Investigating Phlogiston:

Gender and the Effectiveness of Leadership Training

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Abstract (100 words)

The public leadership literature does not distinguish potential different effects of leadership training by gender. Informed by gender role theory in sociology, we posit leadership training would have different effects on leadership behaviors by gender. Using several hundred managers of welfare and financial agencies in Denmark, we first investigate whether leadership behaviors differ between female and male leaders. After that, we conduct a year-long field experiment with leaders of the agencies to examine how female and male leaders respond to leadership training interventions. In general female managers improve more from leadership training even though leadership scores for female leaders were higher before training.

Introduction

Within public administration, the study of leadership and the study of gender can be viewed as two ships passing in the night. Scholars of leadership in the generic leadership literature, especially the prescriptive advocates (Bass & Stogdill, 1990), see leadership as a universal concept that is applicable regardless of the gender of the manager. Despite the gender-neutral framing of the major theoretical work on leadership, leadership is often depicted in masculine terms (see Eagly, 2007, p. 2; Garcia-Retamero & Lopez-Zafra, 2006, p. 51). As a result, the feminist literature on organizations is dismissive of the concept leadership with one author referring to it as "public administration's phlogiston," that is, a mythical substance used for post hoc explanations (Stivers, 2002, p. 62). Ironically, an extensive meta-analysis finds that women managers actually rate higher than men in terms of both transformational and transactional leadership (Eagly, Johannesen-Schmidt, & Van Engen, 2003). The gender paradox in leadership, hence, is that women score higher in measures of leadership yet are under represented among top leadership positions (Early, 2007, p. 1). These contrasting perspectives raise questions about gender and leadership, and provide the motivation to address both gender differences in

leadership behaviors and how leadership training can affect the behaviors of both female and male managers in public organizations.

Although the vast literature in the private sector suggests gender differences in leadership styles, the distinction is rarely made in public organizations. Yet, diverse theories from gender role theory to leadership theory have argued that women and men may exert different behaviors when they serve as organizational leaders. Women leaders tend to be more democratic and participatory while male leaders are more independent assertive (see the discussion below). In this regard, leadership training may have different effects on male and female leaders in improving their leadership skills simply because men and women might differ in perceptions of appropriate leadership and respond accordingly. If this is the case, the gender of leaders should be taken seriously in training leaders in public organizations.

Using data from the Leadership and Performance Project's field experiments on leadership training in Denmark, this study examines whether leadership training affects female and male leaders differently. The field experiments involved the random assignment of several hundred Danish managers to different forms of leadership training (transformational, transactional, combined transformational and transactional, plus a control group). Before and after assessments of leadership by both leaders and their employees allow testing of two hypotheses on gender and leadership training. First, transformational leadership styles fit the theoretical literature arguing that women are more likely to adopt democratic and participatory leadership styles, thus predicting that transformational leadership training will have a stronger impact on women and that the more traditional transactional leadership style will be more influential for men. Second, because women leaders generally score higher on leadership assessments, training might be subject to diminishing marginal returns; and the leadership

training (both transformational and transactional) might be less effective for women managers.

In testing these hypotheses, this article proceeds as follows. First, we briefly discuss the concepts of transformational and transactional leadership and how they can be distinguished from one another. Second, we link leadership theories to organization-based gender theories, thereby explaining how leadership training may affect women and men. We also present our hypotheses in this section. Third, we introduce our experimental research design, methods, and context. Fourth, we explore how employees rate their leaders' leadership behaviors differently by gender of their leader and then present research findings with regard to leadership training effects for female and male leaders. Lastly, we will provide suggestions for future research and conclude with some remarks and limitations of this study.

Transformational and Transactional Leadership

A common belief among much of the generic leadership literature is that leadership behaviors are universal; the skill sets for being an effective leader may not vary according to types of individuals or organizations. Stimulated by Terry (2003) who pointed out the importance of administrative (or bureaucratic) leadership particularly in public organizations, public administration scholars have made substantial efforts to better understand leadership styles in the public sector. This literature has generally adopted leadership theories from the business management literature and applied them to the public organizations (for more details see Van Wart, 2003, 2013). In the process a contingency theory of leadership has developed that suggests that the appropriate style of leadership is conditional on both the characteristics of the leader and the characteristics of the situation.

While these theories on leadership can be used in comprehending leaders in the public sector, recent studies have highlighted the distinction between two types of generic leadership: transformational and transactional leadership.[1] First, the idea of transactional leadership is predicated upon social and economic exchanges between leaders and employees (Vigoda-Gadot & Beeri, 2012, p. 577); leaders provide their followers with verbal or material rewards in exchange for good performance, and punishment can be offered for the poor performance. The expected consequence of using transactional leadership is incentivizing employees to work harder to obtain rewards and/or to avoid punishment, so that individuals align their personal goals with organizational objectives (Barnard, 1938; Simon, 1976).

Transformational leadership, on the other hand, moves beyond the concept of social exchanges and focuses on another critical skill set necessary for an effective leader in an organization (Bass et al., 2003; Wright, Moynihan, & Pandey 2012, p. 207). Because organizational visions that challenge individual employees can enhance productivity, leaders should play a role in inspiring, motivating, and stimulating their followers to accomplish these goals (Ashikali & Groeneveld, 2015; Burns, 1978; Bass, 1985; Caillier, 2016). By doing so, employees exert greater effort and may be able to achieve challenging goals that were once regarded as being beyond their capacity. Although different in orientation, both transformational and transactional leadership are associated with positive outcomes in organizations, such as greater organizational performance and higher workers' productivity (for more details see Bass 1985; Bass & Riggio, 2006).

[1] We focus on transformation and transactional leadership rather than other forms of leadership because both of these forms of leadership are consistently related to organizational performance. Our field experiment follows the medical maxim of "do no harm", that is, it would be unethical to provide leadership training that we know was not effective simply to generate research results.

Many scholars have argued that both transactional and transformational leadership skills are important for leaders in organizations (for example see Bass, 1999; Oberfield, 2014). Furthermore, good leaders can adopt both skills sets making the two types of leadership difficult to separate in practice (Bass, 1985). Findings from the meta-analytic results show that transformational leadership can be fostered in the presence of transactional leadership behaviors (Judge & Piccolo, 2004). In other words, the achievement of organizational visions, in most cases, may require both the effective inspiration of employees to work harder, as well as reasonable rewards when employees actually do so. In this article, we investigate the impact of leadership training–transactional, transformational, and combined–on leadership. Yet, theoretical reasons suggest that leadership training might have different effects on the skills of female and male managers.

Leadership and Gender

Because leaders come from various backgrounds and have a variety of prior experiences, they bring pre-existing advantages and disadvantages in exerting their leadership skills. The purpose of leadership training is, as such, to overcome the weaknesses and bolster the strengths (Holten, Bøllingtoft, & Wilms, 2015). The expected benefits of leadership training usually do not distinguish between men and women leaders. A framework of public leadership development by Seidle, Fernandez, and Perry (2016), for example, does not consider potential gender differences in their leadership development programs.

A theoretical literature in public administration also strongly argues for no differences in leadership or leadership training effects by gender. Ferguson's (1985) feminist theory of

bureaucracy accepts gender-based differences in attitudes and behaviors among men and women (see below), but argues that organizations attempt to socialize their employees through the provision of rewards and punishments in such a way to disadvantage female traits. The argument suggests that women need to adopt male characteristics such as competitiveness and aggressiveness and forgo traits such as compassion to succeed in organizations (see Eagly, 2007, p. 4; Nielsen, 2015). The end result will be that women managers will essentially act no different from male managers. The implications of this argument by Ferguson and echoed by Stivers (2002) and others is that women managers will mimic men in leadership style (either transformational or transactional) and that leadership training will not have divergent effects based on gender.

Good theoretical reasons to believe gender matters with regard to the effect of leadership training, however, also exist. According to gender role theorists, on average, women and men have contrasting individual features developed through biological sex differences and prior sex-segregated experiences. In sex-segregated play groups, boys and girls might develop distinguishing play styles and different ways to influence other friends in the groups (Maccoby, 1988) or learn stereotyped gender roles from their parents (Eccles, Jacobs, & Harold, 1990). Through those socialization processes, in general, women are more likely to have communal characteristics (nurturing, unselfish, friendly, consideration, etc.), while men tend to express more agentic attributes (competence, independence, masterful, assertiveness, etc.) (Eagly & Karau, 1991, p. 686; Nielsen, 2015, p. 1009).[2] A recent article in public administration literature

[2] Social role theorists would argue that gender distinctions might erode in organizations where group members would have shared expectations for a position. Yet, evidence from field experiments shows that gender-related traits still exist in individual members. For instance, Moskowitz, Suh, and Desaulniers (1994) found that although sex-stereotype characteristics can disappear due to organizational socialization processes, communal (or agentic) attributes for women (or for men) still remain when they interact with other members in the organization (especially with the same gender, see also Nielsen, 2015).

brings together these various arguments along with extensive empirical data and finds that women tend to be more empathic while men are more competitive and systematic and that these traits become reflected in leadership styles (Nielsen, 2015).

If women and men have dissimilar attributes, female and male leaders are also likely to have different leadership skills. Bass, Avolio, and Atwater (1996, p. 12) claim that female leaders are more likely to have features of transformational leadership. Moreover, the meta-analytic results of 45 studies by Eagly, Johannesen-Schmidt, and Van Engen (2003) reveal that female leaders are perceived as more transformational leaders than men are (see also Eagly 2007). In a similar vein, a recent experimental study by Vinkenburg et al. (2011) shows that when female leaders effectively function as transformational leaders, which aligns with expected leadership styles from organizations, they are more likely to be promoted to senior management positions.

Empathetic female leaders might also pay more attention to individual needs of employees and be better at mentoring (Vinkenburg et al., 2011; Eagly, Johannesen-Schmidt, & Van Engen, 2003, p. 573). In other words, women as leaders pay more attention to followers' individual opinions and seek to incorporate their needs into the organizational processes (for more details see Fox & Schuhmann, 1999). Female leaders are also more likely to be participative and democratic because they take individual members' perspectives seriously. This is directly associated with a greater level of members' participation in organizations. When the members are highly engaged in decision-making process in organizations, they have more chances to convey their perspectives in setting organizational agendas (for more details see Kim, 2002). In the process of facilitating members' participation and frequently interacting with the followers, female leaders can also have more opportunities to share and sustain organizational

goals and missions, thereby enhancing employees' work attitudes, motivation, and commitment to organizational goals (Bass, Avolio, & Atwater, 1996).

While their male counterparts may prefer to have a systematic approach and tend to create a competitive environment (Nielsen, 2015), female leaders are more likely to organize a less hierarchical process (Eagly & Johnson, 1990, p. 573) and rely less on strict rules and procedures in solving organizational problems. Within this environment, women are more likely to seek to address problems using their analytical and intuitive skills (Eagly & Johnson, 1990). Since these problem-solving approaches can inspire their followers (Bass & Avolio, 1993), female leaders might exceed male leaders in transformational leadership skills (Bass, Avolio, & Atwater, 1996).

The characteristics of male leaders, in contrast, are by and large described as transactional. They tend to be more directive, autocratic, and task-oriented in exercising leadership skills, which resonates with the notion of transactional leadership (Eagly et al., 2003). Traditionally, transactional leadership was viewed more as task-oriented leadership (Bass, Avolio, & Atwater, 1996); leaders of this type are more likely to set a specific goal for their employees, and reward or punish them based on the employees' performance in achieving the goal. Previous studies in both public and private management show that although women have the same managerial positions as men do, they use more limited managerial actions in providing incentives, rewards, and punishment to their employees, due to the hierarchical culture of organizations (Ely, Ibarra, & Kolb, 2011; South et al., 1982). Thus, transactional leadership skills are more likely to be found in male leaders.

Since female or male leaders exhibit either transformational leadership more or transactional leadership more, one can logically expect that the gender of leaders matters in the

degree of leadership training effects. Women already have more transformational traits, which should enable them to easily understand the contents of transformational leadership training and subsequently implement more transformational behaviors; therefore, they can benefit more from such training sessions. Similarly, transactional leadership training may be more effective for male leaders who have higher levels of understanding on transactional leadership features. We, therefore, hypothesize:

H1: Transformational leadership training will have a larger impact for female leaders than it will for male leaders.

H2: Transactional leadership training will have a larger impact for male leaders than it will for female leaders.

The concepts of transformational and transactional leadership styles have been extensively studied and well known for leaders in public organizations. It is plausible, therefore, that leaders already have good knowledge of these leadership styles or exercise these leadership skills frequently. When a strong leadership style is already well established, we might expect to observe that leadership training would result in relatively less change in leadership behaviors. In other words, when a leader has higher levels of transformational leadership before our experimental intervention, the effects of transformational leadership training would result in a smaller change for that leader. Similar arguments can be made for transactional leadership and transactional leadership training. If women leadership rate higher on transformational leadership and men rate higher transactional leadership behaviors, this diminishing marginal returns argument might result in differences by gender.

H3: The impact of transformational leadership training will be larger for leaders with lower levels of pre-training transformational leadership behavior.

H4: The impact of transactional leadership training will be larger for leaders with lower levels of pre-training transactional leadership behavior.

Finally, both feminist theory and the generic leadership literature's gender-neutral stance both support the null hypotheses. Although they stress different elements, both literatures argue that organizations will socialize employees to similar managerial roles. These theories suggest there should be no difference in the impact of leadership training for men compared to women.

Research Design, Context, and Method

The Organizations and Danish Context

Although almost all levels of governments provide various leadership training programs (Van Wart, 2003), testing the effects of leadership training in the public sector has largely focused on a few particular organizations, such as the military where female leaders are less likely to be found (for example see Dvir et al., 2002; Seidle, Fernandez, & Perry, 2016). In this study, we conducted field experiments using three different types of public organizations in Denmark: tax offices, daycare centers, and public schools. Since previous studies have mostly tested the effect of leadership training in male-dominant environments, including these social welfare and financial agencies in our analysis contributes to advancing the generality of the theories on gender and leadership.

The Experiment

To recruit participants for our study, we first sent invitations to *all* Danish leaders in the three types of organizations mentioned above–daycare centers, public primary and lower and upper secondary schools, and tax offices.[3] The invitation letter stated that if they agree to participate in our study, they will have a 75% chance of receiving free leadership training; upon the agreement of program participation, leaders were randomly assigned to three treatment groups – transformational, transactional, and combined leadership training groups – and a control group. A total of 367 leaders and 4,349 employees in Danish public organizations participated in this study.

To enhance the accessibility of leadership courses, four randomly assigned teachers taught small classes in seven locations close to leaders' work places (classes met four times over the year). During the classes, the instructors covered a 600-page curriculum on leadership, facilitated discussions among leaders, conducted course activities, and provided feedback on leadership skills. After each leadership training session, leaders were assigned coursework to be finished by the leaders before the next meeting. The training is equivalent to an executive master level course load in Denmark and to one month full time work for the leaders.

The Dependent Variables

Three dependent variables are used to measure transformational and transactional leadership styles–(1) the use of transformational leadership, (2) the use of verbal rewards, and (2) the use of

[3] The current study only includes leaders who directly supervise first line personnel.

pecuniary (material) rewards.[4] All the three measures use multiple items with five-point Likert scales (1=strongly disagree; and 5=strongly agree), measured before and after the leadership training interventions. Since respondents tend to inflate ratings if survey questions are related to desirable traits (for more details see Atwater, Tammarino, & Fleenor, 1998; Meier & O'Toole, 2013), we use responses from employees' evaluating the leaders rather than leaders' self-assessments of their own leadership skills. For the transformational leadership measure, employees answered four survey items which ask whether leaders set a clear vision for the organization, help employees accept organizational goals, clarify the ways to contribute to the achievement of organizational goals, and encourage cooperation among employees to accomplish the organizational vision. The transformational leadership survey items loaded on a single factor with loadings between 0.846 and 0.898, and a Cronbach's alpha of 0.894.

The measure for verbal rewards is constructed using three survey items. The survey items asked employees whether leaders provide positive feedback when employees perform well, show appreciation when employees perform better than expected, and compliment their employees personally for their outstanding work. All survey items for the use of verbal rewards loaded on a single factor with correlations between 0.929 and 0.95, and a Cronbach's alpha of 0.935.

Three survey items are used to measure the use of pecuniary (material) rewards. These ask employees whether their leaders clarify the types of rewards employees would receive once they meet a certain requirement, give employees rewards when they meet the requirement, and provide employees with rewards based on their performance. All the three questions again loaded in a single factor with factor loadings ranging between 0.852 and 0.921 with a Cronbach's alpha of 0.876.

[4] The use of verbal rewards is likely to be exercised by both transactional leaders and transformational leaders.

In testing the reliability of the survey instruments, we conducted a principle components factor analysis. Since all survey items for each leadership measure loaded on a single factor and met the standards showing high factor loadings and Cronbach's alphas, our survey instruments can be regarded as reliable. To construct our dependent variables, we first add all survey items for each leadership behavior and then transform the measure to range between 0 and 100. After that, we take the first difference of leadership behaviors that are measured before and after the training interventions, which can theoretically range from -100 to 100. If employees only responded to pre- or post-survey, we excluded them to avoid any bias related to individual characteristics.[5]

Analytic Approach

To analyze the experiment, we employ a difference-in-difference (DID) approach using ordinary least square regression models. The experimental research design and DID method allow us to investigate the clear causal effects of leadership training for female and male leaders. Since our data includes observations at multiple levels (employees and organizations), we also use robust standard errors clustered by organizations so as not to bias standard errors downward. Summary statistics of key variables and reliability test results are presented in Appendix Tables 1 and 2.

Findings

Because our hypotheses suggest that there are pre-existing gender differences in the leadership styles of men and women and that these differences could affect the relative efficacy of

[5] We conducted a Heckman selection bias model to determine if the difference in the before and after sample could affect the results and found an insignificant level of bias.

leadership training, comparing leadership styles before training is important. Table 1 portrays how employees assess the leadership behaviors of their supervisors on the three measures of leadership – transformational leadership, the use of verbal rewards, and the use of pecuniary rewards. Employees rate women supervisors significantly higher on transformational leadership (72.2 versus 66.3 on the one-hundred-point scale), a finding consistent with previous literature (Eagly, Johannesen-Schmidt, & Van Engen, 2003). Substantively this difference translates into approximately one-fourth of a standard deviation for the existing sample.[6] On the use of verbal rewards, behavior that is consistent with both transformational and transactional leadership nostrums, female leaders are again rated significantly more positively than are male leaders (65.7 compared to 60.7 on the hundred point scale, again a difference substantively of about one-fourth of a standard deviation).[7] Finally, the pecuniary (material) rewards scale is most directly tied to transactional leadership, a set of behaviors where males have generally scored higher (Eagly, Johannesen-Schmidt, & Van Engen, 2003). Table 1, however, shows that while women actually are rated as higher on the use of pecuniary rewards than men, the pre-training differences between men and women are statistically insignificant. At least in the current sample of Danish leaders, there are no significant differences in behavior before the training in the use of pecuniary rewards.[8]

[Table 1 About Here]

The findings in Table 1 are not the result of interaction patterns between the gender of leaders and the gender of followers. Although the employee gender variable has substantial

[6]Women leaders self-rate themselves as 6.7 points higher on the transformational leadership scale, again a statistically significant difference. It is important to point out, however, that within gender differences are substantially larger than between gender differences. Gender never explains more than 2% of the variance in pre-training scores.

[7]Women also self-rate themselves 6.2 points higher on the verbal rewards scale, statistically higher than men's self-ratings.

[8]Self-ratings also show no significant differences; the ratings are within one tenth of a point of each other.

missing cases, Table 2 presents the average scores on the three leadership variables for various combinations of manager and employee gender.[9] In all three cases women managers are rated higher by women employees than women employees rate male managers; for transformational leadership and verbal rewards those differences are statistically significant. Similarly male employees rate women managers higher than they rate male managers, and in all three cases those differences are statistically significant. At least in the eyes of employees, women simply exhibit more leadership behavior than men.

[Table 2 About Here]

To assess the impact of leadership training, we will present four models for each of the leadership measures. The first will simply show the impact of the leadership treatment on the leaders' behavior to provide a baseline for the analysis. The second will add gender to model 1, the third will interact gender by the various training regimes to determine if the impact of specific types of leadership training vary by gender. The final model will control for leaders' absences from the training (a dummy variable coded 1 if the leader missed two or more training sessions), and the pre-training measure of the behavior in question (to pick up diminishing marginal returns or ceiling effects). The dependent variable will be the difference in the leadership measure (as perceived by employees) after the training compared to before the training.

Table 3 presents the findings for transformational leadership. Both transformational leadership training and combined leadership training have a positive impact on the perceived behaviors of the leaders (in both cases about four points on the hundred point scale, see model

[9]Information on employee gender requires access to register data with Statistics Denmark. In two cases organizations did not provide this information and in other individual cases the employee could not be matched with the registered data.

1).[10] The addition of gender to this equation in model 2 shows that gender by itself is not statistically significant. Model 3 presenting the interactions between gender and training, however, indicates that leadership training appears to be slightly more effective for women than men; but these differences are not statistically significant. Model 4 suggests some qualifications to this conclusion when pre-existing levels of leadership, and absences are included in the model. Pre-existing leadership style, as predicted, is negatively associated with changes in transformational leadership. Interpreting the results of model 4 is somewhat complicated because gender by itself now is statistically significant, and the net impact of training for women needs to combine the base level of training impact (represented by men) with the interactions by gender, and the coefficient for gender. When this is done, it shows that the net change in leadership behavior for women who receive transformational leadership training is +6.9 points compared to +3.7 points for men ($f = 3.35$, $p = .0366$); for women receiving combined training (both transformational and transactional), the gain is fully 8.5 points compared to 4.3 for men ($f = 8.18$, $p = .000$). The f-tests indicate that these are statistically significant differences between men and women after the experiment.

[Table 3 About here]

Verbal rewards behavior can be part of both transformational and transactional leadership. In Table 4, model 1 shows that both combined leadership training (2.3 points) and transactional leadership (2.2 points) training have an overall positive and significant impact on the use of verbal rewards (as perceived by employees). Although transformational leadership training is associated with gains in the use of verbal rewards, the relationship fails to attain traditional levels

[10] The analysis omits any experimental group not intended to affect the dependent variable, that is, Table 3 does not include pure transactional training because it is not focused on transforming the organization and Table 5 does not include pure transformational training since it does not advocate pecuniary rewards.

of statistical significance. Model 2 shows that gender is not statistical significant, and none of the interaction terms in model 3 are statistically significant. This indicates that in terms of verbal rewards, there are no differences between men and women in the study. In model 4, however, the inclusion of prior levels of verbal reward leadership (absences is not significant in this case) generates a large and statistically significant coefficient for gender. Combining all the basic coefficients shows that women gain more from all three forms of leadership training: transformational (women = +5.1, men = +3.3), combined training (women +6.6, men +3.4), and transactional (women +4.9, men +3.9) although this appears to be the effect of gender itself rather than the training.

[Table 4 About Here]

Greater use of pecuniary (material) contingent rewards is a basic characteristic of transactional leadership. Model 1 in Table 5 shows that transactional leadership training, but not combined leadership training, increases employee's perceptions of contingent pecuniary rewards behavior by leaders. Although the coefficient for the more focused transactional leadership training is twice as large as that for the combined training, the confidence limits for those two coefficients overlap. Although model 2 shows that gender per se has no influence on the change in pecuniary rewards behavior, model 3 shows clear differences in training effects. Transactional leadership training appears to work for women significantly more than it works for men (about 7 points for women versus one point for men with the men's coefficient not statistically significant). Model 4, however, qualifies the relationship. When one controls for prior leadership behavior (as well as absences), both forms of leadership training are equally effective for both genders. Pure transactional leadership training has a slightly higher coefficient for women and combined training a slightly lower one for women, but neither of these coefficients reaches

traditional levels of statistical significance. Comparing the net effects shows that combined training increases the use of pecuniary rewards by 5.7 points for men versus 3.9 for women while pure transactional training increases the use of continent pecuniary rewards by 4.1 points for men and 7.6 points for women. Neither of these gender differences is statistically significant, however, so the basic conclusion is that the effectiveness of leadership training on the use of material rewards does not differ extensively between female and male leaders.

[Table 5 About Here]

Conclusions

Although the literature on leadership and the literature on gender in organizations rarely engage each other in regard to the empirical analysis, the present study indicates that gender adds some interesting dimensions to both the study of leadership and the study of leadership training and its effectiveness. Using a sample of public organizations in Denmark, this study found that organizational employees, on average, perceived that women managers were more likely to use transformational leadership and more likely to make use of verbal rewards (there were no differences on pecuniary or material rewards at the start of the study). These differences were not influenced by the gender of the employees. That is, both male and female employees rated women managers higher.

Despite the preexisting differences, leadership training by itself appeared equally effective in improving the skills of both male and female managers. The results, however, indicated some subtle differences. Women were in general more likely to improve on the leadership dimensions over time; and as a result, the leadership gap in favor of women actually increased over the year of the experiment. Although there was some evidence of ceiling effects

(that is, individuals high on various dimensions did not have as much space to improve), in general pre-existing gender differences in leadership behaviors appeared to be augmented by leadership training rather than detracting from it.

The results of this study as well as the extensive non-experimental data on transformational and transactional leadership in organizations suggest that both existing literatures may need to be modified. The theoretical literature on leadership is generally presented as gender neutral, yet substantial evidence now exists that women are likely to rate higher on transformational leadership than men (the evidence is more mixed for transactional leadership, but fairly consistent on the use of verbal rewards). The existing analysis has demonstrated some differences in an experimental study. What is now needed is research on why these differences exist.[11] These results are also relevant for the literature on gender stratification in organizations. If female leaders in general possess equal or greater leadership skills than male leaders, what factors limit the access of women to managerial positions in public organizations? Leadership is not phlogiston; it can be measured, and women managers consistently demonstrate more behaviors linked to successful leadership than do men.

Although this is the largest experimental study on leadership training to date, it is not without limitations. First, Denmark is a small country with a strong record on gender equality. Such a situation might well provide an environment where women are encouraged to exercise leadership skills. Second, the study only indicated gender differences in leadership and some gender sensitivity to leadership training. We have not demonstrated that these leadership differences mattered in terms of organizational performance (although existing literature does

[11] One possibility is selection bias. If the feminist literature is correct and there are fundamental biases against women in organizations, then one would expect that women who aspire to be managers would have to demonstrate more desirable managerial traits than a similarly positioned male. This would create a system where female managers would on average have better skills than male managers.

show such correlations). Such assessments linked to this experiment will need to await the subsequent collection of performance data. Third, public organizations operate in many policy areas, and this study was limited to three government functions – education, child care, and the collection of taxes. Although these are common and significant functions for most governments, they clearly do not exhaust the possibilities. At the same time it is fair to claim that the current study has a far more diverse set of organizations than currently exist in the public sector literature.

The limitations suggest the need for future research. In particular, the study of leadership training in public organizations needs to follow that in the private sector and demonstrate if the gender differences found in this study are correlated with objective measures of performance (see Seidle, Fernandez, & Perry, 2016). Demonstrating that one can induce changes in leadership via training is an important first step in the process, but the objective of leadership training is to actually improve the organization. Improving the organization can take a variety of forms other than a direct effect on performance. It might be the case that leadership affects performance by improving morale and job satisfaction, by limiting the negative impact of unclear goals, or by clarifying the expectations for employees. Tracing out these causal paths that could link leadership to performance would contribute greatly to the literature on public management. The gendered aspects of leadership, particularly transformational leadership, suggest that integrating this literature with the growing literature on emotional labor in organizations would be promising (Guy, Newman & Mastracci, 2014). That literature shows that women are more likely to supply the emotional labor that organizations need to operate effectively. Traits more associated with women such as empathy and compassion play a role in both the transformational leadership literature and the emotional labor literature.

Tables

Table 1: Do female and male leaders have different levels of leadership styles?

D.V.s:	Transformational Leadership$_{t1}$	Verbal Rewards$_{t1}$	Pecuniary Rewards$_{t1}$
	Model 1	Model 2	Model 3
Gender (Female=1)	5.996**	4.962**	1.891
	(1.681)	(1.675)	(1.528)
Constant (Male mean)	66.253**	60.735**	36.222**
	(1.118)	(1.149)	(1.123)
R-Squared overall	0.0190	0.0090	0.0017
N	3149	4291	3183

Notes: + p<0.10, * p<0.05, ** p<0.01; robust clustered standard errors at the organizational level.

Interpretation: the constant is the mean level for male leaders. The gender coefficient is how much more (or less) the female's leaders score on the scale.

Table 2: The effects of gender congruence between leaders and employees on employee perceived leadership behaviors

Gender		Leadership Styles		
Manager	Employee	Transformational Leadership$_{t1}$	Verbal Rewards$_{t1}$	Pecuniary Rewards$_{t1}$
Women	Women	74.867*	65.402*	34.166
Men	Women	67.893**	60.224**	31.744**
Women	Men	68.846	63.806	39.366*
Men	Men	65.422	60.79	34.908*
F-Statistics		9.08	1.95	4.04
Prob. > F		0.00	0.12	0.01
N		1757	2359	1751

Notes: the results only include observations from daycare centers and schools since we were not able to obtain employees' gender in tax offices.
All scores are the means for the manager-employee combinations, that is women employees rate women leaders as 74.867 on transformational leadership and they rate male managers 68.846 on transformational leadership.

Table 3: The effects of leadership training on employee perceived leadership behaviors (the use of transformational leadership) by gender

DV: Δ Transformational Leadership	Model 1	Model 2	Model 3	Model 4
Transformational Leadership Training	4.173**	4.082**	3.778*	3.720+
	(1.235)	(1.233)	(1.891)	(1.905)
Combined Leadership Training	3.722**	3.674**	2.164	4.333**
	(1.106)	(1.084)	(1.520)	(1.580)
Gender (Female=1)		1.093	-0.250	4.197*
		(0.944)	(1.588)	(1.766)
Gender × Transformational			0.775	-1.013
			(2.452)	(2.580)
Gender × Combined			3.160	-0.052
			(2.113)	(2.124)
High Absences (1=two or more absences)				-1.881
				(1.362)
Transformational$_{t1}$				-0.423**
				(0.023)
Constant	-1.823*	-2.318*	-1.710	25.859**
	(0.815)	(0.996)	(1.252)	(1.943)
R-Squared overall	0.0092	0.0099	0.0111	0.2272
N	3149	3149	3149	3149

Notes: + p<0.10, * p<0.05, ** p<0.01; robust clustered standard errors at the organizational level

Table 4: The effects of leadership training on employee perceived leadership behaviors (the use of verbal rewards) by gender

DV: Δ Verbal Rewards	Model 1	Model 2	Model 3	Model 4
Transformational Leadership Training	1.983	1.901	1.016	2.336
	(1.313)	(1.301)	(1.895)	(1.957)
Combined Leadership Training	2.342+	2.298+	1.158	3.405
	(1.322)	(1.303)	(1.835)	(2.073)
Transactional Leadership Training	2.199+	2.071+	3.129	3.855+
	(1.201)	(1.206)	(1.925)	(2.119)
Gender (Female=1)		0.933	0.306	4.329*
		(0.930)	(1.653)	(1.883)
Gender × Transformational			1.749	-1.562
			(2.580)	(2.678)
Gender × Combined			2.358	-1.142
			(2.553)	(2.662)
Gender × Transactional			-1.656	-3.235
			(2.424)	(2.632)
High Absences (1=two or more absences)				-1.829
				(1.541)
Verbal Rewards$_{t1}$				-0.375**
				(0.016)
Constant	-2.371**	-2.789**	-2.508+	19.481**
	(0.848)	(0.991)	(1.282)	(1.759)
R-Squared overall	0.0018	0.0022	0.0034	0.1862
N	4291	4291	4291	4291

Notes: + p<0.10, * p<0.05, ** p<0.01; robust clustered standard errors at the organizational level

Table 5: The effects of leadership training on employee perceived leadership behaviors (the use of pecuniary rewards) by gender

DV: Δ Pecuniary Rewards	Model 1	Model 2	Model 3	Model 4
Combined Leadership Training	1.905	1.888	3.291+	5.723**
	(1.288)	(1.292)	(1.762)	(1.922)
Transactional Leadership Training	4.459**	4.411**	0.993	4.139*
	(1.323)	(1.323)	(1.882)	(1.993)
Gender (Female=1)		0.349	-0.686	2.265
		(1.113)	(1.598)	(1.829)
Gender × Combined Leadership Training			-2.710	-4.047
			(2.553)	(2.503)
Gender × Transactional Leadership Training			6.082*	1.156
			(2.552)	(2.669)
High Absences (1=two or more absences)				-6.479**
				(1.351)
Pecuniary Rewards$_{t1}$				-0.492**
				(0.017)
Constant	-2.030*	-2.187*	-1.723	15.336**
	(0.799)	(0.954)	(1.103)	(1.392)
R-Squared overall	0.0060	0.0060	0.0120	0.2471
N	3183	3183	3183	3183

Notes: + p<0.10, * p<0.05, ** p<0.01; robust clustered standard errors at the organizational level

Appendix

Table 1: Summary Statistics

Variable	Obs	Mean	S.D.	Min	Max
Δ Transformational Leadership	3,149	0.79	19.55	-100	100
Δ Verbal Rewards	4,291	-0.74	22.75	-100	100
Δ Pecuniary Rewards	3,183	0.08	23.51	-100	100
Gender of Leaders (Female=1)	4,349	0.52	0.50	0	1
Transformational Leadership Training	4,349	0.24	0.43	0	1
Combined Leadership Training	4,349	0.26	0.44	0	1
Transactional Leadership Training	4,349	0.25	0.43	0	1
High Absences (two or more absences=1)	4,349	0.16	0.37	0	1

Table 2: Factor loadings for employee perceived leadership behavior indicators

Transformational Leadership Indicators	Loading
[leader's name] concretizes a clear vision for the [organization's] future	0.862
[leader's name] seeks to make employees accept common goals for the [organization]	0.846
[leader's name] strives to get the [organization's] employees to work together in the direction of the vision	0.898
[leader's name] strives to clarify for the employees how they can contribute to achieving the [organization's] goals	0.883
Cronbach's alpha=0.894	
Verbal Rewards Indicators	**Loading**
[leader's name] gives individual employees positive feedback when they perform well	0.944
[leader's name] actively shows his/her appreciation of employees who do their jobs better than expected	0.925
[leader's name] personally compliments employees when they do outstanding work	0.95
Cronbach's alpha=0.935	
Pecuniary Rewards Indicators	**Loading**
[leader's name] rewards the employees' performance when they live up to his/her requirements	0.921
[leader's name] rewards the employees' dependent on how well they perform their jobs	0.913
[leader's name] points out what employees will receive if they do what is required	0.852
Cronbach's alpha=0.876	

References

Ashikali, T., & Groeneveld, S. 2015. Diversity management in public organizations and its effect on employees' affective commitment: The role of transformational leadership and the inclusiveness of the organizational culture. *Review of Public Personnel Administration,* 35, 146–168.

Atwater, L. E., Ostroff, C., Yammarino, F. J., & Fleenor, J. W. 1998. Self-other agreement: Does it really matter? *Personnel Psychology,* 51, 577–598.

Barnard, C. I. 1938. *The functions of the executive*. Harvard university press.

Bass, B. M. 1985. *Leadership and performance beyond expectations*. Free Press; Collier Macmillan.

Bass, B. M., & Avolio, B.J. 1993. Transformational leadership and organizational culture. *Public Administration Quarterly, 17,* 112–121.

Bass, B. M., Avolio, B.J., Jung, D. & Yair, B. 2003. Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology,* 88, 207.

Bass, B. M., Avolio, B. J., & Atwater, L. E. 1996. The transformational and transactional leadership of men and women. *Applied Psychology,* 45, 5–34.

Bass, B. M., & Stogdill, R.B. 1990. *Handbook of leadership*. Vol. 11 New York: Free Press.

Bass, B. M. 1999. Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8, 9-32.

Bass, B. M., & Riggio, R. E. 2006. *Transformational leadership*. Psychology Press.

Burns, J. M.G. 1978. *Leadership*. New York: Harper & Row.

Caillier, J. G. 2016. Do transformational leaders affect turnover intentions and extra-role behaviors through mission valence? *The American Review of Public Administration,* 46, 226–242.

Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. 2002. Impact of transformational leadership on follower development and performance: A field experiment. *Academy of Management Journal,* 45, 735–744.

Eagly, A. H. 2007. Female leadership advantage and disadvantage: Resolving the contradictions. *Psychology of Women Quarterly,* 31, 1–12.

Eagly, A. H., & Johnson, B. T. 1990. Gender and leadership style: A meta-analysis. *Psychological Bulletin,* 108, 233–256.

Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. 2003. Transformational, transactional, and laissez-faire leadership styles: a meta-analysis comparing women and men. *Psychological Bulletin,* 129, 569–591.

Eagly, A. H., & Karau, S. K. 1991. Gender and the emergence of leaders: A meta-analysis. *Journal of Personality and Social Psychology,* 60, 685–710.

Eccles, J. S., Jacobs, J. E., & Harold, R. D. 1990. Gender role stereotypes, expectancy effects, and parents' socialization of gender differences. *Journal of Social Issues,* 46,183–201.

Ely, R. J., Ibarra, H., & Kolb, D. M. 2011. Taking gender into account: Theory and design for women's leadership development programs. *Academy of Management Learning & Education,* 10, 474–493.

Ferguson, K. E. 1985. *The feminist case against bureaucracy*. Philadelphia, PA: Temple University Press.

Fox, R. L., & Schuhmann, R. A. 1999. Gender and local government: A comparison of women and men city managers. *Public Administration Review,* 59, 231–242.

Garcia-Retamero, R. & Lopez-Zafra, E. 2006. Prejudice against women in male-congenial environments: Perceptions of gender role congruity in leadership. *Sex Roles,* 55, 51-61.

Guy, M. E., Newman, M. A., & Mastracci, S. H. 2014. *Emotional labor: Putting the service in public service*. New York: Routledge.

Holten, A.-L., Bøllingtoft, A., & Wilms, I. 2015. Leadership in a changing world: developing managers through a teaching and learning programme. *Management Decision,* 53, 1107-1124.

Judge, T. A., & Piccolo, R. F. 2004. Transformational and transactional leadership: a meta-analytic test of their relative validity. *Journal of Applied Psychology,* 89, 755-768.

Kim, S. 2002. Participative management and job satisfaction: Lessons for management leadership. *Public Administration Review,* 62, 231–241.

Maccoby, E. E. 1988. Gender as a social category. *Developmental Psychology,* 24, 755–765.

Meier, K. J., & O'Toole Jr, L. J. 2013. I think (I am doing well), therefore I am: Assessing the validity of administrators' self-assessments of performance. *International Public Management Journal,* 16, 1–27

Moskowitz, D. S., Suh, E., & Desaulniers, J. 1994. Situational influences on gender differences in agency and communion. *Journal of Personality and Social Psychology,* 66, 753–761.

Nielsen, V. L. 2015. Personal attributes and institutions: Gender and the behavior of public employees. Why gender matters to not only 'Gendered Policy Areas'. *Journal of Public Administration Research and Theory*, 25, 1005-1029.

Oberfield, Z. W. 2014. Public management in time: a longitudinal examination of the full range of leadership theory. *Journal of Public Administration Research and Theory*, 24, 407–429.

Seidle, B., Fernandez, S., & Perry, J. L. 2016. Do leadership training and development make a difference in the public sector? A panel study. *Public Administration Review*, 76, 604–613.

Simon, H. A. 1976. *Administrative behavior*. 3 ed. New York: The Free Press.

South, S. J., Bonjean, C. M., Corder, J., & Markham, W. T. 1982. Sex and power in the federal bureaucracy a comparative analysis of male and female supervisors. *Work and Occupations*, 9, 233–254.

Stivers, C. 2002. *Gender images in public administration: Legitimacy and the administrative state*. Sage Publications.

Terry, L. D. 2003. *Leadership of Public Bureaucracies: The Administrator as Conservator*. ME Sharpe.

Vigoda-Gadot, E., & Beeri, I. 2012. Change-oriented organizational citizenship behavior in public administration: The power of leadership and the cost of organizational politics. *Journal of Public Administration Research and Theory*, 22, 573–596.

Van Wart, M. 2003. Public-Sector leadership theory: An assessment. *Public Administration Review*, 63, 214–228.

Van Wart, Montgomery. 2013. Administrative leadership theory: A reassessment after 10 years. *Public Administration* 91 (3): 521–543.

Vinkenburg, C. J., Van Engen, M. L., Eagly, A. H., & Johannesen-Schmidt, M. C. 2011. An exploration of stereotypical beliefs about leadership styles: Is transformational leadership a route to women's promotion? *The Leadership Quarterly*, 22, 10–21.

Wright, B. E., Moynihan, D. P., & Pandey, S. K. 2012. Pulling the levers: Transformational leadership, public service motivation, and mission valence. *Public Administration Review*, 72, 206-215.