

Perceiving Glass Ceilings? Meritocratic versus Structural Explanations of Gender Inequality among Women in Science and Technology

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Americans often rely on meritocratic ideologies rather than structural factors to explain unequal labor market outcomes, but we know little about how such beliefs are contingent upon individuals' social locations. Taking advantage of unique survey data, this article examines how gender inequality in professional advancement is explained among successful women professionals in science, technology, and allied fields—an employment arena potentially characterized simultaneously by potent meritocratic ideologies and persistent gendered barriers. Using multinomial logistic regressions comparing structural and meritocratic frames for explaining the paucity of women at high levels, we show how respondents in different career and family circumstances use these conflicting perceptual lenses. We find that married women, those with business education, and those in the top levels of their organizations are more likely to account for gender inequality by invoking deficiencies in women's human capital or motivation, whereas mothers, primary breadwinners, sellers of professional services, and those working in unsupportive organizations are more likely to invoke structural explanations. This research has implications for social action. Successful women's beliefs about gender inequality may influence whether they help remove structural obstacles for other women, or whether, through adherence to the meritocratic ideology, they help reconstruct the glass ceilings they have cracked. Keywords: perceptions of inequality, gender, glass ceilings, meritocratic ideology, women in science and technology.

Who recognizes the structural basis of inequality? Most Americans use one of two prominent ideological frames to explain inequality. The “dominant ideology” (Kluegel and Smith 1986) is a widely shared and deeply institutionalized belief in meritocracy. This frame is the most popular explanation of inequality in labor market outcomes in the United States. It assumes that those with the requisite training, experience, and personal motivation will succeed in a meritocratic society, while those who fall behind have only themselves to blame (Gurin 1985; Hunt 2007; Kane 1998; Major and Schmader 2001).¹ A second frame is the explanation of inequalities as the result of structural factors such as discrimination, stereotyping, and exclusion from social networks.

1. For instance, 52.3 percent of men and 47.1 percent of women (49.6 percent of whites and 42.1 percent of African Americans) explain black/white economic difference as “because African Americans just don't have the motivation or will power to pull themselves out of poverty,” compared to 32.5 percent of men and 38.3 percent of women who explain this difference as the result of discrimination (Davis and Smith 2006).

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Explanations of social inequality that are collectively endorsed within cultures and entrenched within institutions hold power to reproduce (or undermine the legitimacy of) that inequality (Major and Schmader 2001). The cultural frames that workplace leaders in particular use to understand social inequalities inform their implementation of policies that either reinforce or challenge existing social inequalities in the labor force. Individuals who account for inequalities with structural factors may be likely to support policies and programs designed to undermine unequal opportunities or outcomes; those blaming inequalities on individual failings may be likely to reject such measures (Burnstein 1991; Roth 2006; Williamson 1974; Wright 2001).

Popular perceptions of inequality are surprisingly under researched given the importance of this topic for successful and sustained movements toward equality (Jost and Major 2001; Wright 2001). Previous studies have primarily focused on how different demographic categories perceive inequality, assuming some experiential or attitudinal affinity among groups of "women," "Latinas," or "African American men" (e.g., Davies-Netzley 1998; Hunt 2007; Kane 2000). However, scholars know little about how accounts of inequality among demographically similar individuals are contingent upon fine-grained social positions (Edgell and Tranby 2007), and there is even less theoretical knowledge of how perceptions of inequality are shaped. Furthermore, it is often assumed that individuals' very membership in a group at risk for encountering structural barriers will lead them to recognize the structural origins of inequality. However, most Americans, including substantial numbers of disadvantaged groups, accept meritocratic accounts of inequality (Olson and Hafer 2001).

This article moves beyond broad demographic examinations and asks how perceptions of inequality are contingent on respondents' locations within the institutions of work and family. We argue that different career and family contexts convey different information about the unequal system of gender and thus can activate ideologies of meritocracy or undermine appraisals of the system's legitimacy. In addition to identifying which circumstances influence perceptions of inequality, we analyze a broad range of career and family circumstances with the hope of better understanding how structural life circumstances influence such perceptions.

Using unique survey data, we study how gender inequality in professional advancement is explained and understood within an illustrative population: successful women professionals in science, technology, and allied fields in a dense and competitive regional technical cluster. This is a useful case for studying the contextual contingency of meritocratic and structural accounts of inequality. Like other extreme or exemplar cases (Blair-Loy 2003; Perry-Jenkins, Repetti, and Crouter 2000), it highlights the processes under study. Respondents are unusually successful women in a male-dominated arena potentially characterized simultaneously by a strong meritocratic ideology and by gendered structural barriers. Their social locations are likely to activate *both* meritocratic and structural explanations of the dearth of women at high levels in their fields.

On one hand, our respondents have likely personally experienced and witnessed gender discrimination, experiences that may undermine their belief in the dominant meritocratic ideology. Employed women are generally more likely than other women or than men to be aware of structural inequality and to interpret gender disadvantage as structurally based (Bolzendahl and Myers 2004). In the workplace, women face pervasive gendered stereotypes devaluing their professionalism (Ridgeway 2001) and unequal access to male-dominated networks (Blair-Loy 2001; Davies-Netzley 1998). In the labor markets studied here, barriers to women's advancement have been documented in science and technology firms (e.g., Fox 2006; McIlwee and Robinson 1992; Xie and Shauman 2003) and in professional services firms that support these industries (e.g., Epstein 1993; Gorman and Kmec 2009). Additionally, respondents' location in a competitive regional technology cluster may aggravate these gendered barriers (Shih 2006). The potential for encountering these structural barriers may increase the likelihood that these women recognize such barriers.

On the other hand, our respondents have earned meritocratic credentials and succeeded professionally. Success in the labor market predisposes individuals to assert meritocratic explanations of inequality (Ellemers 2001). Being one of the successful women in these

male-dominated fields might activate, rather than undermine, ideologies of meritocracy. "Perceptions of legitimacy can be maintained in the face of blatant discrimination if even the slightest hint of permeability is perceived within the system" (Major and Schmader 2001:184). Respondents are themselves proof that permeability is possible. Furthermore, in order to legitimate their own career successes, they may tend to see the professional status hierarchy and the organizational advancement rules as fair (Jost and Major 2001).

We analyze respondents' perceptions of gender inequality through their responses to a survey question about the primary factor holding women back from advancement to corporate leadership. We contend that simply because these women have likely faced the gendered barriers well documented in social science research does not necessarily mean that they recognize glass ceilings. We examine the extent to which respondents' invocation of structural accounts (such as gendered networks and stereotypes) versus one of two meritocratic explanations (deficits in human capital and individual motivation) is contingent on their career and family contexts. In contrast to previous broad demographic approaches, we study how demographically similar individuals adopt different cultural explanations of inequality depending upon on a web of career and family circumstances.

This article makes several other contributions to the inequalities literature. First, we distinguish between two meritocratic explanations generally conflated in the literature—explanations based on human capital deficiencies and those that blame aggregate inequalities on a failure of individual motivation. Second, we synthesize social-psychological theories of system justification and legitimation with sociological research on gendered workplace inequality. Finally, in contrast to previous sociological studies on perceptions of inequality, we examine variation within a group of similarly successful women in a regional cluster. There is little known about perceptions of inequality held by professional women with jobs in which they have likely experienced or witnessed obstacles to advancement. Our sample's homogeneity allows us to carefully assess the career and family contexts likely to highlight the salience of structural accounts versus those making meritocratic explanations more compelling. We also contribute to the sociology of culture by showing how, in one case, dominant ideological frames appear to be activated or deactivated in different social locations. We find that the ideological frames respondents use to explain inequality are dependent on fine-grained biographical circumstances. In particular, structural explanations appear to be activated when women occupy social locations (e.g., motherhood) that put them at risk for very specific forms of workplace inequality while motivational explanations are prominent for those connected to institutions whose ideologies buttress meritocratic explanations.

This case has implications for social action. The way individuals and organizations interpret the causes of inequality influences the efforts they might support to alleviate such inequality (Burnstein 1991). Respondents' beliefs about gender inequality may determine whether they ultimately use their positions of power to take steps to remedy structural obstacles for other women, or whether, through their belief in the meritocratic ideal, they allow the glass ceilings they have cracked to be reconstructed.

The following sections motivate our empirical hypotheses by synthesizing sociological research on gender workplace barriers with social-psychological literature on system justification, legitimation, and perceptions of inequality. The next section describes the research design and methods. We then present our findings that show that both meritocratic and structural frames are present in our sample of professional women and are contingent on career and family circumstances. We conclude with a discussion of broader implications.

Workplace Structural Barriers Faced by Professional Women

Broadly, compared to men, women face gendered structural barriers constraining their opportunities in the labor market (Budig 2002; Cotter et al. 2001). Much sociological research

has examined the social processes segregating women into female-dominated occupations and job ladders (Padavic and Reskin 2002). But even when women have launched careers in male-dominated fields, structural barriers, often described as glass ceilings, continue to limit their advancement (Cotter et al. 2001).

In the labor markets studied here, researchers have shown that science and engineering professions have “chilly climates” for women (Hall 1982:2; National Academy of Sciences 2007; Sandler, Silverberg, and Hall 1996). Research on national samples of similarly educated married scientists and engineers shows large gender gaps in earnings and, among parents, in promotions (Xie and Shauman 2003). In the life sciences, structural obstacles are greatest in large established firms and in academia (Smith-Doerr 2004). Research has also documented gendered barriers in professional service firms, many of which support science and technology companies (e.g., see Gorman and Kmec 2009, National Association of Women Lawyers 2008, and Epstein 1993 for law firms; and see Blair-Loy 2001 and Roth 2006 for financial services firms). We focus on two types of structures: social networks that limit women’s access to valued resources, and cultural structures such as stereotypes that devalue women’s competence and penalize their assertiveness. These mechanisms may be particularly pronounced in high-ranking jobs.

Informal workplace networks affect organizational advancement (Podolny and Baron 1997) in ways that differ for women and men (Ibarra 1997). Studies of senior women in male-dominated fields have found that it is more difficult for women than men to join crucial professional networks. Executive women emphasize social networks as critical for success in elite positions and “the existence of an old boys’ network excludes women and curtails their success” (Davies-Netzley 1998:347). In professional services firms where “promotion to the highest levels requires that the executive can cultivate inter-firm business networks to generate business, or make rain,” many women feel barred from permeating male-dominated client “networks and making them pay” (Blair-Loy 2001:51).

Social networks are given meaning by cultural beliefs such as widely shared schemas and stereotypes. According to social psychological studies, top management jobs have role incumbent schemas that include “an achievement-oriented aggressiveness and emotional toughness that is distinctly male in character” (Heilman 2002:659). Gender stereotypes contain status beliefs that assume women are less worthy and less competent than men (Ridgeway 1997) and therefore less qualified for top management jobs. Women are often held to higher standards to prove their competence than similar men and are often denied credit for their success. When women do beat the odds and display undeniable competence and authority in the workplace, they face another hazard: stigmatization for excelling at tasks viewed as masculine. Competent and powerful women are more likely to be seen as dislikable and untrustworthy and therefore become less influential than similarly acting men (Heilman 2002; Ridgeway 2001).

Gender stereotypes and social networks interact in ways that limit women’s advancement to the highest levels in male-dominated organizations. Madeline Heilman (2002:670) argued that “if a woman is perceived as equally competent to a male colleague but seen as less interpersonally appealing and suitable as a member of the upper management team” she will be excluded from this clique. Cecilia Ridgeway (2001) concluded that the cumulative effect of these processes is “the principal cause of the ‘glass ceiling’” (p. 638). Similarly, Mary Blair-Loy (2001) found that executive women tried to develop strategies to minimize men’s discomfort with their violation of role-incumbent schemas in order to increase their likeability and permeate men’s networks.

Based on the literature on gendered structural barriers just reviewed, we assume that the women studied here—professional women in science, technology, and related industries—are likely to have encountered or observed these barriers at some point in their careers. Although we argue that simply encountering or observing such barriers does not mean that women automatically recognize them as structural, the increased potential of encountering structural barriers likely means that our senior-level sample is more likely than entry or mid-level women or men at all levels to reject meritocratic explanations of inequality. At the same time,

they have invested in human capital and work very hard, qualities emphasized by the ideology of meritocracy. We expect that, instead of a monolithic perspective on inequality, respondents' perceptions are dependent on many life circumstances, such as the career and family contexts examined here. Under what conditions would women in these industries be more likely to give meritocratic explanations for the paucity of women at high levels and what conditions would prime structural accounts? Research on popular accounts of inequality provides a theoretical foundation upon which we reframe these questions as empirical predictions.

Frames for Understanding Inequality: Meritocratic and Structural Explanations

In the United States, structural explanations and meritocratic explanations are two prominent ideological frames for understanding gender inequality.² The social locations of our respondents likely prime both frames. Structural explanations of gender inequality posit that women are victims of explicit and implicit biases that deter their success in the workplace. Structural explanations undermine the legitimacy of the unequal status quo and divert blame from the disadvantaged individuals themselves. We might expect that our respondents' likelihood of seeing or encountering these barriers would activate structural explanations. This expectation is consistent with Nancy Davis and Robert Robinson's (1991) "underdog thesis," which maintains that disadvantaged individuals will be, on average, more conscious of structural reasons for inequality than individuals who are advantaged. The experience of being in the labor force full time may also increase the likelihood that women will attribute this inequality to structural factors (Davis and Robinson 1991; Gerson 1987). According to Catherine Bolzendahl and Daniel Myers (2004), women's employment activates awareness of structural barriers because it (1) exposes them to discriminatory treatment, which leads them to acknowledge gender inequality; (2) falsifies myths about women's capabilities, which undermines individualistic explanations of inequality; and (3) exposes them to networks of nontraditional women who are likely to espouse structural explanations of inequality. Given the extensive literature on gendered stereotypes and networks excluding women discussed above, we suspect that our respondents are particularly likely to have experienced or witnessed barriers to women's advancement. In a similarly high-level population of women Wall Street financiers, Louise Marie Roth (2006) found that women who saw that their subjective evaluations contradicted tangible evidence of their performance (such as their profit and loss ratios) were more likely to view the meritocratic distribution of income as a myth.

The meritocratic ideology is a more dominant frame for understanding inequality. According to this ideology, human capital and effort foster individual "merit," enhance productivity, and deserve to be rewarded with higher pay and status. In contrast, those deficient in the requisite human capital or individual motivation lack merit and will be surpassed by others (Arrow, Bowles, and Durlauf 2000; Bell 1973; Young 1994). It is an individualistic "theory of justice in which the distribution of rewards is to be expected from the distribution of individual talents" (Brickman et al. 1981:175). Furthermore, belief in a meritocratic society holds individuals responsible for their own outcomes, locating the causes of desirable or undesirable outcomes within the attributes of those individuals (Major and Schmader 2001).³ In an era

2. Two other frames are biological determinism ("less in-born ability") and supernatural explanations ("God's will") (Emerson, Smith, and Sikkink 1999; Hunt 2007; Kluegel 1990). National survey data show that these are marginal explanations for inequality compared to meritocratic and structural explanations (Davis and Smith 2006; Kluegel 1990). Thus, they were not included as options in our "primary factor holding women back" question.

3. The bias of locating the cause of outcomes within individuals, rather than within the situation or system, is dubbed the "fundamental attribution error" in psychology (Nisbett and Ross 1980; Yzerbyt and Rogier 2001). This attribution error also extends to the group level, where entire groups of people are held responsible for their position of (dis)advantage (Major and Schmader 2001).

in which discrimination based on gender, race, religion, or disability is formally illegal, many Americans believe that inequality of outcome is based on fair, meritocratic mechanisms (Arrow et al. 2000; Hunt 2007; Lopez, Gurin, and Nagda 1998).⁴ These beliefs are also consistent with the broader “American Dream” ideology (Hochschild 1995).

The meritocratic ideology is also a moral judgment. Meritocracy legitimates the unequal distribution of rewards as the outcome of morally acceptable processes (Della Fave 1991; Kelman 2001; Major and Schmader 2001). As long as individuals accept the mechanisms that produce unequal outcomes, the outcomes themselves are considered legitimate (Zelditch 2001).⁵ This justification reconciles vastly unequal outcomes with society’s commitment to cultural values of equality (Meyer 2001) and minimizes concern for structural or historical processes (Hochschild 1995).

Despite their potential experiences with glass ceilings, the women in our sample may adhere to meritocratic explanations of gender inequality in advancement.⁶ The social-psychological concept of system justification sheds light on why these women may utilize meritocratic frames to understand inequality. System justification, the “social and psychological need to imbue the status quo with legitimacy and to see it as good, fair, natural, desirable, and even inevitable” (Jost and Banaji 1994:2), is the process by which the existing social arrangements are legitimized, even at the expense of one’s personal interests (Jost, Banaji, and Nosek 2004).⁷ Individuals develop strategies designed to protect their belief in a “just world” where there are knowable procedures that are effective in producing desired outcomes (Lerner 1980). For women, such strategies range from denying that they are victims of sexism (Barreto and Ellemers 2005) to using the very stereotypes they are trying to defy to differentiate high and low-achieving women so that inequality seems natural and appropriate (Jost et al. 2004). “The consistency of their actions with the pervasive ideology of meritocracy and strong identity with the high-status group” may allow them to ignore or reinterpret discrimination against other women (Wright 2001:242). Finally, women may deny discrimination because of their need to see themselves as competent, integrated, well-liked, and *deserving* professionals. Expressing resentment about deprivation can elicit undesirable consequences, such as impressions of incompetence, selfishness, or “being a whiner” (Olson and Hafer 2001:168).

Human Capital and Motivational Components of the Meritocratic Ideology

Existing literature on the meritocratic ideology is generally too abstract to be operationalized in nonexperimental research. We develop a distinction between two meritocratic justifications of inequality: one based on human capital deficiencies, and another based on a lack of motivation. To our knowledge, this distinction has not previously been studied. Although both justifications legitimate the status quo, each has different assumptions and implications. The first explanation assumes that, if given equal access to accrue human capital, women and men will succeed at equal rates. Workers decide how much to invest in costly human capital and employers reward that human capital without bias (Correll and Benard 2006); if women

4. This has not always been the case. A century ago, understanding economic inequality as the product of socially contrived barriers was common. In the post-Equal Rights Act era, Americans are more inclined to see inequality as the product of individual characteristics than as structurally produced (Arrow et al. 2000).

5. This is a “construal processes,” where systems of belief mediate the relationship between “objective” circumstances and affective reactions to those circumstances (Major and Schmader 2001).

6. That some women would justify a system that disadvantages most women is a familiar theme in sociology: “when a group or system distributes resources unequally among its members, those members (or most of them) must also view the system as fair” (Olson and Hafer 2001:157).

7. This process stands in contrast to two other processes of interest promotion: “ego justification” (the need to maintain a favorable self-image and to feel legitimate as an individual) and “group justification” (the need to maintain a favorable image of one’s own group). In order for women to recognize gender inequality as illegitimate, their ego or group justifications must overcome their need to justify the system (Jost et al. 2004).

gain equal experience, they will rise through the meritocratic hierarchy. This rationale is consistent with liberal feminist goals for equal playing fields.

The second meritocratic justification asserts that even if women had equal opportunities to gain requisite human capital, many fundamentally lack the competitive motivation and commitment to succeed, especially if they have family responsibilities. This is a more individualistic and morally charged component of the meritocratic ideology than the emphasis on human capital. The individual motivation perspective assumes that relatively blocked advancement of an aggregate group is due to each individual's deeply personal decisions, immune to the influence of social and organizational programs (cf. Messner 2009; Stone 2007). This is consistent with certain cultural beliefs about gender in the United States that posit men as more committed to their work and more "single-mindedly career oriented" than women (Correll and Benard 2006:108).

Empirical Predictions

We draw from gender inequality literature and social psychological research on perceptions of inequality to motivate our hypotheses on the effects of social locations on perceptions of inequality for women in science, technology, and allied fields. We work from the contention that respondents' career and family contexts "convey information about distributive justice within the system [that] can shape appraisals of legitimacy" (Major and Schmader 2001:183). Some contexts may, in other words, undermine the legitimacy of the unequal system while other circumstances promote its legitimacy. Drawing on previous research, we develop hypotheses about which career and family contexts will tend to activate structural explanations and which conditions will make one of the two meritocratic explanations more compelling. The hypotheses are formulated net of other variables in the model.

Although we present career and family circumstances in separate hypotheses, we expect that they have interconnected influences on respondents' views of gender inequality. Existing literature on perceptions of inequality do not provide enough information to predict these relationships a priori. We investigate these interactions empirically and offer our interpretations of the results.

Like most research on the perceptions of inequality, we use cross-sectional data. Statistically, we find associations between social locations and explanations of the paucity of women at high levels. Based on previous research, we infer causality and argue that particular experiences activate structural or meritocratic frames. However, longitudinal data are needed to confirm our interpretations.

Career Circumstances Activating Structural Explanations

We begin by discussing the career circumstances that likely prime structural explanations. We expect that women's increased exposure to structural barriers will undermine the legitimacy of meritocratic explanations for the paucity of women at senior levels and make structural explanations more salient.

Longer professional tenures should increase women's risk of encountering and witnessing structural discrimination. Such exposure may undermine the credibility of meritocratic explanations for the paucity of women at high levels. Scholars have found that working full time (versus part time) increases women's exposure to factors in the workforce that influence perceptions of inequality (Baxter and Kane 1995). Similarly, women putting in longer hours may be more likely to be exposed to, and more likely to be conscious of, gender inequality (Plutzer 1988). Moreover, respondents' own professional experience and long hours are themselves illustrations of the human capital and personal motivation that many women bring to the workplace.

Hypothesis 1: Having a long professional tenure and working more hours per week increases the likelihood that respondents will explain that women are held back from high levels for structural reasons and reject explanations based on lack of individual motivation or human capital.

In addition, restrictions to informal networks and the effects of gender stereotypes may be more salient in some positions than others. Respondents such as patent attorneys and venture capitalists who sell professional services to science and technology firms depend upon networks with male-dominated clients and referral sources. These networks are challenging for women to penetrate even if they have the requisite experience and credentials (Blair-Loy 2001; Schlee 2006). Women in these jobs may be more likely to see their advancement constrained by structural barriers. In contrast, the meritocratic ideologies commonly held by science and technology professionals (Dryburgh 1999; Fox 2006; Hughes 2005) may increase the likelihood that they would advance one of the two meritocratic explanations for inequality.

Hypothesis 2: Respondents selling professional services will be more likely than those conducting or supervising scientific and technological research to explain that women are held back from high levels for structural reasons, relative to explanations based on lack of human capital or individual motivation.

Career experiences are also shaped by race and ethnicity. African American (Hill Collins 1991), Hispanic (Kane 2000), and Asian American women (Padavic and Reskin 2002) experience distinct patterns of workplace inequality. Past research has found that women of color are more aware of the extent of gender inequality, are more likely to perceive discriminatory treatment toward themselves or other women, and are more willing to attribute such inequality to structural origins rather than either human capital or motivation deficiencies (Davis and Greenstein 2009; Kane 1992, 1995, 2000).⁸

Hypothesis 3: The group of African American, Latina, and Asian American women in our sample will be more likely than white women to explain that women are held back from high levels for structural reasons, relative to explanations based on lack of human capital and individual motivation.

Gender inequality depends in part on processes that occur within organizational contexts (Blair-Loy and Wharton 2002; Fox 1991, 2006). We expect that if women employees believe that their employing organization is particularly ineffective at supporting women leaders, they will be skeptical of motivational and human capital explanations of gender inequality and find structural accounts more compelling. Our measure taps women's perceptions of their employer's effectiveness at recruiting, developing, and retaining women—perceptions that are likely consistent with others such as the outcome variable studied here. (We do not have an objective indicator of organizational supportiveness.)

Hypothesis 4: Respondents who consider their workplaces to be unsupportive (ineffective at recruiting, developing, and retaining women executives) will be more likely than others to believe that women are held back by structural factors, relative to both human capital deficiencies and lack of individual motivation.

Career Circumstances Activating Meritocratic Explanations

The system justification literature suggests that those who have achieved the greatest success in an occupational or professional system of advancement may be most invested in seeing that system as legitimate and fair (cf. Major and Schmader 2001). Controlling for professional

8. The small number of respondents with these racial/ethnic backgrounds in our sample requires us to aggregate these groups into one category of women of color.

tenure, respondents who have reached the highest levels in their organizations or who receive the most income for their work may be more likely than others to see the advancement system as legitimate. Rich in human capital themselves, women at the pinnacle of organizational reward systems may be likely to see this capital as the most important condition for advancement and be more likely to attribute gender inequality to lack of human capital rather than to structural factors. We do not hypothesize whether respondents with the highest positions or incomes would be more likely to accept individual motivation explanations over structural ones. Although some may credit individual motivation for their own success, their advancement increases the likelihood that they have observed or experienced structural barriers compared to other respondents, possibly increasing their potential for recognizing such barriers as structural. Thus, it is not clear that women at the top of organizational hierarchies would be more likely than other hardworking respondents to choose individual motivation over structural explanations.

Hypothesis 5: Respondents holding one of the top two positions in their organizations and those earning higher incomes are more likely than others to explain that women are held back from high levels based on lack of human capital rather than structural reasons.

Higher education is a prevailing institution promoting meritocratic perspectives (Jackman and Muha 1984; Meyer 1977). By emphasizing competitive individual effort and meritocratic achievement, higher education endorses individualistic interpretations of social outcomes (Kane 1995; Kane and Kyyro 2001; Lemann 1999). All our respondents have college degrees and two thirds also have graduate degrees. However, not all advanced educational certifications promote meritocratic explanations with the same intensity. Business schools, like other professional schools, were originally founded in part to establish the legitimacy of their graduates' expertise and justify their highly paid positions as experts (Khurana 2007). But by the 1980s, business schools adopted a perspective of atomized and competitive managers who augment their personal wealth working in firms defined as "simply a nexus of contracts among individual agents" (Khurana 2007:325). Business schools promote a particularly potent ideology of individualism, implicitly placing success in reach of anyone with sufficient personal drive (Schleef 2006). The meritocratic ideologies promoted in most business schools also put a high premium on human capital, such as certification and managerial expertise (Schleef 2006), in the pursuit of professional success. We therefore make a new claim: professional women who hold advanced business degrees should find individual motivation and human capital explanations particularly compelling, in contrast to those with only bachelor's degrees or with other advanced degrees.

Hypothesis 6: Respondents with advanced degrees and certification in business will be more likely than others to reject structural explanations for the paucity of women at high levels in favor of explanations based on deficiencies in individual motivation or human capital.

Family Circumstances Activating Meritocratic Explanations

Family relationships likely shape understandings of gender inequality. Consistent with arguments dating back to second-wave feminism (e.g., de Beauvoir [1949] 1989), studies show that women's intimacy with and dependence on men promote views that are less egalitarian and less critical of women's inequality (Kane 1992, 1998). Studies based on national data suggest that heterosexual married women's intimate connections with their husbands shape their consciousness of gender stratification and draw their interpretation of gender inequality toward men's more "privileged interpretation" (Kane 1998:614; see also Baxter and Kane 1995; Kane and Sanchez 1994). Additionally, women engaging in the symbolic act of marriage tend to be

less associated with feminist values about gender than women who remain single (Baxter and Kane 1995; Kane 1998), and longitudinal research has shown that entering into marriage is associated with a shift to less egalitarian gender role attitudes among individual women (Fan and Marini 2000). Compared to single women, married women are less supportive of efforts to reduce gender inequality, hold less egalitarian views, and are also more likely to see the occupational system as legitimate, explaining workplace gender inequality as due to individual failings (Baxter and Kane 1995; Davis and Robinson 1991; Kane 1992; Plutzer 1988). The relationship between marriage and meritocratic perceptions of inequality is based on economic dependence but also on ideological alignment with a socially privileged (male) spouse (Blaisure and Allen 1995; Coontz 2005; Kane 1998). We therefore expect that married women in our sample will be more likely than single women to explain inequality as the result of individual motivation rather than structural barriers.⁹ (Because this literature does not attend to human capital explanations of inequality, we do not hypothesize the relationship between being married and the likelihood of selecting a human capital explanation.)

Hypothesis 7: Married women in our sample will be less likely than single women to believe that women are held back from advancement due to structural reasons, relative to explanations based on lack of individual motivation.

Family Circumstances Activating Structural Explanations

However, married women who are primary breadwinners in their families should be an exception to this pattern. Consistent with Bolzendahl and Myers (2004) and Emily Kane (1992, 1995), we expect that married women who shoulder the primary financial responsibility of their household will be more invested in workplace equality and have more economically at stake in equality than the married nonbreadwinners. As such, they may be more attuned to wage discrimination in their organizations and therefore more likely to explain gender inequality as due to structural obstacles, controlling for other career and family circumstances.

Hypothesis 8: Married women earning 75 percent or more of their family's income will be more likely than others in the sample to believe that women are held back from advancement due to structural reasons, relative to explanations based on lack of human capital or individual motivation.

Existing literature using national data finds that family ties to children bolster women's justification of the unequal status quo and lead them to be less critical of gender inequality (Baxter and Kane 1995; Fan and Marini 2000; Kane and Sanchez 1994). In contrast, we theorize that, net of marriage and earnings, the experience of motherhood *increases* awareness of structural barriers for these high-level respondents. Sociologists have documented motherhood pay penalties (Budig and England 2001; Waldfogel 1998) resulting from assumptions that mothers are less competent and committed than other workers (Correll, Benard, and Paik 2007).¹⁰ Yu Xie and Kimberlee Shauman (2003) have also demonstrated a gender promotion gap among parents in science and technology industries. In contrast, professional women with children themselves may view mothers as equally committed, especially in light of the great efforts they personally expend to remain engaged despite responsibilities at home (Blair-Loy 2003). This reasoning suggests:

9. The survey question we use as an indicator of marriage asks whether respondents are "married or currently have a life partner." The assumed small proportion of respondents who are engaged in a same-sex partnership likely do not experience similar ideological alignment with men (Kurdek 1998). Therefore, we expect that our analysis underestimates the actual relationship between (heterosexual) marriage and perceptions of inequality.

10. This issue has permeated public awareness sufficiently to spawn a new area of law, "family responsibility discrimination" (Still 2006; Williams and Segal 2003).

Hypothesis 9: Mothers of young and school-aged children will be more likely than others in the sample to believe that women are held back from advancement due to structural forces relative to individual motivation and human capital explanations.

Interconnected Relationships between Career and Family Circumstances and Perceptions of Inequality

We have argued that women's career and family contexts prime some explanations of inequality over others. The work-life literature demonstrates, however, that career and family circumstances are not experienced as isolated aspects of people's lives (e.g., Jacobs and Gerson 2004). Studies of managers and professionals show that marriage and children affect the way workers experience career circumstances such as long hours, high levels of responsibility, and supportiveness of their employers (Blair-Loy 2003; Correll et al. 2007; Epstein et al. 1999; Stone 2007). Career circumstances also shape how workers experience their family lives (A. Hochschild 1997; Schieman, Glavin, and Milkie 2009; Wharton and Blair-Loy 2006).

This work-family literature compels us to attend to these interconnections, but lacks specific information on how these interactions might be linked to perceptions of inequality. We therefore do not offer specific predictions about how career-family interactions might affect our outcome measure but rather explore different possible career-family interactions in our analyses. We present the career-family interacting relationships that are significant predictors of perceptions of inequality and offer our interpretations in the results section.

Data

Our sample consists of women professionals who are members of ISIS (a pseudonym), a nonprofit professional association for women in science, technology, and allied fields. ISIS provides its members with workshops, speakers, and networking to promote their success in high-level careers. ISIS members work in a regional cluster in California that is an exciting, dense, and competitive center of technological and scientific innovation. One of the eight major technical clusters in the United States (Wittington, Owen-Smith, and Powell 2009), it cultivates "communities of practice" (Brown and Duguid 1991) where cultural beliefs such as the meritocratic ideology are likely shared and nurtured. At the same time, this competitive and crowded field is conducive to persistent gender barriers: only 7 percent of corporate managers and 3 percent of corporate officers in the region are women (Deloitte 2003).

With the approval of the ISIS executive board and director, we sent our survey to the 494 members of ISIS in December 2005. Sixty-two percent of members (306 women) returned surveys, an impressive response rate for this powerful and busy population. We defined our population of women based on the empirical boundaries of ISIS rather than preexisting categorizations such as Census occupations. This professional association has delimited its own membership, defining who in the geographic region is most appropriate to participate in their professional networking and information-sharing activities.

ISIS members work in commercial science and technology firms, governmental agencies, universities, and service organizations such as law firms. Over half the sample is associated with science and technology firms, a third work in fields such as finance, consulting and law, and the rest work as scientists or technology professionals in government or academia. ISIS membership is offered only to women who hold executive or analogous positions and to a limited number of promising women endorsed by executive members. Three-quarters of our sample occupy mid-level positions in their organization (e.g., managing director) or higher, including 22 percent of respondents who hold C-level positions (CEO, CFO, COO, CTO, or president).

Using the National Science Foundation's SESTAT (2003) data, a nationally representative sample of professionals in U.S. science and technology industries, we are able to compare our sample to national statistics on women in these fields. Compared to a national sample of women in science, technology and allied fields, our sample is similar in age (SESTAT = 43.1 years, ISIS = 46.1 years), percentage who are mothers to young or school-aged children (SESTAT = 33.2 percent, ISIS = 30.0 percent), percentage who are married (SESTAT = 68.0 percent, ISIS = 72.0 percent), and percentage who work as researchers or research managers (SESTAT = 52.8 percent, ISIS = 54.0 percent). Consistent with the high-level positions that members of ISIS occupy, our sample works more hours per week than the SESTAT sample (SESTAT = 40.6 hours, ISIS = 52.3 hours), has a considerably higher mean salary (SESTAT = \$60,265, ISIS = \$145,509), and supervises more people on average (SESTAT = 7.7 people, ISIS = 14.6 people). Our sample has lower representation of racial and ethnic minorities than the SESTAT sample (SESTAT = 16.0 percent, ISIS = 9.5 percent), possibly due to discrimination and bias that block the pathways of minorities to these senior and high-level positions (Long and Fox 1995; Xie and Shauman 2003).

Though ISIS members are part of an organization with the explicit goal of promoting the success of executive women, membership in ISIS is not necessarily inconsistent with meritocratic explanations of gender inequality in advancement. For some respondents, participation in women-promoting activities like workshops and networking may undermine the ideologies of system justification they use to understand gender inequality in the labor market. Others' participation may be entirely instrumental: membership in ISIS is an astute career move that provides access to elite business networks. As with the social positions of the women themselves, both meritocratic and structural frames are salient within ISIS' organizational location.

Analytic Strategy and Variables

This article uses multinomial logistic regression (MLR) to test what factors predict whether respondents believe that structural factors, human capital deficiencies, or lack of individual motivation is the primary factor holding women back from advancement. MLR is a statistical method well suited for multicategorical dependent variables (Wharton, Chivers, and Blair-Loy 2008), as it runs logistic regressions between the base (structural explanations in our case) and the other two variable categories. The two sets of coefficients that result can be read as logistic regressions; one column predicts the likelihood that respondent will choose human capital factors over structural factors and the other column predicts the likelihood that respondents will choose individual motivation factors over structural factors. Both the dependent and independent variables are described below.

We would prefer longitudinal data that would allow us to measure the independent variables at time 1 and measure respondents' understanding of gender inequality at time 2. However, we note that all the independent variables except the attitudinal construct about organizational unsupportiveness are conditions that were likely in place long before the survey was administered.

Dependent Variable

We measure respondents' understandings of gender inequality in the labor market using the following question: "What do you believe is the most important factor holding women back from advancement to corporate leadership?"¹¹ We recoded the seven original ordinal values into three theoretically meaningful categories. We coded "stereotypes/preconceptions of

11. This survey item and the response categories are adapted from Catalyst (2001:21–22).

Table 1 • Frequencies for Dependent Variable (Original Survey Responses and Recoded Categories)

Recoded Categories and Frequencies (percent)		Original Survey Values and Frequencies (percent)	
Structural barriers	59.5	Stereotypes and preconceptions of women	19.8
		Exclusion from informal networks of communication	33.6
		Lack of a mentor	6.1
Meritocratic: lack of human capital	13.8	Lack of significant general management/line experience	13.8
Meritocratic: lack of individual motivation	26.7	Commitment to family	16.5
		Lack of desire	3.4
		Nothing	6.8

women," "exclusion from informal networks," and "lack of a mentor" into the *structural* category; "lack of management/line experience"¹² into the *human capital* category; and "commitment to family," "lack of desire," and "nothing" into the *individual motivation* category. Table 1 presents the frequencies for the original values and our recoded categories.¹³ This question requires respondents to identify the single most important factor holding women back. Although respondents may have given hybrid explanations for inequality if this was an open-ended question, the required choice of a single factor allows us to home in on the dominant ideological frame for each respondent. It is theoretically meaningful that, when given a choice of several options, respondents identify one explanatory frame as dominant over the others.

Independent Variables

To test for the contingency of respondents' perceptions of inequality on their career contexts, we measure respondent's professional tenure, the number of hours a week they work, the type of professional work they perform (sells professional services = 1; researcher or research manager = 0), and whether they identify as Asian American, African American, or Latina (1 = yes). The perceptions of organizational unsupportiveness measure is a combination of three Likert scale variables: "I feel that my company is effective at attracting women executives;" "I feel that my company is effective at developing women executives;" and "I feel that my company is effective at retaining women executives" (1 = strongly disagree to 5 = strongly agree), reverse coded to measure unsupportiveness. These three variables were factor analyzed (alpha = .911) and summed together to produce one value. In order to retain consistency with the variable values from the original Likert scale measures (where 1 = strongly disagree to 5 = strongly agree), we divided this summed value by three.

We also measure whether respondents are in one of the top two positions in their organization (yes = 1), their annual income (log value), and an indicator for whether a missing income value was substituted with a predicted value. We combined measures of respondents'

12. People with line positions have profit-and-loss responsibilities, in contrast to staff positions that support the line jobs. Respondents could have two possible interpretations of this human capital option: (1) women simply do not have equal experience because they have not sought such experience (no bias or discrimination assumed) or (2) women do not have equal line experience because there are structural factors holding them back. However, due to the forced-choice format of the question, we expect that respondents who see structural factors underlying women's lack of line/management experience would likely have chosen one of the structural factors as the "most important factor holding women back."

13. Just over seven percent of respondents responded "other" and gave an open-ended response. We assigned each answer to one of the recoded categories when possible. Two respondents' answers did not fit our categorization, bringing our sample size to 304. Of these "other" responses, only one respondent challenged the forced-choice format ("there are too many to claim the most important") and only one respondent offered a hybrid answer ("several—mentor/opportunities/stereotypes"). No open-ended responses mixed structural and meritocratic explanations.

Table 2 • Means and Standard Deviations of Dependent and Independent Variables

	<i>Mean</i>	<i>Std. Deviation</i>
Dependent variable: What is the most important factor holding women back from advancement?		
Structural barriers	.595	
Human capital	.138	
Individual motivation	.267	
Independent variables		
Career contexts		
Professional tenure	18.051	8.562
Number of hours worked per week (hours)	52.369	9.409
Selling professional services (yes = 1)	.460	.499
Latina, Asian American, or African American	.096	.223
Unsupportive organization (1 = strongly disagree, 5 = strongly agree)	2.857	1.078
Zero or one levels between <i>R</i> and the top position (yes = 1)	.453	.499
Log income	11.888	.525
Indicates missing income values subbed w/predicted values	.112	.315
Business training and certification (yes = 1)	.059	.187
Advanced academic degree (yes = 1)	.619	.396
Family contexts		
Married (yes = 1)	.720	.449
Makes over 75% of dual-person HH income (yes = 1)	.280	.500
Young or school-aged child(ren) (yes = 1)	.305	.461
<i>(n = 304)</i>		

MBA degree or CPA certification to create an indicator for advanced business education (yes = 1). To isolate the particular role of business training, we also created an indicator for any other advanced degrees, such as an MA, MD, JD, or PhD (yes = 1).

Family status variables include whether respondents are married or currently have a life partner (yes = 1), have young or school-aged children (yes = 1), and whether married respondents make 75 percent or more of their household's income (yes = 1).

We created interaction terms between each of the three family contexts (being married, being a primary breadwinner, and having young or school-aged children) and each of the career context variables. We added each interaction term separately to the additive model (Model 1) described above. We present the models for each of the three significant interaction terms we identified in Models 2 through 4.

Means and standard deviations for each variable are presented in Table 2. All variables had high rates of completion. Missing values for independent variables were imputed using mean substitution except for income, where we used predicted substitution.¹⁴ We used mean substitution for no more than 9 percent of cases on any given variable.

14. We used mean substitution to impute missing values on hours worked and the number of job levels between respondent and the highest job level in her organization (before these levels were recoded into the dichotomous "top one or two levels" indicator). We used a regression-based predicted substitution approach for missing income variables. We first predicted nonmissing income values using several independent variables and then used the resulting regression equation to predict the missing income values: $\text{predicted (log)income} = 7.277 + (.008) * (\text{hours worked}) - (.478) * (\text{government/university sector}) - (.169) * (\text{science/tech sector}) + (.157) * (\text{Top 2 Level}) + (.123) * (\text{advanced degree}) + (.169) * (\text{age}) - (.002) * (\text{age-squared}) + (.144) * (\text{logged number of supervisees})$. To ensure that respondents with imputed income values do not systematically differ on our dependent variable from those with reported income values, our models include an indicator for having used a predicted value for a missing income value (yes = 1) (Rubin 2004). This indicator is not statistically significant. Results from a model with no imputed values ($N = 271$) were in the same direction and of the same magnitude as those we report in Model 1.

Results

Descriptive Results

Table 2 presents the means and standard deviations for our dependent and independent variables. Well over half (59.5 percent) of respondents explain gender inequality in advancement using structural explanations: the restriction of women from networks and mentorship or influences such as stereotypes. The remaining 40 percent rely on meritocratic explanations that blame women themselves for deficiencies in human capital (13.8 percent) or motivation (26.7 percent).

In Table 2, just under half of sample members are professionals offering legal and business services to science and technology firms. Respondents work an average of 52 hours a week and have a mean professional tenure of 18 years. Ten percent of our sample is Asian American, Latina, or African American.¹⁵

A minority of respondents believes that their organizations are unsupportive of women (mean agreement: 2.86 out of 5). This is a low proportion, given the previous research on structural barriers to women in male-dominated professions and chilly climates in science and technology firms. Perhaps the relatively high evaluation of organizational supportiveness is due to the fact that 45 percent of respondents work in one of the top two positions in their organizations, and may be beneficiaries of these organization's efforts. Women in our sample are also well paid on average: they have a mean salary of \$145,509 per year, nearly double the mean annual wage of technical workers in the area (\$85,000) (California Cybercities 2006). Six percent of the sample has advanced business education, and 60 percent has another advanced degree.

Almost three quarters of respondents are married and almost a third has young or school-aged children. (Nationally, 68 percent of women employed in science and technology jobs are married and 33 percent have children [SESTAT 2003]). Nearly 28 percent of our respondents are married primary breadwinners who earn three-quarters or more of the household income.

Figure 1 presents the observed frequencies on the dependent variable for illustrative family and career subgroups whose combination of circumstances has been hypothesized to be most conducive to meritocratic explanations (the first and third bars) or most supportive of structural explanations (the second and fourth bars). The clear bar segments represent the percentage of the subgroup who gave structural explanations of gender inequality, the gray segments represent human capital explanations, and the black segments represent motivational explanations. The first bar represents the observed responses for the subgroup who are married but have no children. Here, 57 percent gave structural explanations, and 43 percent gave one of the two meritocratic explanations. The second bar, representing married respondents who are primary breadwinners and have young or school-aged child(ren) (both circumstances hypothesized to prime structural explanations), looks much different. This subgroup gave structural explanations much more frequently, and human capital explanations less often than the first subgroup. These observed frequencies are consistent with our family context predictions: women who are breadwinners and mothers chose structural explanations more often than childless married women who are not breadwinners.

The third bar represents respondents who are researchers or research managers in supportive organizations, where they hold one of the top two positions (all circumstances hypothesized to prime meritocratic explanations). The fourth bar, representing those who sell professional services in unsupportive organizations (hypothesized to be structural-leaning circumstances), is strikingly different from the third. Consistent with our career context predictions, over 85 percent of this last group gave structural explanations—nearly twice as often as the top-level researchers.

15. Our sample is 88.5 percent white, 4.3 percent Asian/Pacific Islander, 3.3 percent Hispanic/Latino, 2 percent African American/black, and the remainder "other." We ran models with these categories represented by separate dichotomous indicators and none were significant (analysis not shown).

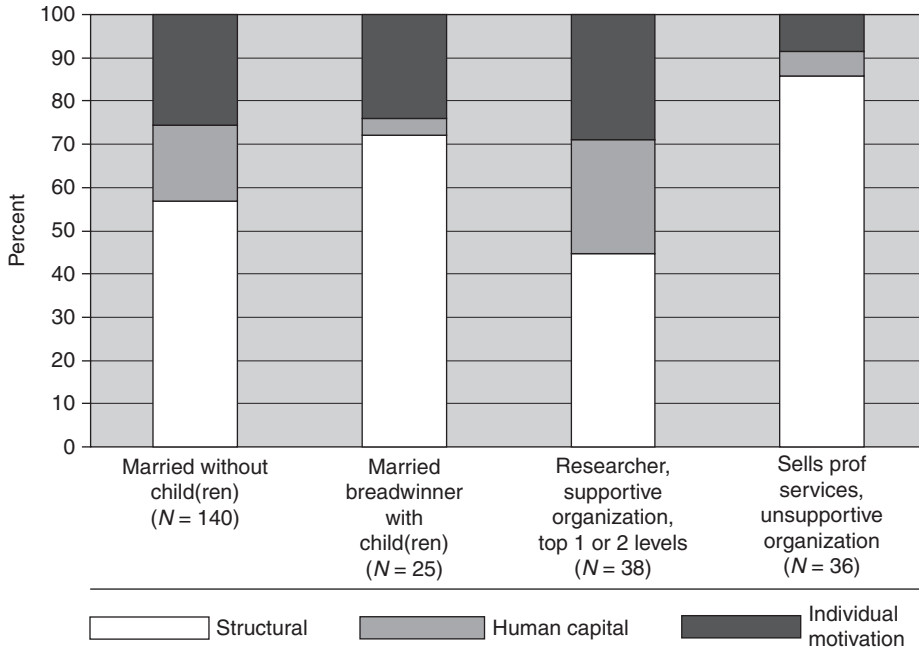


Figure 1 • Percent of Respondents in Illustrative Subgroups Who Gave Structural, Human Capital, or Individual Motivation Explanations for Inequality (Observed Frequencies)

These descriptive results suggest important relationships between career and family circumstances and perceptions of gender inequality. Our multivariate results, presented below, examine these relationships in more detail while controlling for other factors.

Multivariate Results

Table 3 presents the odds ratios from our multinomial logistic regression analysis that compare the likelihood of explaining gender inequality in advancement as human capital deficiencies or as a lack of individual motivation relative to structural explanations (the reference category). Model 1 presents the full model with career and family circumstances. An exponential coefficient less than one indicates that the independent variable increases the odds of explaining gender inequality with a structural explanation (reference category), and an exponential coefficients greater than one indicates that the independent variable increases the odds of choosing a particular meritocratic explanation. In other words, independent variables with coefficients less than one undermine meritocratic explanations of inequality, and independent variables with coefficients greater than one reinforce them.

First, career contexts are important. The more hours these women professionals work, the more likely they are to explain inequality as the result of structural barriers rather than individual motivation. This partially supports our first hypothesis: increased exposure to potentially discriminatory or unequal workplace dynamics will undermine the legitimacy of explanations based on individual motivation and increase the odds that respondents will adopt structural explanations. However, hours worked was not a significant predictor of structural factors over human capital explanations. Contrary to our hypothesis, those with longer tenures were not more likely to use meritocratic explanations than structural ones in

Table 3 • MLR Models Predicting Log Odds of Using Human Capital or Individual Motivation Explanations (Compared to Structural Explanations) of Gender Inequality at High Levels

	Model 1		Model 2		Model 3		Model 4	
	Human Capital vs. Structural	Individual Motivation	Human Capital vs. Structural	Individual Motivation	Human Capital vs. Structural	Individual Motivation	Human Capital vs. Structural	Individual Motivation vs. Structural
Career contexts								
Professional tenure	1.002	.987	1.003	.988	1.023	.931*	1.005	.990
Hours worked per week	.993	.957*	.994	.953**	.996	.955*	.995	.957*
Selling professional services	.367*	.926	.370*	.945	.371*	.890	.388*	1.001
African American, Asian American, or Latina	.862	.506	.847	.507	.887	.511	5.042	3.571
Unsupportive organization	.724†	.482***	.740	.600**	.728†	.473***	.732†	.477***
Top one or two levels	2.193†	1.030	2.152*	.977	2.238*	.990	2.113†	.982
Income (log)	.730	.680	.710	.688	.747	.719	.733	.674
Predicted income indicator	.554	1.017	.540	1.042	.573	1.082	.573	1.131
Business training and certification	3.825†	5.336*	3.783†	6.275*	3.875†	6.309*	4.859*	6.871**
Advanced academic degree	.660	1.329	.658	1.296	.663	1.346	.659	1.343
Family contexts								
Married	1.907	2.208*	1.880	2.091**	3.309	.528	2.491†	2.903**
Makes 75% or more of HH income	.766	.436*	1.038	4.213	.785	.398*	.744	.425*
Parent of young or school-aged child	.340*	.841	.338*	.788	.335*	.942	.358*	.864
Interaction terms								
Unsupportive org * makes 75%+ HH income			.913	.390*				
Professional tenure * married					.973	1.089*		
African American, Asian American, or Latina * married							.082†	.064*
Nagelkerke pseudo R-squared	.251		.271		.269		.272	

Notes: Tolerance values are not directly calculated for MLR, so we ran diagnostic OLS models to check for possible multicollinearity. For each model in Table 3, we ran one OLS regression predicting perceptions of inequality for the subsample of respondents who chose either structural or human capital explanations (representing the left-hand column of each model above), and another OLS model for the subsample of respondents who chose either structural or individual motivation explanations (representing the right-hand column of each model). VIF (tolerance) values for independent variables in Model 1 do not exceed 1.6. VIF values for noninteracted independent variables in Models 2 through 4 do not exceed 1.8 and VIF values for interacted variables and interaction terms in Models 2 through 4 were all below the standard tolerance cutoff of 10 (Robinson and Schumacker 2009).

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed tests)

Model 1 (Table 3). As we will show in the next section, professional tenure interacts with other contexts.

As predicted, respondents selling their professional services are more likely than those conducting or supervising science or technological research to utilize a structural explanation, and less likely to explain gender inequality in advancement as the result of human capital deficiencies. Those selling professional services are not, however, more likely than researchers to select individual motivation explanations over structural ones.

Surprisingly, we found no support for our hypothesis that Latina, Asian American, and African American respondents would be more likely than white respondents to explain gender inequality as the result of structural factors. Given the career success of our respondents overall, the racial and ethnic differences in perceptions of inequality found in the U.S. population at large may be less salient in our sample (Kane 1992, 2000). There are no significant differences in the selection of structural or meritocratic explanations by particular racial or ethnic categories of identity (analysis not shown). However, as we will show in the next section, race/ethnicity interacts with other contexts to affect perceptions of inequality.

Working in organizations respondents view as unsupportive activates structural explanations: respondents working in such environments are less likely to embrace individual commitment explanations and marginally less likely to use human capital explanations relative to structural explanations. Those that work in one of the top two positions in their organizational hierarchy are marginally more likely to choose human capital explanations over structural ones in the first model. Income is not a significant predictor of the dependent variable.¹⁶

As predicted, respondents with advanced business degrees are more likely than others to use meritocratic explanations of gender inequality. Business-trained women are significantly more likely to believe that a lack of motivation explains women's paucity at high levels than structural explanations and marginally more likely to use human capital explanations. No similar relationship exists for other post-graduate degrees. This effect of business education on perceptions of inequality (net of job type, professional tenure, etc.) is remarkably strong, given that only 6 percent of the sample has this background. Supporting our overall argument, we see that, even for this homogeneous population, perceptions of gender inequality are partly contingent on career-related contexts, including work hours, job level, broad type of professional work, business education, and perceived unsupportiveness of one's organization.

We also find that family contexts shape perceptions of inequality. Married respondents are significantly more likely to rely on individual motivation explanations than structural explanations. Yet, married women who make over 75 percent of their household's income are an exception to this pattern. These primary breadwinners are more likely than other married respondents and single respondents to use structural explanations and to reject explanations based on individual motivation. (This context is not a significant predictor of choosing structural factors over human capital explanations, however.) Finally, sample members with young or school-aged children tend to reject human capital explanations in favor of structural ones. In contrast to the literature on national populations, we find that women who have maintained professional careers after childbearing are more likely than women without young or school-aged children to adopt structural explanations. Perhaps these mothers, who continued to be motivated to stay in their demanding jobs, are acutely aware of stereotypes undermining others' perceptions of their competence and commitment. Having young or school-aged children is not a significant predictor of choosing structural explanations over individual motivation explanations.

Figure 2 illustrates the predicted probabilities for each ideological frame across a range of career and family conditions that are significant in Model 1. Using the equation from

16. The indicator for imputed values on the income variable was insignificant.

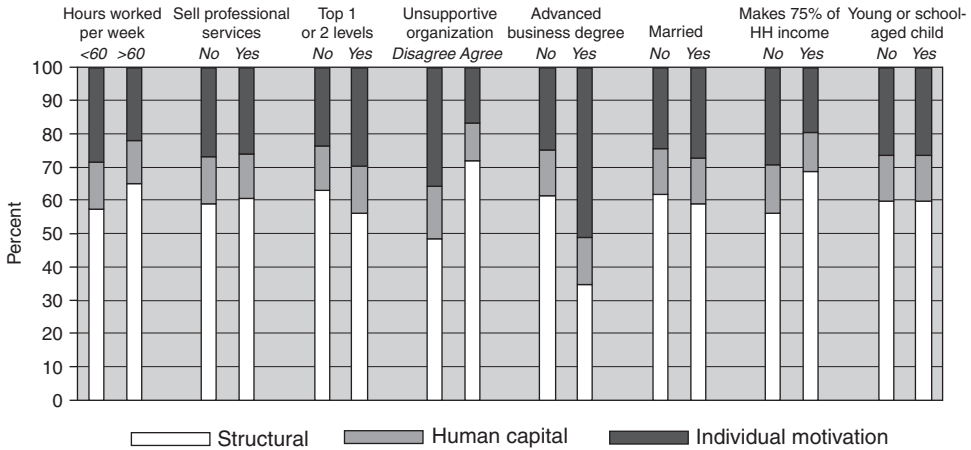


Figure 2 • Percent of Respondents in Each Subgroup Predicted to Give Structural, Human Capital, or Individual Motivation Explanations for Gender Inequality (Expected Probabilities)

Model 1, we predicted the likelihood of choosing each of the ideological frames for several scenarios: working more or less than 60 hours per week, whether respondents sell professional services, whether they occupy one of the top two positions in their organization, the percent of household income they contribute, whether they work in an unsupportive organization, whether they have an advanced business degree, and their marital, breadwinner, and motherhood status. The most striking probabilities are for women working in unsupportive organizations and those with advanced business training. The probability of choosing a meritocratic explanation is nearly double for women who work in supportive organizations compared to those in unsupportive organizations. All else held at the mean, those women who work in unsupportive organizations are the group most likely to recognize the structural basis of gender inequality. In contrast, nearly half of those with advanced business education are predicted to espouse individual motivation explanations (higher than any other subgroup), compared to only a quarter of those without advanced business degrees. Likewise, advanced business degree holders only have a 35 percent likelihood of recognizing structural forces of inequality.

Interactions

These results suggest that career and family contexts are important determinants of meritocratic and structural explanations of inequality. However, the extensive literature on work-life conflict suggests that family issues are often also career issues and that career and family circumstances may interact in ways that are consequential to perceptions of inequality. Although this literature does not suggest specific hypotheses about how these interactions might influence perceptions of inequality, we take advantage of our detailed data to test the interactions between the career and family contexts depicted in Model 1. Three of these career-family interaction terms are significant predictors of perceptions of inequality. Models 2, 3, and 4 in Table 3 present the MLR for each interaction model (Model 1 variables + an interaction term).

First, we find that the unsupportive organizations * primary breadwinner term is significant and less than one (see Model 2). Being a primary breadwinner in an unsupportive organization increases the likelihood of choosing structural explanations, over and above the effects of these

two circumstances individually. Each of these contexts separately increased the likelihood of seeing structural barriers; these contexts in combination amplify this outcome. Primary breadwinners who work in unsupportive organizations are even more likely to see structural barriers than other respondents who work in similarly unsupportive organizations. In contrast, primary breadwinners in supportive organizations (what the married breadwinner coefficient now represents) are more likely than married respondents who are not primary breadwinners and the unmarried to see inequality as the result of a deficit in individual motivation.

We find significant interactions between marriage status and two of the career contexts. We find that the marriage * professional tenure interaction term is significant and greater than one (Model 3). In this model, the professional tenure coefficient is significant and less than one, meaning that each year of professional tenure increases the likelihood that unmarried respondents will recognize structural explanations of inequality, relative to individual explanations. This is consistent with our first hypothesis. However, this professional tenure effect is attenuated for married women. The increased likelihood for choosing a structural explanation does not accrue with time as quickly for married women as for the unmarried. This does not seem to be an age or cohort effect; models (not shown) replacing professional tenure with age and cohort measures produced insignificant coefficients and interaction terms.

Finally, we find that the marriage * racial/ethnic minority interaction term is significant and less than one in predicting individual motivation explanations and marginally significant in predicting human capital explanations (Model 4). This means that the marriage effect, in which married respondents are more likely to explain inequality as the result of meritocratic processes (see Model 1), is primarily a “white marriage effect.” In contrast, for African American, Latina, and Asian American respondents, being married increases the likelihood of recognizing structural explanations. We do not know for certain what drives these results but offer some speculative interpretations. The original marriage effect hypothesis was based on literature assuming the emotional and economic ties with a husband were intimate connections to a privileged male worker likely to hold meritocratic views of inequality. It may be the case that African American, Latina, and Asian American respondents in our sample are more likely than white respondents to be married to men who are also minorities. (We do not have a measure of spouse’s race/ethnicity). Perhaps marriage to minority men, who are more likely than white men to encounter labor market discrimination and to adopt structural explanations (Davis and Greenstein 2009; Kane 1992, 2000), encourages their wives’ adoption of structural explanations.

We recommend further exploration of these interactions between marriage and career contexts. These are complex relationships that call for future study with longitudinal data. The marriage effect is likely contingent on a multitude of other life circumstances due to the variability in the structure and meaning of marriage among social actors.

Limitations

The results presented here are based on an illustrative sample: successful women professionals in science, technology, and allied fields whose social locations likely prime both structural and meritocratic frames for understanding inequality. Ours is a midsize sample from a single geographic cluster. The homogeneity of the sample allows us to tease out relationships between family and career circumstances and perceptions of inequality. However, there are limitations to the generalizability of these findings.

First, the subculture of the geographic location of ISIS likely differs from that of other geographic clusters. Second, our population is unusually successful professionally. Almost half hold one of the top two jobs in their organizations. Our respondents earn, on average, almost double the annual income of technical workers in the region. These women’s professional success in the male-dominated arena of science and related fields makes this population important. Yet, it also means we cannot generalize the specific findings to other occupational

groups or to men. We hope future research will examine the relationships we have documented here in other carefully selected homogenous groups to see how particular career and family contexts activate different cultural frames. We also urge similar research on nationally representative samples.

Like most quantitative research on perceptions of inequality (e.g., Baxter and Kane 1995; Davis and Robinson 1991; Kane 1992, 2000), our study is limited by the use of cross-sectional data. Statistically, we have shown associations between characteristics of social locations and ideologies individuals hold and, based on previous literature, inferred causal relationships between social locations and ideologies. However, longitudinal data are needed to confirm our interpretations.

Discussion and Conclusion

This article examines perceptions of gender inequality within an illustrative population: successful women professionals in science, technology, and allied fields. Multinomial logistic regressions compare three explanations of the primary factor holding women back from advancement. Using measures of career and family circumstances, we examine the associations between these circumstances and respondents' perceptions of gender inequality. We also examine the interactions between these life circumstances.

Consistent with our overall argument, women's advancement into senior positions does not guarantee that they understand inequality as the result of structural processes. Sixty percent of respondents see the glass ceilings that have been documented by social scientists: they blame gender inequality in advancement on structural factors such as stereotypes that devalue women's competence or social networks that limit women's access to valued resources. The remainder relies on one of two meritocratic explanations. Almost 14 percent of the sample explains that women are held back primarily due to their lack of human capital. Over 26 percent invoke another component of the meritocratic ideology: women's lack of individual motivation. To our knowledge, this distinction has not previously been empirically studied.

We find that those most likely to adopt a structural explanation are those who work long hours, sell professional services, work in unsupportive organizations, with young or school-aged children, and those who provide 75 percent or more of their household income. Women with these experiences risk confronting well-documented gender barriers on a day-to-day basis. Respondents who themselves work long hours tend to reject the excuse that women lack motivation; long-hour workers are also at greater risk for encountering structural barriers at work. Selling professional services rather than working in a research-related position heightens the potential for exclusion from important social networks and working in unsupportive organizations means encountering "chilly climates." Additionally, wage inequality and motherhood penalties are particularly salient for household breadwinners and mothers. Organizational unsupportiveness also appears to amplify the effects of other circumstances, such as being the primary breadwinner of one's household, on perceptions of inequality. Although we cannot determine whether our respondents have encountered discrimination firsthand, the statistical likelihood of experiences with discrimination and exclusion seem to undermine meritocratic explanations of inequality and activate structural frames.

In contrast to motivational explanations, human capital explanations are less politically risky statements of meritocracy, as they can easily sit alongside liberal feminist goals of equal opportunity and do not seem to "blame the victim." We find that these human capital explanations are most salient when respondents received the largest return on their own human capital. Holding one of the top two jobs in their organizations was a marginally significant predictor of choosing human capital explanations in Model 1, and fully significant in two of the three individual interaction term models. This pattern is supported by the fact that women

in the top two positions gave human capital explanations more than twice as often as women in lower positions (19 percent versus 9 percent). Net of education and professional tenure, women in the top two positions of their organizations have been most successful at translating their own human capital into career success. Consistent with system justification theory, the women who have been most successful within the system may be most invested in seeing the system as fair. Additionally, as leaders, they may be invested in the perceived fairness of their own organizations, a perception they may extend to job hierarchies in firms across the labor market.

More than a quarter of the total sample invoked the other strand of the meritocratic ideology: individual motivation explanations. This is the rationale closest to the ideology among many male corporate executives: anyone can get ahead if they have the motivation to do so (Blair-Loy 2001). Almost a quarter of this group (6.8 percent of the entire sample) states that “nothing” holds women as a group back from advancement and there is no systematic gender inequality. The remainder cites lack of desire to advance or commitment to family as the justification for the paucity of senior women. This justification seems to assume that lack of success is primarily a deeply personal choice and that many women lack the commitment to succeed even when opportunities to gain human capital are present.

We find that motivational explanations of inequality are associated with two particular contexts: having an advanced business degree and being married. We speculate that respondents with these institutional experiences are exposed to ideologies that buttress meritocratic frames for understanding inequality. First, those who go through professional education learn the values promoted within the educational environment and often take them on as their own beliefs in the process of developing a professional identity (Becker et al. 1961; Schlee 2006). Business schools promote a particularly potent ideology of atomized individualism (Khurana 2007), which seems to remain with attendees long after graduation.

Second, we find that married women are more likely than unmarried women to believe that gender inequality is due to a lack of women’s motivation. We find this effect even in this professional population, underlining the importance of women’s ideological alignment with male spouses and with the cultural institution of marriage. Interestingly, our interaction term analysis suggests that this relationship is strongest among white women in our sample and may be attenuated for women of color. Further, the institutional influences of marriage on perceptions of inequality are dependent on particular circumstances within those marriages. Married women who are primary breadwinners find structural explanations more compelling than motivation-based explanations, perhaps due to their distance from traditional marriages and concerns over supporting their family financially.

We infer from our findings several working conclusions about how social locations influence perceptions of inequality. Among high-level women in science and related fields, it appears that structural explanations are most often used when individuals experience day-to-day situations, specific to the particular type of inequality, which undermine the legitimacy of meritocratic explanations. In the absence of these specific experiences, meritocratic explanations seem to be a dominant explanation of inequality. In addition, human capital explanations seem most salient among those with the strongest returns on their own human capital. Third, motivational versions of the meritocratic frame flourish when reinforced by experiences within institutions (such as marriage and business school) whose ideologies buttress the legitimacy of meritocratic ideological frames for understanding inequality. Finally, the ideological frames used by respondents to explain inequality are dependent on biographical circumstances. For instance, the influence of respondents’ work experiences on their perceptions of gender inequality depends on detailed features of that work, such as job type, job level, and their views of the supportiveness of their employer. We have begun to explain these relationships; more research is needed.

The findings from this article have implications for social action. The way individuals and organizations interpret the causes of inequality helps determine the efforts they might support

to alleviate such inequality (Burnstein 1991). The 60 percent of professional women who see inequality as the result of structural barriers may be inclined to help promote women's advancement. Successful women professionals who are aware of glass ceilings may "lift as they climb," promoting the development of women leaders as they progress through their own careers.

However, when social actors use meritocratic explanations to account for the unusual achievement of individuals in a generally disadvantaged group, unequal outcomes are justified. When the token successful individuals themselves share in this interpretation, the legitimation of the status quo is even more powerful. The quarter of respondents who use motivational explanations of inequality may be unlikely to advocate policy activities to promote women's advancement in the workplace. If women disregard structural barriers affecting other women, they may be unlikely to support collective action to alleviate such barriers (Ellemers 2001; Wright 2001) and unintentionally allow processes of exclusion and discrimination to continue. Women decision makers like those studied here can have a large influence on other women's advancement (Blum, Fields, and Goodman 1994; Cohen and Huffman 2007; Gorman 2005). Their adoption of this belief in the individualization of leveled aspirations may further obscure gendered structural barriers. By accepting the legitimacy of the system, they may contribute to the reproduction of the very glass ceilings they have cracked.

The dependence of perceptions of inequality on subtle elements of one's biography suggests a larger challenge: the lack of sociological imagination among perceivers of inequality. In order to discuss and to implement practical changes that undermine inequality, decision makers must "grasp the interplay of man and society, of biography and history, of self and world" (Mills 1959:2). We encourage scholars to continue research on how social locations activate structural explanations of inequality—explanations that can either buttress the unequal status quo, or undermine its legitimacy and encourage support of collective action to mitigate such inequality.

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