup>. Across this myriad of methodologies,  
55 researchers have found very similar two-dimensional ideological structures, strongly  
56 suggesting that the scales in Table 1 are all capturing the same underlying psychological  
57 phenomena.

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

67         It remains unclear why political attitudes tend to be structured along these two  
68 particular ideological dimensions, and why the two dimensions associate with particular  
69 worldviews. Here, we argue that an evolutionary approach to political ideology can shed light  
70 on both questions. Emerging evidence suggests that variation in political ideology is  
71 heritable<sup>16–20</sup>, remains stable over long periods of time<sup>21</sup>, and covaries with basic  
72 neurological<sup>22–26</sup> and physiological<sup>27–31</sup> differences. The two dimensions of ideology are also  
73 repeatedly observed across a wide range of cultures<sup>15,32,33</sup>, suggesting that they may be

74 universal. This recurrent pattern of ideological variation across cultures, together with  
75 heritable, stable individual differences, raises the intriguing possibility that the two  
76 dimensions are not merely self-interested responses to immediate socio-cultural  
77 environment<sup>34</sup> or historically-contingent cultural constructions<sup>2,3</sup>, but are at least partly  
78 grounded in biology. An evolutionary approach can explain how both genes and environment  
79 shape these individual differences in human social behaviour. While promising evolutionary  
80 approaches to political ideology have begun to consider the dimensions in Table 1, they have  
81 tended to focus on a single dimension<sup>35,36</sup>, a particular domain<sup>35,37</sup>, or some broader putative  
82 set of dimensions<sup>38,39</sup>. Furthermore, the ubiquity of the liberal-conservative model has meant  
83 that biological accounts still largely treat ideology as a single left-right spectrum<sup>20,24,27,40-42</sup>.

84 In this Perspective, we propose that the two basic dimensions of political ideology  
85 captured in Table 1 correspond to individual differences in two basic human social drives:  
86 *cooperation* and *group conformity*. Cooperation is defined as a willingness to pay personal  
87 costs to benefit others<sup>43</sup>. Group conformity is defined as a commitment to group viability via  
88 adherence to group-wide social norms, punishment of in-group norm violators, and  
89 identification with one's cultural group. Below, we review the current state of theory on how  
90 and why these two social drives evolved in humans. We then outline how fitness trade-offs  
91 and behavioural plasticity act to maintain strategic individual differences in cooperation and  
92 group conformity, and argue that these individual differences naturally give rise to the two  
93 basic dimensions of political ideology.

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

<b>Dimension 1</b>	<b>Dimension 2</b>	<b>Reference</b>
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

94 **Two key shifts in the evolution of human group living**

95 The socio-political lives of great apes are complex<sup>60</sup>. Chimpanzee social groups, for  
96 example, are organised by dominance hierarchies. Owing to the fitness benefits of higher  
97 status within these hierarchies, rank positions are hotly contested and change dynamically  
98 over time<sup>61</sup>, with individuals frequently engaging in Machiavellian social strategies to contest  
99 the status quo<sup>60</sup>. Chimpanzees also patrol territorial borders to defend their group against  
100 outsiders<sup>62</sup>. Much like humans, then, the political lives of great apes are spent dealing with  
101 the challenges of group living.

102 Human group living shares much of this complexity, but is unique in two key ways.  
103 First, humans cooperate to a much greater degree than do great apes. While some reports  
104 suggest that chimpanzees band together to form hunting parties<sup>63</sup>, their ability to coordinate  
105 with conspecifics is limited<sup>64</sup>. Furthermore, chimpanzees prefer to benefit themselves over  
106 others<sup>65</sup> and dominants will often monopolise food rather than share with subordinates<sup>66</sup>.  
107 Even bonobos, the socially tolerant great ape, show preferences for exploitative over  
108 cooperative individuals<sup>67</sup>. In contrast, humans effectively communicate with one another to  
109 solve coordination problems<sup>68,69</sup>, are spontaneously prosocial<sup>70</sup>, show greater preference for  
110 egalitarian division of resources<sup>71,72</sup>, and favour cooperative over exploitative individuals<sup>73</sup>.

111 Second, unlike great apes, humans conform to potentially arbitrary group-wide social  
112 norms and actively enforce those norms on other group members. Several species, including  
113 our great ape cousins, exhibit majority-biased learning (*i.e.* copy the most common trait)<sup>74-76</sup>.  
114 However, this conformity is not normative<sup>77</sup>. While chimpanzees engage in second-party  
115 punishment of conspecifics when they have been personally affected, they do not punish  
116 third-parties who violate group-wide social norms<sup>78</sup>. Further, great apes do not appear to  
117 discriminate between in-groups and out-groups based on cultural markers or behavioural  
118 traditions<sup>79</sup>. In contrast, humans naturally conform to group-wide social norms<sup>80</sup>, harbour a



119 range of self-conscious emotions dedicated to normativity (*e.g.* shame and guilt)<sup>81</sup>, and  
120 punish third-parties who violate group norms<sup>82</sup>. Humans also use these norms to discern  
121 group membership, attending to cultural markers like religion<sup>83</sup>, language<sup>84</sup>, and accent<sup>85</sup>.

122       The human social drives for cooperation and group conformity are the result of two key  
123 shifts in sociality that occurred after the divergence of the hominin lineage from great  
124 apes<sup>79,86-88</sup>, and are thought to have allowed early humans to overcome several important  
125 challenges of group living. First, cooperation is argued to have solved problems related to  
126 obtaining food and defending territory. Collaborative hunting and tolerated co-scavenging  
127 encouraged foraging for rarer but higher-value calorie-dense foods<sup>79</sup>. Meat sharing pooled the  
128 risk inherent to this mode of foraging, buffering against shortfalls<sup>71</sup>. Coordinated coalitions  
129 also defended the group against intruders<sup>88</sup>. In all these endeavours, cooperative individuals  
130 are thought to have been at an advantage as they developed good reputations and were thus  
131 chosen more often for later social interactions<sup>79,89</sup> and repaid by third-parties<sup>90</sup>.

132       Second, group conformity is argued to have solved problems related to interacting with  
133 strangers and competition between rival groups. As groups grew in size, humans were  
134 required to undertake joint activities with relative strangers for whom reputational  
135 information was unknown. Group-wide social norms helped solve this problem by creating  
136 the conventions, common knowledge of conventions, and shared meta-knowledge necessary  
137 for group-wide joint action<sup>91</sup>. Human groups also frequently faced competition from rival  
138 groups, be it passive competition for resources or active warfare<sup>79</sup>. Greater reliance on the  
139 ingroup and increased competition between groups fostered high fitness-interdependence  
140 within groups<sup>92</sup> whereby individual fitness became tied to group viability. This selected for  
141 parochialism (*i.e.* in-group favouritism and out-group hostility)<sup>93</sup> and punishment of in-group  
142 norm violators<sup>94</sup> to promote group cohesion in the face of external threats.

143           Thus, the two basic social drives for cooperation and group conformity transitioned  
144 human group life from the small kin bands of great apes to the larger, more complex societies  
145 of ancestral hunter-gatherers<sup>79</sup>. These societies were uniquely organised by both a relatively  
146 egalitarian socio-political structure<sup>95</sup> and deeply-embedded norms, conventions, and  
147 institutions<sup>96</sup>. Later, cooperation and group conformity continued to mutually reinforce one  
148 another; cultural group selection favoured cooperative group norms that solved large-scale  
149 collective action problems, which in turn favoured further genetic selection for cooperative  
150 proclivities<sup>97</sup>. Together, these changes resulted in an ultrasocial species that depended  
151 entirely on their social group and cultural know-how to survive.

152           Today, modern humans show the hallmarks of the strong social drives for cooperation  
153 and group conformity. Toddlers as young as 12 to 18 months of age are sensitive to equal  
154 allocations of resources<sup>98</sup>, prefer to interact with fair individuals<sup>99</sup>, and actively cooperate  
155 with conspecifics in order to achieve joint goals<sup>70,100</sup>. Later, between 2 to 6 years of age,  
156 children begin to conform to their group's social norms<sup>101</sup>, punish third-party group members  
157 who do not abide by these norms<sup>102,103</sup>, and show concern for the reputation of their group<sup>104</sup>.  
158 By the time we reach adulthood, all normally functioning adults possess drives for  
159 cooperation and group conformity that structure variation in social behaviour. Research in  
160 behavioural economics has shown that 79% of the variation in social preferences across a  
161 suite of experimental economic games can be explained by two factors: a willingness to pay a  
162 cost to benefit others (cooperation dimension) and a willingness to pay a cost to punish norm-  
163 violators (conformity dimension)<sup>105</sup>. Subsequent studies have replicated this two-factor  
164 structure<sup>106,107</sup> across multiple cultures<sup>108</sup>, and such individual differences are heritable<sup>109,110</sup>,  
165 remain stable over long periods of time<sup>105,111</sup>, and covary with basic neurological  
166 differences<sup>112,113</sup>.

167

**168 Individual differences in cooperation and group conformity**

169 As well as explaining how cooperation and group conformity came to be species-  
170 typical human social drives, an evolutionary approach provides a natural framework and set  
171 of mechanisms for understanding variation in such traits<sup>114</sup>. Here we consider two  
172 mechanisms that predict strategic individual differences in cooperation and group conformity  
173 in human populations: fitness trade-offs and behavioural plasticity.

174 Fitness trade-offs exist when extreme levels of a trait confer both benefits and costs to  
175 individuals. Such trade-offs can lead to the evolution of functional variation via fluctuating  
176 selection<sup>115</sup>. In other words, variation in a trait is preserved if different levels of the trait  
177 provide different benefits at different times. For example, researchers have attributed  
178 personality variation in both humans<sup>115</sup> and non-human animals<sup>116</sup> to fitness trade-offs. In  
179 humans, high levels of extraversion are associated with a greater number of sexual partners,  
180 but also with greater risk of accident or illness<sup>117</sup>. This trade-off results in an extraversion  
181 spectrum along which individuals can vary. In a similar vein, we expect fitness trade-offs to  
182 have shaped variation in both cooperation and group conformity in human populations.  
183 Cooperators benefitted from good reputations, but were often vulnerable to exploitation from  
184 free-riders. Conformists benefitted from adaptability to the group's local conditions and  
185 increased group viability, but sacrificed possibilities for individual learning and innovation<sup>118</sup>.  
186 Thus, trade-offs between competition and cooperation and between individuality and  
187 conformity are expected to maintain strategic individual differences in both cooperation and  
188 group conformity within human populations.

189 In addition to heritable individual differences, variation in cooperation and group  
190 conformity is also expected as an adaptive response to changes in the social environment.  
191 Behavioural plasticity refers to the expression of different phenotypes in different  
192 environments, either on-the-fly or canalized in early development<sup>119</sup>. There is reason to

193 believe that both humans and non-human animals titrate their levels of cooperation and group  
194 conformity based on feedback from their social environment. Individuals cooperate less if  
195 they perceive their social environment to be hierarchical or competitive. Chimpanzees, for  
196 example, are less likely to distribute benefits throughout their group equitably if they live in  
197 unequal social networks<sup>120</sup>. Similarly, humans are less likely to cooperate in Public Goods  
198 Games with unequal endowments<sup>121</sup> or hierarchical arrangements<sup>122</sup> and are less likely to  
199 give in Dictator Games if they live in neighbourhoods with high antisocial behaviour (*e.g.*  
200 littering)<sup>123</sup>. Individuals also conform more if they perceive their social environment to be  
201 threatening or unpredictable. Nine-spined sticklebacks<sup>74</sup>, rats<sup>75</sup>, and humans<sup>124</sup> all exhibit a  
202 copy-when-uncertain rule, engaging in conformist social learning when environments are  
203 unpredictable. Moreover, as predicted by recent evolutionary game theoretic models<sup>125</sup>,  
204 humans are more norm-adhering and norm-enforcing with increasing threats to group  
205 viability (*e.g.* high pathogen load, intergroup conflict)<sup>126,127</sup>. Thus, individual differences in  
206 cooperative and conformist behaviour result not only from heritable differences, but also  
207 from functional behavioural plasticity in response to local social environments. We expect  
208 less cooperation in a social environment perceived to be more hierarchical or competitive,  
209 and more group conformity under conditions of uncertainty or threats to group viability.

210 Here, we propose that individual differences in cooperation and group conformity,  
211 resulting from both fitness trade-offs and behavioural plasticity, underlie political ideology in  
212 humans. Just as the social drives of great apes result in rudimentary political behaviour<sup>60</sup>, we  
213 suggest that the social drives of humans result in two dimensions of political ideology. The  
214 first dimension reflects an individual's willingness to cooperate with others. The second  
215 dimension reflects an individual's commitment to group viability via adherence to group-  
216 wide social norms, punishment of in-group norm violators, and parochialism. Structured by  
217 an evolved psychology designed to deal with the challenges of group living, these two

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

220

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

222 This evolutionary framework explains why scholars have repeatedly converged upon  
223 two dimensions of political ideology, one referring to cooperation and the other referring to  
224 group conformity (Table 1). A closer look at some exemplar items from these self-report  
225 scales reveals this pattern more clearly (Table 2). The scale items in the left column of Table  
226 2 measure the drive to cooperate at a personal cost. Some items refer to helping, empathy,  
227 and prosocial concern, qualities that would have been crucial prerequisites for any  
228 collaborative efforts in early human groups. Other items emphasise egalitarianism, equality,  
229 and fairness, reminiscent of the kinds of problems early humans would have faced when  
230 sharing the spoils of cooperation<sup>79</sup>. The reverse-coded scales (Social Dominance Orientation  
231 and the Beta-isms) describe opposing competitive tendencies, such as self-interested or  
232 dominating behaviour. The scale items in the right column of Table 2 measure adherence to  
233 group-wide social norms, punishment of in-group norm-violators, and parochialism. Many  
234 items focus on traditionalism, obedience, and deference to authority, which can be  
235 understood as outcomes of psychological predispositions for majority-biased and prestige-  
236 biased conformist learning within groups<sup>128</sup>. Several items emphasise strict laws, justice, and  
237 penalties for offenders, which clearly relate to norm-enforcing punishment. Other items refer  
238 to patriotism and the need for national security, reflecting parochial in-group favouritism and  
239 concern for group viability.

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

<b>Dimension 1</b>	<b>Dimension 2</b>
<i>Economic conservatism (core issues)</i> <sup>11</sup>	<i>Social conservatism (core issues)</i> <sup>11</sup>
... 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> <sup>129</sup>	<i>Right-Wing Authoritarianism</i> <sup>8</sup>
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> <sup>13</sup>	<i>Tradition-oriented religiousness (alpha-isms)</i> <sup>13</sup>
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> <sup>12</sup>	<i>Conservation vs. openness</i> <sup>12</sup>
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)</i> <sup>14</sup>	<i>Binding (in-group/loyalty, authority/respect, sanctity/purity)</i> <sup>14</sup>
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.

240 Our evolutionary framework also makes sense of the political stances that these  
241 ideological scales predict. Scales in the left column of Table 1 (*e.g.* economic conservatism)  
242 predict stances on issues like government-funded healthcare, welfare programs, and free  
243 education<sup>11</sup>. Though far removed from the cooperation problems faced by early human  
244 groups, these issues can all be framed as social dilemmas, in which an individual's short-term  
245 self-interest is at odds with the group's long-term collective interest<sup>130</sup>. For such social  
246 dilemma issues, people's basic drive to either cooperate or compete influences their political  
247 views. For example, individuals with a greater drive to cooperate are more likely to support  
248 extra taxes to fund a publicly accessible healthcare system (a social dilemma). Scales in the  
249 right column of Table 1 (*e.g.* social conservatism) predict stances on issues like traditional  
250 social values, criminal justice, national security, and religion<sup>8,11</sup>. Group conformity underlies  
251 all these political stances. Social conservatives are more likely to conform to their group's  
252 traditional social norms (*e.g.* family structures, gender roles, and marriage norms), support  
253 policies that increase the influence of these norms in the public sphere<sup>8</sup>, and endorse punitive  
254 rather than rehabilitative action towards criminals and other in-group norm-violators<sup>131,132</sup>.  
255 They often support tougher borders and military intervention abroad, as they are keenly  
256 aware of cultural group boundaries and are motivated to maintain a viable in-group in the

257 presence of perceived out-group threats. Norm-adherence and norm-enforcement in social  
258 conservatives is also often tied up with religion<sup>8</sup>. Anthropologists have long recognised  
259 religion as partly functioning to enforce sacred group norms and thus create moral  
260 communities<sup>133</sup>. Similarly, evolutionary theorists have argued that religions are culturally  
261 group selected packages of norms outlining which behaviours are permissible and how norm-  
262 violators should be punished<sup>134</sup>.

263 As well as explaining political stances predicted by economic and social conservatism  
264 separately, our framework also accommodates political stances predicted by both dimensions,  
265 such as intergroup prejudice, ethnocentrism, and immigration<sup>9</sup>. For example, economic  
266 conservatives oppose immigration because they believe that, once assimilated into their  
267 group's culture, immigrants will compete for status and jobs within the group, while social  
268 conservatives oppose immigration because they believe that immigrants will fail to  
269 assimilate<sup>135</sup>. Our framework understands these differential routes to anti-immigration  
270 sentiment as outcomes of the cooperation and group conformity dimensions, respectively.  
271 Competitive individuals are more sensitive to the possibility that successful immigrants will  
272 compete with them for resources, while conformists are more concerned with the potential for  
273 cultural deviance and incompatibility of social norms, threatening group viability.

274 With its emphasis on social norms, our framework acknowledges that the attitudes of  
275 social conservatives should differ depending on the particular norms present in their society.  
276 However, this account does not reduce to cultural constructivism. Social norms are not  
277 entirely arbitrary; they often govern fitness-relevant behaviours (*e.g.* pathogen avoidance,  
278 mate choice, and reproduction) and group viability. For example, Fijian food norms which  
279 forbid pregnant women from ingesting toxic marine species are cultural adaptations that  
280 avoid deadly foetal poisoning<sup>96</sup>. Likewise, religious norms surrounding infidelity, abortion,  
281 and same-sex marriage are cultural adaptations that encourage successful reproduction and



282 promote the growth and stability of the group<sup>134</sup>. Thus, this framework explains why social  
283 conservatives can become focused on particular behaviours, such as marriage, contraception,  
284 prayer in school, and alcohol and drug use<sup>8,11</sup>: they are adhering to and enforcing social  
285 norms that govern fitness-relevant behaviour and group viability.

286       Cooperation at a personal cost is itself a fitness-relevant behaviour that social norms  
287 can govern. Fairness norms across cultures prescribe how one should divide the spoils of  
288 cooperation<sup>136</sup>, and variation in these cooperation norms can explain cross-cultural  
289 differences in the relationship between economic and social conservatism. In developed  
290 Western democracies with *Laissez-faire* economic systems<sup>137</sup>, economic and social  
291 conservatism are weakly to moderately positively correlated with one another<sup>138</sup>. However,  
292 recent work suggests that this relationship is the exception to the rule: in most cultures around  
293 the world, economic and social conservatism are negatively correlated<sup>139</sup>. This is expected  
294 under our account if people readily interpret more egalitarian norms as in the interests of the  
295 group. The enforcement of egalitarian norms can also explain cases like *left-wing*  
296 *authoritarianism*, often found in post-communist Eastern European countries<sup>140,141</sup>. Though  
297 once branded a myth<sup>142</sup>, this political ideology fits naturally within our framework: left-wing  
298 authoritarians are highly conformist individuals who enforce norms of egalitarianism,  
299 equality, and fairness as promoters of group viability.

300       An understanding of the fitness trade-offs associated with the evolution of cooperation  
301 and group conformity makes sense of stable individual differences in economic decision-  
302 making, personality traits, and neurophysiology, and explains why this variation reliably  
303 correlates with political ideology. People show stable individual differences in both  
304 cooperation and norm-enforcing punishment in experimental economic games<sup>105–108</sup> and  
305 these individual differences correlate with social values related to taxation and helping  
306 (cooperation) and revenge (norm-enforcing punishment) in real world settings<sup>105</sup>. People also

307 exhibit stable variation in personality traits like Machiavellianism and openness to  
308 experience, and these traits correlate with economic and social conservatism,  
309 respectively<sup>143,144</sup>. Individual differences in basic neural and physiological processes also  
310 covary with ideology. When viewing images of others in distress, people higher in economic  
311 conservatism show less activation in brain regions associated with empathic concern<sup>145</sup>.  
312 When presented with threatening stimuli, people higher in social (but not economic)  
313 conservatism show greater galvanic skin conductance, heart rate, and startle response<sup>31</sup>. Our  
314 framework explains these individual differences and subsequent correlations with political  
315 ideology as resulting from fitness trade-offs in cooperation and group conformity.

316         Similarly, an understanding of behavioural plasticity in cooperation and group  
317 conformity sheds light on existing data in political psychology. Studies suggest that the two  
318 dimensions of political ideology are influenced by socio-environmental context<sup>9</sup>. Our  
319 framework explains this socio-environmental contingency as resulting from behavioural  
320 plasticity in cooperation and group conformity. We expect that people will adapt their levels  
321 of cooperation based on the amount of competition they perceive in their environment.  
322 Consistent with this prediction, individuals who view the world as a ‘competitive jungle’  
323 score higher on measures of economic (but not social) conservatism. Similarly, we expect  
324 that people will adapt their commitment to group viability through norm-adherence and  
325 norm-enforcement based on the amount of uncertainty and threat they perceive in their  
326 environment. Consistent with this prediction, those who view the world as ‘threatening,  
327 dangerous, and unpredictable’ score higher on measures of social (but not economic)  
328 conservatism<sup>9</sup>.

### 329 **Discussion and future directions**

330 We propose that cooperation and group conformity are the basic social drives  
331 underlying the two repeatedly identified dimensions of political ideology in humans. It is  
332 possible that these two dimensions alone are not sufficient to capture the full breadth of  
333 political views. Several evolutionary approaches have claimed the existence of three<sup>38,146</sup>,  
334 five<sup>39</sup>, or even six<sup>147</sup> dimensions. However, frameworks with more dimensions can often  
335 readily be reduced back down to two core factors<sup>38,148</sup>. Other promising approaches in  
336 political psychology have attempted to carve the two dimensions into distinct sub-  
337 dimensions<sup>149,150</sup>. For example, Right-Wing Authoritarianism has been split into authoritarian  
338 submission, conventionalism, and authoritarian aggression<sup>151</sup>. Consistent with our  
339 framework, these can be understood as an evolved commitment to group viability via  
340 conformity to existing group norms, conformity to traditional group norms, and punishment  
341 of norm-violators, respectively<sup>36</sup>. While such approaches add nuance, the strong and reliable  
342 positive correlations between these sub-dimensions<sup>149,151</sup> suggest that they represent two  
343 coherent packages of social motives that act together to organise cooperative and conformist  
344 behaviour.

345 It is also possible that ideology is not as important for political behaviour as we have  
346 made it out to be. Some scholars claim that since most people in the electorate are unable to  
347 articulate why they harbour particular beliefs and attitudes<sup>2</sup>, political views are better  
348 attributed to self-interest than ideology<sup>34</sup>. We acknowledge that not everyone is politically  
349 knowledgeable, aware, and engaged. However, a lack of political sophistication in the  
350 population should not be touted as evidence against individual variation showing an  
351 underlying structure<sup>4</sup>. Much like the use of language without the metacognitive awareness of  
352 its grammatical rules, people can hold ideologically consistent political views without any  
353 explicit awareness of their structure. Moreover, ideology explains political behaviours that

354 directly contradict self-interest, such as when wealthy individuals support economic  
355 redistribution and disadvantaged individuals oppose welfare policies<sup>152</sup>.

356 Future research should empirically test novel predictions of our evolutionary  
357 framework. First, individual differences in cooperation and group conformity should predict  
358 the two dimensions of political ideology. While there is already suggestive evidence that  
359 cooperation and norm-enforcing punishment in economic games can predict social values<sup>105</sup>,  
360 researchers have not yet systematically examined how social preferences relate to variation  
361 across both ideological dimensions within the same individuals. Second, building on findings  
362 on personality variation early in life<sup>21</sup>, individual differences in children's cooperative and  
363 conformist behaviour should predict the two dimensions of political ideology decades later.  
364 Specifically, sharing and helping behaviour will negatively predict economic conservatism,  
365 and focus on norms, feelings of guilt, and enforcement of rules will positively predict social  
366 conservatism. In line with heritable individual differences, we also expect that parents'  
367 political ideologies will predict their children's cooperative and conformist behaviour. Third,  
368 competitive and threatening socio-environmental conditions should differentially predict the  
369 two dimensions of ideology. Previous work has shown that high-profile events like terrorism  
370 can increase conservatism<sup>153-156</sup>, but this work has largely considered only a single dimension  
371 of ideology. Our framework makes more nuanced predictions. Acute events invoking  
372 competition (*e.g.* tax evasion scandals) should induce short-term increases in economic but  
373 not social conservatism, and acute events invoking threat (*e.g.* disease outbreaks), particularly  
374 group threats (*e.g.* terrorism, warfare), should induce short-term increases in social but not  
375 economic conservatism. Furthermore, chronic conditions, either actual or perceived, invoking  
376 competition (*e.g.* high economic inequality, income resulting from effort rather than luck<sup>157</sup>)  
377 or threats to group viability (*e.g.* high pathogen load, political unrest, and criminality) will  
378 predict economic and social conservatism, respectively. Fourth, across a wide range of

379 cultures including non-WEIRD societies<sup>158</sup>, local social norms and threats to group viability  
380 should predict the political views that social conservatives hold. Just like their Western  
381 counterparts, small-scale societies should express the two dimensions of cooperation and  
382 group conformity. However, social conservatives in these societies should adhere to and  
383 enforce local norms and taboos, the content of which will differ from culture to culture, and  
384 be sensitive to threats to the viability of their social group. Fifth, more research is needed into  
385 why, in contrast to other cultures, Western countries such as Great Britain and the United  
386 States are outliers in showing a positive correlation between the two dimensions<sup>139</sup>. Do  
387 capitalist social norms and party politics in these countries suppress cooperation and  
388 encourage competition among social conservatives? Why have capitalist norms emerged in  
389 these countries and not others?

390         To conclude, we hope to encourage a fruitful dialogue between evolutionary scholars  
391 and political scientists to progress our understanding of the foundations of political ideology.  
392 Political scientists have made great complementary strides in studying the two-dimensional  
393 structure of ideology, but have yet to reach a satisfactory consensus on why this particular  
394 structure exists. Evolutionary theory provides the metatheoretical tools to reach such a  
395 consensus. Not only does the framework presented here shine new light on decades of  
396 existing work in political psychology, but it also makes sense of much of the volatility in our  
397 current political climate. To return to a previous example, many of the within-party  
398 disagreements in the 2016 US presidential election can be understood as outcomes of the two  
399 dimensions of ideology. Hillary Clinton and Bernie Sanders diverged on egalitarian issues  
400 like taxation, healthcare, and free higher education. Before running for office, Donald Trump  
401 differed from other Republicans in his less-than-stringent approach to traditional social norms  
402 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/>.