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# From the Bedroom to the Budget Deficit: Mate Competition Changes Men's Attitudes Toward Economic Redistribution

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How do economic recessions influence attitudes toward redistribution of wealth? From a traditional economic self-interest perspective, attitudes toward redistribution should be affected by one's financial standing. A functional evolutionary approach suggests another possible form of self-interest: That during periods of economic threat, attitudes toward redistribution should be influenced by one's mate-value—especially for men. Using both lab-based experiments and real-world data on voting behavior, we consistently find that economic threats lead low mate-value men to become more prosocial and supportive of redistribution policies, but that the same threats lead high mate-value men to do the opposite. Economic threats do not affect women's attitudes toward redistribution in the same way, and, across studies, financial standing is only weakly associated with attitudes toward redistribution. These findings suggest that during tough economic times, men's attitudes toward redistribution are influenced by something that has seemingly little to do with economic self-interest—their mating psychology.

*Keywords:* resource scarcity, recession, political attitudes, fairness, redistribution, prosocial behavior

Over the past several years, the world economy has been characterized by joblessness, bankruptcy, and real estate foreclosures. Amid this economic turmoil, disagreements over fiscal policy have dominated political discourse. In particular, there has been a contentious debate over the distribution of wealth and the appropriateness of government redistribution (e.g., higher taxes on wealthy people, programs to assist the poor, etc.). Some people feel strongly that economic redistribution is a wonderful idea; others feel just as strongly that it is an appalling notion. Why such extreme differences of opinion?

At first blush, economic self-interest seems a likely motivator. In a struggling economy, it seems reasonable that people would increasingly endorse economic policies that financially benefit them—with the poor seeking more redistribution, and the rich wanting less. However, this seemingly rational logic is not always reflected in actual voting behavior, and people often appear to vote against their own economic self-interest (Breznau, 2010; Frank, 2004; Gelman, Shor, Bagumi, & Park, 2007).

In the current investigation, we examine a different potential influence on attitudes toward economic redistribution, one that has seemingly little connection to people's finances. Rather than fo-

cus on proximate, economic self-interest, we consider self-interest from a functional evolutionary perspective. Specifically, we contend that during economic recessions, shifting attitudes about economic redistribution can reflect adaptively tuned male "strategies" involving competition for mates. Further, we suggest that there are functional reasons why economic threats lead some men to become more favorable toward redistribution while leading other men to do the opposite.

## Economic Threats and Mate Competition

Humans have perennially faced periods of resource scarcity. For our ancestors, and for many living in poverty today, this scarcity comes in the form of food shortages and famine (Chakravarthy & Booth, 2004). For people living in modern, developed nations, however, resource scarcity can also occur through macro-level economic recessions. For instance, during the most recent economic downturn in the United States, the average household's wealth declined more than 20% (Pew Research Center, 2010).

In addition to their direct financial consequences, periods of resource scarcity can also have an impact on human mating strategies. Research from a diverse range of perspectives has found that women seek men with an ability to provide resources (de Sousa Campos, Otta, & de Oliveira Siqueira, 2002; Dunn, Brinton, & Clark, 2010; Gottschall, Martin, Quish, & Rea, 2004; Pillsworth, 2008) and prioritize earning potential over many other characteristics in choosing romantic partners (N. P. Li, Bailey, Kenrick, & Linsenmeier, 2002; N. P. Li & Kenrick, 2006). Because resource scarcity hinders men's ability to successfully attain and display access to resources, one would expect enhanced male competition for access to resources during tough economic times. At the same time, women facing resource scarcity must increasingly compete with one another to attract financially-stable men. Following from this logic, researchers have linked economic threats to enhanced mate competition for both men and women. People living in

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resource-scarce ecologies display characteristics linked to mate competition: They mature at a younger age, engage in sexual activity at an earlier age, have higher rates of pregnancy and childbearing, and a higher overall reproductive rate (Belsky, Schlomer, & Ellis, 2012; Ellis et al., 2003; Ellis & Essex, 2007; Ellis, Figueredo, Brumbach, & Schlomer, 2009; Kotchick, Shaffer, Forehand, & Miller, 2001; Miller, Benson, & Galbraith, 2001; Nettle, 2010).

In the current investigation, we suggest that one consequence of this enhanced mate competition may be shifting attitudes toward redistribution—but only among men. Although women are financially affected by economic threats, a woman's desirability to men is not as strongly linked to her financial standing (Buss, 1989; Griskevicius et al., 2007; N. P. Li & Kenrick, 2006; Schmitt, 2005; Sundie et al., 2011). Instead, women are relatively more likely to compete on another dimension that men prioritize—physical attractiveness (Buss, 1989; Kenrick & Keefe, 1992; N. P. Li et al., 2002; Schmitt, 2005). Indeed, whereas cues to economic threats do not lead women to compete in terms of resources, these cues do lead women to compete with one another on physical attractiveness (Hill, Rodeheffer, Griskevicius, Durante, & White, 2012). Given these findings, we predict that economic threats should affect men's attitudes toward redistribution, but not women's.

### Male Mate Competition Strategies and Redistribution Attitudes

There are a number of ways in which men can compete for mates. For example, increased mate competition leads men to seek more immediate financial rewards and to take larger financial risks (Griskevicius, Tybur, Delton, & Robertson, 2011). Moreover, men experimentally placed in a mating frame of mind (relative to a control condition) become particularly focused on monetary gains rather than losses (Y. J. Li, Kenrick, Griskevicius, & Neuberg, 2012). Mate competition also leads men to become more risk-seeking in non-financial domains and to become more aggressive (Kruger, 2010; Kruger & Nesse, 2007; Kruger & Polanski, 2011). Finally, mating-minded men tend to engage in conspicuous displays of their financial resources, becoming increasingly wasteful and likely to flaunt their wealth (Griskevicius et al., 2007; Sundie et al., 2011). In the current research, we build on these findings by proposing (1) another, previously unexplored, male mate competition strategy that involves shifting attitudes toward redistribution and (2) that when it comes to redistribution, which strategy a man adopts will depend on his mate-value.

Variation in human mate competition strategies has been linked to ecological factors, such as sex ratio or resource scarcity, as well as individual differences, such as mate-value (Gangestad & Simpson, 2000; Simpson, Gangestad, Christensen, & Leck, 1999). *Mate-value* refers to a person's ability to successfully attract and attain desirable mates (Buss & Barnes, 1986; Kenrick, Groth, Trost, & Sadalla, 1993). Those with high mate-value tend to have more mating opportunities and are better at securing mates, whereas those with low mate-value tend to have fewer mating opportunities and are worse at securing mates (Buss & Shackelford, 2008; Durante & Li, 2009). Although we have focused our discussion of female mate preferences on male access to resources, it is important to note that a man's mate-value is not equivalent to his socioeconomic status. Trustworthiness, dominance, physical

attractiveness, physical strength, and intelligence are just a few of the other qualities that contribute to a man's mate-value (N. P. Li et al., 2002).

There is some evidence that resource competition can trigger two alternative social strategies in men—group cooperation or individual competition (Kramer, 1989)—and which strategy a man adopts may depend on his ability to compete with others (Benenson, Antonellis, Cotton, Noddin, & Campbell, 2008; Benenson, Markovits, Thompson, & Wrangham, 2009). Research with other animal species suggests that, for those with a low probability of obtaining a mate (i.e., those with low mate-value), cooperation and coalition formation can be beneficial. For example, wild male turkeys form coalitions to display their fitness to female turkeys, with one male turkey chasing away competitors while the second male turkey performs a strutting dance (Krakauer, 2005). Likewise, in some primate groups, lower- or mid-ranked males join together to help each other compete with the dominant male for access to mates (Connor & Whitehead, 2005; Noë, 1994). Research on humans has also found that men frequently cooperate with one another to help attract women. For example, in one series of studies, male participants reported that their friends helped them to attract mates by (1) speaking positively about them to a potential mate, (2) removing barriers from the situation (such as the potential mate's friends), or (3) warding off potential romantic rivals (Ackerman & Kenrick, 2009). More generally, cooperation in attaining mates has been shown to be prevalent, effective, and predictive of dating outcomes in modern contexts (e.g., Berkowitz, 2004; Strauss, 2005; Wright & Sinclair, 2012).

Although cooperation can have a number of advantages, individualistic competition may be a better strategy for those with an initially high probability of successfully obtaining a mate (i.e., those with high mate-value). By going it alone, a high mate-value man can ensure that he maximizes his own mating potential, rather than expending energy to help others find mates. One agent-based model suggested that individualistic strategies are especially useful during periods of resource scarcity—but only for those with pre-existing competitive advantages (Cassill & Watkins, 2010). More generally, in humans and other species, individualistic strategies can help men with greatly disproportionate access to resources obtain multiple mates (Barber, 2008; Carey & Nolan, 1979). Indeed, around the world, the unequal distribution of resources is one of the strongest predictors of polygyny, with high mate-value men monopolizing multiple women (Barber, 2008; Pollet & Nettle, 2009).

In the current investigation, we propose that these opposing mating strategies, group cooperation versus individualistic competition, can have important implications for attitudes toward redistribution. The literature just reviewed suggests that men with fewer competitive advantages in gaining mates might be motivated to become more cooperative as resources become scarce and the odds of obtaining a mate decrease. Adopting a cooperative strategy may lead such men to become more prosocial and to favor group-level policies aimed at leveling the playing field, such as government redistribution programs. In contrast, men with high mate-value would be expected to adopt an individualistic strategy, leading, in turn, to less prosociality, a desire to maintain or enhance existing advantages, and support for the current status hierarchy—attitudes associated with less support for government redistribution.

In line with this thinking, recent research has found that characteristics linked to male mate-value, such as muscularity, waist–chest ratio, and physical attractiveness, are negatively correlated with attitudes favoring social equality (Price, Kang, Dunn, & Hopkins, 2011). Furthermore, Griskevicius et al. (2012) found that male-biased sex ratios, which increase mate competition among men, lead high mate-value men to prefer hierarchical and unequal social structures, but lead low mate-value men to prefer more fair and egalitarian social structures.

Overall, this research suggests that during economic threats—a time of intense male mate competition—a man's mate-value may influence his attitudes toward government redistribution policies. In particular, during economic threats, low mate-value men should adopt cooperative strategies, involving increased prosociality and greater support for government redistribution policies. Conversely, high mate-value men should adopt individualistic strategies, involving less prosociality and reduced support for redistribution.

### Traditional Economic Self-Interest and Redistribution Attitudes

In contrast to the functional evolutionary framework, a traditional economic self-interest perspective generates a different set of hypotheses. Researchers have long theorized that economic self-interest drives political attitudes (e.g., Lipset, 1960), and political scientists posit that the personal costs and benefits of government economic policies largely determine political behavior (Downs, 1957; Kramer, 1971). In fact, a major tenet of modern politics, repeated by elected officials and pundits alike, is that people “vote their pocketbooks” (Levy, 2012; Ungar, 2012).

According to this perspective, people should be motivated to maximize their access to resources. As such, wealthy men and women should seek to limit redistribution programs that take resources away from them, whereas poor men and women should seek to expand redistribution programs that financially benefit them. Indeed, researchers have found that government redistribution programs are especially popular among the poor (Bean & Papadakis, 1998; Luo, 1998) and unemployed (Bean & Papadakis, 1998; Gelissen, 2000) and that higher income is associated with reduced support for redistribution policies (Giuliano & Spilimbergo, 2009; Linos & West, 2003; Van de Werfhorst & de Graaf, 2004).

How might self-interest guide responses to economic threats? As resources become more scarce, one would expect economic self-interest to become an increasingly important factor in shaping attitudes toward redistribution. Indeed, economic recessions tend to exacerbate income inequality—as, on average, the wealthy fare relatively well when compared to the poor (O'higgins, 1985; Perri & Steinberg, 2012; Weatherford, 1978). From this traditional self-interest perspective, wealthy men and women should become less supportive of redistribution when there are looming economic threats and uncertainties, but poor men and women should become more supportive. In line with this thinking, a longitudinal study has shown that the relationship between social class and attitudes toward redistribution is exacerbated for people who had experienced a recession early in their life (Giuliano & Spilimbergo, 2009).

### Overview

The functional evolutionary and traditional economic self-interest perspectives generate competing hypotheses about how, and for whom, economic threats influence attitudes toward redistribution. The functional evolutionary approach predicts that economic threats will uniquely affect men's attitudes toward redistribution. Access to resources is a valued mating characteristic in men, and, as such, men face increased intrasexual mate competition during economic threats. The functional, evolutionary approach also identifies mate-value as a critical moderator of the relationship between economic threat and redistribution: During economic threats, low mate-value men should adopt more cooperative strategies—as indicated by greater prosociality and increased support for government redistribution. High mate-value men, on the other hand, should adopt more individualistic strategies—as indicated by reduced prosociality and less support for redistribution. Women often compete for mates in other ways, such as by enhancing their physical attractiveness (Hill et al., 2012). Thus, women's attitudes toward redistribution may be unaffected by economic threats.

By contrast, the traditional economic self-interest perspective posits that people are concerned with their financial standing and, as a consequence, predicts that both men's and women's attitudes toward redistribution should be affected by economic threats. Additionally, economic self-interest predicts that responses to an economic threat should be moderated by socioeconomic status. Those who stand to financially benefit most from redistribution, the poor, should support redistribution. Conversely, those who would be financially harmed by redistribution, the wealthy, should seek to limit redistribution.

In five studies, we test the alternative predictions generated by the functional evolutionary perspective and traditional economic self-interest perspective by assessing whether the relationship between economic threats and attitudes toward redistribution is sex-specific and whether it is moderated by mate-value or socioeconomic status. First, we examine whether economic threats are linked, more generally, to different mate competition strategies. To do so, we manipulate the presence or absence of an economic threat and measure social value orientation—an indicator of cooperative versus individualistic strategies (Study 1). Because we propose that such competition strategies are differentially linked to attitudes toward redistribution, in Studies 2–5 we directly test how economic threats affect attitudes toward redistribution. In Studies 2a and 2b, we experimentally examine how economic threat manipulations influence attitudes toward government redistribution. In Study 3, we explore the relationship between economic threats and support for redistribution policies at the national-level, by examining the voting records of members of the United States Congress. In Studies 4 and 5, we return to the lab to more directly assess the psychological process through which economic threats shape attitudes toward redistribution. In Study 4, we manipulate whether economic threats are more directly affecting men or women, and measure attitudes toward redistribution. In Study 5, we examine whether changes in social value orientation mediate the relationship between economic threats and attitudes toward redistribution. In each of these studies, we measure both mate-value and socioeconomic status and test how these variables affect

the link between economic threats and attitudes toward redistribution.

Throughout our studies, we test the alternative hypotheses generated by the functional evolutionary and traditional economic self-interest perspectives. It is important to note, however, that we do not believe the predictions produced by these approaches are mutually exclusive. It is likely that, at some level, both economic self-interest and mate-value can influence attitudes toward redistribution. The current investigation allows us to comprehensively investigate if and under what circumstances each of these variables affects attitudes toward redistribution.

### Study 1: Economic Threats and Mating Strategies

We propose that economic threats affect attitudes toward redistribution because they lead men to adopt different mate competition strategies. As a first step toward addressing this question, Study 1 directly tested the relationship between economic threats and competition strategies (cooperative vs. individualistic). We experimentally manipulated economic threat and assessed participants' social value orientation (Van Lange, Otten, De Bruin, & Joireman, 1997). Critically, social value orientation measures the extent to which people pursue prosocial strategies, characterized by cooperation and equality, versus pro-self strategies, characterized by maximizing benefits to oneself or maximizing one's competitive advantages. Past research has found that those with prosocial orientations, relative to those with pro-self orientations, are more likely to enhance joint outcomes, to form reciprocal relationships with others, and to donate real money to charitable organizations dedicated to helping the poor (Van Lange, 1999; Van Lange, Bekkers, Schuyt, & Van Vugt, 2007). We predicted that the economic threat manipulation would lead low mate-value men to adopt more prosocial orientations, whereas the same manipulation would lead high mate-value men to adopt more pro-self orientations. We did not expect women's social value orientation to shift as a function of the economic threat manipulation.

### Method

**Participants.** One hundred forty-seven participants (94 women,  $M_{\text{age}} = 38.82$  years) were recruited from an online survey website and paid a small monetary compensation.

**Procedure.** Participants were told they would be completing a study on memory and attitudes. Participants were first instructed to read a short story and imagine themselves in the situation described. They were instructed to pay close attention to the story, as there would be a later memory test about its content. Participants were randomly assigned to read either a story about an economic threat or a control story. Afterwards, participants completed a measure of social value orientation and responded to questions about their mate-value.

**Economic threat manipulation.** The economic threat story was a modified version of an article appearing in *The Wall Street Journal* on September 18, 2008 ("Worst Economic Crisis Since '30s With No End in Sight"; Hilsenrath, Ng, & Paletta, 2008). It described the life of a man who had been unexpectedly fired from his job and documented his struggles searching for a job over a period of several months. It went on to describe the poor economy, in general, and gave statistics about the millions of people facing

long-term unemployment. The story ended by stating that tough times are here to stay. This manipulation has been used in previous research on the psychological effects of economic threats. It has been shown to increase perceptions that there are fewer jobs available and that people in general are less wealthy (Hill et al., 2012). The control story was the same length as the economic threat story and described a person organizing their personal office space.

**Social value orientation.** Differences in social value orientation were assessed using the Triple-Dominance Measure of Social Values (Van Lange et al., 1997). This measure involves a series of nine decomposed games in which participants must decide how to allocate points to themselves and an unknown "other." For example, in one of these games, participants must choose between three options: (Option A) 480 points for the self and 80 points for the other, (Option B) 540 points for the self and 280 points for the other, and (Option C) 480 points for the self and 480 points for the other. In this example, Option C represents the prosocial choice because it provides an equal distribution of points and a larger joint outcome for both the self and the other. Options A and B are considered pro-self choices—Option A maximizes the difference in point allocation between the self and the other (a relative advantage), and Option B maximizes one's own point allocation (an absolute advantage). Although some past research has distinguished between these two pro-self options, we do not have predictions about whether men adopting individualistic mating strategies seek to maximize relative or absolute advantages. An analysis of our data suggested that selection of these options shifted similarly across experimental conditions. Therefore, in our analyses we combined the two pro-self options. We recoded responses to the nine decomposed games—assigning a value of "1" to prosocial choices and a value of "0" to pro-self choices. Responses to all nine games were then summed to form a single social value orientation composite, which could range from 0 (representing 9 pro-self choices) to 9 (representing 9 prosocial choices).

**Mate-value.** At the end of the study, participants responded to four questions from the Landolt Mate-Value Scale (Landolt, Lalumiere, & Quinsey, 1995). These questions capture one's ability to attract a mate (e.g., "Members of the opposite sex that I like, tend to like me back") and were aggregated into a single composite ( $\alpha = .83$ ).

**Socioeconomic status.** We assessed participants' socioeconomic status in two ways. First, we asked two questions designed to probe participants' subjective socioeconomic status (e.g., "I have enough money to buy the things that I want"). Participants responded to these questions on a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree* ( $\alpha = .79$ ). These questions have been used in previous research on socioeconomic status (Griskevicius et al., 2012). We also asked participants about their objective socioeconomic status. Specifically, participants were asked about their family's household income and responded on a scale ranging from 1 = *\$15,000 or less* to 8 = *\$150,000 or more*.

### Results

To assess whether the economic threat manipulation would affect men's social value orientation, we regressed the social value orientation composite onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. There was

a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(140) = 2.59, p = .011, \beta = .76$ . As predicted, for men, the Economic Threat Manipulation  $\times$  Mate-Value interaction was significant,  $t(140) = 3.14, p = .002, \beta = .85$ . Following Aiken and West (1991), we probed the Economic Threat Manipulation  $\times$  Mate-Value interaction for men at one standard deviation above and below the mean of mate-value. Relative to the control condition ( $M = 4.6$ ), the economic threat manipulation led *low mate-value men* (one standard deviation below the mean) to make more *prosocial* choices ( $M = 8.4$ ),  $t(140) = 2.14, p = .034, \beta = .48$ . However, relative to the control condition ( $M = 8.2$ ), the same economic threat manipulation led *high mate-value men* (one standard deviation above the mean) to make more *pro-self* choices ( $M = 4.04$ ),  $t(140) = 2.58, p = .011, \beta = -.53$ .

For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .8$ . There was a significant main effect of the economic threat manipulation for women,  $t(140) = 2.20, p = .030, \beta = .22$ . Relative to the control condition ( $M = 4.53$ ), women in the economic threat condition made more *prosocial* choices ( $M = 6.32$ ).

We also examined how socioeconomic status influenced social value orientation. To assess this possibility, we examined whether the economic threat manipulation interacted with either subjective or objective socioeconomic status (SES) to affect the social value orientation composite. Separate regressions showed that there were no significant interactions between either measure of SES and our economic threat manipulation on social value orientation,  $ps > .35$ . Across conditions, neither subjective SES nor objective SES was related to social value orientation,  $rs < .10$ . The Economic Threat  $\times$  Mate-Value interaction on social value orientation also survived controlling for subjective SES, objective SES, and all Economic Threat  $\times$  SES interactions,  $ps < .05$ .

## Discussion

Study 1 tested whether an economic threat would lead men to adopt more cooperative or individualistic competition strategies. As predicted, mate-value influenced which strategy a man adopted. In response to the economic threat manipulation, low mate-value men became more cooperative and prosocial, but high mate-value men became more individualistic and pro-self. Mate-value did not affect which strategy women adopted; all women became more cooperative in response to the economic threat manipulation. Overall, these results are consistent with the functional evolutionary perspective, which predicted that during tough economic times, gender, and mate-value would affect the competition strategies people adopt. In the next several studies, we build on these findings by investigating the relationship between economic threat, mate-value, and attitudes toward government redistribution policies.

### Study 2a: Economic Threats and Redistribution Policies

In Study 2a, we examined whether an experimental manipulation of economic threat would affect people's attitudes toward redistribution. We also sought to test whether this relationship was better accounted for by a functional evolutionary approach, which

suggests gender and mate-value to be significant moderators, or a traditional economic self-interest perspective, which predicts socioeconomic status to be the significant moderator.

## Method

**Participants.** One hundred seventeen participants (62 women,  $M_{\text{age}} = 19.83$  years) were recruited from introductory psychology classes as partial fulfillment of their class requirement. Participants entered the lab in groups of three or fewer and were seated at individual computers separated by dividers.

**Procedure.** The procedure for Study 2a was similar to the previous study. Participants were randomly assigned to read one of the two stories from Study 1. Afterwards, participants responded to questions about their political attitudes, mate-value, and socioeconomic status.

**Political attitude questions.** The political attitude questions were designed to cover a range of topics. There were four questions about healthcare ("Purchasing healthcare is an individual responsibility, not a government responsibility"), five questions concerning welfare (e.g., "Single mothers living in poverty should be supported through publicly funded welfare programs"), five questions about tax policy (e.g., "The government should raise taxes on the top 1% of Americans"), four questions on abortion (e.g., "Abortion, for whatever reason, should always be illegal"), and two questions concerning gay marriage (e.g., "Same-sex couples should be able to marry the same as heterosexual couples"). Participants responded to each question on a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

Theoretically, we expected that the questions about healthcare, welfare, and tax policy would reflect participants' attitudes toward redistribution. In a separate study, we asked another group of participants (207 men, 333 women;  $M_{\text{age}} = 32.7$  years) to respond to the same set of political attitude questions. A principal axis factor analysis with promax rotation showed that these questions grouped into two factors. As predicted, one factor consisted of questions about redistributive issues—healthcare, welfare, and taxes. The other factor consisted of questions about social issues—abortion and gay marriage. A factor analysis of the Study 2a data set yielded the same factor structure. Therefore, in Study 2a we created a *redistribution composite* by averaging questions concerning healthcare, welfare, and tax policy ( $\alpha = .82$ ) and a *social composite* by aggregating questions on abortion and gay marriage ( $\alpha = .79$ ). In both of these composites, responses were recoded, so that higher numbers indicated favoring more progressive redistribution and social policies.

**Mate-value.** At the end of the study, participants responded to the full Landolt Mate-Value Scale (Landolt et al., 1995). Responses to the eight questions were aggregated into a single composite ( $\alpha = .88$ ).

**Socioeconomic status.** We measured participants' socioeconomic status using four questions designed to probe participants' subjective socioeconomic status (e.g., "I have enough money to buy the things that I want"). Participants responded on a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree* ( $\alpha = .78$ ). We also asked participants about their objective socioeconomic status using the same measure from Study 1.

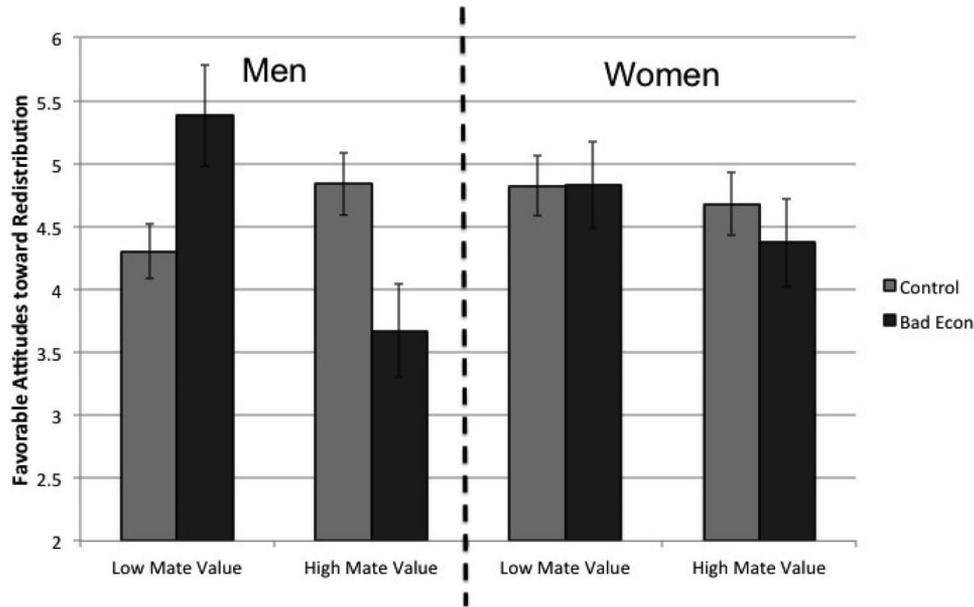


Figure 1. Effect of economic threat manipulation on attitudes toward redistribution by participant gender and mate-value—graphed at 1 *SD* below (low) and 1 *SD* above (high) the mean of mate-value (Study 2a). Error bars represent the standard error of the mean. Econ = economy.

## Results

To assess whether the economic threat manipulation affected attitudes toward redistribution, we regressed the redistribution composite onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. There was a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(109) = 2.55$ ,  $p = .012$ ,  $\beta = .47$  (see Figure 1). As predicted, for men, the Economic Threat Manipulation  $\times$  Mate-Value interaction was significant,  $t(109) = 4.03$ ,  $p < .001$ ,  $\beta = .70$ . For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .5$ .

We next probed the Economic Threat Manipulation  $\times$  Mate-Value interaction for men at one standard deviation above and below the mean of mate-value. Results showed that the economic threat manipulation led *low mate-value men* (one standard deviation below the mean) to become *more* favorable in their attitudes toward redistribution,  $t(109) = 2.69$ ,  $p = .008$ ,  $\beta = .54$ . However, the same manipulation led *high mate-value men* (one standard deviation above the mean) to become *less* favorable in their attitudes toward redistribution,  $t(109) = 3.13$ ,  $p = .002$ ,  $\beta = -.58$ .

To examine whether the Economic Threat Manipulation  $\times$  Mate-Value interaction was unique to participants' attitudes toward redistribution, we also regressed the social attitudes composite onto the economic threat manipulation, mate-value, gender, and their interactions. This analysis showed that there was no effect of the economic threat manipulation, mate-value, and gender on participants' attitudes toward social issues,  $p > .5$ .

Models of economic self-interest suggest that participants' responses to the economic manipulation should be moderated by socioeconomic status and that this effect will occur for both

men and women. To assess this possibility, we examined whether the economic threat manipulation interacted with either subjective or objective SES to affect attitudes toward redistribution. Separate regressions showed that there were no significant interactions between either measure of SES and the economic threat manipulation on attitudes toward redistribution,  $ps > .35$ . Across conditions, attitudes toward redistribution were unrelated to our measures of socioeconomic status,  $rs < .10$ . The Economic Threat  $\times$  Mate-Value interaction on attitudes toward redistribution also survived controlling for subjective SES, objective SES and all Economic Threat  $\times$  SES interactions,  $ps < .01$ .

## Study 2b: Economic Threats and Strategies for Reducing the Deficit

In Study 2b, we sought to replicate the findings of Study 2a using a different experimental manipulation of economic threat and a different measure of mate-value. We also used two measures to assess attitudes toward redistribution: (1) the political attitude questions from Study 2a and (2) new questions designed to capture participants' preferences for different deficit reduction strategies.

The U.S. government has been engaged in an ongoing debate over the best way to reduce its deficit. Though most experts agreed that a combination of spending cuts and tax increases are necessary to substantially reduce the deficit, politicians and the general public disagree over which would be more useful. In general, a strategy of reducing the deficit through large tax increases on the rich and minimal spending cuts is in line with a favorable view of redistribution—this strategy increases costs for the wealthy and maintains spending programs that benefit the poor and disabled. Conversely, a strategy of reducing the

deficit through minimal tax increases and large spending cuts is in line with an unfavorable view of redistribution—this strategy is costly for the poor and disabled. In Study 2b, we took advantage of this ongoing debate by asking participants which method of reducing the deficit they preferred—raising taxes or cutting spending. Again, from a functional evolutionary perspective, we predict that economic threats will lead low mate-value men to prefer raising taxes over cutting spending, but that the same manipulation will lead high mate-value men to prefer cutting spending over raising taxes.

## Method

**Participants.** One hundred twenty-one participants (76 women,  $M_{\text{age}} = 34.18$  years) were recruited from an online survey website and were paid a small monetary compensation.

**Procedure.** Participants were told they would view a slideshow (the experimental manipulation) and be tested about its content later in the study. Afterwards, participants responded to questions about their attitudes toward redistribution, mate-value, and socioeconomic status.

**Economic threat manipulation.** Participants were randomly assigned to one of two slideshows. One was entitled, “Nine signs the economy is getting worse” and showed nine pictures relating to job loss, struggling companies, the poor housing market, increasing inflation, and negative consumer sentiment about the future. The other was entitled, “A day at home: Organizing your desk” and displayed nine pictures of organized office supplies.

**Political attitude questions.** After reading the story, participants responded to the same political attitude questions from Study 2a. Responses to healthcare, welfare, and tax policy questions were aggregated into a *redistribution attitudes composite* ( $\alpha = .89$ ). Responses to abortion and gay marriage questions were averaged into a *social attitudes composite* ( $\alpha = .79$ ).

**Strategies for reducing the deficit.** In addition to the political attitude questions, participants were also asked two questions about their preferred deficit reduction strategy. One asked, “The U.S. should reduce the deficit by reducing government spending.” The other asked, “The U.S. should reduce the deficit by raising taxes on the wealthy.” Patterns of responses to the two deficit questions were similar, but in the opposite direction,  $r(135) = -.34, p < .05$ . This is in line with the notion that they tap opposing views of redistribution. Because we were interested in whether participants prioritized raising taxes or reducing government spending, we created a composite score by subtracting responses to the spending question from responses to the taxation question. This new variable represents a tax-spend composite for which positive scores indicate a greater preference for raising taxes on the wealthy. In the current data set, the tax-spend composite was correlated with the redistribution attitudes composite,  $r(120) = .48, p < .001$ , suggesting that these two dependent variables tap related constructs.

**Mate-value.** In Study 2b, we assessed mate-value by having participants rate their relative standing on several characteristics that past research has shown to be relevant to mating (Buss, 1989; Kenrick & Keefe, 1992; N. P. Li et al., 2002; Schmitt, 2005; Sundie et al., 2011). Specifically, participants were asked to think about how they compared to other people of their gender on physical attractiveness, social status, wealth, intelligence, creativeness,

popularity, friendliness, kindness, responsibility, and humor. Participants rated themselves on these characteristics using a scale with labels, 1 = *much lower than average*, 5 = *about average*, and 9 = *much higher than average*. Responses to these questions were aggregated into a mate-value composite ( $\alpha = .83$ ).

**Socioeconomic status.** Study 2b used the same measures of subjective SES ( $\alpha = .86$ ) and objective SES as Study 2a.

## Results

**Political attitude questions.** First, we analyzed responses to the political attitude questions that had been used in Study 2a. We regressed the redistribution composite onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. There was a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(113) = 2.67, p = .009, \beta = .65$ . As predicted, for men, the Economic Threat Manipulation  $\times$  Mate-Value interaction was significant,  $t(113) = 3.72, p < .001, \beta = .89$ . For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .5$ . Follow-up analyses showed that low mate-value men in the economic threat condition expressed *more* favorable attitudes toward redistribution ( $M = 5.46$ ) than those in the control condition ( $M = 3.97$ ),  $t(113) = 2.8, p = .006, \beta = .63$ . However, high mate-value men in the economic threat condition expressed *less* favorable attitudes toward redistribution ( $M = 3.90$ ) than those in the control condition ( $M = 5.25$ ),  $t(113) = 2.69, p = .008, \beta = -.57$ .

We also regressed the social attitudes composite onto the same set of predictors. As in Study 1, there was no effect of the economic threat manipulation, mate-value, and gender on participants' attitudes toward social issues,  $p > .4$ .

Additionally, we examined whether the economic threat manipulation interacted with SES to affect attitudes toward redistribution. There was no interaction between the economic threat manipulation and subjective SES,  $p > .3$ . However, there was a marginally significant Economic Threat  $\times$  Objective SES interaction,  $t(113) = 1.93, p = .055, \beta = .39$ . Follow-up analyses showed that, relative to the control condition, low SES men and women in the economic threat condition became *more* favorable in their attitudes toward redistribution, whereas high SES men and women became *less* favorable—though these simple effects did not reach statistical significance ( $ps$  of .16 and .22, respectively). Across conditions, attitudes toward redistribution were not significantly correlated with subjective SES,  $r(121) = .11, p > .2$ , but they were significantly correlated with objective SES,  $r(121) = .21, p = .023$ . The Economic Threat  $\times$  Mate-Value interaction on attitudes toward redistribution also survived controlling for subjective SES, objective SES, and all Economic Threat  $\times$  SES interactions,  $ps < .01$ .

**Strategies for reducing the deficit.** Next, we examined the results for the new tax-spend composite. We regressed the tax-spend composite onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. Results also showed a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(113) = 2.69, p = .008, \beta = .66$ . For men, there was a significant Economic Threat Manipulation  $\times$  Mate-Value interaction,  $t(113) = 2.87, p = .005, \beta = .69$ .

For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .4$ . For low mate-value men, the economic threat manipulation *increased* scores on the tax-spend composite ( $M = 0.38$ ), relative to the control condition ( $M = -2.36$ ),  $t(113) = 2.06$ ,  $p = .041$ ,  $\beta = .47$ , indicating a preference for raising taxes on the wealthy over cutting spending. However, for high mate-value men, the economic threat manipulation *decreased* scores on the tax-spend composite ( $M = -3.39$ ) relative to the control condition ( $M = -0.69$ ),  $t(113) = -2.16$ ,  $p = .033$ ,  $\beta = -.46$ , indicating a preference for cutting spending over raising taxes on the wealthy.

We also tested whether the economic threat manipulation interacted with socioeconomic status to affect the tax-spend composite. There was no interaction between the economic threat manipulation and subjective SES,  $p > .3$ , but there was a significant Economic Threat  $\times$  Objective SES interaction,  $t(113) = 2.04$ ,  $p = .044$ ,  $\beta = .42$ . Relative to the control condition, the economic threat manipulation increased scores on the tax-spend composite for low SES men and women, but decreased scores on the tax-spend composite for high SES men and women—though these simple effects did not reach statistical significance ( $ps$  of .17 and .16, respectively). Across conditions, the tax-spend composite was significantly correlated with subjective SES,  $r(121) = .18$ ,  $p = .042$ , but not with objective SES,  $r(121) = .11$ ,  $p > .2$ . The Economic Threat  $\times$  Mate-Value interaction on the tax-spend composite also survived controlling for subjective SES, objective SES, and all Economic Threat  $\times$  SES interactions,  $ps < .02$ .

## Discussion

Building on the findings of Study 1, Studies 2a and 2b found that cues of an economic threat affect people's attitudes toward redistribution. As predicted, this relationship was moderated by both gender and mate-value. In response to the economic threat manipulation, low mate-value men adopted more favorable attitudes toward redistribution, but high mate-value men adopted less favorable attitudes. This pattern of results was obtained with two different manipulations of economic threat, two different measures of mate-value, and two different indicators of attitudes toward redistribution policies.

Across both studies, women's attitudes toward redistribution did not change as a function of the manipulation. Moreover, our pattern of results was unique to attitudes toward redistribution—economic threat did not affect attitudes toward social issues. Finally, socioeconomic status appeared to have weak or nonexistent effects on attitudes toward redistribution. In Study 2a, neither subjective SES nor objective SES interacted with the economic threat manipulation to affect attitudes toward redistribution. In Study 2b, subjective SES did not interact with the economic threat manipulation to affect attitudes toward redistribution, but objective SES did. We further explore the inconsistent relationships between SES and attitudes toward redistribution in later studies and in the General Discussion. Overall, these results are consistent with the functional evolutionary perspective, which predicted that during tough economic times gender and mate-value would affect attitudes toward redistribution.

## Study 3: Economic Threat and Congressional Voting Behavior

In the previous studies, we found experimental evidence that mate-value and gender moderated the relationship between economic threat and attitudes toward redistribution. In Study 3, we explored how these dynamics play out in real-world behavior. Specifically, we examined whether economic threat, gender, and mate-value affect how members of the U.S. Congress vote on legislation concerning government redistribution policies. We also tested how socioeconomic status influenced voting on these policies.

## Method

**Economic threat.** In our experimental studies, we manipulated economic threat by having participants read a story about unemployment and joblessness. In Study 3, we used real information about the unemployment rate in each Congressional district as our indicator of economic threat (U.S. Census Bureau, 2009).

**Attitudes toward redistributive policies.** To assess how members of Congress voted on government redistribution policies, we obtained records from the National Taxpayers Union—a group that records every vote that significantly affects taxes, spending, debt, and regulatory burdens on consumers and taxpayers. The National Taxpayers Union (2012) used data from 377 roll call votes in the House of Representatives to rate each Congressperson on a scale ranging from 0 (*a preference for higher taxes and increased government spending*) to 100 (*a preference for lower taxes and reduced government spending*). Importantly, using this scale allows us to assess votes on economic issues, independent of other issues, and gives us a measure of attitudes toward redistribution that is more nuanced than mere political party affiliation. To be consistent with previous studies, the scale was recoded, such that higher numbers represent more favorable attitudes toward redistribution.

**Mate-value.** A group of nine undergraduates (3 men, 6 women), unaware of our hypotheses, viewed individual photos of each Congressperson, taken from their Congressional website, and rated their mate-value. Although it would be difficult for our raters to identify or recognize most members of Congress, we removed Congresspersons with prominent national profiles: John Boehner, Nancy Pelosi, Paul Ryan, Michelle Bachmann, and Ron Paul. Because our theoretical framework is based upon heterosexual mate competition strategies, we also removed openly gay and lesbian members of Congress: Barney Frank, Tammy Baldwin, Jared Polis, and David Cicilline. Raters responded to the question, "If this person became single tomorrow, how difficult/easy would it be for him/her to find a date?" on a scale ranging from 1 = *extremely difficult* to 7 = *extremely easy*. Ratings were aggregated into a single mate-value composite ( $\alpha = .92$ ).

**Socioeconomic status.** To examine socioeconomic status, we obtained data on the net-worth of each member of Congress (Center for Responsive Politics, 2012).

## Results

First, we regressed unemployment rate, mate-value, gender, and their interactions onto the voting index. There was a significant

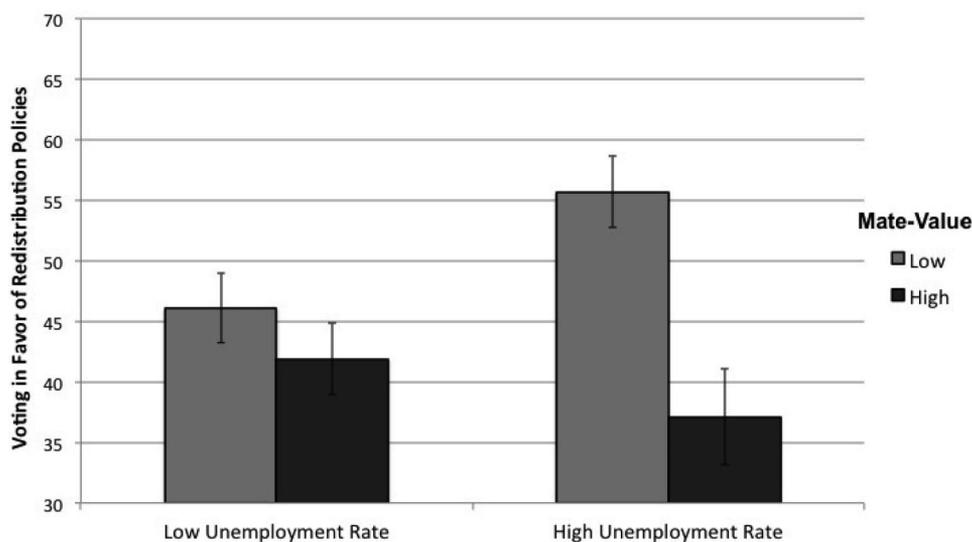


Figure 2. For male members of Congress, the effect of economic threat and mate-value on voting for redistribution policies—graphed at 1 *SD* below and 1 *SD* above the means of unemployment rate and mate-value (Study 3). Error bars represent the standard error of the mean.

three-way Unemployment Rate  $\times$  Mate-Value  $\times$  Gender interaction,  $t(343) = 2.21, p = .028, \beta = .15$ . For Congresswomen, the Unemployment Rate  $\times$  Mate-Value interaction was not significant,  $p > .15$ . For Congressmen, there was a significant Unemployment Rate  $\times$  Mate-Value interaction,  $t(343) = 1.99, p = .047, \beta = .13$  (see Figure 2). Follow-up analyses showed that for Congressmen representing districts with high levels of unemployment (one standard deviation above the mean), higher mate-value was associated with voting against redistribution policies,  $t(343) = 3.82, p < .001, \beta = .34$ . In districts with low levels of unemployment (one standard deviation below the mean), mate-value was unrelated to voting record,  $p > .3, \beta = .078$ .

Again, we tested whether our results were unique to mate-value or whether unemployment rate would also interacted with a Congressperson's socioeconomic status. The Unemployment Rate  $\times$  Socioeconomic Status interaction was not significant,  $p > .6$ . Overall, higher socioeconomic status was related to voting against redistributive policies,  $r(343) = .13, p = .019$ . The Unemployment Rate  $\times$  Mate-Value interaction on voting record survived controlling for socioeconomic status and the Unemployment Rate  $\times$  Socioeconomic Status interaction,  $p < .05$ .

## Discussion

Using real voting behavior, Study 3 provides support for the proposed relationship between economic threat, mate-value, gender, and attitudes toward redistributive policies. In areas with little economic threat (low unemployment), Congressmen's mate-value was unrelated to voting behavior. In areas with high economic threat (high unemployment), Congressmen's mate-value was a significant predictor of voting behavior: As Congressmen's mate-value increased, voting in favor of redistribution policies decreased.

Overall, these results replicate and extend the experimental results obtained in Studies 1, 2a, and 2b, with a real-world,

behavioral measure of support for government redistribution policies. Although these findings provide some insight into how economic threat might affect attitudes toward redistribution outside of the lab, they should be interpreted with caution. First and foremost, these results are correlational and the causal pathway is unclear. For instance, an unknown fifth variable could be confounded with one of our predictors and be driving the observed relationship. Additionally, the results of this study assume that a Congressperson's voting record reflects that Congressperson's actual opinions. In reality, how a Congressperson votes is influenced by a range of factors, from their own opinion, to the opinion of their constituents, to the opinion of their campaign donors. Because the weight of these different factors is unknown, there is some uncertainty about the extent to which we are capturing each Congressperson's true attitudes toward redistribution. Of course, potential variability in such factors only adds "noise" to the measure of voting behavior and thereby makes it more difficult to discern the predicted pattern (or any actual pattern). The observed results, despite this, accord with the findings of three experimental studies and are consistent with the three-way interaction predicted by the functional evolutionary framework.

## Study 4: Gender-Specific Resource Competition and Attitudes Toward Redistribution

The first three studies demonstrate a relationship between economic threat, mate-value, gender, and attitudes toward government redistribution policies. These relationships were observed using both lab-based experiments and real-world behavioral data. The final two studies return to the lab to more directly test the psychological process through which economic threat affects attitudes toward redistribution.

We suggest that economic threats activate a male mating psychology in which men must compete with one another for access to resources. To demonstrate that our results are indeed driven by

male–male resource competition, in Study 4 we manipulated information about the economic recession to suggest that it was either disproportionately affecting men or women. We predicted that men’s attitudes toward redistribution would shift when they read that the recession was affecting men—a situation characterized by heightened male–male resource competition—but that their attitudes would be less likely to shift if they thought the recession was predominately affecting women.

## Method

**Participants.** One hundred eight participants (50 women,  $M_{\text{age}} = 20.02$  years) were recruited from introductory psychology classes as partial fulfillment of their class requirement. Participants entered the lab in groups of three or fewer and were seated at individual computers separated by dividers.

**Procedure.** Participants were randomly assigned to read one of two stories about the economic recession. These stories were modified from real newspaper articles that reported that the recession had more strongly affected male or female industries (Amann, 2009; Blackburn, 2011). The male job loss story described that men had been disproportionately affected by the recession—men had seen their salaries drop during the recession, the majority of job losses had occurred in male-dominated industries, and jobs in male-dominated industries were unlikely to come back. The story also emphasized that women had been relatively unaffected by the recession. The female job loss story described the opposite—women had seen their salaries drop during the recession, the majority of job losses had occurred in female-dominated industries, jobs in female-dominated industries were unlikely to come back, and men had been relatively unaffected by the recession. Participants then responded to the same redistributive policy atti-

tude questions from Studies 2a and 2b. Responses to healthcare, welfare, and tax policy questions were aggregated into a *redistribution attitudes composite* ( $\alpha = .80$ ). Responses to abortion and gay marriage questions were averaged into a *social attitudes composite* ( $\alpha = .84$ ). Following these questions, participants responded to the full Landolt Mate-Value Scale ( $\alpha = .88$ ) and to the same measures of subjective ( $\alpha = .71$ ) and objective SES used in previous studies.

## Results

We regressed the redistribution composite onto the job loss manipulation, mate-value, gender, and all possible interaction terms. There was a significant three-way Job Loss Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(101) = 2.44$ ,  $p = .016$ ,  $\beta = .63$  (see Figure 3). As predicted, for men, the Job Loss Manipulation  $\times$  Mate-Value interaction was significant,  $t(101) = 2.96$ ,  $p = .004$ ,  $\beta = .65$ . For women, the Job Loss Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .55$ . Follow-up analyses showed that, relative to the female job loss manipulation, the male job loss manipulation led *low mate-value men* to adopt *more* favorable attitudes toward redistribution,  $t(101) = 2.37$ ,  $p = .02$ ,  $\beta = .42$ , but led *high mate-value men* to adopt *less* favorable attitudes toward redistribution,  $t(101) = 1.96$ ,  $p = .053$ ,  $\beta = -.37$ .

We also regressed the social attitudes composite onto the same set of predictors. As in the previous studies, the relationship between the job loss manipulation, mate-value, and gender was not related to participants’ attitudes toward social issues,  $p > .8$ .

Again, we also examined whether the job loss manipulation interacted with SES to affect attitudes toward redistribution. Separate regressions showed that there were no significant interactions between either measure of SES and our other predictors,  $ps > .2$ .

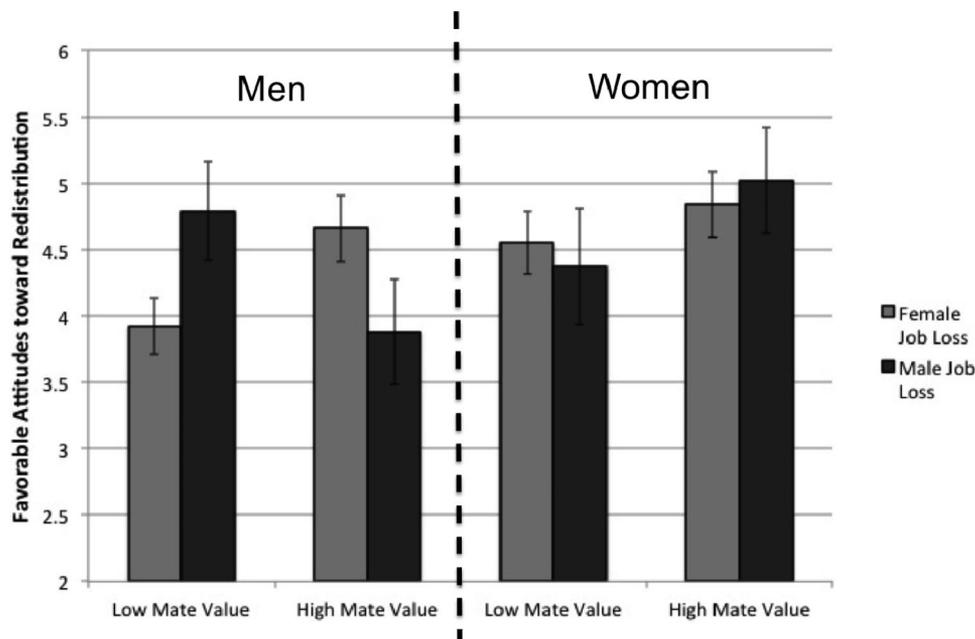


Figure 3. Effect of job loss manipulation on attitudes toward redistribution by participant gender and mate-value—graphed at 1 SD below (low) and 1 SD above (high) the mean of mate-value (Study 4). Error bars represent the standard error of the mean.

Across conditions, attitudes toward redistribution were significantly correlated with objective socioeconomic status,  $r(108) = .20$ ,  $p = .032$ , but not subjective socioeconomic status,  $r < .05$ . The Job Loss  $\times$  Mate-Value interaction on attitudes toward redistribution also survived controlling for subjective SES, objective SES, and all Job Loss  $\times$  SES interactions,  $ps < .01$ .

## Discussion

Study 4 builds on the findings from the previous studies to highlight the psychological process through which economic threats influence men's attitudes toward redistribution. When an economic threat affects men's access to resources, low mate-value men adopt more favorable attitudes toward redistribution policies, but high mate-value men adopt less favorable attitudes toward redistribution policies. When an economic threat affects women's access to resources, the same pattern of results did not emerge. Therefore, the observed effects seem to be created by enhanced male-male resource competition.

### Study 5: Economic Threat, Social Value Orientation, and Attitudes Toward Redistribution

At the outset of our investigation, we proposed that economic threats lead men to adopt one of two mating strategies, group cooperation or individualistic competition, and that which strategy a man adopts would be influenced by his mate-value. We found evidence for such a relationship in Study 1. We further proposed that these different competition strategies would lead men to adopt different attitudes toward government redistribution policies. Although Studies 2–4 consistently demonstrated that economic threats interact with mate-value to affect attitudes toward redistribution, we have not yet tied these shifts to different mating strategies. Study 5 sought to explicitly test whether shifts in competition strategies cause changes in attitudes toward redistribution. To do so, we manipulated economic threat, measured both social value orientation and attitudes toward redistribution policies, and tested whether or not threat-induced changes in social value orientation statistically mediated the relationship between economic threats and redistribution attitudes.

In Study 3, we showed that economic threats affect a real-life behavioral outcome—the voting behavior of members of Congress. In Study 5, we sought to extend this finding by measuring a behavior. Specifically, we modified the social value orientation measure from Study 1 such that participants divided real money between themselves and an unknown person.

## Method

**Participants.** One hundred fifty-one participants (80 women,  $M_{\text{age}} = 34.30$  years) were recruited from an online survey website and paid a small monetary compensation.

**Procedure.** The procedure for Study 5 was similar to the previous studies. Participants were randomly assigned to read one of the two stories about the economy. One story was the economic threat manipulation used in Study 1. The other story was comparable in length and described the economy as improving. It stated that the unemployment rate is decreasing, that companies are hiring employees again, and that the economic future is bright.

Afterwards, participants responded to questions about their social value orientation, political attitudes, mate-value, and socioeconomic status.

Social value orientation was assessed using the same measure from Study 1. However, there was one change. In Study 1, participants were instructed to imagine that they were dividing hypothetical points between themselves and another person. In Study 5, participants were told that they would be dividing real money between themselves and another person. Study 5 used the same nine questions and same point distribution from Study 1. Participants were told that for every 100 points they accumulated, they would receive a \$0.01 bonus. Using this payoff structure, participants typically earned a bonus ranging between \$0.45 and \$0.55. As in Study 1, we recoded responses to the nine decomposed games—assigning a value of “1” to prosocial choices and a value of “0” to pro-self choices. Responses to all nine games were summed to form a single social value orientation composite, which could range from 0 (representing 9 pro-self choices) to 9 (representing 9 prosocial choices).

After completing the social value orientation measure, participants responded to the redistribution attitudes questions from Studies 2a and 2b ( $\alpha = .92$ ), to the four mate-value questions from Study 1 ( $\alpha = .91$ ), and to the measures of subjective SES ( $\alpha = .87$ ) and objective SES from previous studies.

## Results

**Social value orientation.** First, we regressed the social value orientation measure onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. There was a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(139) = 2.52$ ,  $p = .013$ ,  $\beta = .64$  (see Table 1). As predicted, for men, the Economic Threat Manipulation  $\times$  Mate-Value interaction was significant,  $t(139) = 3.28$ ,  $p = .001$ ,  $\beta = .86$ . For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .6$ . Unlike Study 1, there was no main effect of the economic threat manipulation on women's social value orientation,  $p > .7$ . For men, follow-up analyses showed that the economic threat manipulation led *low mate-value men* to make more *prosocial* choices,  $t(139) = 2.36$ ,  $p = .020$ ,  $\beta = .41$ , but the same manipulation led *high mate-value*

Table 1  
Effect of Economic Threat Manipulation on Social Value Orientation and Attitudes Toward Redistribution by Participant Gender and Mate-Value—Reported at 1 SD Below (Low) and 1 SD Above (High) the Mean of Mate-Value (Study 5)

Gender	Mate-value	Story manipulation	Social value orientation	Redistribution
Men	Low	Control	3.68	4.32
		Economic threat	7.03	5.17
	High	Control	5.40	5.22
		Economic threat	3.08	4.21
Women	Low	Control	4.88	4.94
		Economic threat	5.06	4.84
	High	Control	5.01	5.20
		Economic threat	4.62	5.11

men to make more *pro-self* choices,  $t(139) = 1.90, p = .059, \beta = -.29$ .

We also examined whether the economic threat manipulation interacted with SES to affect social value orientation. Separate regressions showed that there were no significant interactions between either measure of SES and our economic threat manipulation,  $ps > .65$ . Across conditions, social value orientation was unrelated to either measure of SES,  $rs < .05$ . The Economic Threat  $\times$  Mate-Value interaction on social value orientation also survived controlling for subjective SES, objective SES, and all Economic Threat  $\times$  SES interactions,  $ps < .01$ .

**Political attitude questions.** Next, we analyzed responses to the political attitude questions. We regressed the redistribution composite onto the economic threat manipulation, mate-value, gender, and all possible interaction terms. There was a significant three-way Economic Threat Manipulation  $\times$  Mate-Value  $\times$  Gender interaction,  $t(139) = 3.08, p = .002, \beta = .77$  (see Table 1). As predicted, for men, the Economic Threat Manipulation  $\times$  Mate-Value interaction was significant,  $t(139) = 3.61, p < .001, \beta = .93$ . For women, the Economic Threat Manipulation  $\times$  Mate-Value interaction was not significant,  $p > .9$ . The economic threat manipulation led *low mate-value men* to become *more* favorable in their attitudes toward redistribution,  $t(139) = 2.05, p = .042, \beta = .36$ . However, the same manipulation led *high mate-value men* to become *less* favorable in their attitudes toward redistribution,  $t(139) = 2.73, p = .007, \beta = -.41$ .

We also examined whether the economic threat manipulation interacted with SES to affect attitudes toward redistribution. Separate regressions showed that there were no significant interactions between either measure of SES and the economic threat manipulation,  $ps > .5$ . Across conditions, attitudes toward redistribution were unrelated to our subjective and objective measures of SES,  $rs < .05$ . The Economic Threat  $\times$  Mate-Value interaction on attitudes toward redistribution also survived controlling for subjective SES, objective SES, and all Economic Threat  $\times$  SES interactions,  $ps < .01$ .

**Mediation.** To examine whether changes in social value orientation mediated shifts in attitudes toward government redistribution, we conducted a mediated-moderation analysis (Hayes, 2012). Following Preacher and Hayes (2008), we estimated the standard deviation of the indirect effect of our economic threat manipulation on attitudes toward redistribution at one standard deviation below and above the mean of male mate-value for 5,000 bootstrapped samples. The indirect effect of the highest order interaction was estimated to lie between .059 and .57 with 95% confidence ( $\beta = 0.24, SE = 0.13$ ). At one standard deviation below the mean (low mate-value), the indirect effect was estimated to lie between  $-.90$  and  $-.047$  with 95% confidence ( $\beta = -.32, SE = 0.21$ ). At one standard deviation above the mean (high mate-value), the indirect effect was estimated to lie between .041 and .65 with 95% confidence ( $\beta = 0.25, SE = 0.15$ ). Because zero was not included in the 95% confidence intervals at either one standard deviation below or above the mean of mate-value, this analysis demonstrates significant mediated-moderation. That is, the Economic Threat  $\times$  Mate-Value interaction altered participants' social value orientation, which, in turn, predicted participants' attitudes toward redistribution.

## Discussion

Study 5 provides additional insight into the psychological process through which economic threats and mate-value interact to affect men's attitudes toward redistribution. Previous research suggests that men adopt one of two social strategies in response to competition—group cooperation or individualistic competition—and that which strategy a man adopts depends on his mate-value. Building on this research, we proposed that these divergent mating strategies would be differentially related to attitudes toward redistribution. Whereas men who adopt a group cooperation strategy should become more prosocial, prefer equality, and favor expanded government redistribution, those who adopt an individualistic competition strategy should seek to maximize their existing advantages, prefer for inequality, and favor reduced government redistribution. Study 5 provides empirical evidence for these proposed relationships. Replicating the findings of Study 1, economic threat interacted with mate-value to influence men's social value orientations: After the economic threat manipulation, low mate-value men become more prosocial, but high mate-value men become less prosocial. Replicating the findings of Studies 2–4, following the economic threat, low mate-value men favored more redistribution, but high mate-value men favored less redistribution. Finally, Study 5 demonstrated that shifts in social value orientation statistically mediate these shifts in attitudes toward redistribution.

## General Discussion

We set out to investigate two related questions: (1) Do economic recessions influence attitudes toward redistribution? (2) If so, are different people affected in different ways? We considered these questions from two distinct theoretical perspectives. A functional evolutionary perspective suggests that the effect of economic threats on attitudes toward redistribution depends on one's mate-value, and that this relationship should be strongest for men. In particular, economic threats should lead low mate-value men to adopt a cooperative mating strategy, and, as a result, low mate-value men should become more prosocial and more favorable toward redistribution policies. In contrast, economic threats should lead high mate-value men to adopt individualistic mating strategies, and consequently, high mate-value men should become less prosocial and less favorable toward redistribution. In contrast, from a traditional economic self-interest perspective, one's attitudes toward redistribution during economically threatening times should be affected by whether one is wealthy or poor, and this relationship should be similar for men and women.

Across five studies, we found strong support for the hypotheses generated by the functional evolutionary approach. In Study 1, an economic threat inspired low mate-value men to become more prosocial, but the same threat led high mate-value men to become less prosocial. In Studies 2a and 2b, economic threat manipulations led low mate-value men to adopt more favorable attitudes toward redistribution policies, but led high mate-value men to adopt less favorable attitudes. In Study 3, we replicated these findings using real-world data on the voting behavior of members of the U.S. Congress. For Congresspersons representing districts with low unemployment, male mate-value was unrelated to voting record. For Congresspersons representing districts with high unemployment, higher mate-value was related to reduced support for redistribution—an outcome that may actually work against the financial

well-being of their constituents. In Studies 4 and 5, we conducted experiments to examine the psychological process through which economic threats affect attitudes toward redistribution. In Study 4, we manipulated whether participants thought resource competition was occurring among men or women. Cues of male–male resource competition, relative to female–female competition, led low mate-value men to adopt more favorable attitudes toward redistribution, but led high mate-value men to adopt less favorable attitudes. In Study 5, we linked attitudes toward redistribution policies to cooperative versus individualistic competition strategies. Specifically, we showed that economic threats interact with male mate-value to affect social value orientation, which, in turn, predicts attitudes toward redistribution policies.

### Economic Self-Interest Versus Mate Competition

We began this investigation by outlining the divergent predictions generated by the functional evolutionary approach and the traditional economic self-interest perspective. In five studies, we found a consistent and coherent pattern of results showing strong support for the functional evolutionary framework. Relationships between economic threats, mate-value, and attitudes toward redistribution emerged using four different indicators of economic threats, three different assessments of mate-value, three different means of measuring attitudes toward redistribution, and these effects were robust even when controlling for socioeconomic status. Moreover, we did not find effects of our economic threat manipulations on participants' attitudes toward social issues—indicating that our results are unique to participants' attitudes toward redistribution. We also found, as predicted—and in contrast to predictions generated by the traditional economic self-interest perspective—that economic threats did not affect women's attitudes toward redistribution. Moreover, we generally did not find that our economic threat manipulations interacted with socioeconomic status to affect attitudes toward redistribution; although we found weak support for this relationship in Study 2b, it was not replicated in the other five studies.

In sum, the present results support the functional evolutionary approach. They do not, however, preclude the possibility that economic self-interest also affects attitudes toward redistribution. As mentioned in the Introduction, the predictions generated by these different approaches are not mutually exclusive. In five studies, we examined how attitudes toward redistribution were related to both subjective SES and objective SES. We found significant correlations between SES and attitudes toward redistribution in 3 out of 9 such analyses. In all 9 analyses, the correlation between SES and attitudes toward redistribution was in the positive direction—a result that is unlikely to occur if there is no relationship between these variables.

To further assess the relationship between SES and attitudes toward redistribution, we aggregated across data sets that used the same measure of attitudes toward redistribution (Studies 2a, 2b, 4, and 5) and assessed the correlation between SES and attitudes toward redistribution. Overall, although the effect sizes are small, attitudes toward redistribution were significantly predicted by objective SES,  $r(506) = .14, p < .001$ , and marginally predicted by subjective SES,  $r(506) = .082, p = .066$ . Thus, supporting the economic self-interest perspective, SES seems to be weakly related

to attitudes toward redistribution, although it appears to be insensitive to cues of economic threat.

### A Functional Evolutionary Approach to Political Attitudes

Investigators seeking to better understand political attitudes have been increasingly interested in integrating research on political attitudes with evolutionary principles (Alford & Hibbing, 2004). To that end, recent studies have linked individual differences in political attitudes to genetic and physiological biomarkers (Alford, Funk, & Hibbing, 2005; Durante, Rae, & Griskevicius, 2013; Hatemi et al., 2010; Oxley, 2008). The present set of studies builds on this research by also highlighting the flexibility of an evolutionary approach in explaining *situational* variation in political attitudes. In response to economic threats, men in our studies adjusted their attitudes toward redistribution in accordance with their self-perceived mate-value.

These findings fit within a broader theoretical perspective suggesting that the human mind comprises flexible psychological subsystems adapted to respond to recurring sets of threats and opportunities (Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Kenrick, Neuberg, Griskevicius, Becker, & Schaller, 2010; Neuberg, Kenrick, & Schaller, 2011). In past research, investigators have differentially linked these motivational subsystems to cognitive processes such as perception, attention, and memory (Ackerman et al., 2009, 2006; Maner et al., 2003, 2005), personality characteristics (Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010; White et al., 2012), economic decision making (Griskevicius et al., 2012; Y. J. Li et al., 2012; White, Li, Griskevicius, Neuberg, & Kenrick, 2013), and complex social behaviors such as aggression and conformity (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; Griskevicius et al., 2009). To the extent that one's political attitudes can tangibly affect outcomes in responding to threats and opportunities—via social activism, voting behaviors, and so forth—one would also expect these psychological subsystems to influence such attitudes.

When considering political attitudes from an evolutionary perspective, however, it is important to recognize that institutionalized governments, and the types of large-scale economic and social policies they are able to enact, are relatively novel in human evolutionary history. As such, it is unlikely that humans could have adapted psychological processes to respond specifically to modern systems of government. Instead, it is more conceivable that aspects of modern governments, and the policies they enact, are related to fundamental features of human psychology. For instance, in the current investigation, attitudes toward redistribution policies are not necessarily functional in and of themselves. Rather, attitudes toward these policies are grounded in more fundamental notions of equality versus inequality and egalitarianism versus hierarchy. Thus, this research highlights how considering the more fundamental features of modern political attitudes can generate novel hypotheses.

### The Psychology of Economic Threats

In attempting to understand how economic recessions affect people, many researchers have focused on mental health out-

comes, such as life satisfaction, optimism, and well-being (De Hauw & De Vos, 2010; Tausig & Fenwick, 1999). The current studies demonstrate that principles from life history theory can be useful in understanding the links between economic threats and mating psychology. Indeed, recent investigations have demonstrated that economic threats affect variables associated with short-term mating effort, such as risk-taking and impulse control (Griskevicius et al., 2011), and alter the characteristics that women look for in potential mates—by increasing the emphasis that women place on men’s earning potential (Hill et al., 2012).

In conjunction with previous research, the current studies also show that economic threats activate mate competition among both men and women. During an economic threat, the number of men with solid financial standing, considered to be high-quality mates, decreases. As a result, women must increasingly compete with one another to attract a shrinking number of available high-quality men. Men, on the other hand, must increasingly compete with one another to demonstrate that they are one of these available, high-quality mates. When competition increases, men and women emphasize the qualities that potential mates find most desirable. Because men prioritize physical attractiveness in mates (N. P. Li et al., 2002), women seek out means to enhance their beauty. Indeed, a recent series of studies found that economic threats lead women to seek out attractiveness-enhancing products—a finding dubbed the “lipstick effect” (Hill et al., 2012). Because women prioritize a mate’s earning potential, men must increasingly compete with one another for access to resources. As demonstrated in our studies, such motives can shift attitudes toward redistribution. Low mate-value men follow cooperative strategies, become more prosocial, and adopt more favorable attitudes toward redistribution. In contrast, high mate-value follow individualistic strategies, become less prosocial, and adopt less favorable attitudes toward redistribution.

## Conclusion

In recent years, a fierce public debate has arisen over the appropriate size and scope of government redistribution policies. To understand this disagreement, it can be helpful to consider the psychological roots of people’s attitudes toward redistribution. Public figures and ordinary citizens alike have often subscribed to the notion of economic self-interest—that people “vote their pocketbooks.” However, our investigation suggests a very different set of motivations at work. Drawing from a functional evolutionary framework, we find that people’s attitudes toward redistribution, especially during tough economic times, can be influenced by something that has seemingly little to do with government redistribution—their mating psychology.

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