

# Patriarchy, Male Competition, and Excess Male Mortality

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Studies of patriarchy typically focus on women's subordination to men and the detrimental consequences for females. In this study, however, the authors predict that greater social empowerment of women will be associated with smaller mortality differences between women and men, which may seem counterintuitive from a non-evolutionary perspective. In other words, they predict that higher levels of societal patriarchy will be associated with greater levels of excess male mortality. They propose that the degree of patriarchy reflects both the extent of male control of females as reproductive assets, as well as the degree of male competition for positions of high status and power that have historically conferred disproportionate reproductive benefits. The intensity of this male competition directly predicts the extent to which male mortality rates exceed female mortality rates. The authors examined national level sociodemographic and mortality data from the WHO Mortality Database, United Nations, CIA World Factbook, and the Encyclopedia of World Cultures. They found that across nations, women's social and economic empowerment had a strong inverse relationship with the disparity between male and female mortality from both external (direct behavioral) and (behaviorally mediated) internal causes, even when accounting for general economic inequality and the prevalence of polygyny. This study demonstrates the usefulness of an evolutionary framework for explaining contemporary social phenomena and important public health issues.

*Keywords:* patriarchy, mortality, polygyny, inequality, sex differences

Both evolutionary and feminist theorists have a central focus on issues of power and sex and thus often seek to explain the same phenomenon (for a review, see [Buss & Malamuth, 1996](#)). In this article, we integrate evolutionary and feminist perspectives on patriarchy, noting the relationships to both power imbalances between the sexes and power imbalances among men. The latter is associated with male competition for positions of high status and power, which drives sex differ-

ences in mortality rates. Thus, higher levels of patriarchy predict even higher levels of male mortality, relative to those of women. The goal of this article is to empirically present support for the argument that greater social empowerment of women is correlated with smaller sex differences in mortality, such that higher levels of patriarchy results in greater levels of excess male mortality. We posit that there are two reasons for this result: how much male individuals control female individuals as reproductive resources and the degree of male–male competition for status and power.

It is imperative to define terms carefully, especially if there are multiple version of meaning available (such as seen for “feminism,” see [Vandermassen, 2005, for a review](#)). Before proceeding, it is also crucial to note that there is no unified body of thought defining “feminist theory,” but overall, feminism is a political move-

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ment that contains assumptions about human nature grounded in social constructionist theory (Campbell, 2001; Vandermassen, 2005).

### Feminism and the Concept of Patriarchy

In 1963, the liberal feminist Betty Friedan published a book about a “problem with no name.” Seven years (and considerable cultural upheaval) later, the radical feminist Kate Millet was one of several who identified that problem and named it as “patriarchy” (Millet, 1970). Pointing to patriarchy as a culprit marked a fundamental change in feminist strategy. The feminist group shifted from a liberal policy of achieving equality through reform, to a radical strategy of smashing patriarchy. Patriarchy was seen to be “a system characterized by power, dominance, hierarchy and competition, a system that [could not] be reformed but only ripped out root and branch” (Tong, 1989, p. 3; for similar sentiments see Gamble, 2001, p. 302).

The first wave of feminism focused on women’s suffrage in the belief that once women had the right to vote for political candidates, inequality with men would disappear (Heywood, 2003). That was not the case, and the problem of patriarchy remains central to second-wave feminism; however, both the existence and origin of patriarchy are assumed rather than explored. What we find instead is a series of axiomatic premises that place both the problem and solution of patriarchy within social constructionist theory (Vandermassen, 2005). The term *patriarchy* is so unwieldy that it has been described as a *panchreston*, “something that means different things to different people and purports to explain everything, but really explains nothing” (Buss, 1996, p. 317). Today we find that there is not one but many feminisms (Kemp & Squires, 1998), and all conceive of patriarchy in slightly different ways, but they agree on three contentions. First, patriarchy is a socially constructed phenomenon, enforcing notions of sex and gender that equate to male supremacy and female inferiority (de Beauvoir, 1949/1986; Cudd, 2011). Second, patriarchy is the mechanism by which all men institutionally oppress all women (Gamble, 2001). Last, all creeds of feminism are united in the fight against patriarchy (Gamble, 2001). These premises underlie the dominant themes of feminist theory today. We note the contrast in the fem-

inist definition of patriarchy as a broad social phenomenon with the traditional use in anthropology, where patriarchy represents social systems based on patrilineality and fathers as the within-household authority (e.g., Barfield, 1997).

### Limitations of the Feminist Perspective

Darwinian social scientists observe the same phenomena as feminists. They both document power differentials between the sexes, especially in the control of resources, with men coveting resources and excluding women from political decisions in the distribution of resources. Both discuss social norms regarding and institutional enforcement of the sexual division of labor. Both also address male sexual proprietariness and sexual violence toward women. All these correspond to feminist conceptions of patriarchy (for a review, see Buss & Malamuth, 1996), though at a proximate level of analysis (Buss, 2005; Hrdy, 1997).

Feminists are primarily concerned with the battle of the sexes (i.e., intersexual conflict) with a proximate interest of how men oppress women, how they continue to get away with it, and how this oppression can be countered. Following from the three premises above, about the social construction of gender through patriarchy ideology, the singular answer to the “how” questions is to destroy patriarchy by dismantling the underlying ideology. On the other hand, Darwinians posited that the mechanisms underlying patriarchy are not socially constructed (though the social environment is a mediating factor) but rather that the complex and varied phenomena subsumed under the feminist term “patriarchy”—the male control of resources, which includes female sexuality—have origins in our prehomimid past (Smuts, 1994). These factors arise from differential parental investment, sexual selection, and female choice, all of which are very likely to have their own causal dynamics (Buss, 1995).

### A Darwinian Perspective on Patriarchy

Evolutionary-based theories provide a deeper (ultimate) level of explanation (Tinbergen, 1963), creating a comprehensive framework for understanding of how patriarchy affects both women and men. Only evolutionary theory ad-

dresses the ultimate explanations for why men are motivated to gain power over women, and why this power so often involves the control of female sexuality (Smuts, 1992). In fact, “evidence from other primates of male sexual coercion and female resistance to it indicates that the sexual conflicts that underlie patriarchy predate the emergence of the human species” (Smuts, 1992, p. 1).

Human behavior is often a product of two different and interacting evolutionary processes: genetic evolution and cultural evolution (Boyd & Richerson, 1985). The invention of agriculture enabled residential stability and the accumulation of wealth.

Variance in male wealth and power increased through sociopolitical arrangements and intergenerational resource and social status transfers. The increasing skew in male social status and resource control led to increasing control of women’s sexuality by a few of the most powerful men (Smuts, 1992). Male intrasexual contest competition may have been the primary mechanism of sexual selection in human men (Puts, 2010). Women’s preferences for high status, resource-controlling men may have co-evolved with men’s competitive strategies, resulting in the cross-cultural tendency for men to have more control over resources and generally higher social status than women (Buss, 1996). Several studies document the positive association between the degree of male social hierarchy and male control of females (Betzig, 1986; Dickemann, 1979; Lerner, 1986).

### **Patriarchy and Male Control of Males**

In social species, such as humans, control over female individuals is necessarily conjoined with control over other male individuals. Men would be likely to interfere with coercive mating attempts by other men, as this could simultaneously reduce a competitor’s reproductive success and increase one’s own potential to mate with the woman (Smuts, 1992). Without a substantial difference in male power, a coercive strategy would be unstable and men would need to use an investment-based strategy. The reproductive conflict of interest between the greater male focus on partner quantity and greater female focus on partner quality can be mitigated through male investment, or female resistance may be overcome at a lower male cost through

force or the threat of force, that is, sexual coercion (Smuts & Smuts, 1993).

In societies where some male individuals can dominate others, powerful men can monopolize control over women, resulting in skewed male reproductive success corresponding with the status hierarchy (e.g., Betzig, 1992, 1993). In these societies, strategies based on investment are less effective because lower status men have a reduced capacity for investment and because higher status men constrain female mate choice by prohibiting them from freely choosing a mate (Smuts, 1992). Thus, male dominance of women and control of their sexuality is parallel with male dominance of other men (Betzig, 1986; Smuts, 1992). Human males make considerable investments in offspring, and paternal resource provisioning, training in life skills, and defense from threats contributes to the prospects of offspring survival and reproduction (Geary, 2005). Yet there is evidence that male competition may have a stronger effect on the human mating system than paternal investment, with male-mate status competition and mate-guarding predicting female-defense polygyny and environmental resource distribution in spatially heterogeneous rich patches (though with a risk of predators) predicting resource-defense polygyny (Marlowe, 2000).

Thus, an evolutionary perspective brings a novel insight to the properties of patriarchy. Patriarchy can be understood as the degree to which highly powerful men control both women and other men, in addition to nonhuman resources. In social-constructivist models, inequality among men and inequality between women and men could vary independently.

### **Hypotheses**

High levels of patriarchy may have an adverse impact on a large proportion of men, as only a minority can obtain positions of high status and power when male social status is highly skewed. On the basis of the theory and evidence reviewed above, we make a prediction that may be counterintuitive from a nonevolutionary perspective. We predict that the sex difference in social power will directly predict the level of excess male mortality, as indicated by the national ratio of the male mortality rate to the female mortality rate (see Kruger & Nesse, 2006). The degree of patriarchy reflects both

male control of females as reproductive assets, as well as the degree of male competition for positions of power that confer reproductive benefits. The intensity of male competition drives the extent to which male mortality rates exceed female mortality rates, leading to excess male mortality. Thus, when comparing conditions across nations, we expect to see an inverse relationship between the extents of women's social empowerment and excess male mortality.

We perform a strong test of this hypothesis by also including indicators of male reproductive inequality and general economic inequality, a polygyny index and the Gini coefficient respectively. These two indicators of reproductive and economic inequality account for 53% of the variance in sex differences in mortality rates across nations (Kruger, 2010), thus the degree of patriarchy (vs. women's social empowerment) would need to account for a substantial unique portion of the variance in excess male mortality to make a statistically significant prediction. We expect the degrees of patriarchy, polygyny, and general economic inequality to covary directly. As women's social empowerment is the inverse of patriarchy, women's social empowerment will inversely predict polygyny, general economic inequality, and sex differences in mortality rates. We examine these influences on sex differences in mortality rates from direct behavioral causes (i.e., external causes) and behaviorally mediated internal causes (such as cardiovascular disease). For a holistic understanding of relationships, we test our hypotheses by entering national indicators into a path model.

## Method

### Data Sources

We examined national level sociodemographic and mortality data from the official reporting organizations, including the World Health Organization's WHO Mortality Database (World Health Organization, 2007), the U.S. Central Intelligence Agency's World Factbook, the United Nations Demographic Yearbook, and the polygyny index created by Kanazawa and Still (1999) based on the Encyclopedia of World Cultures (Levinson, 1991–1995).

### Measures

The outcome measure was based on the annual rates of male and female mortality across age groups provided by the WHO Mortality Database. We created indices of mortality from external causes (i.e., direct behavioral causes; accidents, homicides, suicides) and behaviorally mediated internal causes (cardiovascular disease, cerebrovascular disease, liver disease and cirrhosis, malignant neoplasms, infectious diseases). We included the polygyny index created by Kanazawa and Still (1999) as an indicator of male reproductive inequality based on anthropological classifications of cultural groups within nations weighted by their proportion in the nation's population. The cultural group classifications are taken from the Encyclopedia of World Cultures (Levinson, 1991–1995) and include: 0 = monogamy is the rule and is widespread; 1 = monogamy is the rule but some polygyny occurs; 2 = polygyny is the rule or cultural ideal but is limited in practice; and 3 = polygyny is the rule and is widespread. We included Gini coefficients from the U.S.'s Central Intelligence Agency's World Factbook. Gini coefficients are the standard measure for the degree of economic inequality in a population, based on the degree of departure of the Lorenz curve representing the proportion of the total income by the proportion of income cumulatively earned by the bottom X% of the population from the line representing total income equality (Gini, 1921). The United Nations Gender Empowerment Measure (UN-GEM) is a composite of the percentage of members of parliament, legislators, senior officials and managers, professional and technical workers who are women; and the ratio of estimated female-to-male earned income.

### Analysis

We calculated the male-to-female mortality ratio (M:F MR, the ratio of the male mortality rate to the female mortality rate) across nations and compared this with the UN-GEM. We also calculated M:F MRs for external causes and internal causes. We examined zero-order correlations (see Table 1) and created a path model with the UN-GEM, Gini coefficient, and polygyny index as exogenous predictors of the M:F

Table 1  
Zero-Order Correlations and Descriptives

Variable	1	2	3	4	5	<i>M</i>	<i>SD</i>
1. UN-GEM	—	-.607***	-.458**	-.623***	-.675***	0.59	0.14
2. Polygyny		—	.524**	.493**	.542***	0.26	0.52
3. Gini			—	.713***	.377*	35.53	9.07
4. M:F MR External				—	.566***	2.99	1.11
5. M:F MR Internal					—	1.07	0.10

Note. *N* = 37. UN-GEM = United Nations Gender Empowerment Measure; M:F MR = male-to-female mortality ratio.  
\* *p* < .05. \*\* *p* < .001. \*\*\* *p* < .001.

MRs for direct behavioral external and behaviorally mediated internal causes.

**Results**

As predicted, the M:F MR and the UN-GEM were inversely correlated, Pearson’s correlation  $r(55) = -.691, p < .001$ . This strong binary relationship, with 48% shared variance, appeared to be linear and not driven by outliers (see Figure 1). As predicted, the degrees of polygyny, general economic inequality, and excess male mortality covaried directly (see Table 1). Also as predicted, the UN-GEM, women’s social empowerment, was inversely related to polygyny, general economic inequality, and excess male mortality.

Confirming our prediction, the relationship between women’s social empowerment and excess male mortality was not accounted for by the Gini coefficient representing economic in-

equality or the prevalence of polygyny, representing male reproductive inequality (see Figure 2). The Gini coefficient predicted sex differences in mortality from direct behavioral (external) causes, uniquely accounting for 29% of the variance. The UN-GEM uniquely accounted for 14% of the variance in sex differences in mortality from direct behavioral (external) causes. The UN-GEM was the only unique predictor of sex differences in mortality from (behaviorally mediated) internal causes, accounting for 46% of the variance. Once these factors were accounted for, the prevalence of polygyny did not explain any additional variance in either external or internal mortality sex differences. Also as expected, the potential predictors shared considerable variance. Greater economic inequality predicted lower female social empowerment, sharing 21% variance, and a greater extent of polygyny predicted lower female social empowerment, sharing 37% vari-

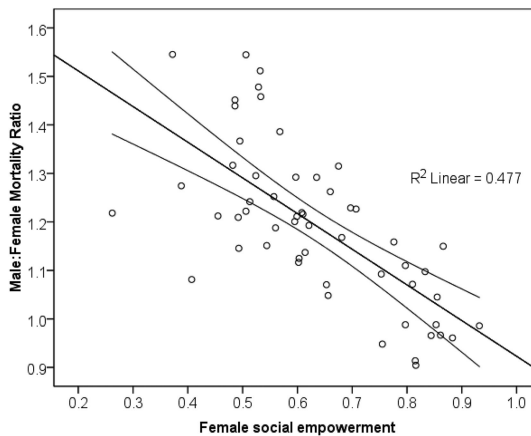


Figure 1. The Male-to-Female Mortality Ratio by the United Nations Gender Empowerment Measure Indicator of Female Social Empowerment.



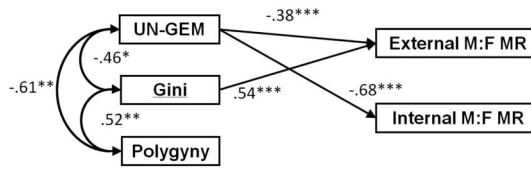


Figure 2. Unique Predictors of Sex Differences in Mortality Rates. UN-GEM = United Nations Gender Empowerment Measure; M:F MR = male-to-female mortality ratio.  $\chi^2(4) = 4.34$ ,  $p = .362$ ,  $\chi^2/df = 1.09$ , goodness-of-fit index = .958, normed fit index = .951, comparative fit index = .996, root-mean-square error of approximation = .049;  $N = 37$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

ance. Greater economic inequality was associated with a greater extent of polygyny, sharing 27% variance.

### Discussion

Evidence for how high levels of patriarchy adversely affect men is scarce. To the best of our knowledge, we are the first to quantify this influence in tangible terms by examining trends in male mortality risk in excess of female mortality risk. The results supported our prediction that lower female social empowerment is directly and positively related with a greater excess level of male mortality above that expected at female mortality rates. These patterns are consistent with theory on how sex differences shaped by natural and sexual selection interact with relevant aspects of the environment to result in mortality rates that are considerably higher for men than for women.

Our findings provide further support that men's behavioral and physiological strategies are sensitive to social conditions historically related to the degree of skew in male reproductive success. When social conditions suggest that a small proportion of men will gain disproportionate reproductive benefits, male individuals respond with strategies entailing a greater degree of risk, which for many men will result in early fatalities. Evolutionary researchers have documented the relationship between variation in male reproductive success and the "young male syndrome," where men in circumstances indicating a low probability of reproductive success engage in heightened levels of risky or violent competitive behavior (Wilson & Daly, 1985).

With respect to patriarchy, excess male mortality presumably stems from increased male

intrasexual competition for access to fertile mates or access to the resources necessary to secure these women. This competition may take many forms at the individual or group level; the latter is readily observed in warfare. High male mortality in warfare is more likely a consequence of the drive of young males in patriarchal societies to acquire mates directly through conquest, as well as acquire the resources, social status, and power that would make them desirable partners (Buss & Shackelford, 1997; Chagnon, 1988). Because the women in one's cohort are likely acquired by older, more powerful men, young males must attempt to acquire mates by means other than through the courtship of their peers. These strategies may require a greater degree of risk than monogamous peer courtship, because of the high degree of competition in a system where every male, including mated high-status males, could potentially obtain additional partners and thus reduce female availability (Daly & Wilson, 1988a).

Indicators of patriarchy and polygyny covaried substantially. High degrees of human polygyny resemble harem competition in other species, where one male has control of numerous females, reducing the number of females who would potentially be available to other males. One historical solution in such situations is to procure females from other groups in intergroup raids, increasing the potential availability of mates and fostering male alliances within the group (Chagnon, 1988). Intergroup raiding is documented in both chimpanzees and preindustrial human populations as a male activity thought to serve male reproductive interests (Manson & Wrangham, 1991). Polygynous mating systems may exacerbate intertribal warfare because of the greater potential benefit of acquiring multiple female mates. Although the

increased reproductive success for some males is advantageous, increased male mortality in general is another result.

We do not deny that patriarchy adversely affects women. As [Hartmann \(2001\)](#) described, in patriarchal systems, women are excluded from access to means to achieve economic gain and resources, and their sexuality is restricted. “Men exercise their control in receiving personal service work from women, in not having to do housework or rear children, in having access to women’s bodies for sex” ([Hartman, 2001](#), p. 676). In more tangible terms, patriarchy seems to have deleterious costs for women’s health. [Kawachi, Kennedy, Gupta, and Prothrow-Stith \(1999\)](#) examined women’s political involvement, economic autonomy, employment and earnings, and reproductive rights across 50 American states and found that women’s mortality was correlated with each of these variables in the predicted direction.

We note the diversity of perspectives falling under the label of feminism. Evolutionary theory on human psychology and behavior is also not monolithic, including divergent perspectives even among the pioneers of the modern empirical era of evolutionary psychology on issues such as whether modern homicide is the product of adaptations for sublethal motivations such as competition combined with lethal modern technology ([Daly & Wilson, 1988b](#)) or a product of contingent psychological adaptations that facilitate homicide ([Buss, 2005](#)). There are multiple levels of evolutionary theory, from universally accepted basic general principles such as mammalian sex differences in parental investment ([Trivers, 1972](#)) to specific hypotheses such as whether rape is an adaptive sexual strategy of low-status men with weak prospects of reproduction through socially sanctioned means, where even coauthors have diverging perspectives (e.g., [Thornhill & Palmer, 2000](#)). Researchers in any field will have theoretical disagreements, and evolutionary theory on human psychology and behavior may be remarkable for a relatively high level of convergence in perspectives on basic principles. As in any area of science, specific hypotheses need to be critically examined for theoretical consistency and rigorously evaluated with empirical evidence. We believe that we ground our hypothesis in a solid theoretical framework and verify our pre-

dition with empirical data from appropriate measures.

### Limitations

We base our analyses on the best available data, yet acknowledge that these measures are not perfect. The World Health Organization Mortality Database is created from data released by national reporting systems, some of which are more comprehensive and/or accurate than others. The Gini coefficient is also calculated from available data. The United Nations Gender Empowerment Measure may be the gold standard for assessing women’s social empowerment, comprising several indicators of economic, corporate, and political power. It does not incorporate other domains, such as women’s roles in selecting their own marital partners and family decision making.

It would be interesting to compare women’s relative levels of power within families and in larger society and examine the relationships with the other constructs. The polygyny indicator is based on classifications of the degree to which polygyny is accepted and considered widespread, rather than a quantitative distribution of male mating, marital partners, or both. Despite these limitations, the magnitude of associations are substantial, suggesting that even crude and approximate indicators are sufficient to reveal the hypothesized relationships. Better measures may reveal stronger relationships, and replications of these results will be likely when more sophisticated data become available. We note that all of our data is compiled at the national level, which opens the possibility for replications based on smaller aggregate units such as states–provinces and municipalities. There is likely variation with nations as well as between nations.

We also do not claim to determine the directions of causality among constructs or validate alternative evolutionary theoretical models. For example, in [Marlowe’s \(2000\)](#) model, the environmental characteristics related to resource defense or female defense lead to a polygynous mating system, which then motivates male–male competition (presumably resulting in higher male mortality). Examining these environmental conditions, especially as they change over time, would provide a better test of such a model.

## Implications for Perspectives on Patriarchy

This study provides evidence of the usefulness of an evolutionary framework for explaining contemporary social phenomena. Our results suggest that a holistic definition of patriarchy includes substantial social-power differentials between men and women and among men, with adverse health consequences for many men. Power differentials and dominance hierarchies exist in many species, not only in humans (Smuts, 1994). Primatologists have observed, “the possibility that primates actively construct social strategies for winning competitions” (Fedigan, 1982, p. xix). From an evolutionary perspective, political behavior (including behavior related to patriarchy) has evolved in the service of reproductive interests (Vandermassen, 2008). From a biocultural perspective, patriarchy is a political strategy based on conditional coalitions between male individuals to control female sexuality as a primary resource and to constrain rival male sexuality and gain a reproductive advantage.

Patriarchy may be in part a product of our evolutionary heritage, yet the cross-national and historical variation in women’s social empowerment indicates that highly biased social conditions are not inevitable. Some feminists and evolutionary scholars (those who do not already consider themselves feminists) may find some common ground in an explanatory framework for patriarchy that addresses the central component of male reproductive skew. Greater skew in male reproductive outcomes, or historically related resource holdings and social status, may be associated with a stronger male tendency to view women as a resource, rather than an equal partner in a social, reproductive, or both types of relationships. Reductions in male status inequalities may converge with reductions in status inequalities across the sexes, with resulting health and longevity benefits for most men and women. We realize that such efforts may face substantial political opposition, especially from men. Men are more sensitive to both their position in the social hierarchy and perceived threats to their relative status (Cronin, 1991).

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