

Identification of Relationships between Emotional Intelligence Skill & Critical Thinking Disposition in Undergraduate Leadership Students

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Abstract

Engaging students emotionally is the key to strengthening their dispositions toward critical thinking. Elder (1997) contends that it is critical thinking which leads us to a rational and reasonable emotional life. The link between thinking and emotions is essential in leadership education. With this in mind, the researchers sought to examine the relationship between the skill sets of emotional intelligence (Developing Your Emotional Intelligence) and the dispositions of critical thinking (EMI). The researchers identified positive relationships ranging in magnitude from low to substantial. The overall skills associated with emotional intelligence showed positive moderate relationships with cognitive maturity, engagement, and innovativeness. In considering EMI critical thinking disposition scores and emotional intelligence, the relationship was substantially positive. The conclusions and recommendations encourage educators to take advantage of this relationship by providing students with experiences which elicit their emotional intelligence. In so doing there is opportunity to strengthen their disposition toward critical thinking.

Introduction

What if there was no such thing as the difference between the Head and the Heart? If both concepts were linked so intricately that decisions never had to be one or the other? Blake and Mouton (1964) challenged leaders to see that the bottom line and concern for people did not have to be at odds with one another. Since that time, it has become more evident that leaders should exhibit a mix of professional skills. Mumford, Zaccaro, Harding, Owens Jacobs, and Fleishman (2000) supported Katz (1955) by noting leaders must exemplify three skills, problem-solving skills, social judgment skills, and knowledge. Wolff, Pescosolido, and Druskat (2002) provide in their work that there is a connection between empathy and cognitive skills.

With that, perspective taking (critical thinking) impacts empathy (emotional intelligence). In both of these models, it becomes evident that a leader must be able to do two things, understand people, and make good decisions.

Conceptual and Theoretical Framework

Critical Thinking

Facione (1990) defines critical thinking as “purposeful, self regulatory judgment which results in the interpretation, analysis, evaluation, and inference as well as the explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which judgment is based” (p. 2). Rudd, Baker, and Hoover (2000) furthered this concept citing that critical thinking is a “reasoned, purposive, and introspective approach to solving problems or addressing questions with incomplete evidence and information for which an incontrovertible solution is unlikely” (p. 5).

In the past, academia focused the majority of research and practice within education on the skills of critical thinking. This narrow focus contributed to a skewed view of critical thinking by characterizing it as an assortment of skills rather than a complex and intentional process allowing for individuals to make reasoned and judicious decisions (Paul, 1990).

Facione (1990) conducted a Delphi to determine a consensus of critical thinking. The Delphi suggested that an individual has two facets of critical thinking: disposition and skill. Together, the two factors provide educators with a much more holistic understanding of critical thinking. Over the past decade academics have increased attention to the dispositions of critical thinking as a means for

developing students' capacity for critical thinking (Ennis, 1996; Esterle & Clurman, 1993; Facione & Facione, 1992; Paul, 1990; Siegel, 1988; Tishman & Andrade, 1996).

Employers value both skill and disposition (Halpern, 1996), making them compulsory to higher education and vocational preparation. In fact when addressing education developmentally, researchers suggested that skills and disposition are inherently linked and should be developed jointly (Kitchener & King, 1994). If a person demonstrates a critical thinking skill, it can be substantiated the person is therefore disposed to using the skill (Facione, Facione, & Giancarlo, 2000).

To effectively understand critical thinking and the relationship existing between the disposition of and skill of it is important to operationalize a definition of critical thinking disposition. Critical thinking disposition has been characterized as the consistent internal motivation to engage problems and make decisions by using critical thinking (Facione, Facione, Giancarlo, 1996).

Disposition refers to a habit or tendency an individual has toward critical thinking. Facione (1990) refers to the dispositions as "characterizations of good critical thinkers" (p. 11). One recommendation of the Delphi (Facione, 1990) is to develop instructional tools which cultivate the dispositions, which can in turn lead to the use of critical thinking skills beyond an instructional setting. Ricketts and Rudd (2004) describe three dimensions of critical thinking disposition:

- Cognitive Maturity: students' predisposition to looking for opportunities to use reasoning; anticipating situations that require reasoning; and confidence in reasoning ability.
- Engagement: students' predisposition to be intellectually curious and desire to know the truth.
- Innovativeness: students' predisposition to being aware of the complexity of the problems; being open to other points of view; and being aware of their own and others biases and predispositions.

(p. 24)

It is vital for students aspiring to serve in leadership positions to develop the ability to think critically as they attempt to solve problems and make decisions with organizational implications. Leadership educators are encouraged to cultivate students' disposition toward critical thinking.

Yet, the complementary piece of the puzzle is emotional intelligence; the Heart that guides relationships, understanding and empathy. By linking the two

educators are providing an educational experience not only creating better decision-makers, but better relationship builders.

Emotional Intelligence

Another tenet of leadership education is the development of emotional skills to enhance personal and organizational development. Emotional intelligence is rooted in the work of Thorndike (1920) who explained that social intelligence is “the ability to understand and manage women and men, boys and girls – to act wisely in human relations” (p. 228). Jensen (1998) notes social and emotional education could be education’s missing piece, specifically for K-12 and potentially for higher education.

Emotional intelligence can be broken down into two areas as outlined by Salovey and Sluyter (1997). The areas are the understanding of emotion and the understanding of intelligence, which are concretely united in an effort to delineate the idea of emotional intelligence (Akers, Miller, Frazee, & Haygood, 2002). Thus, educators are forced to explore creative means of delivering curricula which expose students to emotional intelligence and develop specific areas of emotional intelligence, much like critical thinking. Success in the business world depends on both academic ability and social and emotional skills (Goleman, 1995).

The four core competencies are as follows (Salovey & Mayer, 1990):

- The ability to accurately perceive, appraise, and express emotion.
- The ability to access or generate feelings on demand when they can facilitate understanding of oneself and another person.
- The ability to understand emotions and the knowledge that derives from them.
- The ability to regulate emotions to promote emotional and intellectual growth.

Self-awareness emerged from these four core emotional competencies as a governing tenet for the development of emotional intelligence. Self-awareness refers to the ability to recognize a feeling as it happens (Goleman, 1995). This ability is paramount for students exploring service in leadership positions. Goleman noted that “the ability to monitor feelings from moment to moment is crucial to psychological insight and self-understanding” (p.43). He further asserts that if individuals fail to recognize their true feelings, it can be detrimental. “People with greater certainty about their feelings are better pilots of their lives, having a surer sense of how they feel about personal decisions, from who to marry, to what job to take” (p. 43).

The use of emotional intelligence can lead to productive outcomes at the individual and organizational level (Weisinger, 1998). This is further confirmed by the overwhelming majority of employers who feel emotional intelligence, specifically self-awareness, is critical to success in business (Goleman, 1998). High self-awareness is the foundation from which all other emotional intelligence stems from (Weisinger, 1998). Self-awareness is highly correlated with positive social interaction (Lopes, Brackett, Nezlek, Schultz, Sellin, & Salovey, 2003).

The Link

Through an examination of critical thinking and emotional intelligence literature, the researchers postulated a link between the two philosophies. With that, Boler (1999) argues that emotions indicate what deserves attention and moral scrutiny to the individual. Thus, emotional intelligence plays a critical role in ethical decision making. Conversely, Elder (1997) contends critical thinking is the key to emotional intelligence. This connection and development of these skills are critical to the foundation of leadership education.

Elder (1997) argues that educators should make an appeal to the emotional lives of students, engaging them cognitively and emotionally. It is the students' emotions which guides their relationship to instruction. She maintains that these two affective dimensions are linked. "In fact, critical thinking is the only plausible vehicle by which we could bring intelligence to bear upon our emotional life" (p. 5).

An alternative perspective lends the credibility of critical thinking disposition as a tenant of intellectual character (Facione, 2000). If it can be shown that disposition toward critical thinking influences other "intelligences" than it strengthens the argument that cultivating critical thinking disposition should be encouraged in leadership education.

Purpose

The purpose of this correlational study was to investigate the relationship between emotional intelligence and critical thinking disposition in undergraduates of a leadership development program. There were four objectives included in the research study intended to determine the relationship between:

- Emotional intelligence skills and the disposition of Cognitive maturity in students' in a leadership development course.

- Emotional intelligence skills and the disposition of Engagement in students' in a leadership development course.
- Emotional intelligence skills and the disposition of Innovativeness in students' in a leadership development course.
- Emotional intelligence skills and critical thinking disposition in students' in a leadership development course.

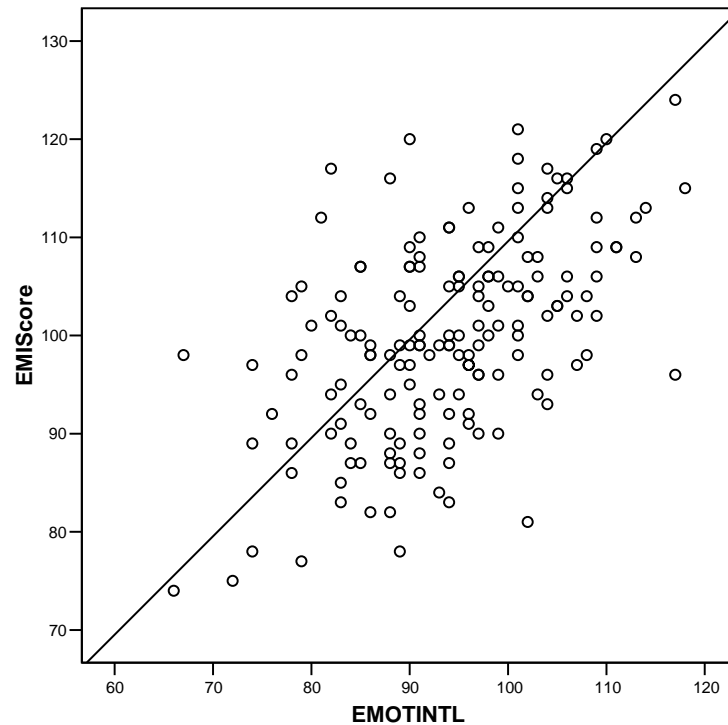
Methods

Using a survey research methodology, researchers utilized two instruments in order to garner valid and reliable findings. Researchers designed this correlational study to explore the relationship between critical thinking disposition and emotional intelligence. The two instruments chosen were to measure the specific constructs of emotional intelligence and critical thinking disposition. This design allowed the researchers to discover the strength and direction of the relationships existing between critical thinking disposition and emotional intelligence using correlational statistics. Researchers initially identified the normalcy of the data through a scattergram (see Figure 1).

Undergraduates enrolled in a required course for leadership development majors were used as the population for this study. Data were collected during the spring and summer of 2005 (N = 200). There were 164 students who submitted their questionnaires for useable data for a total response rate of 82% (n = 164).

Of the students in the course, 86% (n = 142) self-identified as agricultural leadership development majors. The remaining represented a four other college of agriculture majors. Although, gender, age, and race were not included as variables in this study and will be analyzed in the future; approximately 59% (n = 95) were male, 79% (n = 131) were between the ages of 21 and 23 and 79% (n = 131) were Caucasian. While the implications of these variables may yield important contributions to each of the constructs studied, they were not included in this research.

Figure 1
Scatter gram of emotional intelligence and critical thinking disposition scores (n = 164)



As stated previously, the researchers used two questionnaires to collect data. These were the *EMI* and emotional intelligence instrument excerpted from Weisinger's (1998) *Developing Your Emotional Intelligence* instrument. These instruments were selected because of their previous use and determined reliability and validity.

In order to measure critical thinking disposition, the *EMI* instrument was used (Ricketts & Rudd, 2004). Ricketts and Rudd developed the *EMI* to measure three identified scales of critical thinking disposition: engagement, cognitive maturity and innovativeness. The *EMI* consisted of 26 questions measured on a Likert-type scale. The 26 questions were broken down into the three factors or scales: engagement consisted of 11 questions, cognitive maturity 8 questions, and innovativeness 7 questions. Ricketts and Rudd (2005) used Facione's (1990) Delphi to identify the constructs of Cognitive Maturity, Engagement and Innovativeness. Although the questionnaire had already underwent reliability testing by the developers, Cronbach's alpha coefficients were calculated for each

subscale. The Cronbach's alpha coefficients for the constructs were: Cognitive Maturity ($\alpha = .68$), Engagement ($\alpha = .78$), and Innovativeness ($\alpha = .75$). These coefficients were acceptable for the purposes of this research due to the nature of measuring critical thinking disposition (Ricketts & Rudd, 2004).

Emotional intelligence was measured using a version of *Developing Your Emotional Intelligence* instrument developed by Weisinger (1998). The adapted version was more appropriate for students and was published in a leadership text (Daft, 2002). Daft's instrument consisted of 25 questions and contained five subscales of Emotional intelligence Self-Awareness, Managing Emotions, Motivating Oneself, Empathy, and Social Awareness. Five questions measured each subscale. The instrument was abbreviated to provide an illustrated example in Daft's (2002) text. Cronbach's alpha coefficients were calculated for each subscale. The coefficients for the scales were: (a) self-awareness ($\alpha = .71$), (b) managing emotions ($\alpha = .72$), (c) motivating oneself ($\alpha = .74$), (d) empathy ($\alpha = .76$), and (e) social awareness ($\alpha = .76$). Included on the emotional intelligence instrument was a short demographic questionnaire, which included four questions. These were gender, race/ethnicity, major and approximated GPR.

In order to determine the strength and direction of the relationships between the constructs of Critical thinking and Emotional intelligence Pearson Product-Moment Correlation Coefficients were computed using SPSS® Statistical Software for Windows®. Researchers chose the product-moment correlation coefficient r because of its ability to determine the magnitude and direction of relationship between scores of two measures (Gall, Gall, & Borg, 2003). Additionally, the correlation coefficient (r^2) was determined in order to identify the proportion of variance explained by the relationship.

The magnitude of the Pearson Product-Moment Correlation Coefficients for the subscales of emotional intelligence and subscales of critical thinking disposition were determined using the following parameters: $r = 1.0$, perfect; $r = 0.99 - 0.7$, very high; $r = 0.69 - 0.50$, substantial; $r = 0.49 - 0.30$, moderate; $r = 0.29 - 0.10$, low; and $r = 0.09 - 0.01$, negligible (Miller, 1998).

Researchers identified the following limitations of the study: (a) the generalizability to other populations outside of the study, (b) the adapted nature of the emotional intelligence instrument, and (c) the self-reporting and self-perception nature of the instruments.

Findings

The researchers were guided by four research objective because the intent of the study was to establish baseline data exploring the relationship between the constructs of critical thinking disposition and emotional intelligence. Pearson Product-Moment Correlation Coefficients were computed for subscales of critical thinking disposition as reported on the EMI and emotional intelligence as reported on the abbreviated *Developing Your Emotional Intelligence* instrument, as well as the total scores for critical thinking and emotional intelligence.

Emotional intelligence scores ranged from 66-117 (with a maximum of 125). The mean emotional intelligence score was $M = 93.76$, $SD = 10.05$. The five emotional intelligence skills studied were self-awareness ($M = 18.17$, $SD = 2.75$), managing emotions ($M = 17.83$, $SD = 3.10$), motivating oneself ($M = 17.74$, $SD = 2.81$), empathy ($M = 20.04$, $SD = 2.96$), and social awareness ($M = 20.05$, $SD = 2.68$). All were measured on a 5 (low) to 25 (maximum) score range.

Objective 1: Determine the relationship between emotional intelligence skills and the disposition of cognitive maturity in students' in a leadership development course.

The disposition of cognitive maturity ranged scores from 18 to 38 with a mean of $M = 29.58$, $SD = 3.69$. There was a moderate positive relationship (Miller, 1998) between cognitive maturity and the total emotional intelligence skill score $r(163) = .43$, $p < .05$, $r^2 = .19$ explaining 19% of the variance. Three of emotional intelligence skills showed low positive relationships with the disposition of cognitive maturity and were: managing emotions $r(163) = .25$, $p < .05$, $r^2 = .06$, explaining 6% of the variance; self-awareness $r(163) = .27$, $p < .05$, $r^2 = .07$, explaining 7% of the variance; and motivating oneself $r(163) = .29$, $p < .05$, $r^2 = .08$, explaining 8% of the variance.

The remaining two skills showed moderate positive relationships with cognitive maturity and were social awareness $r(163) = .33$, $p < .05$, $r^2 = .11$, explaining 11% of the variance; and empathy $r(163) = .39$, $p < .05$, $r^2 = .15$, explaining 15% of the variance. These findings are summarized in Table 1.

Table 1
Correlation between emotional intelligence skills and the disposition of cognitive maturity ($n = 164$)

Skill	<i>R</i>	<i>df</i>	Sig. (2-tailed)
Managing Emotions	.25	163	.00
Self-Awareness	.27	163	.00
Motivating Oneself	.29	163	.00
Social Awareness	.33	163	.00
Empathy	.39	163	.00
Emotional Intelligence	.43	163	.00

Objective 2: Determine the relationship between emotional intelligence skills and the disposition of engagement in students' in a leadership development course.

The engagement disposition scores ranged from 28 to 55 with a mean $M = 43.71$, $SD = 4.62$. Pearson Product Moment correlation coefficients showed a moderate positive relationship between engagement and emotional intelligence (Miller, 1998), $r = .42$, $p < .05$, $r^2 = .18$, explaining 18% of the variance. Additionally, three of the skills showed low positive relationships: managing emotions $r(163) = .17$, $p < .05$, $r^2 = .03$ explaining 3% of the variance; self-awareness $r(163) = .22$, $p < .05$, $r^2 = .05$; explaining 5% of the variance; and, empathy $r(163) = .29$, $p < .05$, $r^2 = .08$, explaining 8% of the variance.

Two emotional intelligence skills showed moderate positive relationships with engagement: social awareness $r(163) = .34$, $p < .05$, $r^2 = .12$, explaining 12% of the variance; and, motivating oneself $r(163) = .44$, $p < .05$, $r^2 = .19$, explaining 19% of the variance. These findings are summarized in Table 2.

Table 2
Correlation between emotional intelligence skills and the disposition of engagement ($n = 164$)

Skill	<i>r</i>	<i>df</i>	Sig. (2-tailed)
Managing Emotions	.17	163	.03
Self-Awareness	.22	163	.00
Empathy	.29	163	.00
Social Awareness	.34	163	.00
Motivating Oneself	.44	163	.00
Emotional Intelligence	.42	163	.00

Objective 3: Determine the relationship between emotional intelligence skills and the disposition of innovativeness in students' in a leadership development course.

Scores ranged from 15 to 35 for the disposition of innovativeness with an average of $M = 26.67$, $SD = 3.74$. The total score of emotional intelligence showed a moderate positive correlation with the disposition of innovativeness, $r(163) = .43$, $p < .05$, $r^2 = .18$, explaining 18% of the variance. Three of the skills analyzed showed low positive relationships with innovativeness. These were: empathy $r(163) = .20$, $p < .05$, $r^2 = .04$, explaining 4% of the variance, social awareness $r(163) = .22$, $p < .05$, $r^2 = .05$, explaining 5% of the variation; and, self-awareness $r(163) = .26$, $p < .05$, $r^2 = .07$, explaining 7% of the variation.

The remaining two emotional intelligence skills demonstrated a moderate positive relationship with innovativeness. Managing emotions had a correlation coefficient of $r(163) = .33$, $p < .05$, $r^2 = .11$, explaining 11% of the variance, and motivating oneself had a correlation coefficient of $r(163) = .46$, $p < .05$, $r^2 = .21$, explaining 21% of the variance. These correlation coefficients are summarized in Table 3.

Table 3
Correlation between emotional intelligence skills and the disposition of innovativeness ($n=164$)

Skill	<i>r</i>	<i>df</i>	Sig. (2-tailed)
Empathy	.20	163	.01
Social Awareness	.22	163	.01
Self-Awareness	.26	163	.00
Managing Emotions	.33	163	.00
Motivating Oneself	.46	163	.00
Emotional Intelligence	.43	163	.00

Objective 4: Determine the relationship between emotional intelligence skills and critical thinking disposition in students' in a leadership development course.

This last objective was to analyze the total scores of emotional intelligence skill to the total score of critical thinking disposition. Critical thinking scores ranged from 74 to 124 with an average of $M = 100.01$, $SD = 10.07$. Using Pearson Product Moment correlation coefficients, analysis showed a substantial positive relationship between emotional intelligence skill and critical thinking disposition. The correlational coefficient $r(163) = .53$, $p < .05$, $r^2 = .28$, explaining 28% of the variance. Summarized in Table 4 are the coefficients for each of the critical thinking dispositions, total critical thinking disposition, and emotional intelligence.

Table 4
Correlation between emotional intelligence and critical thinking dispositions ($n = 164$)

Disposition	<i>r</i>	<i>df</i>	Sig. (2-tailed)
Engagement	.42	163	.00
Innovativeness	.43	163	.00
Cognitive Maturity	.43	163	.00
Total CT Disposition	.53	163	.00

These findings clearly show a positive relationship between the two concepts of emotional intelligence skill and critical thinking disposition. The researchers make conclusions and recommendations for this research area in the following section.

Conclusions and Recommendations

Readers should approach the following conclusions and recommendations with caution. A limitation of the study is the fact that researchers collected data from undergraduates in a leadership development course for majors. Conclusions and recommendations regarding the objectives of the study will be drawn for this population.

Cognitive Maturity

The findings showed a range of positive relationships between the disposition of cognitive maturity and emotional intelligence skills. The low relationships were with managing emotions, self-awareness, and motivating oneself. However, moderate relationships were found with social awareness and empathy.

Cognitive maturity refers to ones' ability to be aware of that problems are complex, a willingness to be open to other points of view and biases and predispositions. The moderate correlation to social awareness (handling of interpersonal interaction, managing emotions in others) indicates that individuals exhibiting cognitive maturity are aware of others' emotions and the impact those emotions have on their beliefs or values. Likewise, the relationship with empathy indicates their level of cognitive maturity creates an ability to be sensitive to others feelings, this includes taking their perspective and appreciating differences.

In this case of the disposition of cognitive maturity and emotional intelligence, educators should engage students in a variety of experiences which challenge them to see concepts from a variety of perspectives. This includes exposure to media and cultural experiences which are different from their customs and comfort. This familiarity with unlike cultures may further develop a deeper disposition toward critical thinking, specifically cognitive maturity.

Engagement

The disposition of engagement was found to have a range of magnitude in relation to the emotional intelligence skills. Low positive relationships were found among managing emotions, self-awareness and empathy. Yet, two were found to have moderate relationships, social awareness and motivating oneself.

Again, with the moderate relationship to social awareness it would appear that students confident in their reasoning ability and anticipation of situations requiring reasoning would be able to anticipate emotional situations with others (social awareness). This awareness of the emotional state of others provides them with an opportunity to serve as a mediator or someone who can assist others in working through emotional hardships. In terms of the second moderate relationship, motivating oneself (channeling emotions in the service of a goal or emotional control), one may infer that individuals confident in their reasoning ability have no problem in being motivated and that engagement encourages their motivation.

Having students work through a variety of case studies exemplifying emotional situations would assist them in developing this disposition further. If students are challenged with stressful emotional situations, they may have the opportunity to increase their capacity for developing the disposition of engagement. Educators may also see students who are confident and motivated, but must also work with students who do not appear to be self-motivating to determine if their disposition toward engagement is the issue.

Innovativeness

The last critical thinking disposition explored was innovativeness. This disposition had low to moderate relationships with skills of emotional intelligence. There were low relationships with empathy, social awareness and self-awareness. The moderate relationships were found with managing emotions and motivating oneself.

The relationship between managing emotions (handling emotions, so they are appropriate and acknowledging emotional cues) and innovativeness (being intellectually curious and wanting to know the truth) may be indicative of students' who are curious may spend more time not only considering external sources of information, but internal as well. Leading to an individual who is reflective and introspective – they seek the truth about their own feelings and

emotional cues. The link between motivating oneself equates to, if students are curious they will be motivated.

In education there are ample opportunities for experiences which include reflection, personal leadership development in most cases is very introspective. Reflection activities may encourage those with lower innovativeness scores to work on developing that disposition. Additionally, if students' curiosity is peaked, their motivation to discover will be also. The key here is determining what interest students and making learning relevant.

Critical Thinking Disposition

The last findings specifically addressed overall critical thinking disposition and its relationship to emotional intelligence skill. In this analysis the relationship was substantial. This relationship indicates that our disposition to critical thinking may not only influence our critical thinking skill, but influences other affective dimensions. It may be interpreted that students' disposition toward critical thinking makes them better (more equipped) at being emotionally intelligent. With that the implications for education are evident, if an educator can engage students emotionally we can influence critical thinking disposition, likewise cultivating critical thinking disposition can impact emotional intelligence. It is a win-win for the leadership classroom.

The area which may elicit concern is the one emotional intelligence skill which had a low positive relationship with all of the three critical thinking dispositions. Consistently, this was self-awareness. Self-awareness relates to ones' ability to observe oneself and recognize feelings as they happen. Johari's window addresses areas (unknown spots) which hinder ones' ability to see self honestly. Self-awareness is a difficult area to develop; however, educators may use a variety of self-awareness tools to encourage students to further understand who they are and how others see them. This may prove to be a very beneficial tool in leadership development.

Jensen (1998) went on to further explain that too often social and emotional education goes missing, leaving an opportunity to develop students in these areas. Leadership programs provide a natural fit to reinforce these skills (Akers, 2002). If we are challenged as a profession to prepare individuals for the working world and addressing the needs of employers, then it seems imperative that a strong emphasis be placed on emotional intelligence and critical thinking. If we are able to combine these two ideas in curricula than we have a much higher probability for reaching students, for changing them, and for developing them into leaders.

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Biography

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Tony Andenoro is currently serving as an Assistant Professor for the Department of Leadership Studies and a Fellow for the Center for Civic Leadership at Fort Hays State University. He earned a B.A. in Communication from the University of Toledo, a M.S. in Educational Administration from Texas A&M University, and a Ph.D. in Agricultural Education from Texas A&M University. His research interests include the connection between creativity and intelligence in leadership, the development of critical thinking skills through leadership education, and the globalization leadership curricula.