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# Economic inequality drives female sexualization

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Sexual selection plays a crucial role in understanding the diversity of both physiological and behavioral traits of animals and in recent years has made significant contributions to explaining the patterning of inter- and intrasexual competition in humans (1). With increasing interest in the active role of females as competitors (2), evolutionary social scientists are examining more closely variation in women's reproductive strategies (e.g., ref. 3). Blake et al. (4) take this exercise into new empirical territory: the posting of sexy selfies (defined as sexualized self-portrait photographs). Given the conventional view among social and psychological scientists that female sexualization is a direct product of male dominance and gender inequality, the preeminence of sexy selfies in parts of the world where women are least oppressed poses a puzzle that the authors seek to solve. Their alternative proposal is that rising economic inequality promotes status competition among women, manifest through the posting of sexy selfies. The authors reason that, insofar as income inequality breeds status competition and anxiety (5), it strengthens incentives for women to compete in the sexual marketplace—more specifically, to display their physical traits to both enhance their mate value among potential partners and compete with other women.

The findings bear out the authors' expectations. Looking at the patterning of the entire population of sexy selfies published (and geolocated) from Twitter and Instagram during a 1-mo period in 2016 (and controlled for many factors that predict postings more generally), they find that the prevalence of sexy selfies is greatest in environments characterized by highly unequal incomes. This replicates across city- and county-level analyses within the United States and across 113 nations. Furthermore, focusing on what is perhaps a more subtle form of female competition—expenditures in women's beauty salons and clothing stores—the authors find similar patterning within US cities and counties. By contrast, indicators of gender inequity and oppression of women per se play little predictive role in either sexy-selfie prevalence or

beauty-enhancing expenditures. In short, posting sexualized self-portraits and spending heavily on beauty products cooccur with high levels of inequality.

## Keeping Up with the Jane's

Blake et al. (4) offer a refreshing challenge to the conventional view that sexualized depictions of women result from a culture of gender inequality and female oppression—the idea that women in sexist cultures place disproportionate value on their physical appearance, in a sense expecting to be treated as sexual objects by men because of cultural norms. According to this new perspective, sexualization is driven rather by competition in a highly unequal world. Their idea is that sexy-selfies are a form of signaling, the benefits of which increase together with the stakes of moving up in the distribution of income. In this respect, the results parallel studies showing that, as the income share of the richest 1% increases, people farther down the economic pecking order work additional hours, presumably to facilitate Thorsten Veblen's "conspicuous consumption" (6).

This is an innovative piece of work, with much to recommend it, including a comprehensive supplement (163 pages) addressing the multiple sources of bias and confounds that adhere to the analysis of such data. It is also a provocative finding from which inaccurate inferences are easily drawn and therefore bears close scrutiny. In fact, there are many ways this paper should not be read.

## Beware Inaccurate Inferences

First, and most important, as the authors recognize, we do not know who exactly are posting sexy pictures of themselves online. To infer individual strategy from data aggregated across cities, counties, and nations—as the authors unavoidably do—is to commit the ecological fallacy (7). Think of it this way. Median economic status of women, a composite of income, education, and employment calculated at US city and county levels, is shown to be consistently negatively associated with prevalence of sexy selfies—locations where

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women are poorer show more postings. This is an interesting observation regarding the socioeconomic macroenvironments in which sexy-selfie posting is common. However, it does not mean that economically disadvantaged women post more selfies than do richer women. Similarly, nations with higher Human Development Index scores show more postings, but again this does not mean that wealthier women post more (even though this is likely because of differential smart-phone ownership—remember there are no individual-level controls, only controls for generic English-language postings at the nation level). Does this mean that poorer women are signaling their sexuality in developed nations and richer women in less-developed nations? This would offer intriguing hints as to predictors of the different ways in which women compete, but as yet we simply do not know that this is the case, nor can we ever know from macrolevel data.

My second caveat concerns the consequence of being unable to determine precise causal mechanisms from these macrolevel data. One might easily conclude from this study that in an economically unequal world, where there are good and bad mates out there to catch, women might be motivated to post sexualized images of themselves on the internet as a form of mating competition. From the data, however, we cannot tell whether women are using social media to freely provide this sexualized service, whether they are merely responding to male demand, or indeed whether the sexes have arrived at an equilibrium—in other words, whether high levels of sexualized female imagery are driven by female agency or male demand. We only know that there is a correlation between income inequality and the degree (and evident endorsement) of sexualized images of women.

Once we appreciate the lack of a causal mechanism for the principal finding of this study—the association between inequality and sexy selfies—the validity of the second finding—that gender inequity norms can be excluded as influences on the extent to which women are free to sexualize their bodies—becomes somewhat shaky. Indeed, if men and women are reaching some sort of equilibrium over how to advertise and shop for mates (and marriage) on social media, they are likely to be using shared normative conventions. For example, there are places in the world where posting a sexy selfie would torpedo a woman's marriage chances or make any potentially high-investing man run a mile. The point here is that norms promoting the subordination and consequential sexualization of women cannot really be posed as an alternative explanation to that of the need for women to be competitive in the presence of highly unequal potential mates. It is more likely that norms of how to compete may coevolve with individuals' (often conflicting) interests, as indeed the authors have explored elsewhere (8). For this reason, studies in the future might profitably operationalize distinct dimensions of gender inequality, such as religious or social norms.

### Sexualized Cultures

My final caveat concerns the extent to which these findings can be generalized. While the intensity of intrasexual competition among females across the animal kingdom is influenced by inequality in resource distributions (9), they compete in multiple ways to attract mates, repel competitors, attain resources, and secure paternal investment. Women, too, have many avenues of competition—through education, personally acquired wealth, personal appearance, as well as demonstrations of chastity and fidelity (10). The prevalence

of costly dowry payments in the highly economically unequal context of northern India is a classic example (11, 12).

A more precise theoretical framework based on sex differences in the control of resources critical to reproduction (13) and on the strategic dynamics inherent in mating markets (14) suggests that there is a lot to be learned from studying the predictors of the different ways in which women (and indeed men) compete. Put simply, signaling, including sexual signaling, is only one form of competition; furthermore, competition over mates can be both overt and concealed. Just as males can successfully acquire mates both by being nice dads and by winning street brawls (15), women

### Blake et al. offer a refreshing challenge to the conventional view that sexualized depictions of women result from a culture of gender inequality and female oppression.

can sometimes compete through securing education, money, and power and other times through sexy selfies. Indeed, even where we have evidence of women using sex to climb in social status, as with the famous "New Women of Lusaka" (16) and the extensive analyses of transactional sex in Tanzania (17), it is very clear that sex is driven as much by opportunism and hedonism as by pure competition.

What drives a highly sexualized culture? Competition in the mating market is likely part of the story, particularly when there is greater variation in quality among members of one sex than the other (as evolutionary models have shown, e.g. ref. 18). Biological markets play an important role in understanding features of human cooperation (19), violence (15), and mating tactics (20), and it is here that Blake et al.'s (4) paper adds new evidence, albeit quite indirect because of its aggregate nature. Furthermore, it is likely that the structure of inequality—is it wealth or poverty that is concentrated?, for example—influences the nature of inter- and intrasexual competition, as shown in the case of polygyny (21). Accordingly, the perhaps more interesting question is how to compete.

More specifically, why use your body? We could make bland evolutionary explanations regarding a postulated universal importance of attractiveness and fecundity for women, but valuing attractiveness and fecundity is not exactly the same thing as promoting sexuality. Furthermore, even if it were, this would beg the question of why all cultures are not highly sexualized in their mating markets. I suspect that much of the variation in sexy selfies results from the fact that advertising sexuality is relatively costless among highly wired individuals in modernized societies. In these contexts, day-to-day online interactions are somewhat anonymous, getting food on the table is not a recurrent challenge for most people, and there is room and time for a bit of narcissism (if I may be so rude). This relative freedom, together with the liberal religious and political values of the economically advanced and increasingly unequal societies, allows for sexy selfies as a mate advertisement. In short, I wonder how much of the message is shaped by the medium. While the authors made gallant efforts to tease out alternative confounds, I suspect the answer to why women across the world do or do not advertise themselves sexually lies more in the economic and reproductive value for men in controlling women and in the nature of the advertising medium.

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