

AN EMPIRICAL STUDY OF EMOTIONAL INTELLIGENCE AND STRESS IN COLLEGE STUDENTS

Scott E. Bryant, Montana State University
Timothy I. Malone, BNSF Railway Company

ABSTRACT

A growing body of research indicates that emotional intelligence is an important factor for student success. In this paper, we examine the relationship between emotional intelligence and stress. Consistent with our hypothesis, we found a significant relationship between one dimension of emotional intelligence (use of emotions) and stress. We also found that age and gender impacted emotional intelligence and stress. Findings from this study have implications for students and universities.

JEL: M50

KEYWORDS: Emotional Intelligence, Stress, College Students

INTRODUCTION

A growing body of empirical research addresses the impacts of stress on individuals in work and educational settings (e.g., Brougham, Zail, Mendoza and Miller, 2009; Hunter and Thatcher, 2007; Rafferty and Griffin, 2006). Cynkar (2007) estimated that workplace stress costs approximately \$300 billion each year. College students are a group of individuals who are particularly prone to stress (e.g., Darling, McWey, Howard and Olmstead, 2007). Further, there is a well-documented connection between stress and illness (e.g., Roddenberry and Renk, 2010). Given the challenges that stress creates for employees, students and workplaces, it is worth examining factors that might impact how students cope with stress. Several recent studies have suggested that students' levels of emotional intelligence (EI) may impact their ability to effectively manage stress.

Although there has been significant research on intelligences beyond memory and problem solving (Thorndike and Stein, 1937, Piaget, 1954/1981, Wechsler, 1940), Goleman's (1995) best-selling book, *Emotional Intelligence*, ignited the attention of management researchers seeking to determine the power of non-cognitive intelligence to predict or explain organizational phenomena. EI has been defined in many ways, but the concept has generally focused on the ability to manage one's own emotions and the emotions of others to assist in one's thinking, action and decision-making (Salovey and Mayer, 1990, Cherniss, 1999).

While ambitious claims have been made about EI's impact on organizational outcomes like performance, recent research indicates that EI may be a building block for emotional competence that combines or interacts with other factors leading to performance (Goleman, 1998, Mayer, Salovey and Caruso 2000, Gowing, 2001). This study aims to address one of the significant relationships in organizations by examining EI and stress. EI plays a strong part in the abilities that people have in using stress to motivate themselves and their ability to control the stress, as opposed to allowing it to take control of their behavior (Goleman, 1998). Stress in the workplace has been linked to absenteeism, higher turnover and decreased efficiency (Sunil, 2012). Stress also causes exhaustion, irritability, reduced communication and quality

problems and errors—all of which cause problems within the working environment. Individuals handle stress differently; however, EI may help direct each individual through his or her response to stress.

The paper is organized as follows: we provide a literature review; describe data and methodology; report results; and provide concluding comments.

LITERATURE REVIEW

Emotional Intelligence

There have been several incrementally different definitions of emotional intelligence (EI) (Bar-On, 1997, Goleman, 1995, Shapiro, 1997, Weisinger, 1998), and the popular definition provided in Goleman's book, *Emotional Intelligence* (1995). However, Salovey and Mayer's (1990) original definition, the ability to deal with one's own emotions and those of others to advantage in problem solving and decision making, has endured and has served as the foundation for much of the research in this area. This definition, though modified and extended to include general emotional effectiveness through the centrality of reasoning regarding emotional processes (Mayer and Salovey, 1997), serves as the theoretical foundation for the assessment instrument utilized in our study (Wong and Law, 2002). Wong and Law's (2002) Wong Law Emotional Intelligence Scale (WLEIS) instrument assesses four dimensions of EI: self-emotional appraisal (SEA); others' emotional appraisal (OEA); and regulation of emotion (ROE); and use of emotions (UOE). Salovey and Mayer (1990) described EI as composed of four separate dimensions:

SEA relates to an individual's ability to understand his or her deep emotions and the ability to express these emotions naturally. People with high ability in this area will sense and acknowledge their emotions well before most people. SEA includes items like "I have a good sense of why I have certain feelings most of the time" and "I have a good understanding of my own emotions."

OEA captures the ability to perceive and understand the emotions of other people. People who are high in this ability are much more sensitive to the feelings and emotions of others—resulting in almost reading their minds. OEA includes items like "I always know my friends' emotions from their behavior" and "I am a good observer of others' emotions."

ROE addresses the ability to regulate one's own emotions, and higher levels of ROE enable a more rapid recovery from psychological distress. ROE includes items like "I am able to control my temper and handle difficulties rationally" and "I am quite capable of controlling my own emotions."

UOE captures the ability of individuals to make use of their emotions by directing them towards constructive activities and personal performance. UOE includes items like "I always tell myself that I am a competent person" and "I am a self-motivated person."

We used Gross' model of emotion regulation (1998a, 1998b) as a foundation for understanding the effect of EI on organizational outcomes. Gross defines emotions as "adaptive behavioral and physiological response tendencies that are called forth directly by evolutionarily significant situations" (1998b, p. 272). Gross (1998b) defines emotions as response tendencies that can be modulated—thus, can be regulated and managed. Emotion regulation refers to "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (1998b, p. 275). Gross' definition of emotion regulation fits with Mayer and Salovey's (1990) definition of EI. Before people can effectively regulate their emotions, they need to have a good understanding of their emotions (SEA). Since many of our emotional responses are influenced by the emotions of others, understanding our own emotions is directly influenced by our ability to understand others' emotions (OEA). Gross' emotion regulation model suggests that we have the ability to modulate how we experience emotions (ROE), as well as how we

express them (UOE). Combining the concepts of EI and emotional regulation, persons with high EI should be more able to modulate their response tendencies and have more effective emotion regulation processes. As a result, Gross' model of emotional regulation appears to be a reasonable theoretical basis for our investigation of the effects of EI on stress. Empirical support for the effectiveness of EI in predicting organizational outcomes is relatively modest. However, an increasing number of studies seeking to both define and examine the concept are appearing in the academic literature. Bar-On (2000), one of the earliest researchers on the contemporary concept of EI, found that the use of the Emotional Quotient I (EQ-I) (his EI instrument) in the selection of Air Force recruiters saved millions of dollars in annual costs in the recruitment process. In a study of debt collectors in a large collection agency, those with high scores on the EI competencies of self-actualization, independence and optimism had an average goal attainment of 163% over a three-month period as compared to an 80% goal attainment rate over the same period for those with significantly lower scores on the same dimensions (Bachman, Stein, Campbell and Sitarenios, 2000). Cherniss (1999) reported that experienced partners in a multinational consulting firm, who scored higher on EI competencies than did their partners, delivered \$1.2 million more in profits from their activities. In a review of executive performance from over 30 international business organizations, McClelland (1998) concluded that a wide range of EI competencies (and a narrow range of cognitive ones) distinguished top performers from average ones. In an extensive study of similarly situated insurance companies, Williams (1994) concluded that those companies whose CEOs exhibited more

EI competencies had better financial results. The ability to generalize the findings from these early studies of EI is at least somewhat limited by a lack of agreement regarding how EI is defined in the different studies. Although the case for the unique impact of EI on desired organizational outcomes seems to be supportable, the lack of agreement on definitions makes comparisons and conclusions across studies problematic. Given the recent research directed toward a greater understanding of the concept, it is likely that the definition problem will be resolved over time. There does seem to be a growing consensus that EI is more of a core attribute upon which emotional competency and performance is built, rather than a unique predictor of organizational outcomes (Goleman, 1998, Mayer, Salovey and Caruso, 2000).

As a logical extension of knowledge regarding EI, our study sought to determine the unique impact of EI on stress in undergraduate college students. We examined whether older and more experienced undergraduate students had higher levels of EI. Some research that suggests that students' levels of EI increases as they progress in their studies. Boyatzis and Saatcioglu (2008) found that emotional, social and cognitive intelligences can be developed in Masters of Business Administration (MBA) students when specific interventions are given to the students. Higher levels of EI could be due to simple maturation on the part of the students or from development directly attributable to their college experience. This leads to the following hypothesis:

Hypothesis 1: College students who are older will show higher levels of EI.

Sex and Emotional Intelligence

Recent studies have suggested that women have higher levels of EI than men (Brackett, Mayer and Warner, 2004) and have the same levels of EI as each other (Bryant and Brown, 2004, Panda, 2008). If women process their emotions more effectively, and as a result have higher levels of EI, then we would expect them to be more effective at managing stress, and therefore, have lower levels of stress than men. This leads to the following hypothesis:

Hypothesis 2: Female college students will have higher levels of EI.

Emotional Intelligence and Stress

There have been many recent studies devoted to the relationship between EI and stress (e.g., Houghton, Jinpei, Godwin, Neck and Manz, 2012; Singh and Jha, 2012; Singh, 2009). Stress is an adaptive response that is moderated by individual differences that are the natural consequence of any action, situation or event that places special demands on a person (Ivancevich and Matteson, 1996). Houghton, Jinpei, Godwin, Neck and Manz examined college students and found that EI and self-leadership, as mediated through positive affect and self-efficacy, has the potential to facilitate stress coping among students. Riaz and Khan (2012) studied college professors and found a significant negative relationship between EI and stress. Singh and Jha found a strong significant negative correlation between EI and occupational stress. They did not find any sex effect on EI or stress. Ismail, Yeo, Ajis and Dollah (2009) further examined the relationship between EI, stress and performance. They found that EI mediated the relationship between stress and performance such that employees with higher levels of EI were better able to manage their stress and still have higher performance. Matthews, Emo, Funke, Zeidner, Roberts, Costa and Schulze (2006) found that even controlling for the personality factors of the Five Factor Model (FFM), EI was negatively correlated with stress. Finally, Panda (2008) found a significant negative relationship between EI and stress.

Recent studies have also assessed whether EI can predict college student outcomes such as retention, graduation and academic performance. Sparkman (2009) found in a study conducted over a five year period that students with higher levels of EI—particularly empathy, social responsibility, flexibility and impulse control—significantly correlated with enrollment and graduation rates. The study also found that social responsibility was the strongest positive predictor of graduation, followed by impulse control and empathy. Goldman, Kraemer and Salovey (1996) used the Trait Meta-Mood Scale to examine whether students' beliefs about their abilities to regulate feelings impacted stress and physical symptoms. They found that as stress levels increased, students with lower abilities to regulate their feelings were more likely to visit the student health center, which they concluded indicates the value of higher levels of EI to manage stress and physical health. The theory and the empirical findings suggest that being able to manage one's own emotions better will lead to lower levels of stress. Thus, people with higher levels of EI are expected to have lower levels of stress. This leads to the following hypothesis:

Hypothesis 3: College students with higher levels of EI will experience lower levels of stress.

Based on previous research, we expect that female students will have higher levels of EI than men. We also expect that students with higher levels of EI will experience lower levels of stress. Thus we would expect that female students would experience lower levels of stress than male students. This leads to the following hypothesis:

Hypothesis 4: Female college students will have lower levels of stress than male college students.

DATA AND METHODOLOGY

The data were collected in 2012. We e-mailed a link to an online survey to business professors in a College of Business in the Rocky Mountain region. Fifteen professors sent the survey link to their 903 students and asked them to voluntarily participate in the study. A total of 124 students (13.7% response rate) completed the survey (68% female, mean age = 24.10). The students could take the survey from a location of their choice at a time of their convenience. Emotional Intelligence (EI). We used Wong and Law's (2002) WLEIS scale to assess four theoretically supported dimensions (Mayer and Salovey, 1997) of EI: self-emotional appraisal (SEA); others' emotional appraisal (OEA); use of emotions (UOE); and regulation of emotion (ROE). The WLEIS uses a 7-point Likert scale to measure the dimensions of EI.

The EI scale had a Cronbach’s alpha = 0.86 and Mean = 2.88. The four subscales also had high Cronbach’s alphas that ranged from 0.81 to 0.88. A factor analysis using varimax rotation yielded a four-factor model with the 16 items loading cleanly on the four factors as predicted by the scale. The means, Cronbach’s alphas and correlations are presented in Table 1. Stress. We used House and Rizzo’s (1972) job strain scale to measure stress. The seven item stress scale yielded a Cronbach’s alpha of 0.87 and Mean = 3.50.

Control variables. Past studies on EI and stress have controlled for sex, age, workload and cognitive ability. Our model controlled for sex, age, and self-reported college Grade Point Average (GPA) as a proxy for intelligence.

Table 1: Correlations and Scale Reliability

	Mean	Cronbach	Age	Sex	GPA	SEA	OEA	ROE	UOE	ALL
Age	24.10									
Sex	1.68		-0.01							
GPA	3.34		0.13	0.10						
SEA	5.76	0.85	0.26**	-0.11	-0.06					
OEA	5.43	0.87	0.06	0.26**	0.02	0.22*				
ROE	5.79	0.81	0.14	0.05	0.16	0.36**	0.04			
UOE	5.26	0.88	0.17	-0.32**	-0.08	0.53**	0.14	0.32**		
ALL	5.57	0.86	0.23*	-0.06	0.02	0.77**	0.54**	0.63**	0.79**	
STRESS	3.50	0.87	-0.11	-0.33**	0.14	-0.08	0.09	-0.01	-0.31**	-0.12
N = 124										

*This table summarizes the correlations between all the variables (Age, Sex, GPA, SEA, OEA, ROE, UOE and EI-ALL) and the scale reliability (Cronbach Alpha) measures for each variable. ** Correlation is significant at the p < 0.01 level (2-tailed). * Correlation is significant at the p < 0.05 level (2-tailed).*

RESULTS

Hypothesis 1

Hypothesis 1 predicted that older students would exhibit higher levels of emotional intelligence (EI). We tested Hypothesis 1 using hierarchical regression (See Table 2). The following regression equation was estimated to identify determinants of overall emotional intelligence (EI-ALL):

$$EI-ALL = \alpha + \beta1(AGE) + \beta2(Sex) + \beta3(GPA) \tag{1}$$

Model 1 regressed age, sex, and college Grade Point Average (GPA) on the overall EI scale (EI-ALL). The overall model explained a nearly significant amount of variance in overall EI (R2 = 0.06, F (3, 119) = 2.40, p < 0.10). Age was a significant predictor of EI-ALL (EI-ALL) (β = 0.23, p < 0.05). We then regressed age, sex and college GPA on the four sub-scales of EI. This result supports Hypothesis 1 that age is a significant predictor of EI, such that older students have higher levels of EI. Model 2 reports the results of regressing age, sex and college GPA on EI self-emotion appraisal (EI-SEA) with the overall model significantly predicting EI-SEA (R2 = 0.07, F (3, 119) = 3.05, p < 0.05). The following regression equation was estimated to identify determinants of self-emotional appraisal (EI-SEA):

$$EI-SEA = \alpha + \beta1(AGE) + \beta2(Sex) + \beta3(GPA) \tag{2}$$

Age was a significant predictor of EI-SEA (β = 0.27, p < 0.01). Age was not a significant predictor of EI for the other EI subscales. This result also supports Hypothesis 1 that age is a significant predictor of EI, such that older students have higher levels of EI-SEA.

Table 2: Multiple Regression Results for Predicting Emotional Intelligence^a

Dependent Variable	Model 1 EI-ALL (β)	Model 2 EI-SEA (β)	Model 3 EI-OEA (β)	Model 4 EI-UOE (β)
Controls				
Age	0.23*	0.27**	0.07	0.18
Sex	-0.06	-0.10	0.26**	-0.31***
College GPA	-0.01	-0.09	-0.01	-0.07
Model Summary	R ² = 0.06	R ² = 0.07	R ² = 0.07	R ² = 0.13
	F = 2.40†	F = 3.05*	F = 3.05*	F = 6.18***
	df = 3, 119	df = 3, 119	df = 3, 120	df = 3, 120

This table shows the regression estimates for the following 4 models, which regress Age, Sex and GPA on emotional intelligence: Model 1 EI-ALL = $\alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA)$. The overall regression model predicted a nearly significant amount of variance. Age was a significant predictor of overall EI. Model 2 EI-SEA = $\alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA)$. The overall model and age predict a significant amount of variance in EI-SEA. Model 3 EI-OEA = $\alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA)$. The overall model and sex predict a significant amount of variance in EI-OEA. Model 4 EI-UOE = $\alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA)$. The overall model and sex predict a significant amount of variance in EI-UOE. ^aStandardized regression coefficients are reported. N = 124, † p < 0.10*, p < 0.05, ** p < 0.01, *** p < 0.001

Hypothesis 2

Hypothesis 2 predicted that female college students would have higher levels of EI than male college students. To test this hypothesis we regressed age, sex and college GPA on the overall EI scale and the four EI sub-scales (See Table 2). Model 1 regressed age, sex and college GPA on the overall EI scale (EI-ALL). The following regression equation was estimated to identify determinants of overall emotional intelligence (EI-ALL):

$$EI-ALL = \alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA) \tag{3}$$

The overall model explained a nearly significant amount of variance in overall emotional intelligence (EI-ALL) (R² = 0.06, F (3, 119) = 2.40, p < 0.10). Sex was not a significant predictor of EI-ALL (β = -0.06, p > 0.10).

We then examined the impact of age, sex and college GPA on the four sub-scales of EI. Sex did not predict a significant amount of variance in EI-Self-Emotional Appraisal (EI-SEA) or EI Regulation of Emotion (EI-ROE). However, sex did predict a significant amount of variance in EI-Others’ Emotion Appraisal (EI-OEA) (See Table 2). Model 3 regressed age, sex and college GPA on EI-OEA, and the overall model predicted a significant amount of variance in EI-OEA (R² = 0.07, F (3, 120) = 3.05, p < 0.05). The following regression equation was estimated to identify determinants of others’ emotional appraisal (EI-OEA):

$$EI-OEA = \alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA) \tag{4}$$

Sex was a significant predictor of EI-OEA (β = 0.26, p > 0.01). The means indicate that males (M = 5.60) were significantly higher than females (M = 5.43). This result supports a significant difference between males and females, however it is in the opposite direction from what we hypothesized. Model 4 regressed age, sex and college GPA on EI Use of Emotions (EI-UOE) and the overall model predicted a significant amount of variance in EI-UOE (R² = 0.13, F (3, 120) = 6.18, p < 0.001). The following regression equation was estimated to identify determinants of use of emotions (EI-UOE):

$$EI-UOE = \alpha + \beta_1(AGE) + \beta_2(Sex) + \beta_3(GPA) \tag{5}$$

Sex was a significant predictor of EI-UOE (β = -0.31, p < 0.001). The means indicate that females (M = 5.25) were significantly higher than males (M = 4.99), consistent with our hypothesis. These results provide partial support for Hypothesis 2. While sex did not predict overall EI-ALL, it did predict significant amounts

of variance in two of the EI sub-scales: EI-OEA and EI-UOE, although only EU-UOE was consistent with our hypothesis.

Hypothesis 3

Hypothesis 3 predicted that college students with higher levels of EI would experience lower levels of stress. To test this hypothesis we used hierarchical regression (See Table 3). Model 1 regressed age, sex and college GPA on stress. The overall regression model predicted a significant amount of variance in stress ($R^2 = 0.13$, $F(3, 119) = 5.95$, $p < .001$). The following regression equation was estimated to identify determinants of stress:

$$\text{Stress} = \alpha + \beta_1(\text{AGE}) + \beta_2(\text{Sex}) + \beta_3(\text{GPA}) \tag{6}$$

Model 2 added the four EI sub-scales into the regression model. The following regression equation was estimated to identify determinants of stress:

$$\text{Stress} = \alpha + \beta_1(\text{AGE}) + \beta_2(\text{Sex}) + \beta_3(\text{GPA}) + \beta_4(\text{EI-SEA}) + \beta_5(\text{EI-OEA}) + \beta_6(\text{EI-ROE}) + \beta_7(\text{EI-UOE}) \tag{7}$$

The overall regression model had a moderately significant increase in the predictive strength of the model ($\Delta R^2 = 0.07$, $\Delta F(4, 115) = 2.33$, $p = 0.06$). Model 2 predicted a significant amount of variance in stress ($R^2 = 0.20$, $F(4, 115) = 4.00$, $p < 0.001$). The only EI subscale that was significant was EI UOE ($\beta = -0.33$, $p < 0.01$). This provides partial support for Hypothesis 3 that students with higher levels of EI will have lower levels of stress.

Hypothesis 4

Hypothesis 4 predicted that female students would have lower levels of stress than male students. To test this hypothesis, we used hierarchical regression (See Table 3). Model 1 regressed age, sex and college GPA on stress. The following regression equation was estimated to identify determinants of stress:

$$\text{Stress} = \alpha + \beta_1(\text{AGE}) + \beta_2(\text{Sex}) + \beta_3(\text{GPA}).$$

The regression model predicted a significant amount of variance in stress ($R^2 = 0.13$, $F(3, 119) = 5.95$, $p < 0.001$). Sex was a significant predictor of stress ($\beta = 0.32$, $p < 0.001$), such that females ($M = 3.49$) had significantly lower levels of stress than males ($M = 3.69$). This provides support for Hypothesis 4.

Table 3: Regression Results for Predicting Stress ^A

	Model 1 (β)	Model 2 (β)
Controls		
Age	-0.12	-0.11
Sex	0.32***	0.21*
College GPA	0.11	0.07
EI-SEA		0.09
EI-OEA		0.03
EI-ROE		0.14
EI-UOE		-0.33**
	$R^2 = 0.13$	$R^2 = 0.20$
	$F = 5.95***$	$F = 4.00***$
	$df = 3, 119$	$df = 4, 115$
Model Summary	$\Delta R^2 = 0.13^*$	$\Delta R^2 = 0.07^\dagger$

This table shows the regression estimates for the following 2 models, which regress Age, Sex, GPA and EI on stress: Model 1 $\text{Stress} = \alpha + \beta_1(\text{AGE}) + \beta_2(\text{Sex}) + \beta_3(\text{GPA})$. The regression model predicted a significant amount of variance. Sex was a significant predictor of stress, such that women had lower levels of stress than men. Model 2 $\text{Stress} = \alpha + \beta_1(\text{AGE}) + \beta_2(\text{Sex}) + \beta_3(\text{GPA}) + \beta_4(\text{EI-SEA}) + \beta_5(\text{EI-OEA}) + \beta_6(\text{EI-ROE}) + \beta_7(\text{EI-UOE})$. The regression model predicted a significant amount of variance. Sex and EI-UOE were significant predictors of stress, such that women had lower levels of stress than men. ^a Standardized regression coefficients are reported. $N = 124$, $^\dagger p < 0.10^$, $p < 0.05$, $**p < 0.01$, $***p < 0.001$*

CONCLUDING COMMENTS

The results indicate that the emotional intelligence (EI) levels of college students are impacted by age and sex. The results also suggest that students with higher levels of EI experience lower levels of stress. These findings provide some interesting implications for theory and future research.

Implications for Theory and Future Research

Hypothesis 1, which predicted that older students would exhibit higher levels of EI, was supported. While we did examine year in school, there was no significant relationship between year in school and EI or stress. Only age was a significant predictor. This has a couple of interesting implications. It suggests that students gain EI simply by increasing their life experiences. Although some studies suggest that EI can be developed in the classroom setting (e.g., Boyatzis and Saatscioglu, 2008), our study suggests that students may increase their levels of EI simply by growing older and having more experiences.

Hypothesis 2, which predicted that female college students would have higher levels of EI than male students, was partially supported. While sex did not predict the overall EI scale (EI-ALL), it did predict significant amounts of variance in two of the EI sub-scales: EI-Others' Emotion Appraisal (EI-OEA) and EI-Use of Emotions (EI-UOE), although only EI-UOE was consistent with our hypothesis.

Hypothesis 3, which predicted that college students with higher levels of EI would experience lower levels of stress, was partially supported. In particular, we found that one EI subscale, UOE significantly predicted stress. This is consistent with past research on the EI of students.

Hypothesis 4, which predicted that female students would have lower levels of stress than male students, was supported. This is consistent with past research on EI and stress.

This study has several implications for emotional intelligence (EI) theory. It supports previous research that suggests that higher levels of EI are related to lower levels of stress. It also supports previous research that found that female students have higher levels of EI than male students. Thus, female students have lower levels of stress. It extends the research on undergraduate students by examining the relationship between stress and EI. It suggests that helping students develop their levels of EI might decrease their stress levels and thus improve their performance and likelihood of graduating.

Future research needs to address whether EI and stress levels change over time. Ideally, we would look at cohorts of students and assess their levels at the beginning of college and at the end of college to see what changes they made. It would be interesting to see if the relationships between sex and EI and stress hold up when assessing the development of the same students. Future researchers will also need to examine whether providing training on EI results in higher levels of EI and lower levels of stress.

This study used validated and reliable measure of EI and stress; however, they were self-reported measures by the participants. This raises the possibility that the results are caused by common method variance. However, since the results are consistent with other research on EI, stress and sex, we believe the results are solid. Our study extends the research on EI and stress in undergraduate students. The finding that higher levels of EI relate to lower levels of stress suggests that we should be helping students develop their EI. The fact that there appear to be differences between male and female students in levels of both EI and stress suggests that male students may need training and development even more than female students. Helping students develop their EI holds promise to help them more effectively manage stress which should result in higher academic performance and perhaps even graduation rates.

REFERENCES

- Bachman, J., S. Stein, K. Campbell and G. Sitarenios (2000) "Emotional Intelligence in the Collection of Debt," *International Journal of Selection and Assessment*, vol. 8(3), p. 176-182
- Bar-On, R. (1997) *Bar-On Emotional Quotient Inventory: A Measure of Emotional Intelligence*. Toronto, ON: Multi-Health Systems
- Bar-On, R. (2000) "Emotional and Social Intelligence: Insights from the Emotional Quotient Inventory," In *Handbook of Emotional Intelligence*, R. Bar-On and J. Parker eds. San Francisco, CA: Jossey Bass
- Boyatzis, R. and A. Saatscioglu (2008) "A 20-year View of Trying to Develop Emotional, Social and Cognitive Intelligence in Grade Management Education," *Journal of Management Development*, vol. 27, p. 92-108
- Brackett, M.A., J.D. Mayer and R.M. Warner (2004) "Emotional Intelligence and Its Relation to Everyday Behavior," *Personality and Individual Differences*, vol. 36(6)
- Bryant, S. and F.W. Brown (2004) "The Role of Emotional Intelligence in Knowledge Sharing and Performance," *International Journal of Business and Public Administration*, vol. 1, p.15-27
- Brougham, R., C. Zail, C. Mendoza and J. Miller (2009) "Stress, Sex Differences, and Coping Strategies Among College Students," *Current Psychology*, vol. 28, p. 85-97
- Cherniss, C. (1999) *The Business Case for Emotional Intelligence. The Consortium for Research on Emotional Intelligence in Organizations*. Retrieved October 31, 2003) from the Web site: http://www.eiconsortium.org/research/business_case_for_ei.htm
- Cynkar, A. (2007) "Whole Workplace Health," *Monitor on Psychology*, vol. 38, p. 28-31
- Darling, C., L.M. McWey, S.N. Howard and S.B. Olmstead (2007) "College Student Stress: The Influence of Interpersonal Relationships on Sense of Coherence," *Stress and Health: Journal of the International Society for the Investigation of Stress*, vol. 23, p. 215-229
- Goldman, S.L., D.T. Kraemer and P. Salovey (1996) "Beliefs About Mood Moderate the Relationship of Stress to Illness and Symptom Reporting," *Journal of Psychosomatic Research*, vol. 45, p. 115-128
- Goleman, D. (1995) *Emotional Intelligence*. New York: Bantam Books.
- Goleman, D. (1998) "What Makes a Leader," *Harvard Business Review*, vol. 76, p. 93-102
- Gowing, M. (2001) "Measurement of Individual Emotional Competence," in *The Emotionally Intelligent Workplace: How to Select for, Measure, and Improve Emotional Intelligence in Individuals, Groups, and Organizations*, C. Cherniss and D. Goleman, eds. San Francisco: Jossey-Bass
- Gross, J.J. (1998a) "The Emerging Field of Emotion Regulation: An Integrated Review," *Review of General Psychology*, vol. 2(3), p. 271-299
- Gross, J.J. (1998b) "Antecedent- and Response-Focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology," *Journal of Personality and Social Psychology*, vol. 74(1), p. 224-237

Houghton, J.D., J. Wu, J.L. Godwin, C.P. Neck and C.C. Manz (2012) "Effective Stress Management: A Model of Emotional Intelligence, Self-Leadership, and Student Stress Coping," *Journal of Management Education*, vol. 36, p. 220-238

House, R. and J. Rizzo (1972) "Toward the Measurement of Organizational Practices: Scale Development and Validation," *Journal of Applied Psychology*, vol. 56, p. 388-396

Hunter, L.W. and S.M.B. Thatcher (2007) "Feeling the Heat: Effects of Stress, Commitment, and Job Experience on Job Performance," *Academy of Management Journal*, vol. 50, p. 953-968

Ismail, A., S.-S.Yeo, M.N, Ajis, N.F, Dollah (2009) "Relationship Between Occupational Stress, Emotional Intelligence and Job Performance: An Empirical Study in Malaysia," *Theoretical & Applied Economics*, vol. 16, p. 3-16

Ivancevich, J.M. and M.T. Matteson (1996) *Organizational Behaviour and Management*, Chicago: Irwin, p. 649

McClelland, D.C. (1998) "Identifying Competencies With Behavioral-Event Interviews," *Psychological Science*, vol. 9(5), p. 331-340

Matthews, G., A.K. Emo, G. Funke, M. Zeidner, R.D. Roberts, P.T. Costa, Jr. and R. Schulze (2006) "Emotional Intelligence, Personality, and Task-Induced Stress," *Journal of Experimental Psychology: Applied*, vol.12, p. 96-107

Mayer, J.D. and P. Salovey (1997) "What is Emotional Intelligence?" in *Emotional Development and Emotional Intelligence: Implications for Educators*, P. Salovey and D. Sluyter, eds. New York, NY: Basic Books, p. 3-34

Mayer, J. D., P. Salovey, and D. R. Caruso (2000) "Competing Models of Emotional Intelligence," in *Handbook of Human Intelligence*, R. Stenberg, ed. New York: Cambridge University Press, p. 396-420

Panda, Y. (2008) "Emotional Intelligence and Perceived Stress," *ICFAI Journal of Organizational Behavior*, vol. 7, p. 13-16

Piaget, J. (1981) *Intelligence and Affectivity: Their Relationship During Child Development*. T. A. Brown and C. E. Kaegi, trans. (Original work published in 1954). Palo Alto, CA: Annual Reviews

Rafferty, A.E. and M.A. Griffin (2006) "Perceptions of Organizational Change: A Stress and Coping Perspective," *Journal of Applied Psychology*, vol. 91, p. 1154-1162

Riaz, A. and S. Khan. (2012). "Relationship of Emotional Intelligence and Stress at Workplace: Taking in Perspective the Public and Private Sector Universities of Peshawar." *European Journal of Economics, Finance & Administrative Sciences*. vol. 46, p. 88-96

Roddenberry, A. and K. Renk (2010) "Locus of Control and Self-Efficacy: Potential Mediators of Stress, Illness, and Utilization of Health Services in College Students," *Child Psychiatry & Human Development*, vol. 41, p. 353-370

Salovey, P. and J. Mayer (1990) "Emotional Intelligence," *Imagination, Cognition, and Personality*, vol. 9, p. 185-211

Shapiro, L.E. (1997) *How to Raise a Child With a High EQ: A Parents' Guide to Emotional Intelligence*. New York: Harper Collins

Singh, S. (2009) "Leveraging Emotional Intelligence for Managing Executive's Job Stress: A Framework," *Indian Journal of Industrial Relations*, vol. 45, p. 255-264

Singh, I. and A. Jha (2012) "Emotional Intelligence and Occupational Stress Among the Faculty Members of Private Medical and Engineering Colleges of Uttar Pradesh: A Comparative Study," *Advances in Management*, vol. 5, p. 52-57

Sparkman, L.A. (2009) "Emotional Intelligence as a Non-Traditional Predictor of Student Retention and Graduation," Retrieved April 11, 2010, from the ProQuest Dissertations & Theses – Gradworks Web site: <http://gradworks.umi.com/33/26/3326728.html>

Sunil, K. (2012) "Role of Emotional Intelligence in Managing Stress and Anxiety at Workplace," *Working paper, School of Management, Gautam Buddha University, Greater Noida, India*

Thorndike, R.L. and S. Stein (1937) "An Evaluation of the Attempts to Measure Social Intelligence," *Psychological Bulletin*, vol. 34, p. 275-284

Wechsler, D. (1940) "Nonintellective Factors in General Intelligence," *Psychological Bulletin*, vol. 37, p. 444-445

Weisinger, H. (1998) *Emotional Intelligence at Work*. San Francisco, CA: Jossey-Bass.

Williams, D. (1994) *Leadership for the 21st Century: Life Insurance Leadership Study*. Boston: Hay Group

Wong, C.S. and K.S. Law (2002) "The Effects of Leader and Follower Emotional Intelligence on Performance and Attitude: An Exploratory Study," *The Leadership Quarterly*, vol. 13, p. 243-274

BIOGRAPHY

Scott E. Bryant is an associate professor of management in The Jake Jabs College of Business and Entrepreneurship at Montana State University. He can be reached at The Jake Jabs College of Business & Entrepreneurship, Montana State University, 451 Reid Hall, Bozeman, MT 59717-3060, bryant@montana.edu.

Timothy I. Malone is a graduate of Montana State University and is a Trainmaster with BNSF Railway Company. He can be reached at timimalone@gmail.com.

