Emotional Intelligence in STEM Leaders
Do Women Really Have the Advantage?

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Is effective leadership void of emotion? Common beliefs and practice may support this assumption. However, recent studies suggest that today's most effective leaders attain success by utilizing emotional intelligence to understand, improve and direct their teams.

Emotional intelligence (EI) was coined in 1990 by Yale's Peter Salovey of Yale University and John Mayer of the University of New Hampshire. They describe EI as "an ability to recognize the meanings of emotions and their relationships, and to reason and problem-solve on the basis of them." It is the ability to identify, express, and regulate emotion in oneself and others. Emotional intelligence enables a person to correctly assess the best action for her current emotion, or the emotional state of a group. Salovey and Mayer created a measurement for EI called the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT).

Leader Advantage
The ability to identify the emotion of a group and use it to direct appropriate action is a huge advantage for leaders. David Goleman, in his 1998 book "Working with Emotional Intelligence," proposed that the ability of emotionally intelligent individuals to impact action is due to five key characteristics. Emotionally intelligent people are: self-aware, able to self-regulate, motivated, empathetic and socially skilled. Without these five characteristics, it is much more difficult to promote appropriate, impactful action in a group.

Before inspiring a group to action, an emotionally intelligent person must first identify and appropriately deal with their own emotions. Self-awareness and self-regulation allow a person to accurately gauge and utilize their emotions. An individual with self-awareness can identify their emotional state and honestly assess how the present state of emotion affects their capabilities. They can then demonstrate self-regulation by choosing what actions will most benefit from their current state.

For instance, a self-aware individual may identify a positive

emotional state. Recognizing that positivity is more likely to promote a state of creativity but could also blur their ability to identify minutia, they will self-regulate their actions. Instead of editing a detailed protocol, they could choose to brainstorm the next steps of their project. When a negative emotion arises, they will return to the brainstormed ideas to critically evaluate their validity and feasibility. Similarly, a leader with self-awareness and self-regulation directs the actions of their group based on the collective emotion, or assigns individual tasks based on the perceived emotions of a team member.
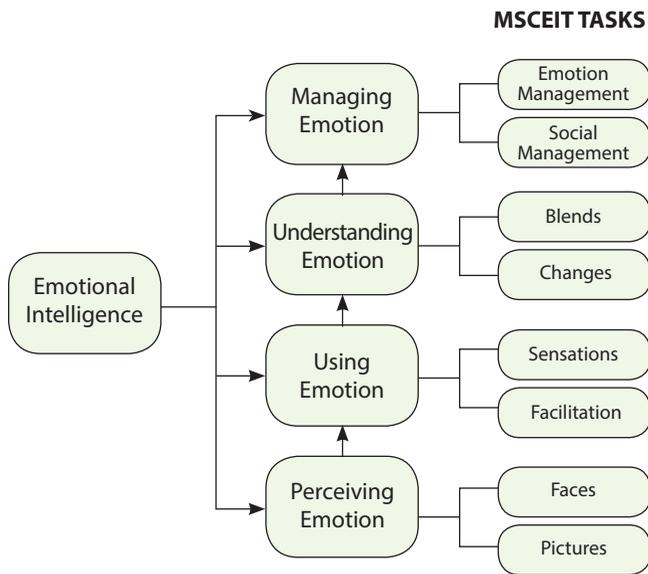
Management and Motivation
The ability to identify motivation is also important for a leader. Understanding motivation requires an individual to pinpoint their deepest preferences. Those preferences are then a catalyst for action and a reason for perseverance. A leader can promote personal investment from team members if they are able to accurately identify and nurture their individual motivations.

If, in addition to sensing their motivations, they can also sense a team's feelings, the leader can express empathy. Showing empathy develops rapport between individuals and a respect for the validity of emotions expressed.

This rapport is further facilitated by well executed social skills. Social skills allow a leader to mediate interpersonal relationships and accurately resolve or mitigate misunderstandings between employees. An emotionally intelligent leader can quickly identify how to motivate an employee to fulfill their individual potential and improve the overall effectiveness of the group. Motivation, empathy and social skills foster a mutually respectful relationship between leaders and team members while self-awareness and self-regulation help a leader act with integrity. These characteristics enable an individual to take perceptive action which creates a cohesive, productive work environment.

Goleman's proposal that these characteristics of EI individuals improve their leadership ability has been supported by research. In 2000, the Center for Creative Leadership evaluated 302 man-

MSCEIT TASKS

Mayer and Salovey's four-branch model of EI and the MSCEIT tasks for each domain of skills.

THE 4 FUNDAMENTAL EMOTIONAL INTELLIGENCE CAPABILITIES

Emotional intelligence – the ability to manage ourselves and our relationships effectively – consists of four fundamental capabilities, each described by their key skills:

1 SELF-AWARENESS
- **Emotional self-awareness:** the ability to read and understand your emotions as well as recognise their impact on work performance, relationships and the like.
- **Accurate self-assessment:** a realistic evaluation of your strengths and limitations.
- **Self-confidence:** a strong and positive sense of self-worth.

2 SELF-MANAGEMENT
- **Self-control:** the ability to keep disruptive emotions and impulses under control.
- **Trustworthiness:** a consistent display of honesty and integrity.
- **Conscientiousness:** the ability to manage yourself and your responsibilities.
- **Adaptability:** the skill to adjust to changing situations and overcoming obstacles.
- **Achievement orientation:** the drive to meet and internal standard of excellence.
- **Initiative:** a readiness to seize opportunities.

3 SOCIAL AWARENESS
- **Empathy:** the skill at sensing other people's emotions, understanding their perspective and taking an active interest in their concerns.
- **Organisational awareness:** the ability to read the currents of organisational life, build decision networks and navigate politics.
- **Service orientation:** the ability to recognise and meet customers' needs.

4 SOCIAL SKILL
- **Visionary leadership:** the ability to take charge and inspire with a compelling vision.
- **Influence:** the ability to wield a range of persuasive tactics.
- **Developing others:** the propensity to bolster the abilities of others through feedback and guidance.
- **Communication:** the skill at listening and at sending clear, convincing and well-tuned messages.
- **Change catalyst:** proficiency in initiating new ideas and leading people in a new direction.
- **Conflict management:** the ability to de-escalate disagreements and orchestrate resolutions.
- **Building bonds:** proficiency at cultivating and maintaining a web of relationships.
- **Teamwork and collaboration:** competence at promoting cooperation and building teams.

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Inspired by Daniel Goldman "Leadership That Gets Results"

agers and found that leaders with high EI excelled in getting employee buy-in at the beginning of initiatives, putting people at ease in their presence, accurately assessing their strengths and weaknesses, balancing work and personal obligations, managing and recovering from crisis, building and mending relationships, being decisive and exerting assertiveness. In 2005, David Rosete and Joseph Ciarrochi found that executives with higher self-reported EI were rated as more effective leaders by their subordinates. Robert Kerr and Emily Boyle's research (2005) supported Rosete's conclusion that EI and leadership effectiveness are positively correlated. Their results took an in-depth look at what areas of EI are most correlated with improved leadership. In their study, leadership was most benefitted by a leader's ability to perceive and use emotions rather than their capacity to understand and manage emotions.

The ability to perceive and use emotions may be improving leadership effectiveness by influencing management style. In 2002, Lisa Gardner and Con Stough released research that emotional intelligence could predict between two different leadership styles. They found that laissez-faire, or "hands off," leadership requires the smallest involvement from leaders and is largely considered the least productive management style. EI and laissez-faire management were negatively correlated in Stough's report. Transformational leaders are characterized by their ability to identify a vision for change. They communicate this vision to their group in a manner that inspires personal investment in the vision's achievement.

EI and Gender
Subordinates of transformational leaders express increased organizational commitment and improved job satisfaction. Stough found that transformational management is positively correlated with emotional intelligence. In 2006, he expanded his research by looking at the relationship between EI and transfor-

mational leadership in a population of female leaders. His results were consistent: Women describing their leadership as transformational also claimed to have higher emotional awareness and scored higher on EI assessments.

Barbara Mandell also identified a positive predictive relationship between transformational leadership style and EI in 2003. Interestingly, her data suggested women have higher EI than men. David Van Rooy (2004) did not find sufficient data to support differential EI between genders. The most recent research, done

in 2014 by Jerzy Wojciechowski and Gerald Matthews, studied 210 participants, 50% of whom were female. They concluded that women did score significantly higher than men on EI. Interestingly, Mandell's study did not find a predictive relationship between gender, EI and leadership style. This means that, while transformational leadership may be slightly more intuitive for women, it is still a skill that requires honing. Female leaders must continually challenge themselves to grow emotionally and encourage the emotional growth of their team. An emotionally intelligent leader can quickly identify how to motivate an employee to fulfill her individual potential and improve the overall effectiveness of the group.

EI in STEM

It is critical for science, technology, engineering and mathematics (STEM) leaders to cultivate EI, according to executive coach Dana Theus. She has observed that STEM professionals generally rise to leadership positions based on technical accomplishments and expertise rather than on their ability to promote project completion through human interactions. Yet the interactions required by STEM projects, between highly specialized, technical experts of various fields, are particularly vulnerable to emotional un-intelligence. The highly individualized skills and varied backgrounds of STEM group members make interactions precarious and vulnerable to miscommunication. When a leader or team member on these projects does not handle their emo-

tions well, it incurs costs of time, money, stress and productivity to the entire group. A STEM leader who nurtures their EI and that of their team members can minimize these costs. They can also add value to her organization by inspiring productive, appropriate action from their team.

To lead people well, emotions must be understood and wisely used. We must practice self-awareness, self-regulation, motivation and empathy while honing our social skills. People are not void of emotion, and neither is leadership. ✪

Rachel Lane is a graduate research assistant at University of Oklahoma Health Sciences Center in Oklahoma City, OK. She received her bachelor's in nutritional sciences, her master's in biochemistry and molecular biology and is currently pursuing her doctorate in biochemistry and molecular biology studying unique polymers with potential biomedical application at the University of Oklahoma. Rachel was honored by receiving the Barret Scholar Fellowship Award from the Oklahoma Medical Research Foundation.