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Editorial: Sex and gender effects on power, status, dominance, and leadership – an interdisciplinary look at human and other mammalian societies

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Editorial on the Research Topic

[Sex and gender effects on power, status, dominance, and leadership – an interdisciplinary look at human and other mammalian societies](#)

In human societies, men tend to have more power, status, dominance, and occupy leadership positions more often than women; similarly, in animal societies, power and dominance are often unequally distributed between males and females. Despite these similarities across societies of humans and animals, the scientific study of power, status, dominance, and leadership have (for the most part) progressed in isolation, with little cross-disciplinary exchange or fertilization between the natural and social sciences.

In the social sciences, an extensive body of work has investigated the relation between gender (or sometimes sex) and power, status, dominance, and leadership outcomes (e.g., Eagly & Karau, 2002; Goldin, 2014; Eagly and Heilman, 2016; Meeussen et al., 2016; Hentschel et al., 2018; Von Rueden et al., 2018; Smith et al., 2020; Eckel et al., 2021; Shen et al., in press; Heilman et al., 2024). This effort notwithstanding, many questions remain. For example, we lack a comprehensive understanding of the contexts and circumstances that favor (or undermine) women's advancement to powerful positions, and about why and when female and male leaders are evaluated differently (Williams and Tiedens, 2016; Cardador et al., 2022).

In the natural sciences, empirical investigations in mammalian societies have primarily focused on the evolutionary origins and dynamics of male-female power asymmetries. Specifically, such investigations often focus on a few taxa with female dominance, such as bonobos, lemurs, and spotted hyenas (Kappeler, 1993; Lewis, 2018; Davidian et al., 2022;

Smith et al. in this Research Topic). Notably, intersexual dominance—the distribution of power and status between the sexes—is often treated as a binary (i.e., a species is described as either male-dominant or female-dominant) and as a fixed (rather than flexible) trait of a given species (Lewis, 2018; Davidian, 2022). Contrary to this view, recent studies suggest the relative power of the sexes in some animal societies may be less biased in favor of one sex and more flexible than previously assumed (Kappeler et al.).

With this Research Topic, we aim to facilitate academic exchange, to learn from perspectives that typically lie outside of each of our disciplinary boundaries, to draw comparisons and insights across these perspectives, and to promote an integrative understanding of gender and sex¹ inequalities in power, status, dominance, and leadership. To do so, this Research Topic combines contributions from ecology, biology, psychology, and management. It houses a collection of 21 articles, including 10 articles from the social sciences and 11 articles from the natural sciences. We hope this trans-disciplinary Research Topic will not only deepen our understanding of the roots and origins of gender and sex inequalities in humans and non-humans, but also generate new insights into possible solutions for reducing sex and gender disparities.

1 Research investigating gender effects in humans

The papers from the social sciences in this Research Topic tackle three key questions: (1) Why and when are women less likely than men to attain positions of power, status, dominance, or leadership? (2) When and why are women and men evaluated differently in positions of power, status, dominance, or leadership? and (3) Do differences exist in how men and women think, act, and behave in powerful positions? We will provide a short overview of the main findings of the papers in this Research Topic addressing each of these three questions below.

1.1 Why and when are women less likely than men to attain positions of power, status, dominance, or leadership?

The first question about why we see fewer women than men in leadership positions can be answered by considering two perspectives: First, supply-side factors such as explanations for potential gender differences in the pursuit of leadership positions. Second, biases and other barriers women versus men face when deciding to pursue leadership positions. Influences on women's leadership aspirations are explored in the theoretical paper of Gloor et al. Their paper focuses on the early career years as a key period during which positive and negative critical events occur both in- and outside of

work domains, such as having a baby or getting a promotion. The authors argue that such events and experiences play key roles in shaping women's leadership aspirations by strengthening or weakening work and non-work identities. They outline the role of contextual factors in shaping the positive relationship between work identity and leadership aspirations. Specifically, the authors argue that a supportive organizational climate and mega-threats in society such as the COVID-19 pandemic can have an influence.

Gender biases in hiring were explored via interviews and a conjoint-experimental study by Dutz et al. Interviewing men and women professors who serve on hiring committees for professorships in STEM (science, technology, engineering, and mathematics), these researchers found that, although applicants of both genders are accorded high status, women applicants often have their ability questioned and receive greater scrutiny. These barriers were revealed in discussions around whether “the job might be too big for them, too difficult, too early” and in openly expressed biased comments such as “can women even do the job?”.

Integrating both demand- and supply-side factors via an evolutionary lens, Smith et al. aim to explain why women are less likely to ascend to positions of power and leadership. They review the vast literature across the social sciences and make connections to research on non-human mammalian societies. They propose that men's greater leadership proclivity is rooted in both (1) evolutionary history, such as, sexual selection processes resulting in, for example, men's greater strength and risk-taking, and (2) people's immediate experiences, including institutional climate, gender norms, and socio-ecological factors such as hierarchy steepness.

Finally, Kremes et al. investigated if there are different factors influencing when high social status is ascribed to women versus men. As their experimental evidence indicates, a person's gender interacts with their physical features to influence status ascriptions. Specifically, in men physical strength, and in women physical attractiveness, increases attributions of status (which the authors operationalized as expected enactment of anger after being thwarted).

1.2 When and why are women and men evaluated differently in positions of power, status, dominance, or leadership?

Addressing this question about different evaluations of men and women in power, several papers demonstrate the greater negative outcomes that women in high-ranking positions experience compared to their male counterparts. In a study surveying dyads of leaders together with their employees, Van Gerven et al. show that women leaders are more strongly penalized for misdemeanors. Their study indicates that women leaders (more so than men leaders) who display narcissistic behavior, such as arrogance, are perceived as inconsistent and unpredictable by their employees. These perceptions of inconsistency can lead to withdrawal of effort on the part of employees and, along with it, lower job performance.

Feenstra et al. also surveyed women in high-power positions. They investigated outcomes of negative treatment in the workplace, including overt experiences of gender discrimination, denigrating treatment from colleagues and supervisors (e.g., being interrupted,

1 Throughout this editorial, we refer to sex differences in reference to differences between male and female non-human mammals, which are largely biological, and to gender differences when addressing differences between men and women, which is also subjected to social construction.

criticized, or have contributions overlooked), or a lack of mentorship from senior coworkers. Women managers who experienced negative workplace treatment reported the feeling that their position, status, authority, and power were threatened. These internalized power threats were, in turn, related to reduced job satisfaction, emotional exhaustion, and intentions to leave their position.

Importantly, however, powerful women and men are not always evaluated or treated differently. Other papers in this Research Topic identify the contextual factors that contribute to gendered experiences in positions of power. Culture is a key contextual factor. [Vink et al.](#) show that in heterosexual couples in which the woman's income is higher than that of the man, the couple's relationship quality suffers. However, relationship quality *only* suffers in traditional gender-stereotypical cultures (e.g., Netherlands, Hungary), but not in egalitarian cultures (e.g., Sweden, Finland). Thus, cultural norms and beliefs about gender in a society can have potent influences on women's experiences and well-being when in a high status position.

A person's age can be a notable demographic variable with the potential to trump gender bias in leadership perceptions. [Daldrop et al.](#) investigated the combined effects of a person's age and gender on evaluations of leadership status, prestige and prominence. They conducted two experimental studies in which participants rated people of different ages and genders. Age information indeed outweighed effects of a person's gender. People were allocated lower leadership status when described as young as compared to middle-aged or older.

The specific leadership behaviors also influence evaluations of male and female leaders. In an experimental vignette study, [Barthel and Buengeler](#) found that both men and women leaders profited equally from servant leadership (i.e., relationship-oriented behaviors focused on supporting employees), as compared to directive leadership (i.e., task-oriented behaviors focused on communicating clear expectations to employees). Specifically, servant leadership heightened perceptions of leader warmth, morality, and competence but lowered perceptions of leader dominance, ultimately boosting ratings of leader effectiveness and liking.

Finally, [Bark et al.](#) show that being representative or prototypical of the team and "being one of us" can help women leaders to overcome gender biases in leader evaluations. Their findings from a combination of experimental and survey methods show that women compared to men leaders benefit to a greater degree from being prototypical leaders. These benefits are apparent in being seen as more authentic leaders and being more trusted by employees.

1.3 Do differences exist in how men and women think, act, and behave in powerful positions?

[Vial and Cowgill](#) address the third question of gender differences in how men and women act in positions of power, status, dominance, or leadership. In a stimulating theory paper, the authors argue that women compared to men use power in more prosocial ways intending to benefit others rather than oneself. They argue that this greater prosocial power is driven by women's greater emotional labor: Women more than men tend to regulate emotions to adhere to organizational needs. However, despite resulting benefits for

employees and organizations, greater emotional labor has hidden costs for women. It can drain women's energy levels and reduce their likelihood of reaching and retaining powerful positions.

2 Research investigating sex effects in non-human mammals

As our overview above reveals, recent studies in the social sciences tend to focus on the biases and prejudices that women face when seeking or holding power. Instead, the studies of non-human societies that are part of this Research Topic seek to advance an understanding of intersexual dominance relationships—that is, male-female power asymmetries. They do so by: (1) reviewing the available evidence, and identifying (2) its quantitative measures, (3) determinants, and (4) consequences. We will again provide a short overview over the main findings of each paper.

First, [Kappeler et al.](#) review the literature on male-female social relationships across the lemurs of Madagascar because, in this radiation of primates, females often dominate males. Female dominance in lemurs was found to be more variable than previously acknowledged and is often, but not consistently, implemented by spontaneous male submission in the absence of female aggression. The ability of lemur females to win agonistic interactions with males develops with sexual maturity, as observed in three different families. This study contributes comparative information on sex roles from an independent primate radiation, thereby strengthening our understanding of the evolutionary emergence of female-biased power.

The study of male-female power dynamics has long faced methodological issues. These limit the ability of researchers to propose objective, quantitative measures of intersexual power that are needed for comparisons across species and for within-species investigations of intersexual power. Addressing this issue, two papers in the current Research Topic sought to identify the best way to measure the social dominance of females relative to males. A paper by [Kappeler et al.](#) compared male-female dominance relationships in 9 species of mammals, including 7 primates, rock hyraxes, and spotted hyenas. Their study revealed that the main measures found in the literature, namely the (1) percentage of male-female conflicts won by females and (2) the percentage of males dominated by an average female, are highly correlated across species. Both can thus be used to reliably measure variation in intersexual power. Plotting these measures across species delineates a continuum from strictly male-dominated species to strictly female-dominated species, rather than a simple dichotomy. Their analyses further revealed that in female-dominated societies, submissive signals and gestures are primarily used to establish and maintain dominance, while aggression prevails in male-dominated societies.

In a similar vein, [Seex et al.](#) assess the accuracy of several measures of intersexual dominance using an agent-based model, in which, unlike in empirical studies, the internal dominance values of individuals are known. From all measures used empirically, the authors conclude that (1) the percentage of males dominated by an average female in a social group and (2) the proportion of intersexual conflicts initiated are the most accurate indices and should be combined.

Several papers in this Research Topic investigated whether the degree of dominance of females over males depends on morphological,

demographic or ecological factors such as relative body size, adult sex ratio, sexual maturity or mating season. The adult sex ratio has been identified as an essential predictor of intersexual dominance both within and between species. One hypothesis that may explain the effects of sex-ratio on intersexual dominance relates to self-organization processes, where a higher frequency of male-male aggression, due to male-biased sex ratios, help females to rise in rank because subordinate males drop to the bottom of the hierarchy (Hemehrik et al., 2008). This hypothesis is supported by Saccà et al., investigation of wild vervet monkeys, and by Hemehrik et al. test in groups of rock hyraxes. In vervet monkeys, the intensity of aggression is not higher in males than females but is higher among males when the proportion of males in the group increases. In rock hyraxes, this association is found only in groups with more than one male, where males compete with other males, and females may become dominant over subordinate males.

Proposing an alternative hypothesis for the effect of sex-ratio, Lewis et al. contend that male-female power dynamics are governed by biological market effects due to leverage effects, which occur when members of one sex - here, females - control access to a resource that members of the other sex - here, males - want but cannot take by force, typically ovocytes. Consistent with this hypothesis, they show that in wild Verreaux sifakas, female power increases when their leverage increases, based on the relative value of ovocytes. This effect can happen because they belong to an experienced mother or are scarcer due to a male-biased adult sex ratio.

Several papers on non-human status asymmetries generate additional insights on the dynamics of intersexual dominance. For example, Smit et al. show that even though female mandrills weigh only one-third of the body weight of males, they can outrank some males, especially young males during the mating season, and especially when they are more socially integrated, suggesting some flexibility in intersexual dominance even in the most dimorphic species. Conversely, Koenig et al show in wild gray langurs that male dominance appears inflexible across contexts, and that the rare events of female aggression toward males are aimed at infant protection, while most male aggression towards females occur in a feeding context. This work suggests that intersexual feeding competition may contribute to shaping male-female relationships.

Finally, in the female-dominated society of spotted hyenas, East et al. show that male fitness is substantially affected by the loss of offspring due to infanticide by females. This research counter-balances a classical view of sexual conflict (and of infanticide) in mammals being mostly costly to female fitness, showing that female-biased power can profoundly alter the evolutionary dynamics of sexual conflict.

3 Conclusions

Investigating how gender and sex affect power, status, dominance, and leadership is a truly interdisciplinary science. The collection of articles in this Research Topic represents one of the first steps towards a more unified science integrating the latest knowledge on sex and gender differences in this area across humans and non-humans. Bringing together diverse lines of research can, we believe, catalyze further cross-disciplinary exchanges and foster

a broader and more integrative perspective. As one example, social scientists may draw inspiration from the natural scientists' focus on contextual factors that favor the evolutionary or social origins of female leadership, or the biological development of male-female differences. This type of knowledge may offer insights into identifying new pathways towards female empowerment in our own societies. Likewise, natural scientists may leverage the large body of work accumulated by social scientists that highlight the pivotal roles of cultural and institutional norms, and in turn open up new programs of research into animal social learning and norms regarding sex roles in animal societies. We hope this Research Topic can motivate and contribute to innovative and cutting-edge research that span traditional disciplinary boundaries.

Author contributions

JTC: Writing – original draft, Writing – review & editing. CKH: Writing – original draft, Writing – review & editing. TH: Writing – original draft, Writing – review & editing. EH: Writing – original draft, Writing – review & editing. PMK: Writing – original draft, Writing – review & editing. JV: Writing – original draft, Writing – review & editing.

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Conflict of interest

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