

Structural Sexism and Health in the United States: A New Perspective on Health Inequality and the Gender System

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Abstract

In this article, I build a new line of health inequality research that parallels the emerging structural racism literature. I develop theory and measurement for the concept of *structural sexism* and examine its relationship to health outcomes. Consistent with contemporary theories of gender as a multilevel social system, I conceptualize and measure structural sexism as systematic gender inequality at the macro level (U.S. state), meso level (marital dyad), and micro level (individual). I use U.S. state-level administrative data linked to geocoded data from the NLSY79, as well as measures of inter-spousal inequality and individual views on women's roles as predictors of physical health outcomes in random-effects models for men and women. Results show that among women, exposure to more sexism at the macro and meso levels is associated with more chronic conditions, worse self-rated health, and worse physical functioning. Among men, macro-level structural sexism is also associated with worse health. However, greater meso-level structural sexism is associated with better health among men. At the micro level, internalized sexism is not related to physical health among either women or men. I close by outlining how future research on gender inequality and health can be furthered using a structural sexism perspective.

Keywords

structural sexism, gender, inequality, health

“Gender is an institutionalized system of social practices for constituting people as two significantly different categories, men and women, and organizing social relations of inequality on the basis of that difference.”

— Ridgeway and Correll (2004:510)

Social inequality in the United States is sickening. Literally. Individuals' positions in social hierarchies as defined by race, class, gender, and other axes of inequality can influence their health and longevity in powerful

ways (Berkman, Kawachi, and Glymour 2014). Much of our current understanding of how social systems of inequality shape health is based on three broad strands of research:

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(1) studies examining how directly perceived experiences of discrimination, mistreatment, or low status in various social contexts influence health; (2) studies of physician bias or discrimination within medical institutions; and (3) studies of the patterns/disparities in health outcomes across social categories representing relatively advantaged versus disadvantaged statuses.

In the case of gender inequality and health, these three lines of inquiry take the form of studies on the health consequences of sexual harassment or perceived gender discrimination; investigations of how physicians and medical institutions fail to offer equitable, unbiased, appropriate medical care for women; and examinations of gender differences in health outcomes.¹ Each approach is vital to our understanding of gender inequality and health, but all have important limitations. As I will demonstrate, these three dominant approaches to gender inequality and health leave unanswered questions about how the broader structural inequalities that characterize gender systems can potentially influence health. Therefore, I advance a *structural sexism and health* perspective. This study contributes to this literature by developing concrete measures of structural sexism—*defined as systematic gender inequality in power and resources*—at the macro, meso, and micro levels of the gender system in the United States, and examining their relationships to the health of men and women in middle age.

GENDER DISCRIMINATION AND HEALTH

The growing body of research on gender discrimination and health consists largely of two types of studies documenting how women's health is harmed by discrimination: studies on directly perceived discrimination or sexual harassment (often measured in the workplace), and studies on gender bias in medical institutions (Krieger 2014). The first line of research links self-reported experiences of perceived gender discrimination and harassment to a variety of negative mental and

physical health outcomes among women, including emotional distress, anxiety, depression, headache, gastrointestinal symptoms, and functional limitations (McDonald 2012; Pavalko, Mossakowski, and Hamilton 2003; Swanson 1999). These studies provide a valuable but incomplete picture of the effects of systemic gender inequality on health, because the processes creating and reproducing unequal gender systems are often not perceived or are not conceptualized as unfair or discriminatory (Fenstermaker Berk 1985; Ridgeway 2011; West and Zimmerman 1987).

For example, in the labor market, gendered organizations and discriminatory practices shape the allocation of women and men to various positions and compensation levels in ways that are typically outside the awareness of individuals whose lives they affect (Acker 1990; Correll, Benard, and Paik 2007; Rivera 2017; Rivera and Tilcsik 2016). Similarly, the allocation of roles, responsibilities, and authority within marriage and family life in ways that systematically disadvantage women is often cast as simply a natural result of inherent gender difference (Fenstermaker Berk 1985; Ridgeway 2011) and thus goes unnoticed. But regardless of individual awareness, the degree to which a society distributes valued resources and opportunities in gender-stratified ways, or otherwise unequally treats individuals along gender lines, may have a powerful influence on health (Krieger 2014).

The second line of gender discrimination and health research examines bias among physicians and medical institutions. This work shows that women are less likely than men to receive the most effective, advanced treatments and diagnostic procedures available for a variety of health conditions (Arber et al. 2006; Chapman, Tashkin, and Pye 2001; McMurray et al. 1991; Raine 2000). Studies have also found evidence of anti-woman gender bias in medical education and textbooks (Alexander-son, Wingren, and Rosdahl 1998; Andrikopoulou et al. 2013) and in Medicaid reimbursement rates, which are roughly 30 percent lower for female-specific (versus male-specific) surgical procedures (Benoit, Ma, and Upperman 2017).

This line of research uses multiple methods, including content analysis and audit studies, allowing it to illuminate the ways gender discrimination shapes health beyond individual perceptions. However, it is limited in scope, as healthcare is only one of many factors that contribute to health, and many people only interact with medical institutions after they become ill. Scholars and policymakers have increasingly recognized the primary importance of social factors as determinants of health (see Braveman, Egerter, and Williams 2011; U.S. Department of Health and Human Services 2010). The social conditions in which people live and work, and the social policies that shape them, have far greater impact on population health than does medical care or health policy (Bradley et al. 2016; House 2015). Thus, although the labor and healthcare markets are key venues of gender discrimination, existing research in these domains cannot account for the myriad ways individual health may be affected through other social institutions and processes that constitute a society's gendered stratification system.

GENDER DIFFERENCES (GAPS) IN HEALTH OUTCOMES

The most long-standing and influential tradition of gender and health research examines gender differences in health and mortality. This line of research, which began in earnest in the 1980s, compares rates of death and various illnesses between men and women. Patterns of gender difference in health and mortality are now well documented (for thorough reviews, see Bird and Rieker 2008; Read and Gorman 2010, 2011). **In general, women live longer than men, but they are more likely to suffer chronic illness and disability.** This work measures gender² as an *attribute of individuals* and asks: *How and why do men and women differ in terms of health and mortality?* The observed differences between categories are understood to represent a combination of social, biological, and behavioral factors, and a central concern of this work is to disentangle the various

explanations for patterns of difference.³ This approach generally does not examine how inequality in gender systems varies across social contexts in ways that may influence the health of both men and women (Schofield 2015), although recent scholarship has called for increased efforts to contextualize gender differences in health research (Read and Gorman 2010).

A more structural perspective that begins with the concept of gender as a *social system* of difference and inequality (rather than an individual attribute) might instead ask the related, but distinct, question: *How does the inequitable distribution of power and resources characterizing the gender structure of a society shape the health of its members?* The existing research on gender differences in health is invaluable for producing knowledge of who is and is not healthy, but it cannot fully answer this question because exposure to discriminatory gender structures remains largely unmeasured. Gaps between men and women on health outcomes can provide clues about how a gender system works, but they do not provide all the information needed to understand how the degree of systematic gender inequality in power and resources—that is, *structural sexism*—to which individuals are exposed shapes their health.

To illustrate this point, Figure 1 shows three different scenarios, depicting hypothetical relationships between structural sexism and health problems among men and among women. In each scenario, the gap between men's and women's health problems at the mean level of sexism exposure is identical. In the first panel, structural sexism has no effect on men's or women's health. In this case, the observed gender gap in health problems could be due to non-social or other unobserved factors. The second panel illustrates a scenario with the same average gender gap in health problems as the first panel, but structural sexism is related to health problems in opposite directions among women and men. In this scenario, gender relations are best thought of as zero-sum—higher levels of sexism result in increasing benefit to the dominant group (men)

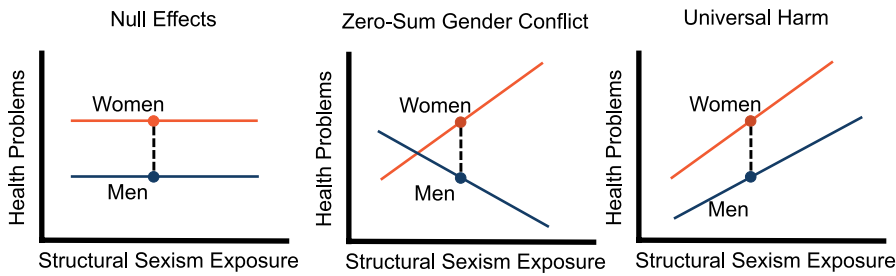


Figure 1. Hypothetical Relationships between Structural Sexism and Health among Women and Men

and increasing harm to the subordinate group (women). This type of pattern is one we might expect based on conflict theory and classical gender/sex stratification perspectives (Blumberg 1984; Chafetz 1984; Collins 1971, 1975). The third panel shows a scenario in which the gender gap is again the same, but both men's and women's health are harmed by higher levels of structural sexism. This scenario is consistent with modern feminist studies of masculinities and men's health that suggest patriarchal social systems foster a toxic culture that harms men as well as women (Connell 2005, 2012; Courtenay 2000). Similarly, some recent theories of structural inequalities and health suggest a pattern of universal harm because inequality undermines the social fabric and makes the entire society less productive and healthy (Lucas 2013; Wilkinson and Pickett 2011). Any of these three scenarios (and several others) are possible with the same observed gender gaps in health outcomes.

Thus, because they do not measure exposure, gender gaps alone are insufficient to determine how structural sexism influences health; both men and women living in a certain social context are exposed to some level of gendered inequality, but its effects on their health may differ. Therefore, I advance a *structural sexism and health* perspective that complements and extends the existing gender and health literature by attempting to measure attributes of gender systems and focusing on within-gender comparisons across levels of exposure to discriminatory gender systems, rather than on gender gaps in health outcomes. Using within-gender comparisons

sidelines questions of biological sex difference and places the focus squarely on structural inequality. This approach allows me to address two novel research questions: (1) Is structural sexism associated with health outcomes among women and men? (2) If so, are the patterns more consistent with a theory of zero-sum gender conflict or universal harm?

TOWARD A STRUCTURAL SEXISM AND HEALTH APPROACH

In developing a structural sexism approach, I draw on the emerging structural racism and health literature and contemporary theories of gender as a multilevel social structure or system. Race and health research—similar to the gender and health research discussed earlier—largely consists of studies of perceived discrimination, physician bias and differential treatment in medical institutions, and health disparities across racial categories. An extensive amount of research has been devoted to these topics, and the knowledge produced has been enormously influential. In particular, the Everyday Discrimination Scale (Williams et al. 1997) has been used in hundreds of studies to show that perceived discrimination is associated with a wide variety of physical and mental health problems (Goosby, Cheadle, and Mitchell 2018; Williams 2018).

However, a new structural racism and health literature has begun to grow out of a recognition that measures of perceived racial discrimination—while illuminating an

important piece of the puzzle—stop short of capturing the full effects of racism on health, because racism is not exclusively an interpersonal-level phenomenon and because a large portion of racial discrimination goes unperceived (Bonilla-Silva 1997; Gee and Ford 2011). This emerging literature conceptualizes structural discrimination as a process that operates at the societal level to constrain the resources, opportunities, and well-being of disadvantaged groups (Hatzenbuehler et al. 2010; Lukachko, Hatzenbuehler, and Keyes 2014; Phelan and Link 2015). By looking beyond individual actors and behaviors, this perspective highlights the discriminatory character of institutional arrangements. For instance, a recent study found that structural racism in the United States—as measured by state-level racial disparities in political representation, economic conditions, and juridical treatment—is associated with increased risk of myocardial infarction among black individuals and decreased risk among white individuals (Lukachko et al. 2014). Similar studies link other measures of state-level structural discrimination to increases in psychiatric disorders in lesbian, gay, and bisexual populations (Hatzenbuehler et al. 2010), to higher rates of infant mortality among African Americans (Chae et al. 2018; Wallace et al. 2017), and to differences in mortality rates among blacks, whites, males, and females (Lucas 2013). Application of this approach to the study of gender and health, however, has been quite limited (Krieger 2014).

Yet a structural approach to discrimination is particularly well-suited to the study of gender. Just as structural discrimination is understood to be a feature of a social context rather than an individual, contemporary gender scholarship conceptualizes gender itself not as an individual attribute, but as a multilevel structure (or system) of difference and inequality (Lorber 1994; Ridgeway and Correll 2004; Risman 2004). The gender system is relational and embodied (Connell 2012), and it is expressed through institutions, interactions, and individuals in social processes that structure opportunities and constraints based on sex category (Risman 2004). Therefore, rather

than focusing on macro-level institutions as the structural racism and health literature has done, I propose a multilevel framework for studying structural sexism and health. A multilevel approach is particularly important given that gender research and theory highlight the central role of interactional processes in the reproduction of unequal gender systems (Ridgeway 2011; Ridgeway and Smith-Lovin 1999; West and Zimmerman 1987).

I use the term “structural sexism” to refer to *the systematic gender inequality in power and resources manifest in a given gender system*, and I argue that it can be observed at each level of the gender system. Figure 2 shows a conceptual model of structural sexism. My characterization of the levels of the gender system is based on the work of Risman (2004) and Ridgeway and Correll (2004:510–11). I use the terms “macro,” “meso,” and “micro” to refer to the institutional, interactional, and individual levels, respectively. However, it is important to note that these terms are often used by scholars in other subfields in different ways. For example, interactionist approaches to sociology and social psychology are considered “micro,” but they often focus on dyads rather than individuals (cf. Simmel 1950). Nevertheless, these labels are useful for delineating levels of a gender system in which structural sexism can be measured.

Although structural sexism enables more overt and intentional forms of gender-based mistreatment, such as interpersonal perceived gender discrimination and sexual harassment, structural sexism is conceptually distinct because it is based in systemic inequality and can be perpetuated in the absence of individual awareness or intent (Bonilla-Silva 1997; Krieger 2014; Lukachko et al. 2014). Given that structural sexism is systemic and may not be directly perceived, why and how might it affect individuals’ health? Research on the social determinants of health identifies several health-promoting factors (e.g., material resources; subjective social status; social support; psychosocial resources such as self-esteem, mastery, sense of control, autonomy, and coping resources; healthcare quality and

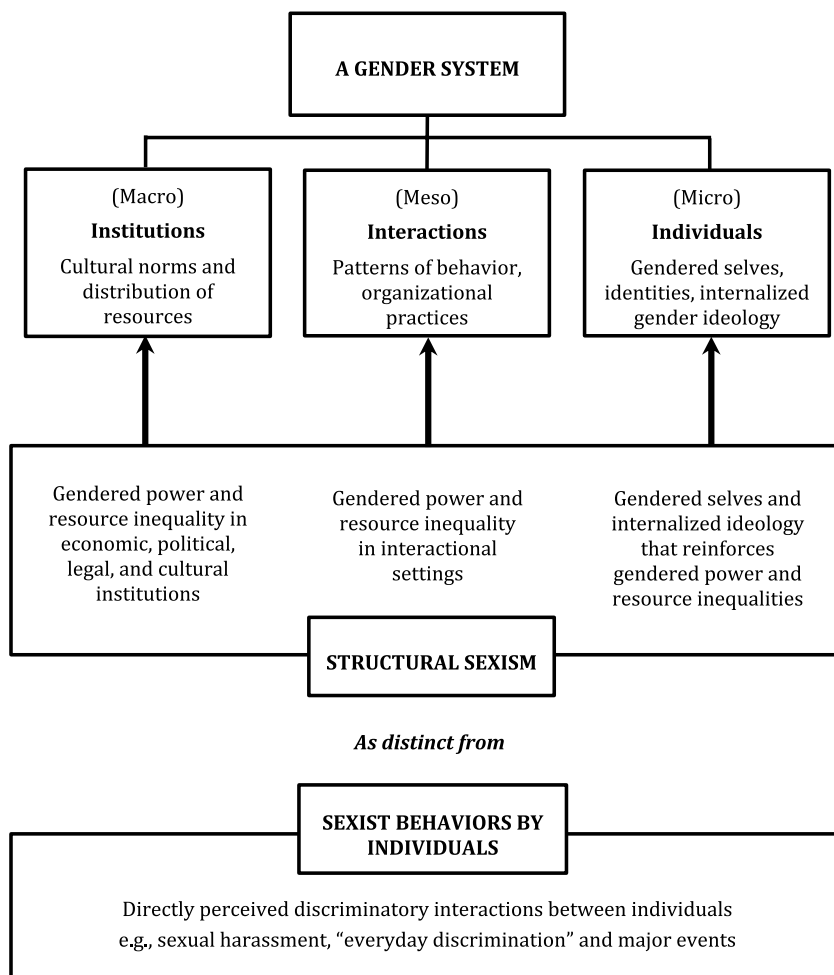


Figure 2. Conceptual Model of Structural Sexism

access) and several health-harming factors (e.g., stress; exposure to violence, harassment, or unsafe working conditions; perceived discrimination; poor health behaviors and risk-taking) (Adler 2009; Aizer 2010; Braveman and Gottlieb 2014; Link and Phelan 1995; Marmot 2005, 2006; Pascoe and Richman 2009; Pearlin et al. 2005; Yang, Schorpp, and Harris 2014). To the extent that structural sexism shapes the distribution of these risk factors across individuals, we would expect to observe health effects of structural sexism.

Most societies in history have been male-dominated, but there is enormous variation in

the extent of gender inequality in power and resources across social contexts (Chafetz 1984). In this study, I seek to quantify the amount of structural sexism in various social contexts and leverage the observed variation across these contexts to understand the impact of structural sexism on the health of both men and women in the United States. In the subsections that follow, I describe in greater detail (1) how I conceptualize structural sexism at each level of the gender system, (2) the domains in which I measure it for this particular study, and (3) the relevant prior research on how gender is related to health in each domain.

Macro-Structural Sexism

At the macro level, the gender system involves widespread cultural norms and the distribution of resources along gender lines in a society's major institutions (Ridgeway and Correll 2004; Risman 2004). Thus, macro-structural sexism refers to systematic gender inequality in power and resources favoring men within political, economic, and cultural institutions. This can be thought of on both global and national scales, but the present study focuses on structural sexism within the United States, and I will therefore examine U.S. state-level political, economic, and cultural institutions. The nascent structural racism and health literature on which I build takes U.S. states as the unit of analysis and shows substantial variation in state-level discriminatory environments (Lucas 2013; Lukachko et al. 2014). Similarly, recent studies have found that U.S. state-level characteristics, including social, economic, and policy contexts, are related to women's mortality rates (Montez, Zajacova, and Hayward 2016) and to men's and women's disability rates (Montez, Hayward, and Wolf 2017). State-level income inequality has also been shown to increase individual mortality risk (Lochner et al. 2001). This literature on state-level inequalities and health focuses primarily on socioeconomic and racial inequality, and the important theoretical insights and methodological approaches from this work have not yet been widely applied in research on gender and health.

The most prominent theoretical framework for understanding how macro-level discriminatory environments can shape individuals' health is Nancy Krieger's (2001, 2014) ecosocial theory, which was articulated primarily with respect to structural racism. According to this theory, oppressive social relations (e.g., structural racism) are expressed in political, social, and economic processes that create unequal living and working conditions and harm the health of marginalized groups through multiple "pathways of embodiment," including social and economic deprivation, toxic/hazardous living conditions, social

trauma, and inadequate healthcare. This theory, and the empirical literature which has begun to test it, paints a relatively clear picture of how structural discrimination harms the health of the oppressed group (blacks), but provides less clarity regarding the health of the dominant group (whites). The theory seems to imply that as the dominant group, whites can be expected to experience health benefits from structural racism, but many studies examine only blacks (e.g., Chae et al. 2018), and those that do include whites have produced mixed results, with some finding null effects (Wallace et al. 2017), some finding a health benefit for whites with higher levels of structural discrimination (Lukachko et al. 2014), and some finding harmful effects of structural discrimination on both blacks and whites (Lucas 2013).

In extending the ecosocial theory to gender, structural sexism in state-level environments would be expected to harm women's health by limiting their access to material resources, goods, services, quality healthcare, and psychosocial resources, as well as by increasing their exposure to violence, harassment or unsafe working conditions, perceived discrimination, low subjective social status, and stress. However, the uncertainty regarding the impact of structural discrimination on the dominant group is even more acute in the case of structural sexism than structural racism, because existing gender theory suggests patriarchal social systems are also harmful for men's health (Connell 2005, 2012; Courtenay 2000).

In practice, very few empirical studies have examined how state-level measures of gender inequality in the United States relate to population health. One recent study shows that political gender inequality in state legislatures is associated with higher infant mortality rates (Homan 2017). Three studies that use composite measures of "women's status" find that low status is related to elevated state-level infant mortality rates (Kawachi et al. 1999; Koenen, Lincoln, and Appleton 2006), state-level mortality rates among women and men (Kawachi et al. 1999), and women's depressive symptoms (Chen et al. 2005). A fourth

study found state-level measures of gender inequality were positively related to individual men's mortality risk (Kavanagh, Shelley, and Stevenson 2017). Research has not yet examined the effects of U.S. state-level gender inequality (1) on chronic conditions and other individual physical health outcomes for both men and women, or (2) in conjunction with gender inequality at the micro and meso levels of a gender system.

Meso-Structural Sexism

At the meso level, the gender system involves interactions, patterns of behavior, and organizational practices (Ridgeway and Correll 2004; Risman 2004). Therefore, meso-structural sexism refers to the inequality in power and resources between men and women in interpersonal interactions. Gendered interactions occur regularly in the family, the workplace, and a variety of other social-relational settings that are shaped by hegemonic cultural norms about gender (Connell 1987; Ridgeway and Smith-Lovin 1999). Men and women “do gender” in interactions when they orient their behavior toward these norms, thereby rendering social arrangements based on sex categories as normal and natural—and therefore legitimate—ways of organizing social life (West and Zimmerman 1987:146).

Extensive research describes how the ways we “do gender” in the workplace and family perpetuate gender inequality in the division of labor (e.g., Brines 1994; Coltrane 1989; Fenstermaker Berk 1985; Padavic and Reskin 2002). Furthermore, the performance of gender-typed tasks and cultural expectations requiring women to be communal and team-oriented can result in women doing more undesirable or unrewarded work, thereby reducing their likelihood of promotion (Babcock et al. 2017; Winslow 2010). This may not be perceived but may nonetheless shape women's health through direct and indirect pathways, including stress and diminished access to material resources.

In addition to “doing gender,” status processes also perpetuate gender inequality via

interaction in ways that individuals often do not perceive and may occur without individual discriminatory intent (Correll et al. 2007; Ridgeway 2011; Ridgeway and Smith-Lovin 1999). Ridgeway and Smith-Lovin (1999) describe the process as follows: men and women typically occupy structurally unequal positions when they interact; these status differences produce performance and perception differences that are then confounded with gender difference; this reinforces gendered competence beliefs, thereby reproducing the gender system in interaction. Because men and women interact much more closely and frequently than do people of different racial and class categories, measuring inequality at the interactional level has a unique importance for structural sexism compared to other forms of structural discrimination.

Systematic power and resource inequalities between men and women exist in a variety of social-relational contexts, so meso-level structural sexism can be conceptualized and measured in many domains, including the family, the workplace, the neighborhood, and local civic organizations. For this study, I focus on marriage for two reasons: it is a primary site of interaction between men and women, and the gendered division of labor between spouses is central to both the social production of gender in everyday life and the reproduction of gender inequality in society at large (Blumberg 1990; Fenstermaker Berk 1985; Okin 1989). This study is the first to examine meso-structural sexism and health as part of a multilevel framework, and power and resource differences within marriage represent an important starting place with deep roots in feminist thought (e.g., Gilman 1898).

There is a long history of studying the gendered health benefits of marriage, going all the way back to Durkheim (1897). Most of this work shows that being married is beneficial for health, but men benefit more than women (Berkman and Breslow 1983; Durkheim 1897; House, Landis, and Umberson 1988; Ross, Mirowsky, and Goldsteen 1990; Umberson 1992; Umberson and Kroeger 2016). Some recent research, however, calls into

question gender differences in the effects of marriage after accounting for marital quality (Carr and Springer 2010; Williams 2003). The most thorough recent review (Umberson and Kroeger 2016) supports the finding that men accrue larger health benefits from marriage, but it also indicates these benefits may depend on the health outcomes studied and they may be decreasing over time. There is also a robust tradition of looking at inequality within marriage—this research mainly focuses on the division of labor and the allocation of household chores (Bianchi et al. 2000; Brines 1994; Coltrane 1989; Fenstermaker Berk 1985; Friedberg and Webb 2006). Surprisingly, very little research connects this gender inequality in status and power within marriage directly to health.

Theoretically, there are several reasons to expect a link between inter-spousal inequality and health. In their classic theoretical work on gender and power in U.S. marriages, Blumberg and Coleman (1989) describe how a gender imbalance in economic power (i.e., earnings), typically favoring the husband, can influence a variety of factors, including spouses' self-esteem, the division of household labor, sexual satisfaction, fertility, conflict resolution, and economic decisions related to consumption and leisure. Each of these factors have been shown to affect health, particularly for women (Barber, Axinn, and Thornton 1999; Bird and Fremont 1991; Kiecolt-Glaser and Newton 2001; Sánchez-Fuentes, Santos-Iglesias, and Sierra 2014). Yet no study to date has directly examined inter-spousal inequality's effect on each partner's physical health.

The few empirical studies that directly examine the relationship between marital inequality and *mental* health find that power imbalances within marriage are associated with higher levels of depression and psychiatric symptoms for the spouse in the low-power position (Bagarozzi 1990; Halloran 1998; Mirowsky 1985). These studies also find the distribution of power in the average marriage favors the husband's mental health rather than the wife's (Mirowsky 1985). In the present analysis, I extend this line of work by

investigating whether inter-spousal inequality in power and resources—one specific type of meso-structural sexism—is related to women's and men's physical health.

Micro-Structural Sexism

At the micro level, the gender system involves gendered selves, identities, and internalized gender ideologies (Ridgeway and Correll 2004; Risman 2004). Therefore, micro-structural sexism refers to gendered constructions of self and internalized gender ideologies that undergird and reinforce gendered resource and power inequalities. This type of sexism is created through processes of socialization, internalization, and identity work and is embodied by individuals (Risman 2004). Although this form of sexism is expressed in individuals, it can be thought of as structural because it plays a central role in reproducing discriminatory gender structures. In this study, I focus on individuals' gender role attitudes as reflections of internalized gender norms. The specific gender role attitudes I examine are those that limit women to subordinate social and economic roles.

A large and growing literature links masculinity norms and gender ideology to men's health. In particular, studies show that traditional gender role beliefs, as well as conformity to stereotypically masculine ideals, are linked to risk-taking, unhealthy behaviors (e.g., excessive substance use and violence), and health-care avoidance (Courtenay 2000; Mahalik, Burns, and Syzdek 2007; Seidler et al. 2016; Springer and Mouzon 2011). The most influential theories of masculinity and health posit that men use unhealthy behaviors to demonstrate their conformity to hegemonic masculine ideals and preserve their patriarchal privilege and status (Connell 2005, 2012; Connell and Messerschmidt 2005; Courtenay 2000).

Much less work examines femininities and health. In particular, little research examines the relationship between women's health and traditional gender role beliefs that relegate women to subordinate roles in the family and society. These traditional gender role beliefs

are linked to a variety of other important outcomes in women's lives, including educational attainment, age at first birth, household division of labor, and earnings (Bianchi et al. 2000; Christie-Mizell et al. 2007; Davis and Greenstein 2009; Davis and Pearce 2007; Stewart 2003). Based on these findings, it is reasonable to expect that traditional gender role beliefs could influence women's health and well-being through these pathways, but also through psychosocial mechanisms such as self-esteem, mastery, and subjective social status, which are well-known mediators of the relationship between subordinate social positions and health (Pearlin et al. 1981; Pearlin et al. 2005).

In summary, while a great deal of past research has been conducted on different topics in the area of gender inequality and health, this work has not been done within a coherent structural framework allowing for the simultaneous consideration of different levels of the gender system. Work on how macro-structural gender discrimination shapes health is particularly scarce. This study is the first to conceptualize and measure structural sexism at different levels of the gender system and examine its relationship to physical health among women and men in the United States. The structural sexism and health approach allows this study to consider the impact of discriminatory systems on both marginalized and dominant group members. Doing so allows us to determine whether the patterns of health effects support a conflict perspective (in which one group benefits while the other suffers), a theory of universally harmful inequality (in which everyone suffers, although perhaps to varying degrees), or neither.

METHODS

Examining how structural sexism at different levels of the gender system relates to physical health among U.S. women and men requires connecting individual characteristics and health information to data reflecting the marriage arrangements and state-level environments in which individuals live. I measure macro-level structural sexism using U.S.

state-level administrative data compiled from a variety of sources to reflect gender inequality in political, economic, cultural, and reproductive domains. I combine these data with restricted geocode data from the National Longitudinal Study of Youth 1979 (NLSY79) to locate individuals within states to capture their exposure to structural sexism and examine how this is related to their health. I use spousal- and individual-level data from the NLSY79 to measure exposure to structural sexism at the meso and micro levels. Data reflect respondents' exposures and health outcomes during midlife, which is an ideal time for examining the relationship between structural sexism and health because (1) midlife is typically the time in the life course when large inequalities in physical health first emerge, and (2) midlife may be a critical period for exposure to structural sexism given the gendered work and family pressures that occur during this life stage.

Sample

The NLSY79 is a nationally representative sample of individuals born in the years 1957 to 1964. Data were collected annually from 1979 to 1994 and biennially since 1994. The main sample includes 6,111 respondents who were age 14 to 22 when they were first interviewed in 1979 (U.S. Bureau of Labor Statistics 2016). The original survey also included military and supplemental samples that were dropped from the survey prior to the study period, so only the main sample is considered in the present analysis. I use data from the 1998 through 2012 waves because this is the period during which detailed health information was collected. Respondents completed an age 40+ and an age 50+ health module on a rotating basis during the next survey year after they reached these ages. To be included in the analytic sample, respondents had to participate in the age 40 and age 50 health modules by 2012 ($n = 3,433$).

Of those eligible, 56 individuals (1.6 percent) were missing geocode information and were excluded from the sample, yielding a

final analytic sample of 3,377 individuals. Item missingness is negligible and is therefore handled using listwise deletion.⁴ Each individual contributes one or two person-years of information depending on the analysis. For example, because meso-level structural sexism is measured in the marital dyad, analyses involving meso-level sexism use only the person-years during which individuals are married. Analyses are conducted separately for men and women. Sample sizes range from 3,075 to 1,719 person-years and are noted in the tables for each analysis.

Measures

Health outcomes. The relationship between structural sexism and health is assessed with three commonly used health outcomes: chronic conditions, self-rated health, and physical functioning. Chronic conditions are measured using a count of the number of major chronic conditions respondents have been diagnosed with by a doctor: high blood pressure/hypertension, diabetes/high blood sugar, cancer (excluding skin cancer), lung disease, heart disease/problems, stroke, psychiatric conditions, and arthritis/rheumatism (for recent examples of similar chronic condition measures, see Brown 2018; Brown, O'Rand, and Adkins 2012; Ferraro and Farmer 1999; Gorman, Read, and Krueger 2010). This type of summary measure is preferable to single health conditions because it can better capture the non-specific health consequences of discriminatory social arrangements (Aneshensel 2005).

Self-rated health (SRH) is measured on a five-point scale from poor to excellent. Self-rated health is one of the most widely used indicators of health status in sociological and epidemiological research over the past 60 years and is well-established as a key predictor of mortality (Idler and Benyamini 1997; Jylhä 2009).

Physical functioning is measured using the physical component summary portion of the SF-12, a 12-question health survey designed to provide a measure of respondents' mental

and physical health irrespective of their proclivity to use formal health services (Ware, Kosinski, and Keller 1996). The SF-12 physical component summary score is a composite measure that includes six items that capture physical functioning, role limitations due to physical health problems, bodily pain, and general health. The theoretical range is 1 to 100, with 100 being the healthiest. The SF-12 is used extensively in health research and its validity and reliability as a measure of health status and health-related quality of life has been confirmed across many different countries and patient populations (Anglewicz et al. 2018; Gandek et al. 1998; Kontodimopoulos et al. 2007; Lam, Tse, and Gandek 2005; Salyers et al. 2000; Sanderson and Andrews 2002).

Each health outcome used has different strengths and limitations for studying gender and health. For example, the number of chronic conditions is the most concrete measure, but it relies on going to the doctor and receiving an appropriate diagnosis, both of which are gendered processes (McMurray et al. 1991; Read and Gorman 2010). Examining the relationship between structural sexism and health across all three physical health outcomes allows me to capitalize on the strengths of multiple measures while minimizing the bias inherent in any one. Consistent patterns of results across health outcomes can increase our confidence in the validity and reliability of the results.

Table 1 shows health outcomes at age 40 and 50 by gender for all individuals and for married individuals. Both SRH and functioning are reverse coded in all analyses so that higher values indicate worse health for all outcomes. Compared to the total sample, married individuals had fewer health problems and less variance in health at both ages.

Macro-level structural sexism. This type of structural sexism refers to systematic gender inequality in major macro-level social institutions. Similar to other recent studies of structural discrimination (Chen et al. 2005; Kawachi et al. 1999; Lukachko et al. 2014; Lucas 2013), I measure macro-level structural

Table 1. Health Problems by Gender at Age 40 and 50 among All Individuals and among Married Individuals

	Age 40				Age 50				Range
	Total		Married		Total		Married		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Women									
Chronic Conditions	.56	.88	.51	.81	1.17	1.28	1.02	1.16	[0, 7]
Self-Rated Health	2.32	1.01	2.20	.97	2.58	1.06	2.43	.99	[1, 5]
Physical Functioning	48.32	8.76	47.55	7.88	51.29	10.88	50.04	9.92	[33.4, 88.8]
Men									
Chronic Conditions	.43	.73	.39	.68	.98	1.13	.89	1.07	[0, 7]
Self-Rated Health	2.24	.96	2.18	.93	2.49	1.03	2.35	.96	[1, 5]
Physical Functioning	47.00	6.73	46.83	6.57	49.57	9.00	48.67	8.01	[32.8, 88.4]

Note: Range represents observed range across both waves. Self-rated health and physical functioning are reverse coded so that higher values indicate worse health for all variables in the analysis. The theoretical range for physical function is 1-excellent to 100-poor.

sexism at the U.S. state level. Table 2 describes the key indicators, all of which are designed to capture the degree to which men and women are unequal in various domains.

The political and economic measures parallel those used to measure structural racism (see Lukachko et al. 2014). The political measure is the proportion of state legislature seats occupied by men, which previous research shows is related to higher infant mortality rates (Homan 2017). The three economic measures are ratios of men's to women's labor force participation, men's to women's wages, and women's to men's poverty rates. One previous study shows the latter two indicators are associated with increased odds of mortality among men (Kavanagh et al. 2017).

In addition to the political and economic domains, I consider two additional domains that have particular relevance for structural sexism: cultural and physical/reproductive measures. For the cultural measure, I use the percentage of the state population composed

of religious conservatives. This group includes Evangelical Protestants and Mormons (Steensland et al. 2000). The prevalence of religious conservatives is an important indicator of structural sexism, because these religions relegate women to subordinate roles in the family and the church in their ideology and practice (CBMW 2018; Chaves and Eagle 2015). The percentage of religious conservatives reflects the centrality and influence of these ideologies and practices within the state environment. Furthermore, the proportion of religious conservatives in a state has a significant relationship to conservative gender attitudes even after adjusting for individuals' own religious beliefs and practices (Moore and Vanneman 2003), suggesting an important contextual effect of religious conservatism for all residents of the community.

Finally, I include as a physical/reproductive equality measure the percentage of women in the state who live in a county without an abortion provider. This is an important

Table 2. Measures of Macro-Structural Sexism

Dimension	Measure	Data Source
Economic	Ratio of men's to women's median usual weekly earnings of full-time wage and salary workers	Bureau of Labor Statistics
	Ratio of men's to women's labor force participation rates, age 16+	IPUMS CPS (author calculation)
	Ratio of men's to women's poverty rate (percent below federal poverty line)	IPUMS CPS (author calculation)
Political	Percent of state legislature seats occupied by men	Center For American Women in Politics
Cultural	Percent of state population composed of religious conservatives (Evangelical Protestant or LDS)	Association of Religious Data Archives
Physical/Reproductive	Percent of women who live in a county without an abortion provider	Guttmacher Institute

indicator of structural sexism because feminist scholars define gender equality as freedom from physical coercion and behavioral constraint (Chafetz 1984:5). Reproductive choice and access to a full range of reproductive healthcare services are generally considered fundamental human rights and preconditions for women's equal citizenship and participation in social, political, and economic institutions (Borgmann and Weiss 2003; Crane and Smith 2018).

Values of each indicator were obtained for each U.S. state every two years during the observation period (1998 to 2012), with the exception of the religious conservatives and abortion access measures, which were only available in certain years (1980, 1990, 2000, 2010 for religious conservatives, and 1988, 1992, 1996, 2000, 2006, 2008, 2012 for abortion access). For these two measures, I fill in missing time points during the observation period using state-level linear interpolation. All macro-structural sexism measures are standardized relative to the entire observation period (6,754 person-years across 50 states between 1998 and 2012) and summed to create an index (Cronbach's $\alpha = .64$) reflecting the overall level of macro-structural sexism across the four domains. The index has a mean of 0, a standard deviation of 3.36, and a range from -8.2 to 11.3. The online

supplement discusses the index creation in detail and includes a series of supplemental analyses showing that (1) the results are robust to alternative specifications of the index, (2) the results are not driven by any single indicator, and (3) the individual indicators are related to the health outcomes in the same (positive) direction.

Meso-level structural sexism. This type of structural sexism refers to power and resource inequality between men and women in interactional settings. For this study, I measure meso-level structural sexism in the marital dyad, operationalized as follows: logged ratio of husband's-to-wife's past year earnings (with \$1 added to all values to preserve the ratio format given that some individuals reported no earnings); ratio of husband's-to-wife's years of education; and husband-to-wife age ratio in years.

I chose these measures because prior research indicates they are important determinants of bargaining power within marriages. Women who are much younger, less educated, and earn less than their husbands tend to have less power or status relative to their husbands (Blood and Wolfe 1960; Chang 2016; Friedberg and Webb 2006). Furthermore, a recent study found wives' individual earnings were negatively related to husbands'

self-rated health and pointed to the examination of spouses' *relative* income (e.g., ratios) as an important next step for understanding gendered inequality and health within marriage (Springer 2010:812). Finally, evidence suggests the age gap between spouses is related to mortality (Drefhal 2010). These measures are standardized relative to the entire sample of married person-years and summed to create an index. The index has a mean of 0, a standard deviation of 1.77, and a range of -6.19 to 16.5.

Micro-level structural sexism. This type of structural sexism refers to individually-embodied gender inequality created through the processes of socialization, internalization, identity work, and construction of selves (Risman 2004). I focus on internalized gender norms as measured by a series of four questions about respondents' own gender role attitudes. Respondents were asked to rate their agreement with the following statements on a four-point scale (strongly agree, agree, disagree, strongly disagree): a woman's place is in the home, not the office or shop; it is much better if the man is the achiever outside the home and the woman takes care of the home and family; men should share the work around the house with women (reverse-coded); and women are much happier if they stay home and take care of children.

These particular gender role beliefs represent micro-level structural sexism because adherence to them systematically excludes women from power, resources, and full social participation. Structural sexism is internalized when women (and men) hold these types of self-limiting beliefs that lead them to think and act in ways that reinforce gendered inequalities. These items are summed to create an index with a range of 4 to 20 (Cronbach's $\alpha = .67$). Higher scores on the index indicate higher levels of individual internalized sexism. The index has a mean of 8.44 and a standard deviation of 2.75.

Additional covariates. At the state level, I include the following time-varying

characteristics as additional covariates: (1) the percentage of the state population below the federal poverty line in each year, based on data from the U.S. Census Bureau (2016a); (2) state income inequality, measured in each year using the Gini coefficient provided by Frank (2013) (for details, see Frank 2014); and (3) state racial composition measured by the percentage of the state population that is non-white in each year based on census population estimates (U.S. Census Bureau 2016b). I also include a dummy variable indicating whether each state is considered part of the South, based on the U.S. Census Bureau's (2015) region definitions. Southern states have higher rates of chronic disease and worse health outcomes (Artiga and Damico 2016), so this additional variable is added to distinguish a "South" effect from a structural sexism effect.

At the individual level, I adjust for respondents' age, sex, race, education (in years), household income (in thousands of dollars), marital status, parental status, and health insurance status. I also include a dummy variable indicating whether each respondent got divorced during the observation period to account for selection out of marriage based on meso- and micro-level inequality. Finally, I adjust for each individual's duration of residence in the state in which their state-level exposures are measured. Approximately 85 percent of the sample had lived in their current state of residence for 10 years or more. Table 3 shows individual-level descriptive statistics for the full sample and the married subsample. Overall, the married subsample is similar to the total sample except it has a higher mean household income, a larger proportion have children, and a larger proportion have health insurance.

Analytic Methods

Respondents are assigned values for state-level and individual-level characteristics based on the year in which they participated in each of the two health modules. For example, someone who was 40 years old in 1998, participated in the age 40+ health module,

Table 3. Individual-Level Descriptive Statistics (For Person-Years in Full Sample and Married Subsample)

	Total		Married		Range
	Mean	SD	Mean	SD	
Age (years)	45.8	4.8	45.8	4.8	[39, 55]
Household income (\$k)	75.1	74.9	95.2	80.5	[0, 498]
Education (years)	13.5	2.5	13.7	2.6	[0, 20]
Duration in state of residence (years)	9.1	2.4	9.1	2.3	[0, 10]
Men	46.3%		46.9%		
Non-white	19.3%		12.8%		
Married	64.1%		100%		
Have children	80.8%		88.7%		
Have health insurance	84.9%		91.0%		
Divorced during period	10.1%		7.9%		
N (person-years)	6,754		4,336		

and resided in Florida at that time would be assigned the values of macro-level variables for Florida in 1998.⁵ This person would also be assigned values of meso- and micro-level variables based on their personal and spousal characteristics in 1998. The only exception is the micro-level sexism measures, which are treated as time-invariant and were measured only in 2004 for all respondents. Each respondent contributes up to two person-years of data, and therefore I use random-effects models. To adjust for potential state-level clustering of errors, I also estimated models using cross-classified random effects for person and state. I used cross-classification because 9 percent of respondents moved between time 1 and time 2. However, there was virtually no error variance at the state level, and the coefficient estimates were nearly identical to those produced using only person-level random effects. Thus, results from cross-classified models are not shown.

As a robustness test, I also estimated person-level fixed-effects models, but they were relatively inefficient due to very limited within-person variation in exposure to structural sexism. Moreover, the fixed-effects approach does not allow for estimation of micro-level sexism effects because the micro-level measures are time-invariant. Hausman tests indicate that random effects are

appropriate;⁶ therefore, all results presented are based on models using a person-level random-effects approach. Two health outcomes, self-rated health and SF-12 physical functioning scores, are treated as interval. The number of chronic conditions is treated as a count variable and modeled using a Poisson regression model with person-level random effects. Results shown are robust to alternative specifications of the macro- and meso-level sexism indices (see the online supplement).

RESULTS

A Descriptive Picture of Multilevel Structural Sexism in the United States

Macro-level structural sexism in U.S. states. Table 4 presents descriptive statistics for the state-level variables among the total sample of person-years. Of the six indicators of macro-structural sexism, three are ratios (wages, labor force participation, and poverty) and three are proportions (men in legislature, religious conservatives, and women lacking abortion access). For the ratio measures, a score of 1 indicates gender equality. For all three ratios, the means across all observations exceed 1, showing substantial inequality favoring men. The proportion

Table 4. State-Level Descriptive Statistics, 1998 to 2012 (Among Person-Years in Full Sample)

	Mean	SD	Range
Macro-structural sexism index	.00	3.36	[-8.2, 11.3]
Wage ratio (M:W)	1.27	.07	[1.10, 1.53]
Labor force ratio (M:W)	1.21	.05	[1.03, 1.35]
Poverty ratio (W:M)	1.25	.12	[.91, 2.07]
Legislature percent men	77.3%	6.4%	[59.2, 95.7]
Percent religious conservatives	17.7%	10.7%	[2.3, 71.0]
Percent women w/o abortion access	37.7%	22.8%	[0, 95.7]
Poverty rate	12.9%	3.1%	[4.5, 22.5]
Percent population non-white	28.0%	13.1%	[2, 74]
Gini coefficient	.601	.041	[.526, .711]
N (person-years)	6,754		

measures also show evidence of considerable gender inequality. On average, 77.3 percent of state legislatures were men; the lowest observed proportion was 59.2 percent men and the highest was 95.7 percent men. The average proportion of the state populations composed of religious conservatives was 17.7 percent, and the average proportion of women living in a county without an abortion provider was 37.7 percent.

Table 5 lists the states with the five highest and five lowest average levels of structural sexism during the study period, based on each of the individual indicators and the overall macro-structural sexism index. Figure 3 is a map illustrating the geographic variation in the macro-structural sexism index scores. The map is based on each state's mean score from 1998 to 2012. States with the highest levels of macro-structural sexism include Utah, Wyoming, Mississippi, Louisiana, and Oklahoma; states with the lowest average levels of macro-structural sexism include Massachusetts, California, Hawaii, Vermont, and Maryland.

Meso-level structural sexism within marriages. Table 6 shows descriptive statistics for indicators reflecting inter-spousal inequality for all person-years in the married subsample. In general, husbands and wives are more closely matched in terms of education than they are in either earnings or age. On average, husbands earn \$21,000 more than their wives, yielding a mean husband-to-wife

earnings ratio of 1.95. In 45 percent of observations, husbands earn more than twice what their wives earn. The average education difference observed between husbands and wives is zero, but in 23 percent of observations husbands have at least two more years of education than do their wives. Finally, on average, husbands are approximately two years older than their wives, yielding a mean husband-to-wife age ratio of 1.05. In 25 percent of couples, the husband was five or more years older than the wife, whereas the reverse was true in only 5 percent of couples.

Micro-level internalized sexism. To what extent do men and women who were in their mid-40s in 2004 espouse an ideology of traditional gender roles? For illustrative purposes, I describe two individual indicators and then provide further detail about the index scores. Roughly 10 percent of the sample (9 percent of women; 11 percent of men) agreed or strongly agreed that "a woman's place is in the home, not the office or the shop," and 25 percent of the sample (23 percent of women; 27 percent of men) agreed/strongly agreed that "it is much better if the man is the achiever outside the home and the woman takes care of the home and family." Table 7 shows descriptive statistics for the micro-level structural sexism index by gender among the total sample and married subsample. Women exhibit lower internalized sexism levels than do men, and this difference is

Table 5. U.S. States with the Highest and Lowest Levels of Sexism (Based on State Averages 1998 to 2012)

	Macro-Sexism Index	Religious Conserva-tives	Lacking Abortion Access	Legislature Percent Male	Wage Ratio (M:W)	Poverty Ratio (W:M)	Labor Force Ratio (M:W)
Highest-1st	Utah	Utah	Wyoming	S. Carolina	Wyoming	Vermont	Texas
	Wyoming	Alabama	Mississippi	Alabama	Louisiana	Indiana	Arizona
	Mississippi	Oklahoma	W. Virginia	Oklahoma	Utah	Louisiana	Utah
	Louisiana	Mississippi	Arkansas	Kentucky	W. Virginia	N. Hampshire	California
	Oklahoma	Arkansas	S. Dakota	Mississippi	Alaska	Georgia	New Jersey
<hr/>							
Lowest-50th	Mass.	Connecticut	Mass.	Maryland	Vermont	Utah	Alaska
	California	Vermont	New York	Arizona	New York	Nebraska	Minnesota
	Hawaii	N. Hampshire	Connecticut	Vermont	Maryland	Wisconsin	S. Dakota
	Vermont	Mass.	California	Colorado	Arizona	Maine	Vermont
	Maryland	Rhode Island	Hawaii	Washington	California	California	N. Dakota

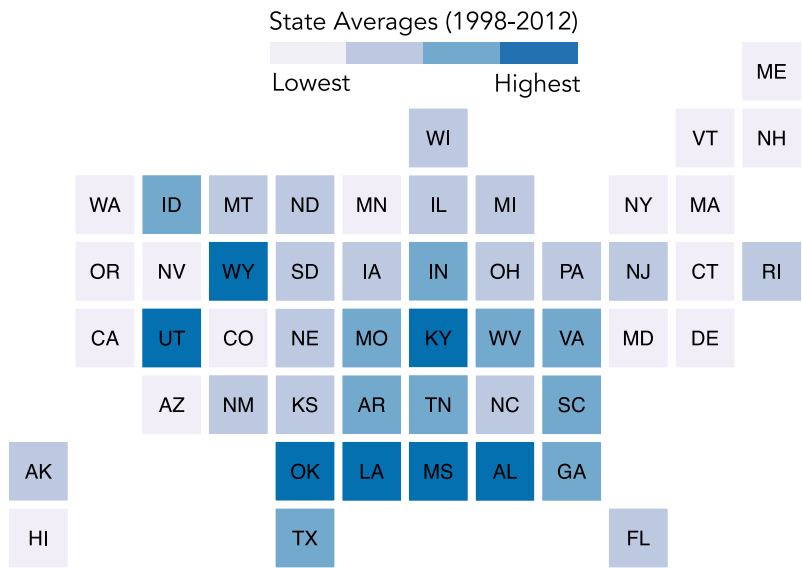


Figure 3. Macro-Structural Sexism Index, State Averages 1998 to 2012

statistically significant at the $p < .001$ level. Index scores among the married subsample are not significantly different from scores among the total sample.

The Relationship between Structural Sexism and Health

Table 8 presents coefficients for the effects of structural sexism on women’s physical health.

For each of the three health outcomes, results are shown from two models. Model 1 includes only macro-level structural sexism and additional covariates. Model 2 includes all available levels of structural sexism exposure (macro and micro only for the full sample; all three levels for the married subsample), plus additional covariates. The results in Table 8 show that higher macro-structural sexism is associated with more chronic conditions,

Table 6. Meso-Level Descriptive Statistics (For Married Person-Years, $N = 4,336$)

	Mean	SD	Range
Meso-sexism index	0	1.77	[-6.19, 16.52]
Husband to wife ratio of:			
Earnings (logged)	1.95	5.13	[-12.75, 12.75]
Education	1.01	.20	[.07, 4.00]
Age	1.05	.12	[.55, 2.05]
Husband earns > 2x wife	45%		
Husband education 2+ years > wife	23%		
Husband 5+ years older than wife	25%		
Wife 5+ years older than husband	5%		

Note: Both spouses in a marital dyad were not interviewed. Respondents were either a husband or a wife and reported on the other spouse's characteristics.

Table 7. Micro-Level Sexism Index Scores by Gender (For Person-Years in Full Sample and Married Subsample)

Micro-Sexism Index	Total			Married		
	Total	Women	Men	Total	Women	Men
Mean	8.44	8.03	8.91	8.47	8.08	8.90
SD	2.75	2.79	2.63	2.77	2.79	2.62

Note: Differences between women and men are significant at the $p < .001$ level. There are no significant differences between the total sample and the married subsample.

worse self-rated health, and worse physical functioning for women. The effects tend to be slightly larger among the married subsample.

For meso-level sexism (measured only within marriages), we see statistically significant effects on the number of chronic conditions and physical functioning. Micro-level internalized sexism is associated with more chronic conditions in the full sample, but it does not have any independent effects net of the other levels of structural sexism exposure on the physical health of married women. This pattern may reflect a particularly harmful effect of internalized sexism among unmarried women who may feel their marital status is preventing them from fulfilling their ideal of a woman's role. The effects of macro-level sexism remain relatively stable when sexism at other levels is added to the model (Model 2), suggesting the macro, meso, and micro levels operate relatively independently. One exception is physical functioning among married women, for which macro-level

structural sexism does not have a statistically significant effect when meso- and micro-level exposures are included in the model.

Table 9 shows the coefficients for the effects of structural sexism on men's physical health. The results show that macro-level structural sexism is harmful for men's physical health as well as women's. However, the effects are much more pronounced among married men. Among the married subsample, greater macro-level structural sexism is associated with more chronic conditions and worse physical functioning; the effect on self-rated health is not significant at the $p < .05$ level ($p = .06$).⁷ Among the full sample of men, macro-level sexism only has significant effects for physical functioning. Interestingly, meso-level sexism affects men's health in the opposite direction. Rather than being harmful to men's health, greater meso-level sexism is associated with *better* self-rated health and better physical functioning among men. Micro-level internalized sexism is not associated with men's

Table 8. Coefficient Estimates for Structural Sexism from Random-Effects Models Predicting Women's Physical Health Outcomes

Structural Sexism Exposure	Chronic Conditions		Poor SRH		Poor Phy. Functioning	
	1	2	1	2	1	2
Among Full Sample						
Macro Level	.027** (.010)	.023* (.010)	.015* (.007)	.014 (.007)	.197** (.073)	.169* (.076)
Micro Level		.022* (.010)		.012 (.008)		.081 (.083)
N	3,075	2,891	3,074	2,890	3,058	2,875
Among Married Subsample						
Macro Level	.045*** (.013)	.040** (.013)	.021* (.009)	.019* (.009)	.190* (.084)	.123 (.084)
Meso Level		.052* (.021)		.023 (.016)		.686*** (.171)
Micro Level		.005 (.014)		.007 (.010)		-.001 (.092)
N	1,932	1,742	1,932	1,742	1,921	1,731

Note: Robust standard errors are in parentheses. All models include individual-level predictors (age, years of education, household income, race, divorce during observation period, health insurance, parental status, duration in state of residence) and state-level predictors (poverty rate, Gini coefficient, racial composition, and southern region), which are not shown. All analyses among full sample in top half of table also adjust for marital status. In addition to all additional predictors, Model 1 includes only macro-level sexism, and Model 2 includes all available levels for each sample (macro and micro for total sample; macro, meso, and micro for married subsample).

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

physical health. Comparisons between Models 1 and 2 again suggest that sexism exposures at the macro and meso levels of the gender system have independent effects on health.

Although structural sexism exposures at different levels have independent effects, it is possible that exposures at one level could exacerbate or buffer the effects of exposures at another level. For example, perhaps macro-level sexism is less harmful for women in more egalitarian marriages. However, I did not find evidence to support this hypothesis. I tested for cross-level interactions between macro-, meso-, and micro-level sexism among men and women and found no statistically significant interactions. This means the effects at each level are additive. Intersectionality theory and research (see Brown et al. 2016; Crenshaw 1991) point to the possibility that structural sexism may differentially affect women of color compared to white women. Therefore, I also tested for interactions

between an individual's race and their sexism exposures among men and women separately, but again I found no statistically significant interaction effects.

To summarize the results, Figure 4 illustrates the predicted health problems across differing degrees of exposure to structural sexism at each level of the gender system among married women and men. To generate these predicted values, men and women were included in the models together with an interaction between gender category and sexism exposure. This strategy makes it possible to hold all additional variables constant at their overall mean, but it assumes the effects of these other predictors are equal across gender categories—an assumption not made in the separate gender models presented in Tables 8 and 9. I estimated separate models for each health outcome at each level, so the figure summarizes nine models. The asterisks indicate which single gender effects are

Table 9. Coefficient Estimates for Structural Sexism Exposure from Random-Effects Models Predicting Men's Physical Health Outcomes

Structural Sexism Exposure	Chronic Conditions		Poor SRH		Poor Phy. Functioning	
	1	2	1	2	1	2
Among Full Sample						
Macro Level	.013 (.012)	.015 (.012)	.012 (.008)	.013 (.008)	.145* (.060)	.158* (.063)
Micro Level		-.009 (.014)		-.002 (.009)		.000 (.069)
N	2,718	2,517	2,722	2,521	2,708	2,508
Among Married Subsample						
Macro Level	.034* (.016)	.033* (.017)	.017 (.009)	.016 (.010)	.228** (.069)	.253*** (.073)
Meso Level		-.033 (.024)		-.033* (.014)		-.429** (.152)
Micro Level		-.007 (.018)		-.003 (.010)		-.039 (.081)
N	1,793	1,627	1,795	1,628	1,788	1,621

Note: Robust standard errors are in parentheses. All models include individual-level predictors (age, years of education, household income, race, divorce during observation period, health insurance, parental status, duration in state of residence) and state-level predictors (poverty rate, Gini coefficient, racial composition, and southern region), which are not shown. All analyses among full sample in top half of table also adjust for marital status. In addition to all additional predictors, Model 1 includes only macro-level sexism, and Model 2 includes all available levels for each sample (macro and micro for total sample; macro, meso, and micro for married subsample).

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed tests).

significantly different from zero (a single asterisk indicates all levels of statistical significance of at least $p < .05$).

The first column of Figure 4 shows that macro-structural sexism is associated with worse health among men and women across all three outcomes, supporting a theory of universally harmful inequality. Based on model predictions, 45-year-old women with levels of macro-structural sexism exposure two standard deviations below the mean have an average of .5 chronic conditions, whereas similar women at two standard deviations above the mean exposure have almost twice as many chronic conditions. This difference is roughly equivalent to the effect of being seven years older. In general, the magnitude of the effects of macro-level structural sexism are similar among men and women, although at higher levels of sexism exposure women appear to be more adversely affected than men in terms of chronic conditions.⁸

At the meso level, however, the patterns in effects across gender category are strikingly different. Greater structural sexism between husbands and wives is associated with more physical health problems among women, but fewer physical health problems among men. This pattern supports a theory of zero-sum gender conflict in which men reap health benefits from greater dominance or status relative to their wives. At the micro level, internalized sexism in the form of adherence to traditional gender role ideology is not associated with physical health outcomes among either men or women. Although there are a few variations in statistical significance, the overall patterns are remarkably consistent across the three health outcomes. This consistency indicates that sexism is related to subjective and objective measures of health, and the results are robust to possible sources of measurement error in the health outcomes.

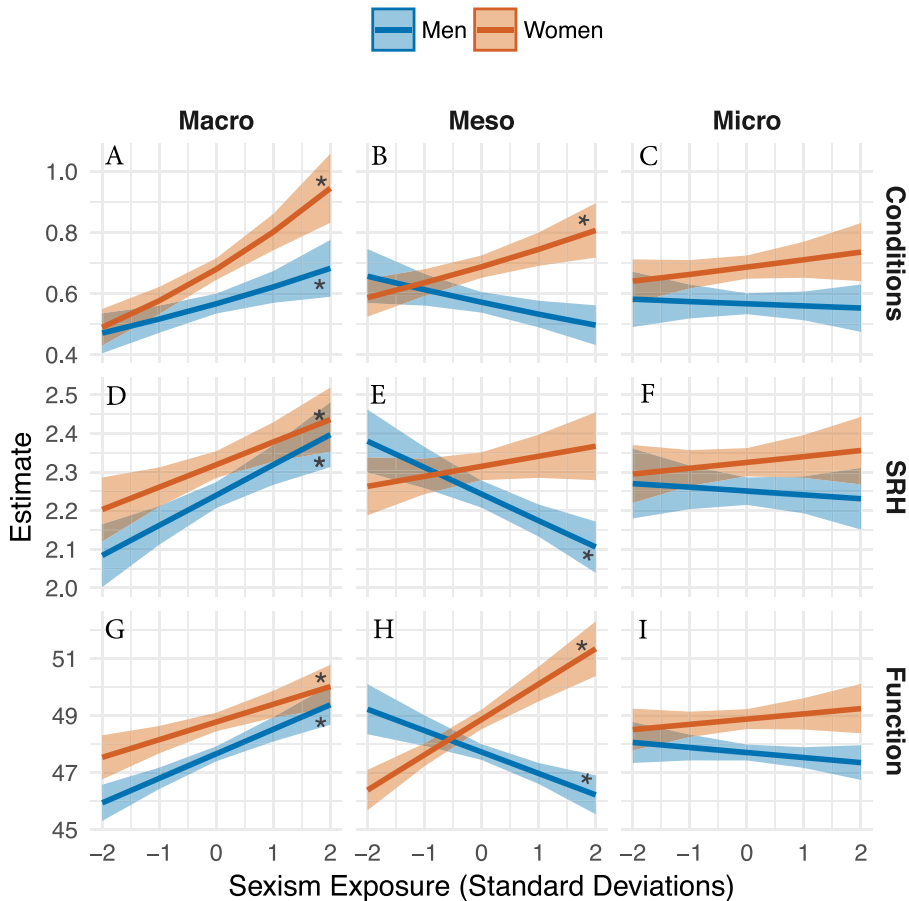


Figure 4. Predicted Values of Health Outcomes Given Structural Sexism Exposure

Note: * indicates that the single gender trend (i.e., slope) is significantly different from zero at $p < .05$. At points where confidence intervals do not overlap for men and women, gender differences in health outcomes are statistically significant at the $p < .05$ level. Wald tests of the sexism-by-gender interaction terms indicate that the effects of sexism on health are significantly different ($p < .05$) for men and women at the meso level (panels B, E, and H) but not the macro or micro levels for all three health outcomes. However, Wald test results may be overly conservative in the case of the chronic conditions estimates (panels A, B, and C) because these estimates are from nonlinear models. For further discussion of statistical tests for gender differences in the effects of sexism, see note 8.

DISCUSSION

Summary of the Findings and Implications for Theories of Gender and Health Inequality

Rather than focus on gender differences in health outcomes or the harmful effects of perceived discrimination/harassment for women, I advanced a *structural sexism* approach to the study of gender inequality and health that is consistent with contemporary theoretical understandings of gender as a multilevel social

system. This approach directs our attention beyond individual actors to the question of how the inequitable gendered distribution of power and resources that characterizes a society's gender system influences the health of its members. This study is the first to conceptualize and measure structural sexism at different levels of the gender system and to examine its relationship to physical health among women and men in the United States. The findings show that structural sexism has important consequences for the health of both women and men in midlife.

For women, the results show more physical health problems are associated with greater exposure to structural sexism at both the macro and meso levels, which aligns with logical expectations given their disadvantaged social position. Existing work on health disparities offers substantial insight into the process of how social inequality “gets under the skin.” Krieger’s (2001, 2014) ecosocial theory describes the processes through which discriminatory social systems undermine the health of marginalized groups by structuring their living conditions and the exercise of their civil, political, social, economic, and cultural rights in ways that create economic and social deprivation, toxic/hazardous living conditions, socially inflicted trauma, and inadequate healthcare.

The ecosocial model, in combination with other health disparities research, suggests a variety of pathways through which structural sexism may harm women’s health, including reduced access to material resources, goods, and services; exposure to violence, harassment, or unsafe working conditions; perceived discrimination; low subjective social status; increased stress; reduced psychosocial resources such as self-esteem, mastery, sense of control, autonomy, coping resources, and social support; and inadequate healthcare quality or access (Adler 2009; Aizer 2010; Link and Phelan 1995; Marmot 2005, 2006; Pascoe and Richman 2009; Pearlin et al. 2005; Yang et al. 2014). All these factors may contribute to the positive association between structural sexism and health problems among women, with material resources and exposures possibly playing a larger role at the macro-structural level and psychosocial resources and stress playing a larger role at the meso and micro levels.

Among men, however, understanding the health effects of structural sexism is less straightforward. Conflict theories in general, and the ecosocial model in particular, suggest dominant groups benefit at the expense of their subordinates (Collins 1975; Krieger 2014). As the dominant group, men are expected to experience increasing levels of

power, resources, and status—and thus a corresponding health benefit—with increasing degrees of structural sexism. Results at the meso level support this gender conflict perspective: greater degrees of inter-spousal structural sexism are associated with fewer health problems among men and more health problems among women. These patterns in the effects of structural sexism on health may be part of the reason for the common finding that men experience a larger health benefit from marriage than do women, and for the preliminary evidence that this unequal benefit may be decreasing over time (Umberson and Kroeger 2016). The average marriage has traditionally exhibited a high degree of inter-spousal sexism—which, according to this study, would benefit men’s health and harm women’s—and although the results show a substantial amount of inter-spousal inequality remains, marriages have become increasingly more equal over time (Bianchi et al. 2000; Sayer 2005; Schwartz 2010).

The one-to-one relationship between husband and wife means resources and responsibilities in a marital dyad are more likely to be zero-sum, and the spouse with the higher status position stands to benefit more directly from inequality in ways that may not hold true for larger aggregate-level inequalities. All men may not necessarily profit to the same degree from the subordination of women in major social institutions. This lack of direct or consistent benefit for all men is particularly likely if, as some argue, greater subordination of women in a society is linked to stronger dominance hierarchies among men, with fierce competition resulting in greater disadvantage to low-status men (cf. Wilkinson 2005).

Indeed, the effects of structural sexism on men’s health at the macro level do not support a zero-sum gender conflict perspective. At the macro level, greater exposure to structural sexism is related to worse health among *both* women and men, showing a pattern of universally harmful inequality. This is consistent with theoretical perspectives on structural inequalities and health that argue inequality

harms everyone because it damages social relationships, increases competition for dominance, undermines the social fabric, and makes the entire society less safe, less productive, and less healthy (Lucas 2013; Wilkinson 2005; Wilkinson and Pickett 2011).

The pattern of universal harm is also consistent with theory and research specifically focused on gender inequality and health. Although there is limited research on macro-level gender inequality in the United States, cross-national comparative research in the developing world shows that gender equity is vital for development, poverty reduction, and improvements in population health (World Bank 2003, 2011). Studies suggest that when women are empowered, they influence social policy in ways that promote education, health-care, social programs, and expenditures that improve health for the entire population (Boehmer and Williamson 1996; Bolzendahl and Brooks 2007; Little, Dunn, and Deen 2001; Miller 2008).

The observed pattern of universal harm is also consistent with gender theories that posit patriarchal social systems foster toxic constructions of masculinity that shape institutions (Acker 1992) and cultural norms in ways that harm men's health (Connell 2005, 2012; Courtenay 2000). Thus, an important implication of this study is that the application of ecosocial theories of structural discrimination to the case of structural sexism and health requires a careful consideration of gender theory and a revision of expectations for men as a dominant group.

The lack of a statistically significant relationship between physical health and internalized gender ideology at the micro level is surprising, particularly among men given prior work on masculinity and health (Mahalik et al. 2007; Seidler et al. 2016; Springer and Mouzon 2011), and it implies that the effects of hegemonic masculinity on health have an important institutional component that is not fully captured by individual beliefs and behaviors. The null findings at the micro level may also indicate that the specific gender role beliefs examined here are (1) less

important than other aspects of masculinity and gender norms for influencing health, or (2) more closely associated with other non-physical health outcomes not considered here, such as mental health and life satisfaction. These possibilities raise important questions for future research to consider. The absence of cross-level interactions suggests future research aiming to quantify the effects of structural sexism on health may not need to investigate all levels simultaneously in a single study; a piecemeal approach with a unifying multilevel theoretical framework may also be appropriate.

Suggestions for Future Research

This study represents an early attempt to characterize the relationship between structural sexism and health, similar to emerging work on the health consequences of structural racism (Bailey et al. 2017). As such, future research is needed to refine and extend both the theory and measurement of structural sexism. I suggest six priorities for future research.

First, future research should develop additional measures of structural sexism across a variety of domains, with particular attention to the meso and micro levels. The present study examined meso-level structural sexism only within the context of heterosexual marriages.⁹ Although heterosexual marriage is a key site for the reproduction of gender inequality, future research should investigate structural sexism in a variety of other interactional settings, including the neighborhood and the workplace. Perhaps the gendered balance of power within occupations or organizations will not exhibit the strong zero-sum patterns identified within marriages. Similarly, internalized gender ideology represents only one specific type of micro-level process that creates and reinforces inequality within a gendered system. More work is needed to develop other ways of measuring how sexism is internalized and embodied by individuals and how this shapes health.

Second, future research should examine the effects of structural sexism on other health

outcomes (including birth outcomes, mental health, biomarkers of physiological dysregulation, disablement, and adult mortality) to develop an even more comprehensive account of the population health toll of structural sexism in the United States. Although I found little variation in the effects of structural sexism across the health outcomes examined here, effects may be stronger or weaker for health outcomes reflecting earlier or later stages of health decline and disablement (Homan and Lynch 2017), or for outcomes reflecting mental health rather than physical health. Just as the present study used multiple measures of physical health to account for the gendered nature of perceiving, reporting, and diagnosing illness, future research focused on structural sexism and mental health should examine multiple outcomes to account for the gendered manifestations of mental illness in terms of internalizing behavior (e.g., depression), which is more common among women, and externalizing behavior (e.g., substance abuse), which is more common among men (Read and Gorman 2011).

Third, future studies using longitudinal data over a longer time period are necessary to study structural sexism from a life course perspective and gain a more complete picture of the timing of exposures to structural sexism and how exposures shape trajectories of health decline. The present study focused on midlife because of its potential as a critical period for exposure to structural sexism given the convergence of work and family pressures during this life stage. However, research shows that the gender wage gap increases with age (U.S. Department of Labor 2017), so examinations of structural sexism in later life represent another important priority for future research.

Fourth, the present study did not contain measures of perceived interpersonal gender discrimination or sexual harassment. Investigating the relationship between structural sexism and this more overt type of gender-based mistreatment, and assessing the role such mistreatment plays in the structural sexism–health relationship, are vital next steps for future research.

Fifth, future research should further explore the possibility of heterogeneity (in the distribution of structural sexism exposures and in its health effects) across a variety of status characteristics, including race, education, marital status, sexual orientation, and parental status. Such investigations can illuminate how structural sexism may combine with other sources of privilege and disadvantage to shape health (Brown et al. 2016).

Finally, a critical task for future research will be to move beyond the gender binary theoretically and empirically. This will entail a twofold process of working to better understand the impact of discriminatory gender systems on transgender individuals and those with non-binary gender identities, as well as grappling with how measurement of structural sexism relates to the gender binary. Although the gender system in U.S. society is still fundamentally organized around heterosexual relationships and the man-woman gender binary, an increasing number of individuals are identifying as transgender and non-binary (Meerwijk and Sevelius 2017). To the extent that institutions adjust to this reality and shift the gendered distribution of power and resources, new ways of measuring structural sexism that take this into account may become increasingly necessary.

Concluding Remarks

The results of this study demonstrate the promise of a structural sexism approach to gender inequality and health. This approach has the potential to inform current theories on gender and health and lay the groundwork for future studies documenting the wide-reaching health effects and underlying mechanisms of gendered inequalities. The fact that macro- and meso-level results support different theories regarding the effects of inequality on the health of dominant group members highlights the importance of a *multilevel* systems approach. A multilevel structural sexism framework could also be used to examine a variety of individual-level outcomes other than health that interest sociologists, such as educational attainment, academic achievement, family formation,

voting, and volunteering. This study's findings suggest systematic gender inequality in the United States is both a human rights issue and a public health problem. The health of our entire society is likely undermined by the systematic exclusion of women from resources and power within major social institutions.


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Notes

1. The literature on gender inequality and health (as well as on social inequality and health more broadly) can be characterized in a variety of ways. For example, Schofield (2015:63) focuses only on the sex/gender differences approach as "the dominant approach to gender and health throughout the world." I choose to discuss these three categories/types of research because they are among the most prevalent for understanding how inequality affects health, and they are useful for highlighting important knowledge gaps that structural approaches can help fill.
2. This gender categorization is typically indistinguishable from sex categorization as male/female and is self-reported by respondents in the majority of large health surveys.
3. Recent work in this area has called for a more thorough integration of social, biological, and genetic data to explore how these factors intertwine in complex ways to shape gender differences in health across the life course (Short, Yang, and Jenkins 2013).
4. Missing data was less than 1 percent for any given outcome, and 6 percent or less for all independent variables except income (which was missing in 14 percent of cases). Listwise deletion remains an appropriate strategy in this case, even given the percent missing on income, for several reasons. First, sample sizes are large enough that the reduction in statistical power is unproblematic. Second, prior work shows that listwise deletion may be less biased than standard multiple imputation or FIML methods when data is missing not at random (MNAR)—which is often true of income if, for example, people with higher income are less likely to report (Allison 2001, 2014).
5. I chose to use contemporaneous exposures (rather than lagged) because simulation studies show this to be a reasonable strategy that produces conservative, reliable estimates when exact lag time is unknown (see Lynch 2011). Also, using lagged values in this study would result in a loss of one quarter of the sample, constituting a problematic loss of power. Because 85 percent of the sample resided in their current state for at least 10 years, and state-level environments change quite slowly over time, using lagged exposures would have negligible effects on the estimates and would not alter the substantive findings.
6. For example, $\chi^2(12) = 9.16, p = .65$, for the Hausman test among married women in models predicting chronic conditions that contain all three levels of sexism exposure.
7. The p -value for the effect of macro-level sexism on married men's SRH hovers near .05 and tends to fluctuate above and below that threshold depending on model specification. In the gender interaction model shown in Figure 4, which has a larger sample size, the effect is statistically significant. In the series of six leave-one-out models included as a sensitivity analysis in Table S4 in the online supplement, the majority of estimates are statistically significant. Regardless of the significance tests, all models estimated show effects in the same direction: a positive relationship between sexism exposure and poor SRH among men.
8. Wald tests for significance of the gender-by-sexism interaction term in pooled-sample models as well as Chow tests for coefficient equality across the models stratified by gender (presented in Tables 8 and 9) all consistently indicate that macro- and micro-level effects are not significantly different for men compared to women at the $p < .05$ level, whereas meso-level effects are significantly different and opposite in direction. The results of these tests are the same across all three health outcomes. Recent work by Long and Mustillo (2018) suggests caution in testing and interpreting interaction effects for nonlinear outcomes (such as chronic conditions in the present analysis) and recommends examining group differences in predicted values at multiple values of regressors. The plot of the predicted number of

chronic conditions in panel A of Figure 4 suggests that although below-average levels of macro-structural sexism exposure have similar effects for men and women, at mean levels of exposure and above sexism appears to have slightly larger harmful effects on chronic conditions for women than for men. The gender difference in the predicted number of chronic conditions is significant at $p < .05$ for values of sexism exposure of 0, 1, and 2 standard deviations above the mean (but nonsignificant at -1 and -2) based on z -tests using delta-method-derived standard errors.

9. Data limitations did not allow for examination of same-sex marriages in the present study, but recent work shows that gendered processes related to health behaviors operate differently for men and women in gay, lesbian, and straight relationships (Reczek 2012; Reczek and Umberson 2012).

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