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The Ancestral Logic of Politics: Upper-Body Strength Regulates Men's Assertion of Self-Interest Over Economic Redistribution

Michael Bang Petersen[1], Daniel Sznycer[2], Aaron Sell[2,3], Leda Cosmides[2], and John Tooby[2]

[1]Department of Political Science & Government, Aarhus University; [2]Center for Evolutionary Psychology, University of California, Santa Barbara; and [3]School of Criminology and Criminal Justice, Griffith University

Abstract

Over human evolutionary history, upper-body strength has been a major component of fighting ability. Evolutionary models of animal conflict predict that actors with greater fighting ability will more actively attempt to acquire or defend resources than less formidable contestants will. Here, we applied these models to political decision making about redistribution of income and wealth among modern humans. In studies conducted in Argentina, Denmark, and the United States, men with greater upper-body strength more strongly endorsed the self-beneficial position: Among men of lower socioeconomic status (SES), strength predicted increased support for redistribution; among men of higher SES, strength predicted increased opposition to redistribution. Because personal upper-body strength is irrelevant to payoffs from economic policies in modern mass democracies, the continuing role of strength suggests that modern political decision making is shaped by an evolved psychology designed for small-scale groups.

Keywords

evolutionary psychology, social cognition

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Given the ubiquitous presence of aggression among animal species, it is highly probable that human ancestors engaged in aggression for tens of millions of generations, possibly from the origin of the vertebrates. In contrast, the human transition from small-scale conflict to state politics involving millions of players took place with extraordinary abruptness, from 3 to 250 generations ago, depending on the region and its population (Hibbs & Olsson, 2004). This means that despite the technological and demographic changes associated with agriculture and the industrial revolution, any evolved decision-making system that navigates political conflicts in modern contexts must have been designed by natural selection to operate in small-scale social ecologies such as those faced by human ancestors (Petersen, 2012).

What effect would these intense, long-enduring selection pressures have had on the subset of decision-making machinery that evolved to regulate conflict? The asymmetric war of attrition (AWA) is one of the best validated models in behavioral ecology (Hammerstein & Parker, 1982; Maynard Smith & Parker, 1976), and it is supported by scores of empirical studies across all major vertebrate classes (Kelly, 2008). Its central premise is that greater fighting ability leads animals to bargain for a disproportionate share of contested resources (Huntingford & Turner, 1987; Kelly, 2008; Smuts, Cheney, Seyfarth, Wrangham, & Struhsaker, 1987). Lesser fighting ability leads animals to more readily cede resources they cannot cost-effectively defend. It is a fitness error for weaker contestants to attempt to seize resources when they cannot prevail and for stronger ones to cede what they can cost-effectively defend. Although human social evolution incorporated an unusually strong cooperative dimension (Cosmides & Tooby, 1992; Trivers, 1971), converging evidence from archaeology (Gat, 1999), human evolutionary ecology

Corresponding Author:
Michael Bang Petersen, Aarhus University, Political Science, Universitetsparken Building 1331, Aarhus DK-8000, Denmark
E-mail: michael@ps.au.dk

(Chagnon, 1988; Hess, Helfrecht, Hagen, Sell, & Hewlett, 2010; von Rueden, Gurven, & Kaplan, 2008), and psychology (Archer & Thanzami, 2007; Sell, Hone, & Pound, 2012; Sell, Tooby, & Cosmides, 2009; Price, Kang, Dunn, & Hopkins, 2010; Thomsen, Frankenhuis, Ingold-Smith, & Carey, 2011) indicates that asymmetries in fighting ability were nevertheless a socially relevant variable in ancestral human populations. These asymmetries helped determine the outcomes of conflicts and hence predicted the payoffs of making alternative decisions. In short, this regime would have selected for neural machinery that assessed relative fighting ability and used these assessments as inputs to regulate people's decisions about whether to attempt to take resources from others and, reciprocally, about whether to cede one's own resources to others.

In small-scale societies, a man's upper-body strength was one of several key components of his fighting ability with or without weapons (Sell, Tooby, & Cosmides, 2009; von Rueden et al., 2008). Even in developed and well-policed societies in which individual violence is rarely used to settle important resource conflicts (Pinker, 2011), people nevertheless accurately assess men's upper-body strength from visual and auditory cues, spontaneously base their assessment of others' fighting ability on upper-body strength, and accurately assess their own strength (Archer & Thanzami, 2007; Sell et al., 2010; Sell, Cosmides, et al., 2009; Sell, Tooby, & Cosmides, 2009). Consistent with the argument that these abilities have an evolved basis, previous research has shown that 10- to 13-month-old preverbal infants make predictions of social outcomes between agents on the basis of relative physical size (Thomsen et al., 2011).

As predicted on the basis of the AWA model, men with greater upper-body strength feel more entitled to advantageous outcomes and have lower thresholds for aggression in conflicts of interest (Archer & Thanzami, 2007; Hess et al., 2010; Sell, Tooby, & Cosmides, 2009; von Rueden et al., 2008). In contrast, direct physical aggression was a less rewarding strategy for women over human evolutionary history, both because women had less to gain and more to lose from aggression (Campbell, 1999) and because they were at an enduring disadvantage in aggression as a result of the evolved upper-body strength differential between men and women (Lassek & Gaulin, 2009). Hence, a person's upper-body strength is predicted to (and has been found to) play a role in male but not in female decisions involving conflict (Sell, Tooby, & Cosmides, 2009). In short, previous research supports the claim that among modern humans, a man's own upper-body strength is taken as an input variable to the decision system that regulates how strongly to assert self-interest in conflicts of interest (Sell, Tooby, & Cosmides, 2009).

Economic Redistribution as Conflict Over Resources

Whether they focus on rational choice or heuristic processes, standard models of judgment and decision making assume that somatic variables such as upper-body strength are irrelevant to the choices people make (Gilovich, Griffin, & Kahneman, 2002). Correspondingly, in the study of political decision making, most accounts assume that orientations about modern political conflicts are generated by cultural, historical, or social processes without input from somatic variables in the self. Yet if, as hypothesized, individual dispositions about modern political conflicts are partly generated by evolved mechanisms designed for evolutionarily recurrent conditions, then the AWA model predicts that men with greater upper-body strength should be more likely to adopt political positions that increase their share of resources, whereas men with lesser upper-body strength should be more likely to adopt positions that relinquish resources demanded by other individuals. In contrast to its predictions for men, the model predicts that this relationship should be weaker or absent among women (Sell, Tooby, & Cosmides, 2009). To test the association between upper-body strength and political positions, we focused on a key resource conflict in modern politics: the redistribution of income and wealth.

Analyzed without the complications of macroeconomics, income and wealth redistribution is a simple conflict of interest between individuals whose share of resources would increase following redistribution (i.e., those who are poorer) and individuals whose existing share would be reduced (i.e., those who are richer). If economic redistribution is interpreted by the evolved mechanisms of the mind as a form of resource conflict, then the issue of redistribution should activate the components of human psychology that evolved to handle such conflicts. If human decision-making adaptations evolved to regulate the assertion of self-interest on the basis of fighting ability, then the fighting ability of men should predict their positions on economic redistribution. Specifically, men with greater upper-body strength should more strongly favor redistribution if they are poor but oppose it if they are wealthy. This theory predicts the existence of a two-way interaction between males' socioeconomic status (SES) and their upper-body strength on support for redistribution. First, for males of low SES, physical strength should positively correlate with support for redistribution; second, for males of high SES, physical strength should negatively correlate with support for redistribution. Women's upper-body strength, in contrast, should have little or no effect on their support for redistribution.

Rational-choice theory is the dominant theory of pursuit of self-interest in the social sciences. In modern society, male upper-body strength continues to be correlated with success in interpersonal conflicts (Sell, Tooby, & Cosmides, 2009; Sell et al., 2012), which is consistent both with the existence of an evolved AWA-based psychology and with rational decision making that recognizes that in some individual-level conflicts, personal fighting ability may be instrumentally useful. However, when it comes to redistributive policies in modern states, any rational connection between personal upper-body strength and payoffs from assertion of self-interest is severed. Here, payoffs are determined by large-scale economic policies enacted by democratically elected representatives and enforced by the state. To the extent that upper-body strength shapes assertion of self-interest on policies of economic redistribution, this would provide clear support for an evolutionarily based theory of political orientation rather than a rational-choice perspective.

Method

To test the predictions entailed by the AWA model about support for economic redistribution, we collected data on upper-body strength, SES, and support for economic redistribution in three countries: Argentina (113 males, 110 females; mean age = 21 years, $SD = 3.03$), the United States (211 males, 275 females; mean age = 19 years, $SD = 3.35$), and Denmark (421 males, 372 females; mean age = 48 years, $SD = 13.91$; the Danish sample was nationally representative). Fighting ability was operationalized as the circumference of the flexed bicep of the dominant arm—the single best morphological predictor of upper-body strength (Sell, Cosmides, et al., 2009). SES was measured with questionnaires about social and economic background. To measure support for economic redistribution, we asked subjects to state their degree of agreement or disagreement with a number of statements about redistribution. All measures were *z*-scored prior to analysis. (See the Supplemental Material available online for more details on the methods, including descriptions of the measures of SES, upper-body strength, and support for economic redistribution, as well as additional validation analyses.)

Results

Does upper-body strength influence support for economic redistribution in men? Yes. As predicted, for men of high SES, the correlation between strength and support for redistribution was negative, whereas for men of low SES, the correlation was positive (see Fig. 1). In other words, strong men of high SES opposed redistribution, whereas strong men of low SES favored redistribution. Using ordinary-least-squares regression, we regressed subjects' support for redistribution on their SES, upper-body strength, and the interaction of these two factors for males and females separately. For males, there was a highly significant interaction effect in all three countries—Argentina: $F(1, 98) = 7.83$, $p = .003$, $r^2 = .082$; United States: $F(1, 201) = 6.22$, $p = .007$, $r^2 = .032$; Denmark: $F(1, 414) = 9.70$, $p = .001$, $r^2 = .124$ (one-tailed *p*s). Figure 1 displays the marginal effects of male upper-body strength (with associated confidence intervals) on support for redistribution and how that effect changes with different levels of SES. These effects were robust to the inclusion of control variables such as age, body mass index, political ideology, and physical exercise (see the Supplemental Material). It is telling that the effect of strength on support for redistribution remained after controlling for political ideology, which suggests that political ideology can be broken down into different evolved domains that are each regulated by distinct evolutionarily relevant variables (Hatemi & McDermott, 2011; Petersen, Sznycer, Cosmides, & Tooby, 2012).

Does upper-body strength influence support for economic redistribution in women? No. Regarding female subjects, nowhere was the interaction of upper-body strength and SES on support for economic redistribution statistically significant—Argentina: $F(1, 87) = 1.38$, $p = .24$; United States: $F(1, 268) = 0.39$, $p = .54$; Denmark: $F(1, 366) = 0.12$, $p = .73$ (two-tailed *p*s). Furthermore, the interaction of upper-body strength and SES on support for redistribution was stronger for men than for women in all tested countries, and the difference reached significance in both the United States and Denmark. This was indicated by a three-way interaction between sex, upper-body strength, and SES on support for redistribution—United States: $F(1, 469) = 5.69$, $p = .009$; Denmark: $F(1, 780) = 3.40$, $p = .033$ (one-tailed *p*s). In Argentina, the three-way interaction was not significant—Argentina: $F(1, 185) = 0.12$, $p = .364$, one-tailed. The effect size of this interaction was comparable in the Argentine and Danish samples ($\beta = 0.09$ and $\beta = 0.13$, respectively); however, the data from the Argentine sample, less than a third of the size of the Danish sample, lacked the statistical power to reach conventional significance levels.

As predicted, physical strength was positively correlated with support for economic redistribution among low-SES males. However, as SES increased above average, the effect of upper-body strength on support for redistribution became negative; in other words, among higher-SES men, physical strength was correlated with opposition to redistribution. Because redistribution policies have the effect of shifting resources from higher- to lower-SES individuals, the results indicate that physically stronger males (rich and poor) are more prone to bargain in their own self-interest, supporting proposals for redistribution if they are poor and resisting those proposals if

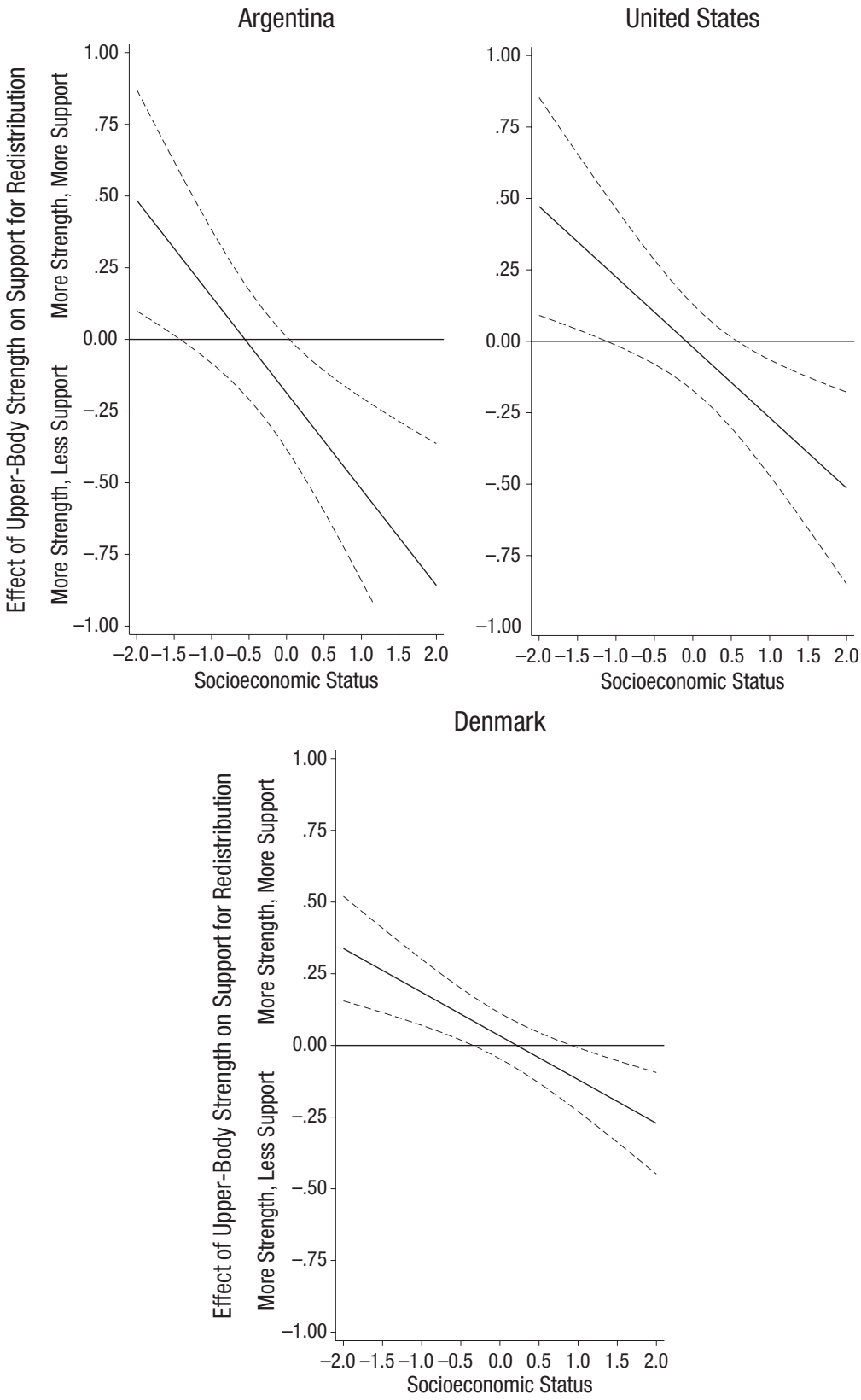

Fig. 1. Effect of upper-body strength in men on support for economic redistribution as a function of socioeconomic status. Results are shown separately for Argentina ($N = 102$), the United States ($N = 205$), and Denmark ($N = 418$). Solid lines show predicted effect sizes, and dashed curves indicate 90% confidence intervals of the given effect sizes (equivalent to one-tailed *p*s). Effect sizes are unstandardized regression coefficients based on *z*-scored variables.

they are rich. In contrast, weaker males (rich and poor) are less likely to contest proposals that run against their own self-interest, showing less support for redistribution if they are poor and less resistance to redistribution if they are rich. As predicted, in all three countries, the same statistical pattern was found only among men.

Discussion

The AWA model of animal conflict predicts that animals use advantages in fighting ability to bargain for increased access to resources. Equally, it predicts that attempts to self-interestedly increase resource shares should not be initiated when at a competitive disadvantage. The findings reported here show that this model generalizes to humans and successfully predicts the distribution of support for, and opposition to, economic redistribution in three different nations.

We tested a key prediction derived from animal-conflict theory: Individuals with greater fighting ability (here, upper-body strength) should seek larger shares of contested resources. We showed that upper-body strength in modern adult men influences their willingness to bargain in their own self-interest over income and wealth redistribution. These effects were replicated across cultures and, as expected, found only among males. The effects in the Danish sample were especially informative because it was a large and representative national sample.

These findings also offer a solution to one of social science's key puzzles: Despite the fact that rational-choice theory is a dominant theory in social science, many empirical studies have found that self-interest has only small effects on political attitudes (Kumlin, 2007). On this basis, critics have argued that political attitudes are divorced from self-interest and are instead derived from abstract political principles (Sears & Funk, 1991; Sears, Lau, Tyler, & Allen, 1980). The present findings show, however, that the assertion of interest in mass politics is reliably calibrated by physical strength, a factor relevant to ancestral bargaining in men. It is not that self-interest is irrelevant—rather, decision-making systems for bargaining are simply designed to reflect self-interest in a cost-effective way, assuming evolutionarily recurrent small-scale social conditions.

Although individual differences in upper-body strength were consequential in ancestral conflicts of interest and continue to be relevant in many interpersonal disputes today, physical strength is objectively irrelevant to the personal payoffs of particular distributional schemes at the national level: National policies on issues such as economic redistribution are determined by anonymous voting, electoral representation, and the numerical power of the factions in the legislature. Furthermore, they are enforced by the state rather that by the individual. Yet our results demonstrate that physically weak males are more reluctant than physically strong males to assert their self-interest—just as if disputes over national policies were a matter of direct physical confrontation among small numbers of individuals, rather than abstract electoral dynamics among millions.

It should be noted that it remains possible that individuals partially recognize the irrelevance of individual fighting ability in the domain of mass social dynamics. It may be that the weighing of physical strength in decision making negatively covaries with the number of individuals involved in a conflict, such that strength influences processing about abstract large-scale political conflict less than processing about small-scale interpersonal disputes. Future research that directly compares the influence of fighting ability on parallel decisions in small- and large-scale settings would be able to determine whether increasing the number of individuals involved down-regulates the strength effect.

Furthermore, the findings of this study are silent with regard to the precise proximate variables that mediate between upper-body strength and psychological traits. One candidate is testosterone, which previous research has linked to both strength (Isidori et al., 2005) and aggression (Archer, 2004). If valid, endogenous endocrine release of testosterone would be regulated by mechanisms designed to monitor upper-body muscle mass in the self and others. At the same time, it should be noted that the association in men between upper-body strength and aggression is unlikely to be just the product of testosterone, as the effects of strength on aggression are substantially greater than the established effect of testosterone on aggression (Archer, 2004; Sell, Tooby, & Cosmides, 2009).

Humans are undeniably complex and unusual animals, and other more traditionally accepted factors certainly play a role in determining how individuals approach mass politics. Nevertheless, modern mass political conflict appears to be another important domain of human behavior in which decision making bears the stamp of our species' hunter-gatherer past.

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The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Supplemental Material

Additional supporting information may be found at http://pss.sagepub.com/content/by/supplemental-data

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Supplemental Materials

For

The Ancestral Logic of Politics:

Upper-Body Strength Regulates Men's Assertion

of Self-Interest Over Economic Redistribution

Contents:

Methods

Cross-cultural consistency was crucial to validating our hypotheses, and so we collected data on upper body strength, SES and political positions in three countries: Argentina, US and Denmark. These countries were particularly appropriate because they are considerably different in terms of welfare state policies and economic history. Below we provide details about sampling and information about the measurement of the core variables of interest. The exact wording of all core items appears in this supplementary information, while information about the control variables is available from the authors.

Samples

Each study was geared to maximize the internal validity of either upper body strength or SES. In the studies conducted in Argentina (113 males, 110 females, average age = 21.00) and the US (211 males and 275 females, average age = 19.1), we relied on samples drawn from university communities (Universidad de Buenos Aires and University of California, Santa Barbara, respectively). Due to the accessibility of the subjects, trained research assistants were able to obtain direct and highly reliable measures of the subjects' upper body strength. To provide proxies of SES in these samples, we rely on the two main approaches in extant studies of college samples: Measures of subjects' own subjective sense of SES (Argentina) and objective measures based on the SES of the parents (US). Our final study was conducted in Denmark. Using a survey agency, measures were collected over the internet from a nationally representative sample of Danish citizens. Subjects were drawn from YouGov Zapera's standing webpanel based on quota sampling such that the sample was nationally representative on sex, age and geographical location. The response rate was 34%. This sample allows us to get a highly reliable and varied measure of SES directly based on subjects' own income, living conditions and education. The Danish subjects were instructed on how to self-measure upper body strength (421 males and 372 females returned strength measures, average age = 48.04). The studies in Argentina and Denmark were conducted in 2008, while the US study was conducted in 2009.

Measuring upper body strength

As a measure of upper body strength we relied on the flexed biceps circumference of our subjects. Intensive analyses indicate that the best single predictor of upper body strength (as assessed on standardized weight-lifting machines in the gym) is flexed biceps circumference, which alone

accounts for 55% of the variation in weight-lifting ability.[1] In Argentina and US, flexed bicep circumference of the dominant arm was measured to the nearest millimetre.

In Denmark, a protocol was devised and presented to the subjects over the internet instructing them on how to measure their biceps correctly. The protocol included an image of a male measuring his biceps in the correct way. In addition, subjects were presented with the option of skipping the task to avoid false reporting. The wording of the protocol was the following: "To answer this question you need a ruler and a piece of string. If you have a soft tape measure, it is even better. The purpose of this task is to get a precise measure of the circumference of your upper arm, when you have flexed your upper arm muscle (also called the bicep). The picture shows how to achieve the measure. Use the string or tape measure to measure around your arm where the flexed muscle is thickest. Please measure directly at your arm and not outside your clothes. Make sure the string or tape measure is tight and straight around the arm. If possible, you can use a mirror or get another person to help you. If you are using a string you can subsequently measure the circumference using the ruler. Write the measure in centimeters as precisely as possible. For example: If the circumference is 31 centimeter and 5 millimeter, write 31.5." The measures of three subjects were removed because their self-reported bicep circumferences were unrealistic (3, 250 and 295 cm).

Measuring socio-economic status

In the Argentinean sample, we relied on subjective SES measures in order to get a valid measure from a student population. The SES measure consisted of four individual items. Subjects were asked to rate on 7-point scales, first, their current economic situation and, second, the economic situation in the house in which they were raised. Third, they were asked to rate from 0-100 how easy it is for them compared to others to get enough money to live. Fourth, subjects were asked to

provide their monthly income. In the US sample, we used information about parents' SES to get more objective measures of SES from the student population. To measure SES, questions were asked about the level of the education of the subject's mother and father, the personal income in 2009 of the mother and the father and whether at least one of them owned their house. The Danish sample was a nationally representative sample, which allowed us to build a measure of SES based on objective indicators that directly related to the subjects' own SES. To form the index, subjects were asked about their level of education, their degree of ownership of their house (rented, partly owned, owned) and their income (questions on personal and household income were separately asked and averaged). In all three samples, items were z-scored and then added together to form the final index of the subject's SES.

Measuring support for economic redistribution

In all three samples, subjects were asked to state their degree of agreement with a number of statements about redistribution using 7-point scales. Such survey items have been shown to have strong effects on actual behavior such as, for example, voting behavior. To maximize the ecological validity of our measures, the specific items varied from country to country, thereby allowing the items to take into account country-specific factors regarding the political discussions on redistribution. A subset of the US sample was given all of the items from all three samples and analyses reveal that they all form one coherent scale (α=.88) (see supplementary discussion in this document). In each sample, answers were averaged to form a scale of support for redistribution (α: Argentina=.47; US=.81; Denmark=.78). While the α-value of the scale in the Argentinean sample reveals a high level of random noise, the same scale in the US subsample had an α-level of .69, suggesting that the items in general have measurement validity (see supplementary discussion in this document). Also, a reliable subscale with an acceptable α-level (α=.65) can be created in the

Argentina sample (based on item 1 and 4) and this replicates the general findings (see supplementary discussion in this document).

In the Argentinean study, the following statements were used: 1) The government should intervene economically to redistribute the wealth from those having more resources to those having less. 2) It is not fair that people have to pay taxes to fund welfare programs (reversed). 3) The government should raise taxes to give more help to the poor. 4) Inequality in the distribution of wealth is very unjust.

In the US study, the following statements were used: 1) We should resist the demands for higher welfare benefits from people with low incomes (reversed). 2) The wealthy should give more money to those who are worse off. 3) Wealth should be taken from the rich and given to the poor. 4) Wealthy people should not be taxed more heavily than others (reversed). 5) The government should intervene economically to redistribute wealth from those who have more resources to those who have fewer resources. 6) The government should increase taxes and thus give more help to the poor.

In the Danish study, the following statements were used: 1) High incomes should be taxed more than is currently the case. 2) We should resist the demands for higher welfare benefits from people with low incomes (reversed). 3) The wealthy should give more money to those who are worst off. 4) The government spends too much money on the unemployed (reversed). 5) The state has too little control over the business world. 6) In politics, one should strive to assure the same economic conditions for everyone, regardless of education and employment.

Supplemental Analyses

All statistical models are linear regression models and are all available in the supplementary tables in this document. P-values for the predicted interaction is one-sided, all others are two-sided. In the main text we provide empirical support for the prediction that strong men who are high in SES

oppose redistribution whereas strong men who are low in SES favour redistribution. Here, in this supplementary information, we test the robustness of this core finding by controlling for a range of potential confounds. All these analyses are displayed in Supplementary Tables 1-3.

Model 1 in Tables 1-3 shows the basic linear regression model used to estimate Figure 1 in the main text. The other models in Tables 1-3 control different potential confounds on the interaction effect. First, in each country, we added three basic controls: subjects' age, BMI and general political ideology in the form of self-placement on the political left-right spectrum (see Model 2, Tables 1-3). Age is a potential confounding variable with regards to flexed bicep circumference (younger people are stronger), BMI as a measure of body fat is another potential confounding variable with regards to flexed bicep circumference (fat as well as muscles increase circumference), while political ideology is the traditional major predictor of political attitudes. Across the three countries, the predicted interaction effect among males is robust to the inclusion of these variables. In the US, the interaction effect is not only robust for the inclusion of these control variables but is amplified by their inclusion (i.e., the variables work as suppressors). By implication, the predicted marginal effects displayed in Figure 1 Panel B underestimate the true effects of upper body strength on support for redistribution in the US sample.

In the US and Danish studies, we measured additional control variables that are more narrowly tied to the issue of redistribution. For example, previous studies have revealed that perceptions of and feelings towards welfare recipients are particularly powerful predictors of support for redistribution. Therefore, we add to the model the subjects' perceptions of the laziness and the intelligence of recipients of social welfare as well as measures of feelings of anger and compassion towards welfare recipients (see Model 3, Tables 2 and 3). The interactive effects of upper body strength on support for redistribution are robust to the inclusion of these variables in both the US (Model 3, Table 2) and Denmark (Model 3, Table 3). Finally, in the Danish study we

included two additional potential confounds of upper body strength: whether the subject is employed as a manual worker and how many hours per week the subject engages in physical exercise. Even in this highly elaborate model, the predicted interaction effect stays significant (see Model 4, Table 3).

Scale validation

The above analyses increase our confidence that the effects of upper body strength on political positions are not spurious but reflect the operations of evolved decision-making mechanisms. To provide further confidence in our results, we now turn towards our main dependent variable, support for redistribution, and provided additional analyses of the validity of our measure.

Convergent validity of scales measuring support for redistribution

Each study uses a different scale to measure support for redistribution, thereby allowing the items to take into account country-specific factors regarding the political discussions on redistribution. While this maximizes the ecological validity of our measures, it would provide additional confidence in our results if we could directly demonstrate that these different scales do capture the same underlying dimension. To demonstrate this, a subset of the US subjects in study 2 was presented with the redistribution items from all three studies. Analyses of this subsample demonstrate that all scales are highly related and have intercorrelations between .75 and .87. As further evidence of this, a scale consisting of all items has an alpha of .88. Furthermore, we can test whether it is possible to replicate the interaction effect in the subsample from study 2 on the scales from study 1 (alpha = .69) and 3 (alpha = .75). The analyses are presented in supplementary table 4. As can be seen, there is a highly significant interaction effect on support for redistribution as measured by the scale from study 1 and on support as measured by a combination of all three

scales. The interaction effect is not significant when the scale from the Danish study are used to gauge the US subjects' support for redistribution. This arises because two of the items are somewhat unreliable in a US context. Hence, for items 5 and 6, the inter-item correlations range from as low as .11 to .30. These two items are also those that express the idea of European-style market intervention most clearly and, hence, could sound odd and unfamiliar to the US subjects. When these two unreliable items are removed (alpha after removal = .72), the interaction effect becomes significant.

Robustness of the Argentina study

The scale measuring support for redistribution in the Argentina sample has a low α-level and, hence, is affected by a high level of random noise. Hence, the consistency of the results across the samples is achieved in spite of this noise. A subscale with an acceptable α=.65 can be formed from items 1 and 4. In support of the validity of the findings, we find a significant interaction effect between males' socioeconomic status and their upper body strength on this subscale ($F_{1,102}$=4.255, p = .021).

References

Sell, A., Cosmides, L., Tooby, J., Sznycer, D., von Rueden, C., & Gurven, M. (2009). Human adaptations for the visual assessment of strength and fighting ability from the body and face. *Proceedings of the Royal Society B: Biological Sciences, 276,* 575–584.

Supplementary Table 1. How upper body strength and SES shape support for redistribution in men. Argentina sample, males only. With controls.

	Model 1		**Model 2**	
	Coeff.	**p**	**Coeff.**	**P**
Constant	.246	.039	.193	.071
SES	.147	.225	.122	.252
Upper-body strength	-.186	.117	.021	.883
× SES[1]	-.336	.003	-.256	.01
Age	-	-	-.034	.699
BMI	-	-	-.143	.251
Political ideology	-	-	.425	.000
R^2	.082		.293	
N	101		100	

Notes. Coefficients are OLS unstandardized regression coefficients computed from z-scored variables and are comparable to standardized regression coefficients. Variables were z-scored prior to separating males from females in the analyses. High value on the dependent variable indicates support for redistribution. Changes in N are due to missing data on control variables.
[1]P-values are one-sided due to the directionality of the interaction hypothesis; all other p-values are two-sided.

Supplementary Table 2. How upper body strength and SES shape support for redistribution in men. US sample, males only. With controls.

	Model 1		**Model 2**		**Model 3**	
	Coeff.	**p**	**Coeff.**	**p**	**Coeff.**	**p**
Constant	-.108	.258	-.069	.384	-.151	.098
SES	.150	.147	.202	.019	.134	.113
Upper-body strength	-.021	.818	-.004	.955	-.002	.980
× SES[1]	-.246	.007	-.307	.000	-.246	.001
Age	-	-	.001	.888	.001	.985
BMI	-	-	-.001	.871	.049	.545
Political ideology	-	-	.575	.000	.341	.000
Welfare recipients are lazy	-	-	-	-	-.241	.003
Welfare recipients are unintelligent	-	-	-	-	-.099	.113
Anger towards welfare recipients	-	-	-	-	.033	.653
Compassion towards welfare recipients	-	-	-	-	.269	.000
R^2	.032		.34		.562	
N	204		202		139	

Notes. Coefficients are OLS unstandardized regression coefficients computed from z-scored variables and are comparable to standardized regression coefficients. Variables were z-scored prior to separating males from females in the analyses. High value on the dependent variable indicates support for redistribution. Changes in N are due to missing data on control variables (the items on welfare recipients are only asked in some of the waves of data collection).

[1]P-values are one-sided due to the directionality of the interaction hypothesis; all other p-values are two-sided.

Supplementary Table 3. How upper body strength and SES shape support for redistribution in men. Denmark sample, males only. With controls.

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Coeff.	**p**	**Coeff.**	**p**	**Coeff.**	**p**	**Coeff.**	**p**
Constant	-.037	.447	-.019	.645	.011	.785	.002	.955
SES	-.309	.000	.-215	.000	-.197	.000	-.174	.000
Upper-body strength	.033	.493	.112	.009	.082	.057	.073	.090
× SES[1]	-.152	.001	-.135	.001	-.141	.001	-.124	.004
Age	-	-	.187	.000	.096	.001	.156	.000
BMI	-	-	-.002	.969	.104	.884	-.015	.71
Political ideology	-	-	.557	.000	.494	.000	.468	.000
Welfare recipients are lazy	-	-	-	-	.044	.085	-.099	.064
Welfare recipients are unintelligent	-	-	-	-	.110	.000	.036	.388
Anger towards welfare recipients	-	-	-	-	-.094	.083	-.088	.049
Compassion towards welfare recip.	-	-	-	-	-.13	.574	.154	.000
Weekly hours of exercise	-	-	-	-	-	-	-.021	.577
Occupation: Non-worker	-	-	-	-	-	-	-.107	.005
R^2	.124		.439		.479		.490	
N	418		402		381		380	

Notes. Coefficients are OLS unstandardized regression coefficients computed from z-scored variables and are comparable to standardized regression coefficients. Variables were z-scored prior to separating males from females in the analyses. High value on the dependent variable indicates support for redistribution. Changes in N are due to missing data on control variables.
[1]P-values are one-sided due to the directionality of the interaction hypothesis; all other p-values are two-sided

Supplementary Table 4. How upper body strength and SES shape support for redistribution measured by different scales. US sample, males only. With controls.

	Scale from study 1 (Argentina)		**Scale from study 3 (Denmark)**		**Scale from study 3 without item 5 & 6**		**All scales combined**	
	Coeff.	**p**	**Coeff.**	**p**	**Coeff.**	**p**	**Coeff.**	**p**
Constant	-.039	.691	-.001	.926	-.610	.495	-.048	.613
SES	.164	.085	-.107	.282	-.004	.967	.091	.324
Upper-body strength	-.027	.787	-.013	.904	.018	.518	.002	.985
× SES[1]	-.251	.003	-.075	.205	-.167	.035	-.241	.003
Age	.020	.755	.036	.594	-.003	.966	.023	.710
BMI	.134	.146	.029	.766	-.030	.758	.063	.480
Political ideology	.57	.000	.542	.000	.552	.000	.592	.000
R^2	.373		.338		.340		.409	
N	141		139		140		139	

Notes. Coefficients are OLS unstandardized regression coefficients computed from z-scored variables and are comparable to standardized regression coefficients. Variables were z-scored prior to separating males from females in the analyses. High value on the dependent variable indicates support for redistribution. Changes in N are due to missing data on control variables.