Breaking the glass ceiling: The effects of sex ratios and work–life programs on female leadership at the top

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ABSTRACT
Data, at the level of the corporation, revealed that the percentage of lower-level managerial positions held by women in the 1980s and early 1990s was positively associated with the number of work–life human resource practices provided in 1994 and with the percentage of senior management positions held by women in 1999. In turn, the number of work–life human resource practices provided in 1994 was positively associated with the percentage of senior management positions held by women in 1999 and partially mediated the effect of lower-level female representation on senior level female representation. These results support the blending of a social contact theory perspective and a strategic human resource management perspective when explaining the glass-ceiling phenomenon, and have important implications for managing human resources and individual careers.

KEYWORDS
female leadership • glass ceiling • sex ratios • work–life programs

Over the last 30 years the proportion of women in lower- and mid-level management positions has increased dramatically, while the proportion of women reaching top management positions has remained relatively small (Powell, 1999). Evidence suggests that women in management are able to advance just so far in corporate hierarchies before encountering a 'glass
ceiling' that prevents or reduces the likelihood of reaching top management or executive status (Powell, 1999; US Department of Labor, 1991). Hymanowitz and Schellhardt (1986) first used the glass-ceiling metaphor to describe an impediment in organizational hierarchies, just below the top management level, that prevents or constrains women from rising into the ranks of senior management. In 2000, among Fortune 500 companies, women represented only 12.5 percent of all corporate officers and less than 5 percent of top earning officers (Catalyst, 2000).

At the level of firm performance, the glass-ceiling phenomenon presents problems for at least three reasons - and thus deserves further research attention. First, if lower-level female managers perceive that the opportunity to reach senior management is limited because of gender, this may dampen their desire and motivation to compete at this level. A belief that hard work and perseverance will not pay off, among a large segment of the workforce, would be likely to have negative productivity effects at all levels of the organization (Vroom, 1964). A second reason for concern relates to a lack of diversity among members of top management teams - too much homogeneity may lead to poor and costly decisions (Elsass & Graves, 1997; Janis, 1982). Finally, under tight labor market conditions, gender-based barriers can further reduce the supply of needed talent and resources. Resource dependence theory suggests that it is to the firm's advantage to eliminate barriers to needed resources, and in some cases to focus on moving women into key management positions because they may better match the demographic characteristics of significant customer segments (Jacobs, 1992; Pfeffer & Salancik, 1978).

Scholars have offered a variety of theories to account for the phenomenon of the glass ceiling. However, the mechanisms behind this effect are still largely unknown. This is because competing theories can lead to conflicting predictions and little existing empirical work addresses the key dependent variable of interest - the percentage of top management positions held by women. The goal of the current study was to provide empirical evidence on the determinants of female representation at the top of organizational hierarchies - evidence that can be used to evaluate the relevance of two perspectives on gender-based opportunity in the workplace. On one side are the social contact theories based in the tradition of Blau (1977) and Kanter (1977). On the other is a perspective that comes out of the tradition of strategic human resource management (SHRM). Using a unique longitudinal data set at the level of the organization, hypotheses based on a blending of these two perspectives were tested. The current study was designed to determine if the proportion of lower-level managerial positions held by women and the presence of work-life human resource practices (HRPs) are positively
associated with the proportion of top-level managerial positions held by women. Sex ratios from 1982 and 1992 and a 1994 measure of work-life HRPs (i.e. initiatives to help employees manage the interface between work and other important life and family activities) were used to account for top management female representation in large US corporations in 1999.

Conceptual framework

Before reviewing the theoretical and empirical literature that directly relates to the objective of this study, a comment about other perspectives that relate to the glass ceiling is in order. These perspectives are often referred to as ‘supply-side’ theories and address ability and motivation factors that are thought to distinguish between male and female managers. Supply-side explanations for the glass ceiling all argue that, on average, there are important attribute differences between men and women that tend to prevent women from progressing into the highest levels of management. These explanations can take many forms. Some are based on human capital theory (Becker, 1964; Blau & Ferber, 1992), and reason that women tend to accumulate less human capital (investments in education and careers) than men and are therefore less likely to reach top management. Others suggest that sex-role socialization beginning early in life leads to the development of gender-specific managerial styles that advantage men when they pursue executive careers (Henning & Jardim, 1977). A third perspective argues that women often choose older male partners who possess more workforce experience than they do. Because the male partner then probably commands a higher initial salary, these couples promote the male partner’s career (Markham, 1987). While supply-side theories have played a role in understanding male-female differences in career attainment, reviews of the empirical evidence do not show that they provide a complete explanation for why so few women reach senior management (Northcraft & Gutek, 1993; Powell, 1999). It is for this reason that the focus of the current study will be to build on what are referred to as structural or ‘demand-side’ explanations for the glass ceiling.

Social contact theory

Blau (1977) and Kanter (1977) have proposed theories suggesting that increases in the proportionate size of a minority group should promote more contact with members of the majority and reduce the stress and performance pressures experienced by minority group members (Tolbert et al., 1999).
Among other things, Kanter’s theory develops the idea that in highly skewed management cadres, minority-group members are at a particular disadvantage because of a number of social behaviors exhibited by majority members. For example, because minorities are very salient to members of the majority, majority-group members may exaggerate the differences between themselves and the minority and view minorities in terms of stereotypes. In response, minority members are posited to experience increased social isolation, performance pressure, and pressure to conform to role expectations. As groups begin to move toward less extreme distributions, these effects are predicted to become less exaggerated. Kanter also argues that as sex ratios become more balanced, minority members can become ‘allies, can form coalitions, and can affect the culture of the group’ (1977: 966). Thus, in more balanced groups, members of the minority have the potential to influence management practices in ways that enhance their opportunity for success.

While there have been studies that support the view that as minority representation increases, majority attitudes and behaviors toward minorities also improve (see Konrad et al., 1992), very little empirical work exists at the level of the entire organization or corporation (Burke & McKeen, 1996). It is at this level that Kanter’s (1977) ideas about coalition formation and cultural change have particular relevance and it is work at this level that has the greatest possibility of contributing to our understanding of the glass ceiling. If, as female representation in lower-level managerial positions increases, female managers (1) become less salient to the male majority and therefore experience less isolation and performance pressure, (2) can form coalitions and support networks, and (3) are seen as critical organizational resources, this should influence in a positive way female career advancement. The results from one recent study support this line of reasoning. Goodman et al. (in press) provide evidence that there are positive relationships between the proportion of women in lower-level management positions, the emphasis on certain employee development and promotion practices, and the proportion of women occupying top management positions. While their study offers some of the only evidence available that female sex ratios at the top are positively correlated with female sex ratios at lower organizational levels, it is limited (from a glass-ceiling perspective) due to its sampling strategy. Their study was based on data from 297 medium to large work establishments in the state of Georgia. These single location worksites were typically part of larger multi-site companies and the researchers were working at the establishment rather than the corporate level. Thus, many of the women classified as top managers were working well below the ranks of corporate officers (i.e. CEOs, COOs, operating company presidents, executive vice presidents, CFOs, and corporate vice presidents in charge of key corporate functional...
areas like research and development) typically included in definitions of
positions above the glass ceiling.

In summary, the application of the social contacts perspective to the
glass-ceiling phenomenon leads to the prediction that, over time, opportunity
for women will improve as more women choose to enter previously male-
dominated managerial hierarchies. That is, as general organizational values
become more favorable regarding the appropriateness of women in mana-
gerial positions, more women will pursue entry-level managerial career paths.
As female/male ratios in lower-level managerial positions increase, women
should experience less isolation and social pressure, begin to form coalitions
and support networks, and become more acceptable as candidates for senior
positions. This suggests that, as female representation in lower-level mana-
gerial positions increases, it is just a matter of time before female representa-
tion in senior-level managerial positions also will increase.

SHRM perspective

The SHRM perspective does not directly conflict with the social contacts
perspective, but it does suggest that if companies take a more active and
aggressive stance on providing career opportunities for women, they will
more rapidly be able to take advantage of a qualified pool of female senior
management talent. A central SHRM proposition is that the 'human resource
(HR) systems of successful firms often display practices reinforcing consistent
themes or messages' (Baron & Kreps, 1999: 38). The SHRM perspective
emphasizes that a workforce strategy should fit an organization's business
goals, culture, and environmental circumstances. Thus it is consistent with
both resource dependence theory and institutional theory. Resource depen-
dence theory would argue that as the percentage of women in the labor force
grows, organizations will need to adjust HR systems accordingly because of
their increased dependence on female talent (Ingram & Simons, 1995). Insti-
tutional theory argues that, to be successful, organizations must actively
adjust management practices in order to conform to environmental pressures
(DiMaggio & Powell, 1983). In this case, these pressures can arise from
changing cultural expectations and associated changes in the regulatory
environment (e.g. equal employment opportunity laws).

Finally, this perspective argues that HR practices should be interrelated
and internally consistent (Dreher & Dougherty, 2002). That is, HR systems
need to be created so that bundles of interrelated practices can exert
maximum influence on key organizational objectives. This perspective
suggests that if an organization wants to gain a competitive advantage by
creating a larger pool of qualified female talent, there are interrelated steps
that can be proactively taken. For instance, creating a larger pool of qualified female talent may require very proactive and integrated recruiting and retention practices along with multiple work-life human resource practices. This suggests that human resource executives play an important role in helping to shape organizational adaptation to change (Milliken et al., 1990, 1998).

**Hypotheses**

Figure 1 shows a time-lagged approach to studying the determinants of the glass ceiling and represents the research framework used in the current study. To the author’s knowledge, this is the first study of these and related phenomena to use a longitudinal design with time lags of this duration. This represents a critical issue for this emerging research literature. Without proper time lags, data gathered to examine the glass-ceiling phenomenon are very difficult to interpret from a causal perspective.

As noted earlier, social contact theory posits that as the percentage of women in lower-level managerial positions increases, this will set in motion organizational changes that will, after a sufficiently long time horizon, increase the percentage of women in upper management positions. Specifically, Figure 1 shows that the percentage of female managers in the 1980s and early 1990s will have both direct and indirect effects on the percentage of senior management positions held by women in 1999. A variety of arguments support this line of reasoning.

First, research evidence continues to show that women in dual-career families carry a greater amount of domestic and childcare responsibility than

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**Figure 1** Accounting for female representation at the top: A research framework
their male counterparts (Lewis, 1997; Lewis & Cooper, 1988). This, coupled with evidence that more and more hours of work are now required to be successful in a career, can lead to particularly high levels of stress among women (Hochschild, 1997). This, in turn, can disadvantage early- and mid-career women when they are competing to be recognized as individuals with senior management potential. Both resource dependence theory and portions of Kanter’s social contact theory predict that as the proportion of women in lower-level managerial positions increases, the likelihood that organizations will introduce work–life human resource practices also increases. Resource dependence theory suggests that as the ratio of women to men in managerial positions increases, firms will take steps to retain this important resource. One way organizations believe they can better attract and retain female talent is to introduce an assortment of HR practices designed to address work–family conflict. Kanter’s views about coalition formation among women and the associated cultural changes that follow when sex ratios become less exaggerated would lead to similar predictions. As women become a more and more powerful group within a firm, they should be able to encourage the introduction of HR practices that will be useful in addressing work–life issues. Such things as flexible work schedules, job sharing, telecommuting and being able to work at home, adoption and elder care benefits, and generous childcare benefits are likely to be particularly useful to women – given the greater demands placed on them at home. In addition to providing relief from a variety of nonwork concerns, an abundance of work–life HRPs will probably signal to prospective female employees that a company sees the pool of female managerial talent as valuable and that it is taking other steps to fully utilize this resource - further contributing to a firm’s ability to attract and retain female managers (Pfeffer, 1981). Finally, in their study of the impact of work–life programs on firm productivity, Konrad and Mangel (2000) observed a positive association between work–life programs and the percentage of firms’ workers who were female.

Also, in addition to its effect on work–life HRPs, the percentage of females in lower-level managerial positions is shown to have a direct effect on female representation at the top of organizational hierarchies. This is because a movement toward more balanced sex ratios in lower-level managerial positions affects a variety of processes (in addition to the HR practices of the type discussed thus far) that tend to favor the career prospects of female managers. For instance, as sex ratios become more balanced, female managers should experience less performance pressure and more opportunity to join the informal networks of the dominant group. So, in addition to the coalition building that can promote sought after workplace benefits, more balanced sex ratios among lower-level managers may enhance female
performance levels by reducing stress and providing needed organizational information. Finally, Figure 1 shows that organizational sales and a set of industry variables will serve as control variables. Their relevance and other issues of control will be discussed in the Methods section.

Following on from these arguments, the first two hypotheses focus on the effects of lower-level managerial sex ratios:

**Hypothesis 1:** After controlling for industry and annual sales, the percentage of female managers in the 1980s and early 1990s will be positively correlated with the presence of work-life HRPs in 1994.

**Hypothesis 2:** After controlling for industry, annual sales, and work-life HRPs, female representation in the 1982–92 period will be positively correlated with the percentage of senior management positions held by women in 1999.

The final two hypotheses address the role of work-life HRPs in accounting for the percentage of senior management positions held by women. Hypothesis 3 is supported by the findings reported by Goodman et al. (in press) and the proposition that if women carry a greater amount of domestic and childcare responsibility than their male counterparts (Lewis, 1997; Lewis & Cooper, 1988), organizational practices that help reduce tensions between job and family demands should be particularly useful to the career prospects of female managers. It would seem that these types of practices would have special meaning for lower- and mid-level managers - when the resources for hiring domestic help would still be limited for many people. Therefore, women employed by companies that provide abundant work-life HRPs should be better able to compete with male managers during the critical career phases when decisions are being made about who does and who does not have senior management potential. Thus hypothesis 3 is as follows:

**Hypothesis 3:** After controlling for industry, annual sales, and female representation in the 1982–92 period, work-life HRPs will be positively correlated with the percentage of senior management positions held by women in 1999.

Finally, hypothesis 4 makes explicit the mediating role of work-life HRPs depicted in Figure 1. Because female representation in lower-level managerial positions is shown to have both main and indirect effects on female representation in senior management positions, work-life HRPs in 1994 should partially mediate the relationship between the percentage of female managers in lower-level positions and the percentage of female senior managers in 1999. Specifically:

**Hypothesis 4:** The size of the positive relationship between the percentage of lower-level managerial positions held by women in the 1982–92
period and the percentage of senior management positions held by women in 1999 will be reduced when work–life HRPs are controlled— that is, work–life HRPs will partially mediate the effect of lower-level female representation on senior-level female representation.

**Methods**

Sample and research design

The unit of analysis for this study is the corporation. One of the problems associated with empirical studies at this level of aggregation is that it is difficult to take measurements at appropriate time intervals. That is, the posited determinants of organizational outcomes often need to be in place for many years before one would expect to see a firm-level response. Changes in such things as work schedules and childcare options would need to be in place for many years before we would be likely to observe associated changes in the proportion of senior management positions held by women. Unfortunately, the time issue is rarely addressed in the strategic human resource management literature (Napier, 1996). A common practice is to gather cross-sectional information using surveys or phone interviews. Organizational informants (often human resource managers) are asked to describe organizational characteristics at the time of data collection and this information is then used to account for various dependent variables that are also measured at about the same time (e.g. Arthur, 1994). One of strengths of the current study is that it used data that captured rather long time horizons.

The sample for this study comprised 72 large US corporations. To be included in the study, complete data from three sources needed to be available. The companies included were all part of the Fortune 500 and most would currently meet the definition of a Fortune 200 company. In 1992 these companies, based on market capitalization, were among the 200 largest federal contractors to the US government. In 1999, the median number of employees for these companies was 39,000 and the median annual sales revenue for the group was $13.55 billion. As will be noted in the Results section, these companies also are representative of most major industrial sectors.

Measures

**Female sex ratios for 1982 and 1992**

In 1994 staff researchers at the Wall Street Journal constructed a unique data set (Wall Street Journal, 1994). To examine how women were faring in
management, the Journal studied employment records of companies filing reports with the US Equal Employment Opportunity Commission (EEOC) from 1982 to 1992. These reports, referred to as EEO-1 reports, described the internal demographic profiles of each company by race, gender, organizational level, and job type. While the Journal was able to obtain computer tapes of these reports, data in this file were not identified by company name. The Journal then used the Freedom of Information Act to obtain consolidated employment filings for approximately 400 federal contractors from the Department of Labor. Using these two sources of information, the Journal reported that it was able to merge these files such that the 200 companies with the largest market capitalization were now represented in a file that included each company’s name along with information about the percentage of all managers who were female for the years 1982 and/or 1992. Among these 200 companies, only 158 included 1982 data. This was because the 42 companies with missing data had either not been formed or were not classified as federal contractors in 1982 (e.g. Cisco Systems). It is from this source that two variables were accessed for the current study – the percentage of all managers in 1982 and 1992 who were female. These variables were based on the number of female employees meeting the EEOC’s definition of a manager. These two percentages were averaged to form the first analysis variable – female managers 1982/92. Thus, to be included in the current study, there could be no missing data on either the 1982 or the 1992 female percentages.

**Work-life human resource practices 1994**

An index was constructed of work-life human resource practices (HRPs) from a data set provided by Hewitt Associates, a large international consulting firm known for its detailed benefits surveys. This firm provided the 1994 entries in what is termed its ‘SpecBook (US)’ – a comprehensive reference source containing company-by-company plan specifications for benefits programs provided to salaried employees for many major US employers. Benchmarking reports compiled from this source are what Hewitt sells to its corporate clients. The data provided were identified by company name. It was the merging of the Hewitt Associates and Wall Street Journal data sets that resulted in the current 72-company analysis sample (i.e. only 72 companies were represented in both). The entries in the Hewitt data base were reviewed and six benefit options that displayed some degree of variability across companies and that were designed to address work-life issues were identified. Five of these options were described in the Hewitt file such that for each firm there was an indication of whether or not the option was available (as a corporate-wide benefit for managers and professionals) in
1994. These five addressed the availability of flextime, job sharing, telecommuting/work-at-home scheduling, elder care, and adoption benefits. For these five options, for each firm, either a 0 (signifying that the option was not provided) or a 1 (signifying that the option was available) was recorded. The sixth addressed dependent childcare benefits and was more complex. Virtually all the 72 firms reported that they provided at least a $5000 per year dependent care spending account to all managerial and professional employees. However, some companies provided childcare benefits that exceeded this standard provision. For example, firms that went beyond the $5000 per year spending account provided benefits such as on-site sick or emergency childcare, before- and after-school care, school holiday care programs, on-site childcare facilities, and spending accounts that exceeded $5000 per year. When a company reported providing at least two additional options, a 1 was recorded. For all the other companies a 0 was recorded. Finally, the index of work–life HRPs 1994 was calculated by counting the number of 1s recorded for each company. Thus, this index could range from 0 to 6.

**Female senior managers 1999**

For each company in the sample, the percentage of corporate officer positions held by women was calculated. Annual reports for 1999 served as the source data. In annual reports, companies typically identify the individuals they have classified as corporate officers by name and position. While there is variation across companies regarding how the corporate or top officer class is defined, there is some degree of commonality. Most companies in this sample listed 25–35 individuals as corporate or top officers. Position titles typically listed included those of chairman, vice chairman, chief executive officer, president, chief operating officer, chief financial officer, all operating company presidents, senior and executive vice presidents, a variety of titles like chief technology officer, global external relations officer, and vice presidents of key corporate functional areas like human resources, environmental affairs, operations and quality assurance, research and development, and investor relations and public affairs. Some companies also listed regional vice presidents (e.g. Vice President – Pacific, Asia, and Africa Operations). This information was gathered from Hoover's, Inc. Online (HOL) data summary service. Hoover's is a business-information products and services company that provides detailed company profile and financial information. For all covered companies, Hoover's provides a list (compiled from annual reports) of what are labeled ‘top officers’. If, after reviewing names on Hoover's top-officer list, it was not possible to determine a person's gender, a company representative was contacted for clarification. For each company, the number
of female officers was divided by the total number of officers and then multiplied by 100 to calculate female senior managers 1999. The mean for this variable was 9.38, but the variable was not distributed normally. Eleven percent of the companies had no female officers while three of the companies had over 20 percent of their top positions filled by women. Because of the bimodal shape and number of outliers associated with this distribution, these data were recoded by assigning a value of 1 to companies with 0–4 percent of their top management positions held by women, a 2 for companies with 5–7 percent representation, a 3 for 8–10 percent, a 4 for 11–15 percent, and a 5 for companies with more that 15 percent of top management positions held by women. It was this recoded variable that was used in subsequent analyses.

Controls

Many variables that are commonly controlled statistically in research of this type were addressed via the sampling characteristics of the study. For example, past studies have statistically controlled for such things as firm age, profit versus not-for-profit status, and degree of foreign competition. All the companies in the current sample were long-term enterprises, were publicly traded/for-profit corporations, and were heavily engaged in international product and service markets.

Milliken et al. (1998) found that the availability of family-responsive benefits was related to firm size. Also, larger organizations may be particularly sensitive to stakeholder expectations about corporate social responsibility (Goodstein, 1994). Therefore, two organizational size variables were considered for statistical control: sales (a measure of annual sales for the trailing 12-month period preceding May 2000) and number of employees. These two variables were highly intercorrelated (r = .75), thus only the annual sales value was used as a control variable. The logarithm of this value was calculated for use in this research.

The other control variables focused on industrial sector, and were introduced for two reasons. First, the processes that have been shown to lead to occupational and functional sex segregation in the workforce are likely to lead to industry-based sex segregation. For example, there may be a tendency for women to prefer or to be channeled into positions in industries like commercial banking and insurance more than positions in industries like basic materials manufacturing (Leicht & Marx, 1997; Stroh & Reilly, 1999). Also, the industrial sector is likely to have a direct effect on the presence of work–life HRPs. This is because certain industries have a tradition of being leaders in providing benefit options of all types (US Chamber of Commerce,
1993). Therefore, a dummy-coding sequence was constructed based on the sector into which each company was classified. Companies in energy and basic materials, technology, services (primarily financial services), and healthcare, were contrasted with conglomerates and companies in consumer and capital goods manufacturing.

Analyses

The study's hypotheses were addressed by performing a series of three ordinary least square multiple regression analyses. In each case the dependent variable was regressed on the controls and appropriate analysis variables using a simultaneous entry rule. Hypothesis 1 was tested by examining regression weights in a model using work–life HRPs 1994 as the dependent variable. Hypotheses 2 and 3 were tested by examining associated regression weights in models using female senior managers 1999 as the dependent variable. Hypothesis 4 (the mediation hypothesis) was tested by examining a configuration of regression weights across all three regression models.

Results

In addition to providing basic descriptive information about the analysis sample, Table 1 presents zero-order correlations between the study's variables. Among the independent variables used in subsequent analyses, all correlations were below .70, and only one correlation exceeded .50. In addition, variance inflation factor (VIF) values were calculated for each independent variable (separately for each regression model) and revealed no serious problems of multicollinearity.

Table 2 presents the results of three regression analyses. Hypothesis 1 was tested by regressing work–life HRPs 1994 on the control variables and female managers 1982/92. Before interpreting this equation, the data were examined for any possible violations of the major assumptions of ordinary least squares (OLS) regression. To test the assumptions of linearity and homogeneity of variance, a plot of residuals against predicted values and partial regression plots of the dependent variable on each independent variable were examined. These assumptions appeared to be met. Finally, an examination of a frequency distribution of residuals revealed no violation of the normality assumption. Hypothesis 1 was supported – after controlling for industry and annual sales, the percentage of female managers in the 1980s and early 1990s was positively associated with the presence of work–life HRPs in 1994 ($\beta = .31$, $t = 1.85$, $p < .05$). It also is interesting to note that
Table 1  Means, standard deviations, and correlations

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<td>2. Energy/basic materials</td>
<td>.24</td>
<td>.43</td>
<td>.03</td>
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<td></td>
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<td></td>
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<td>4. Services</td>
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<td>.33</td>
<td>-.08</td>
<td>-.21</td>
<td>-.12</td>
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<td>-.21</td>
<td>-.12</td>
<td>-.14</td>
<td></td>
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<td>6. Female managers (mean %) 1982/92</td>
<td>16.17</td>
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<td>-.43**</td>
<td>.08</td>
<td>.67**</td>
<td>.06</td>
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<td>.04</td>
<td>.06</td>
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<td>-.35**</td>
<td>.28*</td>
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<td>8. Female senior managers (%) 1999</td>
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<td>-.04</td>
<td>.14</td>
<td>.17</td>
<td>.42**</td>
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<td>9. Female senior managersf 1999</td>
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<td>.11</td>
<td>.13</td>
<td>.40**</td>
<td>.88**</td>
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* n = 72
b Logarithm
c Recoded: 1 = 0–4%, 2 = 5–7%, 3 = 8–10%, 4 = 11–15%, 5 = greater than 15%
* p < .05, ** p < .01
companies in the healthcare industry tended to provide the most work–life HRPs in 1994 (β = .24, t = 2.04, p = .05), while companies in the services sector provided the fewest HRPs (β = -.47, t = -2.99, p < .01). Hypotheses 2 and 3 were tested with what is labeled the ‘full model’. Following the procedures used when considering hypothesis 1, the data were examined for possible violations of the major assumptions of OLS regression. Again, none were noted. The standardized regression weights associated with this model provided support for both hypotheses. After controlling for industry, annual sales, and work–life HRPs, female representation in the 1982–92 period was positively associated with the percentage of senior management positions held by women in 1999 (β = .34, t = 1.99, p < .05). Likewise, after controlling for industry, annual sales, and female representation in the 1982–92 period, the number of work–life HRPs provided in 1994 was positively associated with the percentage of senior management positions held by women in 1999 (β = .36, t = 2.93, p < .01).

Finally, hypothesis 4 (the mediation hypothesis) was tested by comparing the regression weights for female managers 1982/92 when the work–life HRPs 1994 variable was and was not included in the equations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Work-life HRPs 1994</th>
<th>Female senior managers 1999 (mediation analysis)</th>
<th>Female senior managers 1999 (full model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>.06</td>
<td>.19</td>
<td>.17</td>
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<tr>
<td>Energy/basic materials</td>
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<td>.26*</td>
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<tr>
<td>Technology</td>
<td>.11</td>
<td>.08</td>
<td>.04</td>
</tr>
<tr>
<td>Services</td>
<td>-.47**</td>
<td>-.24</td>
<td>-.07</td>
</tr>
<tr>
<td>Healthcare</td>
<td>.24*</td>
<td>.13</td>
<td>.04</td>
</tr>
<tr>
<td>Female managers (mean %) 1982/92</td>
<td>.31*</td>
<td>.45**</td>
<td>.34*</td>
</tr>
<tr>
<td>Work–life HRPs 1994</td>
<td>-</td>
<td>-</td>
<td>.36**</td>
</tr>
<tr>
<td>R</td>
<td>.49</td>
<td>.40</td>
<td>.51</td>
</tr>
<tr>
<td>F</td>
<td>3.40**</td>
<td>2.03+</td>
<td>3.16**</td>
</tr>
</tbody>
</table>

Regression weights are standardized coefficients.

*a n = 72
 b Logarithm
 c 1 = 0–4%, 2 = 5–7%, 3 = 8–10 %, 4 = 11–15%, 5 = greater than 15%
 + p < .10, * p < .05, ** p < .01
accounting for senior level female representation in 1999. In both the ‘full’
model and the ‘mediation analysis’ model, the regression weights were
statistically significant (.34 and .45 respectively), but of different magnitudes.
The regression weight was larger, in a meaningful sense, when the hypothe-
sized mediator was not in the equation. Also, female managers 1982/92
accounted for variation in work–life HRPs 1994. Thus this configuration of
regression weights meets Baron and Kenny’s (1986: 1176) definition of
partial mediation, and hypothesis 4 was supported.

Discussion

Over the last 30 years the proportion of positions in low- to mid-level
management held by women has increased substantially. What effect will this
changing female representation in lower-level positions have on female
representation in top management? According to social contact theory (Blau,
1977; Kanter, 1977), as the relative size of a minority group increases,
minority-group members should begin to experience a reduction in stress and
other performance pressures and their opportunity to demonstrate
competence and managerial potential should increase. Also, as managerial
sex ratios become more balanced, female managers should be able to form
coalitions and support networks that enhance the chances of female career
advancement. The results from the current study and the previous study by
Goodman et al. (in press) provide indirect support for this perspective – at
least when applied to understanding the glass-ceiling phenomenon.

In addition to the finding that the percentage of female managers in
lower-level positions was positively related to the percentage of females in
top management in 1999, this 1982/92 percentage was positively related to
the number of work–life HRPs a firm provided its employees in 1994. Firms
with the most generous benefits – comprising such things as flextime, job
sharing, telecommuting, elder care, adoption benefits, and dependent child-
care options – also tended to be the firms with the highest percentages
of senior management positions held by women. Again, based on the processes
suggested by social contact theory (Blau, 1977; Kanter, 1977), as the percent-
age of women in lower- and middle-level management positions increases
beyond some critical value, female managers should be better able to form
coalitions and exert political influence. This should work to improve the like-
lihood that work–life HRPs will be introduced. Once provided, these prac-
tices should have a particularly positive effect on the career prospects of
female managers. There was, however, one anomaly to this line of reasoning.
Compared with other companies, firms in the service sector (in this sample
these were typically financial services firms) had high levels of female managerial representation in 1982 and 1992, but did not tend to provide abundant work–life HRPs in 1994.

There are a number of managerial implications associated with the overall results reported in this study. Most importantly, they suggest that there are actions organizational leaders can take to improve the likelihood that women will be able to successfully compete for senior management positions. It would seem that actions taken to attract and retain female managerial talent in low- to mid-level positions are associated with the opportunity for women to reach the top of organizational hierarchies. Thus, the relative number of women in the ‘pipeline’ does seem to make a difference. The finding regarding work–life HRPs also suggests that focused discretionary managerial action (based on the tenets of the strategic HR perspective), even when holding the number of low- to mid-level female managers constant, can influence female career prospects. While companies that provide bundles of work–life HRPs undoubtedly provide relief from a variety of nonwork concerns, in all likelihood these same companies also hold values and philosophies that translate into other management practices that combine to take advantage of all segments of the talent pool. An abundance of work–life HRPs probably signals that a firm sees the pool of female managerial talent as a valuable resource and that it is taking other steps to fully utilize this resource. Thus the presence of abundant work–life HRPs probably signals a broader corporate philosophy and set of management practices that encourage talented women to join a company and to compete for the top leadership positions.

Finally, even though this research did not directly address this point, the availability of abundant work–life HRPs is not just a women’s issue. Men also can take advantage of on-site daycare, elder care, and related benefits. The real issue is the removal of barriers that limit the career attainment and contribution of otherwise talented individuals.

Limitations and future research

Before discussing the current study’s limitations and some needed future research, it should be noted that it possesses some important design strengths. For example, the data collected represent conditions in place in 1982, 1992, 1994, and 1999. Because these time lags should have been sufficiently long for hypothesized effects to manifest themselves, causal inferences are more justified. While some form of reverse causation cannot be completely ruled out (e.g. the number of women holding senior management positions in the 1980s or early 1990s may have influenced choices about providing work–life
HRPs in the mid-1990s), the longitudinal nature of these data represents an improvement over much of the previous work devoted to this and related topics. Also, because data were gathered from multiple sources, at different points in time, and were not perceptual in nature, common method variance concerns have largely been eliminated.

There are, however, at least three limitations associated with this study. One is sample size. There are three potential classes of problems associated with small-sample research. The first is that these studies can lack needed levels of statistical power. The failure to reject a null hypothesis can be attributable to either weak or inappropriate theory or type I error. In this study all research hypotheses were supported, thus the problems surrounding the interpretation of results that have not reached a level of statistical significance do not exist. A second problem associated with small-sample research is one of generalization. Often one is not able to generalize findings to a population of interest because the sample is small and not representative of the much larger population. If the desire is to generalize only to very large corporations this problem does not pose a serious limitation in this case. While only 72 companies were included in this study, a good case can be made that these firms are representative of the Fortune 200. Based on market capitalization, these firms were among the largest in the US in 1992. The limitation is that these results may not generalize to smaller companies or business units. Future research should attempt to replicate these results, using similar measures and research designs, among small and mid-size companies. The third problem with small-sample research is the potential for outliers to exercise a powerful influence on the results. This issue was addressed by recoding or using log transformations when data distributions were highly skewed.

Another limitation is that it is difficult to rule out other explanations for the results. For example, work-life benefits may have covaried with other HR practices. Ideally, it would be useful to know if firms that provide abundant work-life benefits also tend to provide high-quality staffing practices and career development practices. When this type of control has been attempted in the past, company informants typically were asked to make judgments about such things as staffing system selectivity and training program effectiveness (Delaney & Huselid, 1996). It is very difficult to determine whether these informants made accurate judgments about these practices or whether these practices were in place for sufficiently long periods of time to have made real differences in their respective organizations. In the current study, like most that have preceded it, it was not possible to isolate the effects of one type of HR P. The most appropriate interpretation is that work-life practices are likely to be part of a constellation of practices that
positively affect the career prospects of female managers. It was, however, possible to control for industrial sector and sales. Also, other variables commonly controlled in research of this type were addressed via the sampling characteristics of the study. For example, past studies have addressed issues such as firm age, profit versus not-for-profit status, and degree of foreign competition. All the companies in this sample were long-term enterprises, were publicly traded/for-profit corporations, and were heavily engaged in international product and service markets.

A final limitation and issue requiring further research attention relates to the dependent variable used in this study. The percentage of top management positions held by women would seem to be the correct dependent measure in studies of the glass-ceiling phenomenon. However, there is no agreement in the literature about how to define a top manager. In the current study the operational definition was based on decisions about who was included as a top manager or corporate officer in a company's annual report. But there is a lack of consistency regarding the positions that are included in these reports. If a more stringent operational definition were to be used (e.g. the number of women holding the position titles of CEO, COO, chairman, vice chairman, or president) sufficient variability would not exist for analysis purposes. This is because very few women hold these positions (Catalyst, 2000).

Conclusion

Despite the limitations discussed, this is one of the first studies to provide evidence suggesting that steps taken to recruit and retain lower- and mid-level female managers and to provide relief from a variety of nonwork concerns can affect the likelihood that women will be able to compete for and move into top management positions. This is an issue of great importance because whatever reduces the motivation and opportunity for talented women to reach senior management status will tend to have negative consequences for firm performance. This is because the number of people possessing the capability to work effectively at the senior management level is limited and the people with the potential to reach this level represent a very rare resource. If a disproportionate number of women choose to abandon the competition for senior management positions or are inappropriately denied the opportunity to do so, the overall quality of this valuable talent pool will decline. It would seem that all employers, given the competitive nature of current product and service markets, have a stake in creating large and highly qualified talent pools from which senior managers can be selected. Creating such talent pools is likely to require a focused and long-term workforce strategy – a strategy
that is not overly sensitive to economic downturns associated with typical business cycles.

While the mean percentage of senior management positions held by women was 9.38 percent for the companies represented in this research sample, 11 percent of these companies had no women in senior management positions and 22 percent had fewer than 5 percent of these key positions held by women. These values suggest that many US corporations are not fully utilizing a valuable and needed source of talent.

References


Lewis, S. Family friendly organizational policies: A route to organizational change or playing about at the margins. Gender, Work and Organizations, 1997, 4, 13–23.


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