

The Neurobiology of Leadership:
Why Women Lead Differently Than Men

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Abstract

Effective leaders today are the key to engaging and retaining high potential talent as well as creating a psychologically healthy culture for high performance. Current research findings suggest that although there is no difference in overall leadership effectiveness by gender, women tend to utilize different supervisory and management styles relative to men. This presentation will summarize our own research and those of others suggesting that women express more participative and transformational leadership styles compared to men and that these behaviors are largely attributed to the pro-social hormone called oxytocin. Implications for talent development and team building will also be discussed.

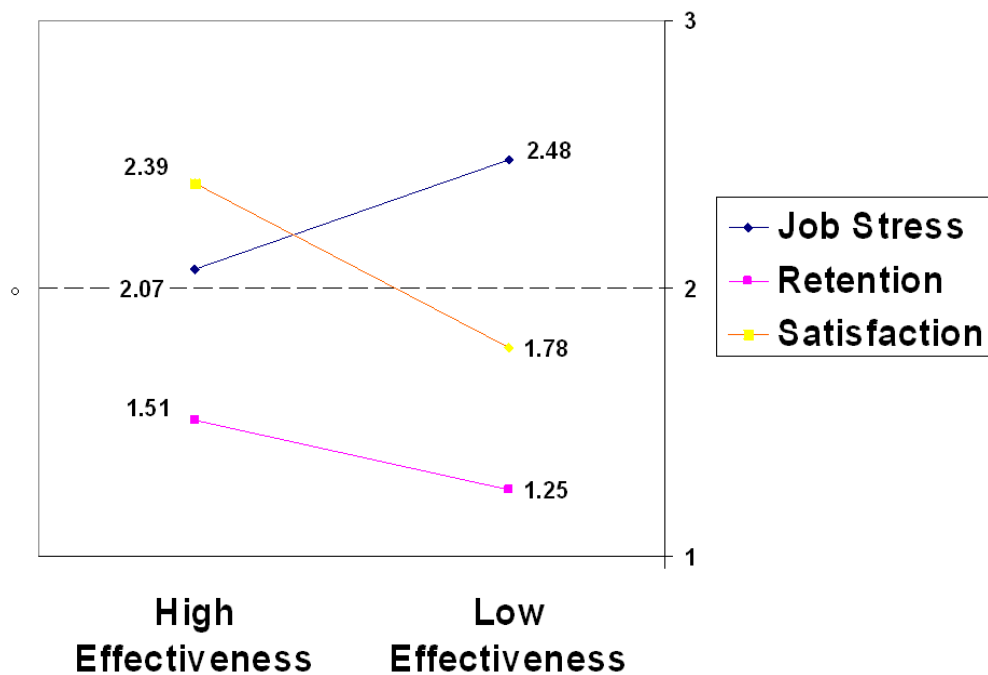
Introduction

In general, current research supports the observation that women and men differ in leadership styles (Rosener, 1990; Hopkins, O'Neil, Passarelli & Bilimora, 2008). These differences might be attributed to a number of factors such as anatomical brain differences, socialization and hormones (Rosener & Jordan, 2007). This paper will briefly describe some current differences in leadership style and provide some current research suggesting that these differences in style might be partly influenced by the pro-social peptide called oxytocin that plays a role in both female stress responses and pregnancy.

Leadership Matters

Robert Hogan of the University of Oklahoma has estimated that the "base rate" of managerial incompetence may be as high as 50%. Leadership practices are intimately linked to diverse measures of organizational success. The authors of *Primal Leadership* (Daniel Goleman et al., 2002) state that "Roughly 50 to 70 percent of how employees perceive their organizational climate can be traced to the actions of one person: the leader. More than anyone else, the boss creates the conditions that determine people's ability to work well." Indeed, growing evidence suggests that leaders make a difference.

A recent study by Envisia Learning provided support for the hypothesis that leadership effectiveness, defined as involvement-oriented and sensitive management practices can have a significant impact on an employee's commitment, perceptions of stress and retention (Nowack, 2006). Employees who rated leaders in the organization as effective were less likely to consider leaving within 12 months, were more engaged and satisfied with work and reported significantly less stress compared to those who rated leadership practices as less effective overall.



Not only do leaders impact engagement and productivity but a growing research literature also suggests it directly impacts employee’s physical health and psychological well-being. The stress of working with colleagues, peers and bosses that are difficult can also directly affect one’s health. In fact, interpersonal stress has an effect on the stress hormone cortisol that is three times greater than when the stress is not interpersonally oriented. When the stressor is relationship based, cortisol remains elevated about fifty percent longer to reach baseline levels (Dickerson & Kenemy, 2004). Further research suggests that social rejection activates the same brain centers associated with sensations of physical pain suggesting that negative feedback, bullying behavior and having our ideas ignored by others can cause distress (Eisenberger, Lieberman & Williams, 2003).

Recent work by the Gallup Organization suggests that close relationships at work can actually boost employee satisfaction and when employees have a friendship with their boss they are more than twice as likely to be engaged (Rath, 2006). Their findings also suggest that having a “best friend” at work can boost the level of job satisfaction as well as having significant correlations with fewer accidents, being more engaged with customers and increased creativity.

Early research showed that leadership practices (justice) were strongly associated with absenteeism even after controlling for behavioral risks, workload, perceived control and social

support (Nowack, 2000; Elovainio, Kivmaki & Vaherta, 2002). Wager and colleagues (2003) found that statistically elevated blood pressure differences were observed for female healthcare employees working for supervisors who demonstrated poor leadership practices. Finally, two prospective studies demonstrated that employees who worked for leaders with less transformational styles had higher risks for coronary heart disease (Nyberg, A. et al. 2008). These were the first studies to provide direct evidence that bad bosses can actually kill employees by their poor leadership practices and management style. In one of these studies following over 6,442 British civil servants found that employees who perceived their supervisors treated them fairly had 30% lower cardiovascular incidents after adjustment for all other heart disease risk factors.

What we can see from all of this research is that leadership matters. Leaders who are poor in interpersonal relations, lack emotional intelligence, and utilize less transformational approaches to managing talent are unlikely to retain and motivate their best talent. So, whether you are male or female, how you behave as a leader has important and predictable outcomes on both productivity and health of employees.

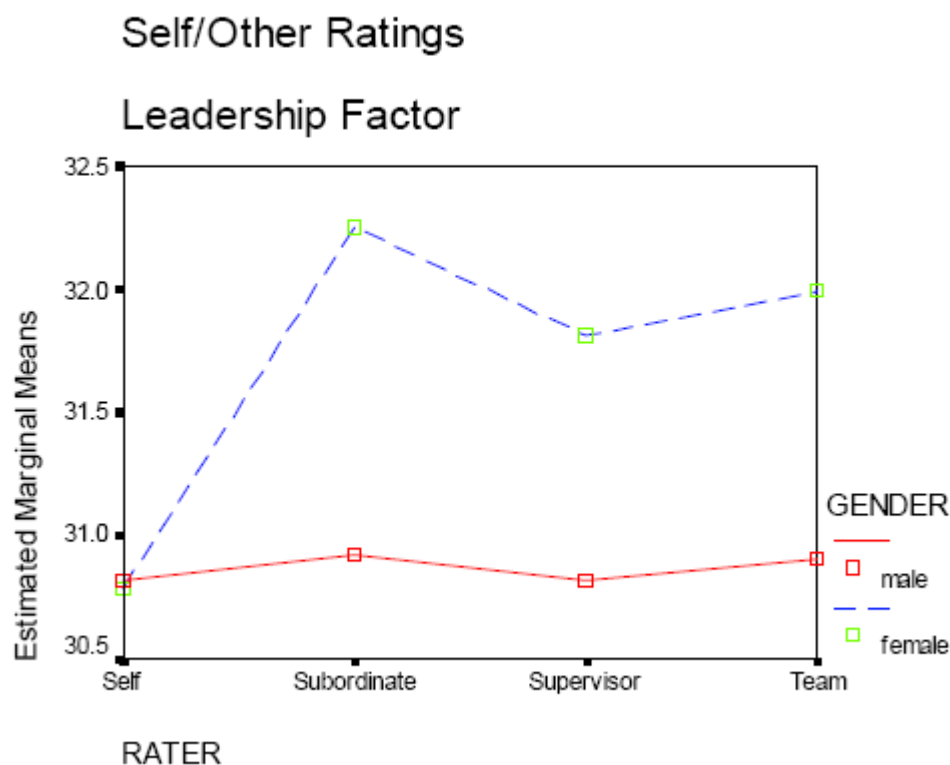
Gender Differences in Leadership

In general, research support that women do indeed lead *differently* than men. At least three reasons would appear to contribute to this evidence based observation (Rosener & Jordan, 2007): 1) Brain differences; 2) Socialization; and 3) Hormones. The remainder of this paper will share some recent research that suggest that at least one of the female hormones called oxytocin may be a neurological factor in how women react under stress and help to explain gender differences in leadership practices.

Recent meta-analytic research, including a review of over 160 studies found that women tend to use more participative and transformational styles compared to men (Eagly & Johnson, 1990; Eagly, Johansen-Schmidt & Van Engen, 2003). Additional review of over 80 studies found that men and women do not differ in effectiveness and comparisons of leadership effectiveness favor women when the setting is female dominated and the role requires high cooperation (Eagly, Karu & Makhijani (1995).

Several studies of ours also provide some interesting findings about gender differences in leadership. The first study explored gender differences between 801 male managers and 417 female managers in diverse companies, we compared self-reported ratings and other ratings using our validated Manager View 360 assessment (Nowack, 1998). This assessment measures 20 specific competencies and four leadership areas including interpersonal, communication, problem solving and leadership. Men rated themselves significantly higher in proficiency than their female counterparts in oral presentation, delegation, conflict management, team building, problem solving and decisiveness/judgment.

Using analysis of variance (ANOVA) on the leadership/leadership factor composed of six competencies (leadership/influence, team development, interpersonal sensitivity, conflict management, coaching/talent development, employee involvement), we compared boss, direct report and peer ratings by gender and found a significant interaction effect indicating that women were rated significantly higher by other raters relative to men (all p's < .01) although there was no significant difference in self-ratings on the overall leadership/interpersonal factor.



Our second set of studies used our validated Emotional Intelligence View 360 (EIV360). This assessment is based on the Daniel Goleman emotional intelligence model (Goleman, 1998; EI) and measures 17 competencies divided into three factors that include self-management, relationship management and communication. In an unpublished study, we compared differences in 740 leaders in the U.S. with 1,271 in Spain (Nowack & Pons, 2009). Leaders in Spain were rated their emotional intelligence higher than those in the U.S. with the manager rater group the most critical relative to others in Spain only.

EIV360 has also shown significant correlations with job performance, academic performance and retention in both student and adult groups in recent research. Three recent unpublished studies show a moderately high correlation between the EIV360 and commonly used measures of transformational leadership including the well known multifactor leadership questionnaire (MLQ; Bass & Avolio, 1999) correlations ranged from .55 to .71, all p's < .01).

Finally, using a sample of leaders in the U.S. we compared gender differences on the EIV360 for 671 men and 674 women working in diverse company cultures. Women rated themselves significantly higher than men on a composite measure of EI, the relationship management competency group and communications. Other raters (bosses, direct reports and peers) rated women significantly higher than men on the composite EI score and communication competencies (all p's < .01). On the basis of our multi-rater feedback studies, we can summarize our findings:

1. Women in our studies were rated significantly higher than men by managers, direct reports and peers.
2. Our measure of emotional intelligence may overlap greatly with established measures of transformational leadership.
3. Our findings are consistent with earlier research showing women use a more involvement oriented leadership style compared to men.

The Neurobiology of Leadership Practices

It is well known that women under stress exhibit a unique response beyond the classic “fight and flight” reaction. In general, women under stress react by protecting themselves and their young through nurturing behaviors and forming alliances with a larger social group that has been called the “Tend and Befriend” response (Taylor, 2002). This “tend and befriend” response suggests that women under pressure and challenge are more emotionally expressive, empathetic, involvement oriented, and social than males and that this response appears to be largely associated with a hormone called oxytocin (OT). Animal studies suggest that females produce oxytocin, which produces a feeling of relaxation, reduces fear, and decreases some components of the fight-or-flight response. Oxytocin is also involved in social memory and in childbirth.

Several recent studies have explored the biological basis of empathy and trust among adults with general findings supporting the idea that change in oxytocin in both men and women is significantly associated with increased trust, collaboration, empathy and prosocial behavior (Zak, 2005; Zak, Stanton & Ahmadi, 2007). In a series of studies, subjects inhaling oxytocin demonstrated significantly more trust behavior and were 80% more generous in a simulation (Trust game) than those who took a placebo control (Zak & Fakhar, 2006).

Zak and his colleague had 200 male investors breathe in a dose of oxytocin formulated as a nasal spray (enabling the drug to reach the brain) and compared their behavior with that of control subjects who inhaled a placebo. They found that those who received oxytocin gave 17 percent more money to their partner in the simulation and twice as many dosed subjects (nearly one half of them) as controls exhibited maximal trust within the game they used to measure collaboration and trust. This experiment shows that a *rise* in oxytocin in the brain (not our baseline levels) causes an increase in collaboration, trust, and trustworthiness with complete strangers.

Barraza and Zak (2009) recently demonstrated that viewing an emotional video raised perceived empathy towards others with an increase in oxytocin relative to watching a non-emotional video and that this response was significantly stronger in women compared to men. This finding provides the first evidence that oxytocin is a physiologic “signature” for empathy, trust and collaboration and it is most pronounced in women. In light of the “tend and

befriend” stress response in women, these results suggest that oxytocin amplifies a woman’s empathy for others and motivates a desire to help them. These hormonal differences might help explain the tendency for women to deploy more participative leadership behaviors relative to their male counterparts and naturally utilize transformational practices that emphasize team work, cooperation, networking and interpersonal support.

Conclusion and Discussion

In this paper we have tried to make an argument that leadership profoundly impacts employee morale, productivity and overall health and well-being. We have also presented evidence that:

1. Women leaders tend to use more transformational and participative leadership styles compared to males.
2. The evidence is mixed that women are any more *effective* compared to men although our own studies provide some limited evidence that females are rater significantly higher on leadership factors and emotional intelligence than males.
3. Oxytocin appears to be a key neurological contributor to the “tend and befriend” stress response and a “signature” for increased empathy, trust and collaboration that is more pronounced in women.
4. The observed differences in leadership style in men and women (transformational versus transactional) may have a biological basis mediated by the hormone oxytocin.

In the United States among the largest companies, women make up fifty eight percent of the bachelor’s degrees, thirty percent of most Executive MBA classes and forty percent of the leadership workforce but only 15.4% of the top executives and 2.4% of the chief executive officers are female (Hopkins, O’Neil, Passarelli & Bilimora, 2009). We can conclude that women are promoted at a lower rate as men and also receive less executive training.

According to a recent 2009 report ("Holding Women Back: Troubling Discoveries and Best Practices for Helping Women Succeed.") by a U.S. talent development consulting company Development Dimensions International, during the first level of management there are 28% more men than women who receive development such as high potential groups and this number rises to 50% at the executive level. Furthermore, research by Sylvia Ann Hewlett (Hewlett & Luce, 2005), President of the Center for Work-Life Policy (CWLP) and an author of a 2005 Harvard Business Review article found in her research (2,443 women and 653 men) that 37% of highly qualified women stop out of work for some period of time, the vast majority (93%) want to return to work. Many women find this more difficult than they anticipated. Only 74% succeed in rejoining the workforce and only 40% return to full-time jobs.

It appears that many women are pulled out of organizations due to family demands or pushed out by aspects of the job (example: expectations of travel or long work hours) that make them leave. So what can organizations do to maximize the retention, development and promotion of women today? In order to be competitive today in the world economy, companies need to move to a new generation of policies, rewards, benefits and practices that will more fully realize the talents, skills and ambitions of their women leaders. Some suggestions include:

1. Provide more formal mentoring of women in light of research in the U.S. that women receive less mentoring than men (those who receive mentoring report more job satisfaction, higher pay and have more interpersonal competence compared to those who do not).
2. Teach leaders to become better coaches to all of their talent and to take special interest in the career ambitions and goals of the women they supervise.
3. Provide more opportunities for women to come back to the organization they leave for family responsibilities such as job sharing, part time work and consulting opportunities.

4. Create more opportunities to formal and informal networking within the organization to gain visibility and outside the company with professional associations.
5. Create high potential women leadership programs that utilize assessment center methodologies to identify strengths and encourage special assignments and problem solving tasks to help future women leaders grow and develop.
6. Encourage short-term international experiences as well as structured challenging job assignments as part of talent development/succession planning for women leaders within the organization.
7. Provide women leaders (and men) with executive coaching for their first 90 days on the job and after 10 to 12 months provide a 360-degree feedback process to highlight strengths to continue leveraging and potential areas of development to focus on (Nowack, in press).
8. Encourage women to define "success" using a "balanced scorecard" where career and work are only one part of the definition. The other components include relationships, happiness, and legacy or meaning in life. Women should be encouraged to think about longer career goals (5 to 10 years) rather than the short-term goals typically found in most women.

Further research is required to explore the role of oxytocin and transformational leadership tendencies in women in diverse leadership roles and organizational cultures. Additional factors that have been shown to impact gender differences should also be investigated including personality factors, structural brain differences, and socialization (early childhood, parenting, mentoring and coaching practices).

Organizations should continue to explore ways to retain high potential men and women talent and emphasize special training, rewards and benefits to ensure that women have an opportunity to grow and develop in light of fewer women being promoted into senior leadership positions and struggling to re-enter the workforce after they voluntarily leave for family and personal reasons.

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