Team Emotional Intelligence as a Predictor of Project Performance:

A Case Study at a College-Level Construction Management Course

by

Joshua Mischung

A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science

ARIZONA STATE UNIVERSITY

December 2014

ABSTRACT

The current paradigm to addressing the marginal increases in productivity and quality in the construction industry is to embrace new technologies and new programs designed to increase productivity. While both pursuits are justifiable and worthwhile they overlook a crucial element, the human element. If the individuals and teams operating the new technologies or executing the new programs lack all of the necessary skills the efforts are still doomed for, at best, mediocrity. But over the past two decades researchers and practitioners have been exploring and experimenting with a softer set of skills that are producing hard figures showing real improvements in performance.

Over the past two decades emotional intelligence has been widely researched by academia, and wildly accepted by many organizations. There is still controversy surrounding emotional intelligence and how it can impact or predict performance, but a growing body of research does suggest positive correlations between emotional intelligence and individual performance. But what about the emotional intelligence of teams and the team's project performance? After all, more and more work is being performed by teams than by individuals. That is exactly what this paper explores.

Data was collected over two semesters on student teams and project performance in a construction management program at a major university in the United States. The emotional intelligence of each team member was averaged together to create a team emotional intelligence quotient. Then the team averaged emotional intelligence was compared to the team's performance on a class final project. While the overall emotional intelligence of the team showed no significant correlations several components of team averaged emotional intelligence did. This finding has important applications in both academic and professional settings. Identifying measurable and trainable abilities that correlate to project performance

can allow for more purposeful design of project teams, as well as the opportunity to

train and improve project teams that are struggling.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

v

CHAPTER 1

INTRODUCTION

Speaking of Emotional Intelligence (EI), in 1995 Time Magazine claimed "EI may be the best predictor of life success, redefining what it means to be smart". Originally published in 2001 Goleman et al. stated "we've known for years that EI improves results – often by order of magnitude" (Goleman et al., 2013). Sensational claims like these from researchers, consultants, and the media have fueled the emotional intelligence flame that is spreading like wildfire throughout almost all parts of business (Cherniss, 2010). At the same time a growing body of research is calling the absolute nature of these statements into question.

The purpose of this research effort was to better understand the impact of emotional intelligence in a university construction management program. Specifically, the construct of team emotional intelligence and any possible relationship it has to project performance. Data was collected for two semesters on individual student emotional intelligence and their performance on a final project at the end of the semester. The research was conducted with two hypotheses in mind; 1) team averaged emotional intelligence would positively correlate with project performance, and 2) standard deviation of team averaged emotional intelligence would negatively correlate with project performance.

CHAPTER 2

BACKGROUND

History, Definitions, Models and Criticisms

While the term Emotional Intelligence (EI) was first coined in 1990 by Mayer, DiPalo, and Salovey, who proposed the concept of social skills and abilities that are distinct from intellectual intelligence, the idea of multiple intelligences is much older. In 1920 Thorndike proposed that intelligence consisted of three broad dimensions: mechanical, abstract, and social (Newsome et al., 2000). During the 1950's Piaget explored the theoretical relationships between affectivity and intelligence (Jordan et al., 2002). The concept of multiple intelligences was further developed during the 1980s by researchers such Izard, Lazarus, LeDoux, and mostly notably Gardner who proposed his theory of intelligence consisting of interpersonal intelligence (understanding other people) and intrapersonal intelligence (understanding the self) (Newsome et al., 2000; Jordan et al., 2002).

It was not until the 1990s when Mayer, DiPalo, and Salovey proposed their theory of emotional intelligence that the concept really caught hold with business managers and executives. Many factors potentially play into the general public's embracement of EI. One such factor is clinical experience demonstrating that scoring high on traditional measures of intelligence does not necessarily translate to effective performance in one's career or life (Cherniss, 2010). It is widely believed that an individual's EI is able to be improved through education and practice (Turner, Lloyd-Walker, 2008). Furthermore, some research has suggested that measures of personality can be powerful predictors of job performance and academic achievement (Newsome et al., 2000). Companies also seem to be acknowledging that relentless focus on project metrics at the expense of human needs can have a negative impact, leading to employee dissatisfaction, reduced commitment and increased employee turnover (Lindebaum and Cassell, 2012).

Emotions have the potential to optimize how challenges are addressed, and how opportunities are exploited, within the context that they are experienced (Cote, 2014). Cherniss (2010) broadly describes the concept of EI as being based on three observations: the crucial role emotions play in life; individual ability to perceive, process and effectively act on emotions varies; and as a result situational outcomes for each individual vary based on their mastery of emotions. While a plethora of EI models have been proposed four models currently dominate the field. Even so, researchers continue to debate the validity of each model and the model's underlying concepts. Some researchers contented that even the more prevalent models in the EI field are actually representations of Emotional Social Competency (ESC) (Cherniss, 2010). Other researchers have suggested that not all of the models are competing models, but instead are actually presenting and measuring different constructs (O'Connor Jr., Little, 2003). The distinction is made between EI models that that focus on trait emotional intelligence and EI models that focus on ability of emotional intelligence. Interestingly, similar debates have also taken place in the field of traditional intelligence. Another aspect of EI is that it is believed to be 'trainable', meaning that an individual is capable of increasing their EI (Lindebaum and Cassell, 2012). The idea that EI is trainable gives the concept great appeal to both researchers and practitioners. The trainability of EI is also a differentiater from intellectual intelligence, which is believed to be, for the most, fixed. However, in recent years critics are emerging that contest the feasibility of 'training' EI.

To better understand Emotional Intelligence first a definition of standard intelligence is presented. The American Psychological Association (APA) defines intelligence as the "ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, [and] to overcome obstacles by taking thought" (Cote, 2014). Based on this definition of intelligence cognitive processes are the

primary focus (Cote & Miners, 2006). EI, as will be shown, focuses primarily on non-cognitive abilities (Newsome et al., 2000).

Finding a definition for Emotional Intelligence that even a majority of researchers can agree upon has proven an elusive undertaking. Since EI was first proposed many researchers have come forward with their own constructs of EI. Some of the more prominent constructs in the field of EI are Mayer, DiPalo and Salovey's, Bar-On's, Boyatzis and Goleman's, and Petrides's. The most prevalent and debated definitions originate from three of the four aforementioned models; Bar-On, Boyatzis and Goleman, and Mayer and Salovey.

Bar-On proposed a model in 1988 of what he has come to call "emotional and social intelligence" (Cherniss, 2010). The emotional and social intelligence model is made up of five main components; intrapersonal skills, interpersonal skills, adaptability, stress management, and general mood. Each component is comprised of various subscales, totaling to 15 in whole. Based on this construct, Bar-On defines EI as "an array of non-cognitive capabilities, competencies and skills that influence one's ability to succeed in coping with environmental demands and pressures (Newsome et al., 2000)." To evaluate an individual's level of emotional and social intelligence Bar-On created the Emotional Quotient Inventory (EQ-i). The EQ-I is a 133-item self-report inventory that assesses an individual's level of competency in each of the five categories and 15 subscales of emotional and social intelligence. Bar-On claims that the EQ-i is capable of predicting academic and job performance. The EQ-i is most often compared to the 16PF, which was already established and in use when Bar-On proposed the EQ-i. An experiment examining the correlations between the global factors of the 16PF and the EQ-i showed considerable overlap. This means that the two tests are potentially measuring the same thing. Jordan et al (2002) has suggested that the EQ-i may actually be measuring well-being, and not emotional intelligence.

Boyatzi and Goleman's model of EI has also gained acceptance. Their model is based on the earlier work of Mayer, Salovey, and Caruso, but differs in its inclusion of social and emotional competencies, which they claim are linked to exceptional job performance. This model is comprised of specific competencies that create four basic clusters: self-awareness, self-management, social awareness, and relationship management (Cherniss, 2010). The four basic clusters are comprised of 49-cognitive components (Frye et al., 2006). Two different test can be used to assess an individual's level of EI based on Boyatzi and Goleman's model; the Emotional Competence Inventory (ECI) or the Emotional and Social Competence Inventory (ESCI). In 2006 Goleman revised the model, renaming relationship management to social facility, and distinguishing between EI and "social intelligence" (SI). Goleman's distinction proposes that the latter two clusters of the model, social awareness and social facility, are in fact part of the SI construct. More recently, Boyatzis revised his definition of EI to "an ability to recognize, understand, and use emotional information about one's self that leads to, or causes, effective or superior performance (Cherniss, 2010)."

Around the same time that Bar-On proposed his model of EI Mayer, Salovey, and Caruso also proposed their own model of EI, which has gained widespread acceptance. Mayer, Salovey, and Caruso's model stems from their interest in the psychology of emotions, personality theory, and mental abilities (Cherniss, 2010). The model consist of four "branches"; the ability to perceive emotions, the ability to use emotions to facilitate thought, the ability to understand emotions, and the ability to manage emotions. Based on their model Mayer and Salovey's basic definition of EI is "the ability to perceive and express emotion, assimilate emotion and thought, understand and reason with emotion, and regulate emotion in the self and others (Jordan et al., 2002)." Mayer and Salovey also address the construct of SI, proposing that it is a component of the more global construct of EI (Newsome et al., 2000). The Mayer-Salovey-Caruso emotional intelligence test (MSCEIT) is an ability test that measures EI by evaluating an individual's actual performance

(Cherniss, 2000). This differs from the other popular EI measurement tool, the EQ-i, which measures an individual's potential EI using self-evaluation. Mayer and Salovey suggest that EI cannot be accurately measured by asking an individual to report their own level of EI (Newsome et al., 2000), The MSCEIT is a 141-item test that scores individuals in all four branches of Mayer, Salovey, and Caruso's EI model, as well as providing a total EI score (O'Connor Jr., Little, 2003). Like many of the other EI measuring tools the MSCEIT claims to be a strong predictor of academic and job performance, with several independent studies supporting the claim (Cote, 2014). The MSCEIT has become the most popular performance-based measure of EI (Cote, 2014), and more recently, many researchers have adopted and suggested the use of Mayer, Salovey, and Caruso's model of EI (Jordan et al., 2002). However, even supporting experts concede that the MSCEIT is not without limitations. One main criticism of the MSCEIT is that there is not necessarily one unquestionably correct answer to each question. The 'correct' answer to each question is decided by a committee of experts, and some have suggested that selection criterion for the committee is not stringent enough (Cote, 2014).

Each model and measuring tool discussed above claims the ability to predict an individual's level of success, both academically and professionally. From a research standpoint that is a very bold claim, to say the least. For organizations the prospect of a tool that can predict an individual's levels of success, and furthermore, identify shortcomings that if addressed can measurably increase success is too tantalizing to ignore. This has prompted researchers to conduct studies and experiments to see if independent data support the claims. Most studies have found that the MSCEIT, or similar performance based tests, tend to be better predictors of academic and career performance than self-report or traditional cognitive intelligence tests (O'Connor Jr., Little, 2003; Cote and Miners, 2006; Rode et al., 2007; Lindebaum and Cassell, 2012). For instance, one study found a significant correlation between ACT composite and MSCEIT scores (O'Connor Jr., Little,

2003). The same study found no correlation between ACT composite and EQ-i scores. Researchers have suggested the reason for the disparity is that the MSCEIT is measuring EI as a cognitive ability, whereas the EQ-i, and other self-report measures, are assessing personality traits and characteristics. A number of other studies published in peer-reviewed journals have found a relationship between EI and performance when EI is measured with the MSCEIT (Cherniss, 2010). Overall, the results of the studies are mixed. Some studies show strong correlations between EI and performance. Others show weak correlations, or none at all, once general mental ability and/or personality are accounted for.

Exaggerated claims from early EI researchers have led to the idea that EI is a panacea for personal and professional success. After an initial study identified intellectual intelligence as contributing only 20% towards individual success researchers concluded that the remaining 80% of the contributions may be from EI (Jordan et al., 2002). While technically the conclusion is correct in that "the remaining contributions may be from EI", consultants and mainstream business interpreted the statement as "the remaining contributions are from EI." Unfortunately results of further research on these claims are largely inconclusive (Chien et al., 2012). It appears that early research that supported the claim of a positive relationship between EI and performance were either drawing from anecdotal evidence based on exceptional individuals or were actually measuring emotional social competencies (ESC) (Jordan et al., 2002; Cherniss, 2010). An example of crediting high performance to components of EI when in fact ESC's are more likely being observed is the effects of self-discipline or delay of gratification. Both self-discipline and delay of gratification are considered to be components of ESC, a construct that is similar but unique from EI. Cherniss (2010) stated that based on EI being defined as "the ability to perceive, use, understand, and manage emotions" we probably should not expect a strong relationship to performance.

7

The validity of the tests used to assess an individual's EI have also been called into question. At present the two predominant forms of measuring EI are self-assessment tests and ability tests. As early as 1937 Thorndike and Stein had expressed doubt that SI could be measured using verbally derived instruments (Newsome et al., 2000). Experiments have shown that individuals struggle to objectively assess their own abilities (Cherniss, 2010; Cote 2014). If the abilities being assessed are highly valued by society the disparity between believed ability and actual ability is even greater. One experiment showed that 80% of participants believed that they were in the top 50% most emotionally intelligent people in the population, which is clearly impossible. For this reason many researchers believe that EI can only be accurately measured using instruments that do not rely on self-reporting (Cote, 2014). Newer instruments for measuring EI that rely on others to rate an individual's EI have been proposed, but with limited acceptance due to the feasibility of administering the test (Cherniss, 2010). Additionally, later research found no statistical difference between what is being measured by self-report EI scales and already established personality traits (Newsome et al., 2000; Parker et al., 2004). This has led researchers to question if EI should be viewed as an ability-related construct (O'Connor Jr., Little, 2003). Approaching EI as an ability-related construct and using measurements of ability could address the issue of inaccurate self-reporting. This is because much of EI depends on an individual's ability to perceive certain elements in a given situation, and one cannot present a solution to a situation one does not perceive (Cote, 2014).

While measuring EI as an ability based construct using instruments such as the MSCEIT addresses many of the concerns surrounding self-report measuring methods, ability based test are not without faults either. Critics of the MSCEIT have expressed concern regarding its scoring process (Cherniss, 2010). Instruments designed to measure traditional forms of cognitive intelligence are comprised of questions and tests that clearly have only one correct answer. In contrast, the correct answer to a test or question regarding EI can

be subjective, highly dependent upon context, and often times more than one feasible solutions exists. At present the adopted solution to this dilemma has been the use of expert committees to come to a consensus as to what the correct solution is for each test or question (Cote, 2014). This solution is not unreasonable, but it is less than ideal. There is also debate about whether the MSCEIT is measuring actual EI or potential EI (Cherniss, 2010). Critics point out that an individual knowing the correct course of action and being able to perceive a specific situation in the real world and act accordingly are two different things. Furthermore, even if an individual is able to perceive a given situation and is aware of the correct course of action coming across as sincere is important, and by no means guaranteed. To address these limitations newer ability tests have been developed. Two examples of these new ability tests are the situational test of emotional understanding (STEU) and the situational test of emotional management (STEM).

Another claim of EI that fascinated researchers and practitioners is that an individual can develop their EI with training. Recently, however, researchers are arguing this point, stating that there is little empirical evidence to support this claim (Lindebaum and Cassell, 2012; Cote, 2014). Furthermore, evidence at the biological level has been identified that suggests limits to the level of improvement in EI that adults can experience. Short-term increases in the ability to recognize displays of emotion have been noted as individuals are exposed to displays of emotions from members of different cultures. But it is unclear at this time if the short-term increases that are observed translate to sustained long-term change. For those that still embrace the idea that EI can be developed researchers are suggesting that focusing on certain emotional and social competencies may have a greater impact on performance than concentrating exclusively on EI (Cherniss, 2010).

Perhaps the strongest, and most damaging, criticism of EI is the lack of agreement among experts as to what exactly EI represents (Cherniss, 2010). Mayer, Salvoney, and Caruso have stated that the term 'EI' is used to cover too many things. A plethora of EI

models have been proposed. Some of the models are overly inclusive as to what EI represents, including traits and personal qualities that do not seem to fit with the traditional definition of EI. In 2005 Locke went as far as to ask "What does EI...not include?" Many of the models also strongly contradict each other. This has led to the danger of EI becoming a meaningless concept. Critics have even questioned whether EI meets the basic definition of a unique intelligence (Jordan et al., 2002). A study has shown that as much as 41% of variance in EI scores can be attributed to cognitive intelligence, the Big Five traits of personality, and gender (Cote, 2014). As compelling as these complaints are against EI, it is important to remember that even the concept of traditional intelligence was strongly debated late into the twentieth century. A group of two dozen experts on the topic of intelligence was asked to define intelligence in the mid-1980s. The result was two dozen different definitions of intelligence (Cherniss, 2010).

Context

Up until recently the role that context plays in the assessment and expression of EI has largely been ignored (Jordan et al., 2002). Early research into EI assumed that an individual's level of EI was consistent and predictable across all situations. Theoretical debates have questioned the applicability of EI across organizational context, and management literature is acknowledging the role that context might play in the predictive validity of EI (Lindebaum and Cassell, 2012). The work of Jordan et al (2002) attempted to account for context by focusing exclusively on the workplace, both in measuring EI levels and in EI training. This allowed participants to reflect on specific situations and behaviors within a specific context. This approach accounted for the possible differences between work relationships and personal or family relationships. While some researchers are criticizing this oversight others believe it might explain the inconsistent results of many experiments attempting to prove a relationship between EI and performance (Cherniss, 2010). In real

life individuals are required process a great deal more information pertaining to a given situation, and must respond in real time without an orderly list of options or time to reflect.

EI & Academic Success

Past research into the relationship between traditional intelligence and academic success has provided little evidence to support a positive correlation between the two. One study showed that traditional intelligence was only modestly associated with academic performance, as measured by GPA, in students making the transition from high school to university (Parker et al., 2004). Another showed that traditional intelligence only accounted for 25% of the variance in academic performance (Newsome et al., 2000). This left researchers to speculate as to what accounted for the remaining 75% of the variance. Many studies have concluded that measures of personality and EI are more effective predictors than traditional intelligence when looking at academic, job, and life performance (Newsome et al., 2000; O'Connor Jr. Little, 2003). However, a broader review of the literature reveals that the results are anything but conclusive (Parker et al., 2004).

Since the EQ-I and the MSCEIT are two of the most prominent instruments used to measure EI there is a great deal of research evaluating the claims of these tests. The EQ-i Technical Manual claims there is a relationship between EI and academic performance (Newsome et al., 2000). However, investigation by Newsome et al. (2000) found the correlation between GPA and the results of the EQ-i to be "very low". Later research by Parker et al. (2004) found interpersonal, stress management, and adaptability (subscales tested by the EQ-i) to be significant predictors of academic success in first-year university students. The results were even more impressive when students were organized into two groups; those considered to be academically successful, and those considered to be academically unsuccessful. In their study 82% of successful students and 91% of unsuccessful students were identified. Parker et al. (2004) concluded that the extreme age

11

range observed in the 2000 Newsome et al. study is likely responsible for their finding no significant correlation between EQ-i scores and GPA.

Research examining a possible correlation between MSCEIT scores and GPA produced similar results. O'Connor Jr. and Little (2003) found no significant correlation between MSCEIT total scores, or EQ-I total scores, and GPA. This led them to conclude that both measures of EI have limited predictive validity in relation to academic performance. Interestingly, they did find a significant correlation between ACT composite scores and MSCEIT total scores, and several MSCEIT subscale scores. This supports the claim that the MSCEIT is measuring EI as a cognitive ability. Researchers that have studied the correlation between EI and performance in both academic and professional settings have concluded that EI is more capable of predicting performance in professional settings than in academic settings (Frye et al., 2006).

EI & Job/Career Success

Much of the twentieth century was spent attempting to engineer emotions out of the workplace. The long-standing belief was that emotions introduce unwanted variation into the organization's outputs. Research has shown that attempts to remove emotion from the workplace are mostly unsuccessful, and can even have negative consequences for the organization (Love et al., 2011; Lindebaum and Cassell, 2012). This should not come as a surprise since modern neuroscience has shown that the underlying mechanisms of cognition and emotion are not separate (Phelps, 2006). It appears that as long as the human element is present in a process emotion will also be present. For that reason, perhaps, Goleman suggested that individuals with higher levels of EI excel in the workplace because they are better equipped to cope with the job stresses that arise from the presence of emotion in the workplace (Love et al., 2011).

In the twenty-first century organizations have begun to pay a great deal more attention to EI, with the goal of developing leadership skills in managers hiring better candidates (Turner and Lloyd-Walker, 2008; Cote, 2014). Individuals with high levels of EI are believed to be able to better navigate situations in the workplace by extracting information from emotions and therefore maintaining favorable interpersonal relationships with peers and supervisors (Chein et al., 2012). Researchers investigating the correlation between EI and job performance have produced positive results in both the laboratory and field settings. In 2010 Cherniss found that at least 13 studies had identified some correlation between EI and job performance.

Turner and Lloyd-Walker (2008) conducted a case study investigating the impact of emotional competency (EC) training in the defense contracting sector in the USA. Pre and post training self-assessment and peer review surveys were used to measure the impact of EC training on employee satisfaction and project success. The active group showed a 1.148 point increase in self-assessed job satisfaction over the control group using a five-point Likert scale. Interestingly, participants in the active group that had not received any post-secondary education benefited even more from the EC training than did their colleagues who had received post-secondary education. This suggests that EI might be developed during post-secondary education. Self-assessed job performance was also positively impacted by the EC training, increasing by 0.580 points. No statistical significance for employee satisfaction or job performance based on peer evaluation was found when averaged across all 72 questions of the survey. Three sections within the peer evaluation survey did show statistically significant negative results. Turner and Lloyd-Walker believe that those in the control group who did not receive the EC training might have had unrealistic expectations of the changes that could be expected from their peers in just six months. This is supported by findings that a four to six month lag time exists between training and any impact on performance (Lynn, 2002). The level of EI required to

adequately perform a specific job also appears to contribute to the impact that EC training can have on job performance (Turner, Lloyd-Walker, 2008).

<u>EI & Leadership</u>

Research into the field of EI often leads to speculation about the relationship between EI and leadership. The potential link between EI and leadership is, at least in part, what causes many companies to pursue the development of EI in its workforce (Cote, 2014). The research examining the possible link between EI and leadership reveals reasons for both optimism and caution. Managers with high EI have been found to positively affect organizational effectiveness and performance. Butler and Chinowsky (2006) found that within the construction industry interpersonal skills and empathy are two key EI elements, and both must be further developed within executives for the industry to experience more successful project outcomes. Even at the project level it is a project manager's people skills that are often credited for a project team's performance (Turner & Lloyd-Walker, 2008). This is because emotionally competent group norms (ECGNs) are developed as a direct result of the team leader's own EI (Koman & Wolff, 2008).

However, continued study of the topic has shown that an emotionally intelligent team leader alone does not guarantee an emotionally intelligent team, or superior performance (Turner & Lloyd-Walker, 2008). Each team member's individual level of emotional intelligence contributes to the groups collective EI, and thus the group's performance. At least one study has shown a neutral to negative correlation between team leader EI and team performance. Feyerherm and Rice (2002) observed that teams with a leader skilled at managing emotions in others were less accurate, productive, and committed to continuous improvement than teams whose leader was average, or below average. This trend was also observed for overall EI scores as well. Feyerherm and Rice

14

concluded that the relationship between a leader's EI and the team's performance is more complex than what early EI researchers originally believed.

<u>EI & Teams</u>

The vast majority of research has examined EI at the individual level. However, in the past decade teams have become the preferred method by organizations for problem solving and increasing productivity (Frye et al., 2006). In response researchers have begun examining the impact of EI at the team level (Druskat, Wolff, 2001; Jordan et al., 2002; Druskat et al., 2013). Cherniss (2010), a leading researcher in the field of EI, believes that EI is likely to have an even greater impact on team performance than on individual performance. The possibility for greater impact at the team level stems from the findings that employees with higher levels of EI are better able to sense, understand, and appropriately respond to emotional cues from other team members (Chien et al., 2012). But the evidence surrounding EI at the team level remains mixed (Feyerherm and Rice, 2002; Jordan and Troth, 2004; Koman and Wolff, 2008). Examining the impact of the leader's EI on team performance, as well as the formation of emotionally competent group norms (ECGN) has shown increased performance in some instances, and decreased performance in others.

As the scope of EI research has broadened to the team level additional concepts and terms required clarification by researchers. Definitions for team, team effectiveness, and group-level emotional intelligence are provided by Koman and Wolff's research (2008):

Team - "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems and who manage their relationships across organizational boundaries."

15

Team Effectiveness – "a multidimensional construct that entails both meeting customer specifications and being able to work together effectively in the future."

Group-Level Emotional Intelligence – "the ability of the team to generate operating norms that increase awareness of emotions and management of behavior in ways that have positive emotional consequences."

Earlier work by Druskat and Wolff (2001) outlined the basic components of EI at the team level. They claimed that in order for a team to be effective there has to be trust between group members, strong group identity, and group efficacy. Along with the existing components of EI at the individual level groups have to grapple with yet another dimension of EI, being mindful of the group's collective emotions and the emotions of individuals or groups outside of its boundaries. Druskat and Wolff identified participation, cooperation and collaboration as three fundamental elements that must be present at high levels for teams to realize their full potential. Just as with individual EI many researchers, including Druskat and Wolff, believe that Group EI can be increased with education and practice.

A few misconceptions were also dispelled. First is the idea that grouping emotionally intelligent individuals together will result in an emotionally intelligent group. Druskat and Wolff believe this is because of the additional EI dimension present at the group level, as well the fundamental requirements of the group. It was also found that confrontation can actually be a positive event for an emotionally intelligent group. Without confrontation when it is necessary negative emotions will often fester, either rotting away the core of the team or leading to an unhealthy and unproductive explosion of negative emotions.

Seeking to understand the impact of team emotional intelligence in an academic setting Jordan et al. (2002) observed and measured a group of undergraduate students in Australia for the duration of a fourteen week managerial and communication course. A customized measurement tool that had been developed and validated called the WEIP-3 was

used to measure team EI. Goal focus and team effectiveness were chosen as the dependent variables to represent team performance. The research team wanted to understand whether EI can be viewed at the team level as an aggregate of individual EI's, or if the leader or the individual with the highest EI dictates the direction and performance of the team. Jordan et al. hypothesized that goal focus and team effectiveness would be higher among teams with high averaged EI than teams with low averaged EI. The findings indicated that teams with high averaged EI displayed strong process effectiveness and goal focus at the beginning of the project, and maintained consistent levels throughout the project. Teams with low averaged EI on the other hand initially displayed poor process effectiveness and goal focus at the beginning of the project, but were able to equal the performance of the high averaged EI teams by the end of the project. Based on their findings Jordan et al. concluded that team EI is a valid predictor of team performance, at least in an academic setting.

Team level EI has also been validated at the professional level, both in the public and private sectors. Beginning with Boyatzis and Goleman's model of EI at the individual level as their foundation Koman and Wolff (2008) incorporated dimensions of EI at the team level to create a team EI model. A key component of their model is that at least one awareness norm and one regulation norm is present at each of the three levels; individual, group, and cross-boundary (external). Using this model they looked to better understand the impact that the leader has on the development of emotionally competent group norms (ECGN), and what affect ECGNs have on performance. A military sample of aircrew teams and their maintenance teams were used as the sample for the study. Group-level EI was assessed using the Group Emotional Intelligence measure refined by Hamme in 2003. The results of the study provided evidence that a team leader's EI does affect the development of ECGNs in a team, and as a result also affects the team's performance. It was found that awareness norms often lead to the development of regulation norms, which have been shown to be related to performance. Two frequent predictors for ECGNs were individual EI competencies;

optimism and organizational awareness. Based on their findings Koman and Wolff believe that EI levels of individual group members might also affect overall group EI.

Frye et al. (2006) studied the effects of team-level EI in the private sector by surveying employees of a promotional products distributor. They assessed team-level EI by collecting individual EI using Bar-On's EQ-i, and then averaged each of the composite scores and the overall scores within each team. The dependent variables observed were team task orientation and team maintenance function. Only a positive but non-significant correlation was found between total team averaged EI and the two dependent variables. However, a positive and significant correlation was found between two EI composites, team averaged interpersonal EI and team averaged general mood EI, and both dependent variables. Manifestations of high interpersonal EI within individuals are dependableness, responsible, and good social skills. Similarly high mood EI is often manifested as a positive outlook on life (optimistic). Based on their data Frye et al. believe that teams comprised of individuals displaying the aforementioned characteristics are significantly more likely to develop strong team task orientation and team maintenance function. By approaching and measuring team-level EI as an aggregate of individual EI Frye et al. provided evidence to support Koman and Wolff's speculation that the EI levels of individual group members will have an impact on team-level EI.

To this point the positive correlation between team-level EI and team performance has been without question. But as is often the case with the study of human behavior and interaction the link between team-level EI and team performance is not without contention. A frequently cited study by Feyerherm and Rice (2002) provides evidence against a positive correlation between the leader's EI and team performance. Individual EI levels of employees working in a financial services center were recorded and compared to their respective team's performance. EI was measured using the Multifactor Emotional Intelligence Scale (MEIS). The MEIS is a multi-rater tool where the individual whose EI is being measured

conducts a self-assessment of their skills, as well as several peers evaluating their skills. Team performance was represented by customer service, accuracy, productivity, and continuous improvement. The various aspects of team performance where also measured by the use of a multi-rater where individuals rated their own team's performance, as well as several other peers outside of the team rating the performance of the individual's team. The results of the study showed that the higher the leader's total EI and several composites of EI the poorer the team performed as rated by individuals within the team and outside of the team. The only positive correlation between the leader's EI and team performance was the team leader's ability to understand emotion and the team's customer service performance. Interestingly the data showed that the higher the team leader scored in their ability to manage emotions in others the less accurate and productive the leader's team perceived themselves as being. Negative correlations were also found between the team leader's overall EI and both accuracy and productivity. The opposite was also true, that teams with leaders having overall lower EI scores performed higher. While Feyerherm and Rice's study suggests that the leader's EI is not a panacea for team performance, it does raise some very interesting questions. Is it possible that teams lead by individuals with higher EI set a higher standard for their performance, thus leading to lower self-assessed rankings. Perhaps the most important contribution of Feyerherm and Rice's study is that it serves as a reminder that the relationship between EI and team performance is not a foregone conclusion, nor as simple as originally believed.

While research into the correlation between team leader EI, team-level EI, and team performance shows promise, it's important to remember that it's not a universal antidote for eliminating poor performance. To realize the possible results of teams with high EI both the leader's EI and the EI of each individual on the team must be developed (Turner, Lloyd-Walker, 2008). Even then, team-level EI must be a continued focus. Simply grouping individuals with high levels of EI together does not always lead to an emotionally intelligent

team (Druskat, Wolff, 2001). Another obstacle that can neutralize EI's ability to positively impact team performance is that many techniques currently in use by organizations intentionally attempted to remove emotions from any team situation. The reality is that as long as humans are part of the process emotions will always be present. Until a paradigm shift takes place that embraces the presence of emotions in teams it is unlikely that the full impact of team-level EI will be realized.

<u>EI & Construction</u>

Through an almost self-perpetuated cycle of research and application EI has gained momentum over the last two decades. In that same time period almost every major industry has seen an increase in productivity (Love et al., 2011). Obviously this is not due solely to the increased understanding of EI, but it is likely that EI researchers might say EI played a part. If that is the case, then perhaps it is no coincidence that the one major industry to be left behind in the flourishing of productivity is also one of the industries most resistant to the acknowledgement and recognition of emotion (Lindebaum and Fielden, 2011; Love et al., 2011). That industry is the construction industry. While interest pertaining to EI in the construction industry was initially scant, over the past decades many researchers have given the topic serious consideration. EI researchers such as Cherniss (2010) have suggested that EI becomes more important depending on "the job, the specific situation, the outcomes, and the kind of people involved." She also speculated that EI will have a greater impact in high-stress situation. Both of the statements have made EI of particular interest to researchers, and even some professionals, within the construction industry.

A 2006 study by Butler and Chinowsky assessed EI levels of executives within the construction industry and compared the results to the EI levels of the general population. This study utilized Bar-On's EQ-i self-assessment to measure EI of each executive. Analysis

of the data showed that construction industry executives score slightly higher in EI than the general population, and also have a smaller standard deviation than the general population. As a whole the construction executives scored highest in stress tolerance, independence, and optimism. The construction industry is widely acknowledged as a stressful and risk laden environment. It makes sense then that individuals that have managed to promote to the level of executive and guide their companies through the challenging terrain of the construction industry would score highly in these attributes.

Conversely, the three EI attributes that the executives scored lowest in were all in the interpersonal category. They were empathy, interpersonal relationship, and social responsibility. Butler and Chinowsky credit the weakness in empathy and interpersonal relationship to the historically low bid, tyrant-type ruler environment of the construction industry. It is worth noting that the female construction executives that participated in the study scored considerably higher than their male counterparts. The low score in social responsibility can suggest that the executives as a whole share the attitude that taking advantage of others for one's own gain is acceptable. Again, a sentiment that is commonly associated with the construction industry. By the standards of research in the field of social sciences the construction executives compared quite well, and provided evidence to support the positive relationship between EI and leadership behavior in the construction industry.

Moving closer to the individuals performing the day to day tasks within a construction company offers an interesting perspective about the attitudes held towards emotions that pervades the general industry. Lindebaum and Fielden (2011) conducted a qualitative study by interviewing nineteen CPMs from four different construction companies within the UK. Their review of the existing literature confirmed the belief that many people hold, that construction and expressions of frustration, anger, aggression, and hostility go hand in hand. Furthermore, repression of softer emotions is also socially rewarded. It appears that the aforementioned emotions, and expressions of emotion, are reinforced by

the fact that they do drive results in the short-term. Other contributors are the male-dominated industry makeup, adversarial relationships, tight profit margins, and extreme short-term pressures that are all commonplace within the industry.

The interviews that Lindebaum and Fielden conducted proved to be quite telling. A common theme expressed by the CPMs was the belief that anger and aggressive behavior are not the best ways to resolve issues, and they would rather not use those methods. But when under pressure and faced with budget or schedules overruns most CPMs conceded that they have resorted to angry and aggressive outburst in the past, and admit that they would probably do it again in the future if needed. CPM 8 (55) (study designation) believes that the industry naturally attracts individuals that are "much less well-disciplined", even amongst professionals. Interestingly Lindebaum and Fielden's review of the literature found support for this view. Evidence has suggested that science and engineering students display more authoritative behavior than social science students. Another CPM believes that a person will not get very far in construction if they express their emotions openly in the workplace. The CPM concluded by suggesting that the construction industry is not very receptive to emotions. This CPM's conclusion is interesting because it suggests that at least for some in the industry anger and frustration are considered differently from the general term 'emotions'.

Lindebaum and Fielden concluded that "anger appears to be embedded in the occupational culture of construction and embraced as a strategic and legitimate function to be successful as a CPM." While the common position that the expression of anger is ineffective as a leader, and suggests a lack of emotional regulation, they feel the position is potentially invalid within the construction industry. They concede that their study only focused on the short-term impact of expressing anger, and admit that there are potentially negative long-term physiological effects.

A comprehensive literature review conducted by Love et al. (2011) highlights the need of an industry-wide EI intervention. Over the past fifty years construction has lagged just about every other industry in regards to increased productivity. The past two decades have seen an influx of new technologies, delivery systems, and operations methods adopted. And yet only marginal increases in overall industry performance have been observed. Love et al. suggests that greater focus should be given to project teams and their individual members, as they are the ones that ultimately determine the effectiveness of any new tool or technique. By looking at the key tasks, skills, and personal characteristics required of an effective CPM it is clear that the CPMs' role aligns well with the current EI research. Furthermore, knowing the EI of their team and its individual members provides the CPM the opportunity to best align the human resources on the project. But they also acknowledge some of the obstacles of integrating deliberate focus on EI into the construction setting. As a whole the construction industry is somewhat unwilling to embrace the concepts of EI or individual psychology. This, again, illustrate the impact of context within any construct of EI.

One of the greatest criticisms of EI is the inconsistencies in results that experiments produce. Cherniss (2010) credits the inconsistencies to the important role that context plays within any construct of EI. She suggests that certain environments will naturally encourage emotionally intelligent behavior more than other environments. It is likely that two different EI scores can be produced for the same individual at roughly the same time just by changing the context of the interactions they are referencing as their EI is measured (Jordan et al., 2002). For example, having the individual focus exclusively on their work relationships and interactions during one measuring session, and then having the same individual focus exclusively on their family relationships and interactions during another session. Trait activation theory (TAT) explains this phenomenon by showing that an environment, or context, contains salient trait-relevant cues that will encourage associated

behaviors to be exercised (Tett & Guterman, 2000; Tett & Burnett, 2003). The example Chien et al. provide illustrates the effect of TAT on individuals high in extraversion:

> As an example, a department happy hour is laden with cues relevant to the personality trait of extra- version because the context provides opportunities for and positively values social interaction. These extraversion-relevant cues in turn activate attendees' extraversion, such that individuals higher in extraversion might engage in more conversation compared with less extraverted individuals. In contrast, in a context lacking salient extraversion-relevant cues (such as a funeral), individuals' extra- version—regardless of level—is unlikely to be expressed in the form of gregarious social behavior.

In the case of the construction industry both executives and CPMs tested at or above average EI levels of the general population (Butler & Chinowsky, 2006; Sunindijo et al., 2007). Yet observers and practitioners alike continue to describe the construction industry as dominated by aggressive, authoritative behavior where feelings of frustration and anger are accepted, and in many cases even rewarded (Lindebaum & Fielden, 2011; Love et al., 2011; Lindebaum and Cassell, 2012). On the other hand, softer feelings such as empathy are discouraged, and may even inhibit career success. So why then if the construction industry is not comprised of emotionally incompetent individuals is it characterized by emotionally incompetent behavior? The answer is, again, context. While the individuals within the environment may possess average, or above average, levels of EI the salient trait-relevant cues to encourage the emotionally intelligent behaviors appear to be absent. While many of the roles within the construction industry would likely benefit from emotionally intelligent behavior the current environment of construction does not require it.

And research has found that it is in jobs that require high levels of EI where a positive

relationship between EI and job performance exists (Turner, Lloyd-Walker, 2008).

CHAPTER 3

METHODOLOGY

<u>Participants</u>

This study builds upon previous research efforts that analyzed the impact of emotional intelligence on academic performance. More specifically, this study seeks to better understand the relationship between team EI and project performance in construction management curricula. Participants in this study were students enrolled in a junior-level construction estimating course, a required class in the construction management and construction engineering program at a large university within the United States. Students enrolled were selected as target participants because of the final project they are required to complete at the end of the course. For the final project students are required to pair up in teams ranging from two to four members and perform a complete quantity takeoff, estimate and bid for an assigned construction project. Students voluntarily choose who to pair up with. The assigned construction project is a real project that has been constructed.. The difficulty of the project allows both effective and ineffective team behaviors to surface due to the stress and pressure the student teams experience while working on the project.

Data was collected over two semesters, fall 2013 and spring 2014. Students were asked to voluntarily participate by completing a brief questionnaire that collected information about their emotional intelligence, among other things. As an incentive to participate in the study students were offered extra credit on their first exam score. Of the 67 students that took the first exam 61 students completed the EI survey, for a response rate of 91 percent. All 61 students that completed the EI survey turned in a final project at the end of the semester, but not all of the 59 students were on teams where every team member completed the survey. This reduced the sample to 52 individual students over the two semesters.

Data was analyzed from 52 students comprising 16 project teams. The teams ranged in size from two to four students. There were seven teams of four students, six teams of three students, and three teams of two students. Of the students that participated the average age was 24 years old, with a range of 19-54 years old and a standard deviation of 6.9 years. Male participants comprised 90 percent while 10 percent were female. The majority of students were in the junior year, and 79 percent were involved in at least one extracurricular activity. The average hours worked at an internship or job was 20.5 hours. The average industry experience was 3.2 years, and 1.3 years of estimating experience.

Emotional Intelligence & Team Emotional Intelligence

TalentSmart's (Bradberry and Greaves, 2009) 28-question Emotional Intelligence Appraisal instrument was used to assess individual levels of emotional intelligence. This specific appraisal of emotional intelligence is accepted by the EI consortium, and has also been used in previous studies to assess emotional intelligence within the construction industry (Sunindijo, et al.; 2007). The instrument assesses four sublevels of emotional intelligence; self-awareness, self-management, social-awareness, and relationship management. Self-awareness and self-management are grouped together to provide individuals with their personal competence, while social-awareness and relationship management are grouped together to provide social competence. From there personal competence and social competence are grouped together to provide an individual's overall emotional intelligence score. In the development of the instrument TalentSmart (Bradberry and Greaves, 2009) measured the emotional intelligence of 13,248 subjects worldwide. Based on those measurements TalentSmart reports the average EI score for their test to be 75 points (out of a possible 100 points).

To calculate team average EI, Frye, et al.'s (2006) methodology was used. Each team members' scores for total EI, personal competence, social competence, self-

awareness, self-management, social-awareness, and relationship management were averaged together to produce a team average in each category. The standard deviation of the team average in each category was also calculated.

Project Performance

      The students' grades on the final project were used as the metric for team performance. The final project is creating a complete cost analysis and report for a real project that has been built within the last decade. A full set of drawings and specifications is given to them approximately 6 weeks before the end of the semester. The CSI Master Format is used in conjunction with RS Means for work structure breakout and pricing. Students are required to perform a full quantity takeoff of all CSI divisions and extend the cost for material, equipment, and labor using RS Means to provide a final cost to build. Afterwards all overhead, GSA costs, markup, and bonding are added. The requirements of the bid are a submission letter, a full cost breakout, and professional binding of all materials. The projects are graded 50 percent on the accuracy of the estimate, and 50 percent of the quality of the report. For the two semesters the average project grade was 87 percent, with a standard deviation of 9 percent.

CHAPTER 4

RESULTS

To assess the relationship between team averaged EI and project performance

among students a Pearson's product-moment correlation was performed. Due to the

exploratory nature of this research linearity and a normal distribution of variables was

assumed. No outliers were removed in order to give the most accurate representation of the

total population. Initial examination of the results showed no significant correlation between

team averaged EI and project performance. However, when the four individual parts of EI

were examined several significant, or near significant, correlations were found. A near

significant moderate negative correlation was found between team averaged self-awareness

and project performance, $r(14) = -.355$, $p = .089$. Standard deviation from the team

average self-management and project performance also showed a near significant moderate

negative correlation, $r(14) = -.375$, $p = .076$. The strongest correlations were found

between team averaged social competence and performance $[r(14) = .581, p = .009]$, team

averaged social-awareness and performance $[r(14) = .589, p = .008]$, and team averaged

relationship management and performance $[r(14) = .500, p = .024]$. This explained 34

percent, 35 percent, and 25 percent of the variation in project scores respectively.

The relationship between individual student total EI, as well as the individual parts of

EI, and project score were also examined to determine if any similar correlations were

present. A slight positive near significant correlation existed between individual total EI and

project score, $r(14) = .195$, $p = .083$. Individual social competence and project score $[r(14)$

$= .366, p = .004]$, individual social-awareness and project score $[r(14) = .387, p = .002]$,

and individual relationship management and project score $[r(14) = .305, p = .014]$ all

showed a significant moderate correlation. But none were over the critical r-value required

for df = 14. For visual comparison Figure 1 shows a comparison of significant and near

significant r-values for individual EI components and team averaged EI components as it

relates to project performance. Individual EI and components labeled with (I), while team averaged EI and components are labeled with (T). The bars representing the r-value for team averaged self-awareness and team averaged self-management standard deviation are in red, as well as each label having an asterisk, to not that those correlations are negative.
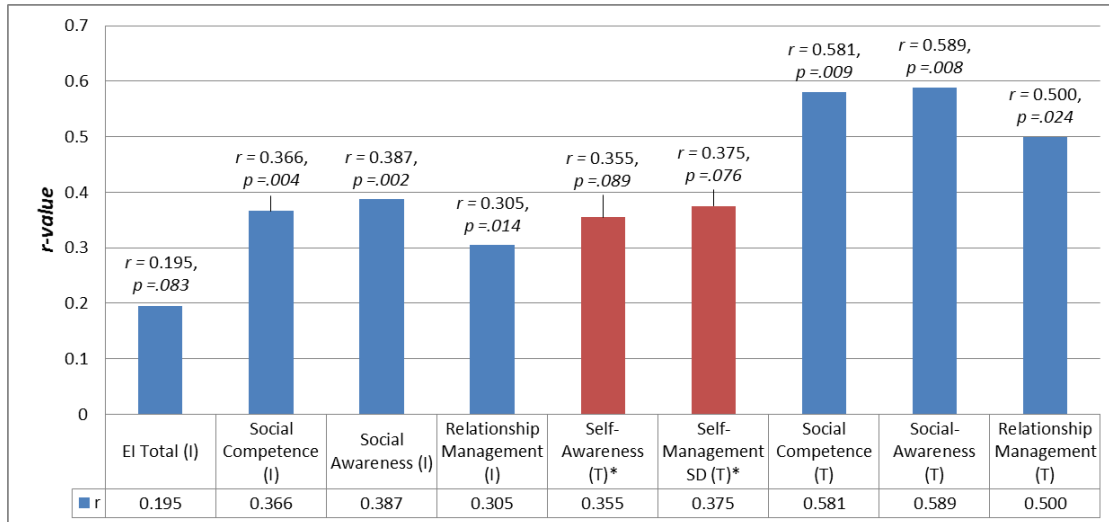

Figure 1. Comparison of r-values Between Significant Factors

Figure 2 shows the explained variance in project scores for each significant and near significant correlation for both individual and team averaged EI components.
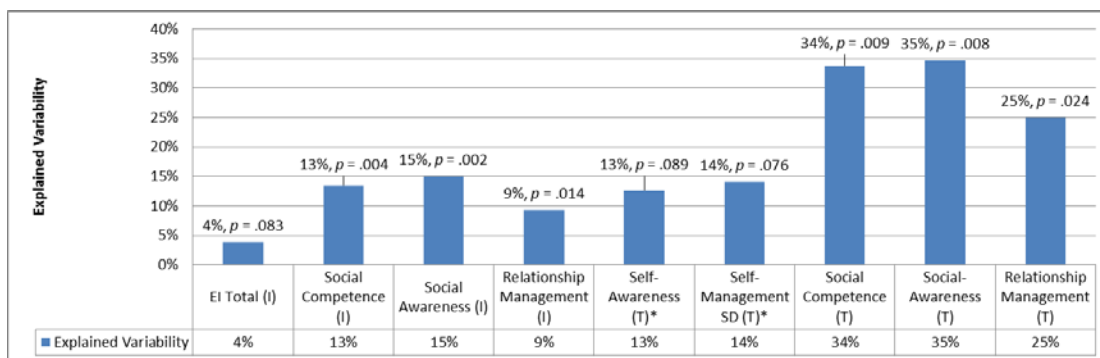

Figure 2. Comparison of Explained Variance Between Significant Factors

CHAPTER 5

DISCUSSION

Because TalentSmart's Emotional Intelligence Appraisal (Bradberry and Greaves, 2009) was used to assess emotional intelligence their construct of emotional intelligence will also be used for this discussion. Table 1 provides their definition of EI and its various components.

TABLE 1: Emotional Intelligence Appraisal Definitions (Bradberry & Greaves, 2009)

Component	Definition
Emotional Intelligence	Your ability to recognize and understand emotions in yourself and others, and your ability to use this awareness to manage your behavior and relationships.
Personal Competence	The collective power of your self-awareness and self-management skills. It's how you use emotional intelligence in situations that are more about you privately.
Social Competence	The combination of your social awareness and relationship management skills. It's more about how you are with other people.
Self-Awareness	Your ability to accurately perceive your emotions and stay aware of them as they happen. This includes keeping on top of how you tend to respond to specific situations and certain people.
Self-Management	Your ability to use awareness of your emotions to stay flexible and positively direct your behavior. This means managing your emotional reactions to all situations and people.
Social Awareness	Your ability to accurately pick up on emotions in other people and get what is really going on. This often means understanding what other people are thinking and feeling, even if you don't feel the same way.
Relationship Management	Your ability to use awareness of your emotions and the emotions of others to manage interactions successfully. Letting emotional awareness guide clear communication and effective handling of conflict.

The original hypotheses of this study were 1) that team averaged EI would have a significant and positive correlation with project performance, and 2) that standard deviation from team averaged EI would have a significant and negative correlation with project performance. The results showed no significant correlation between team averaged EI and

project performance, or the standard deviation from team averaged EI and project performance. Thus the null hypothesis must be accepted in both instances. However, further analysis of the individual components of EI showed several strong correlations with project performance.

Team averaged social competence, social awareness and relationship management all displayed strong correlation with project performance. While individual scores of each of the previous skills correlated to project performance as well, the variance in project scores it could account for was less than half what the team average of that same skill was able to. It stands to reason that higher social skills would be beneficial in team settings. What is interesting is how much stronger the correlation between the team averaged skills and project performance is compared to the individual skills and project performance.

Interestingly a significant and negative moderate correlation was found between team averaged self-awareness and project performance, as well as the standard deviation from team averaged self-management and project performance. While further research is required to unpack this finding one possible explanation for this could be that with higher levels of self-awareness individuals might be capable of manipulating their own emotions and other people's emotions for their own personal gains, even at the expense of the group (Grant, 2014).

Data was also collected and analyzed on several control variables: age, industry experience, estimating experience, and extracurricular activity levels. The only control variable to also show significant correlation to project performance was extracurricular activity levels, as measured by how many student clubs, organizations, and competitions students were involved in. At both the individual level [$r(50) = .302, p = .015$] and team averaged level [$r(14) = .477, p = .031$] extracurricular activity levels had a positive correlation with project performance. At the university where this study was conducted students are encouraged to participate in extracurricular activities to demonstrate to

32

employers that they are capable of working with others. This finding suggests that a correlation may exist between social skills within the construct of EI and engagement in extracurricular activities.

Two primary limitations to this study exist due to the exploratory nature of the experiment. The first limitation is the number of student teams observed. As stated in the results section, linearity and normality were assumed because of the limited number of data points. The second limitation is the academic setting of the study. While research have identified that EI is not as strong a predictor in academic settings as it is in professional settings (Frye et al., 2006), it cannot be assumed that an even stronger correlation would be found if this study were performed in the construction industry. The reason for this is the construction industry's pushback against the embracement of EI as a legitimate and useful tool for increasing project performance (Lindebaum and Fielden, 2011).

Future research is needed to further validate the findings, as well as explore other possible correlations that were observed. Similar studies with a larger sample size will be needed to in order to draw a better conclusion about the findings. Additionally, the relationship between team averaged social components of emotional intelligence and levels of extracurricular activity should be investigated. Understanding if one component leads to an increase in the other can help instructors in construction management programs better develop the social skills that correlate to higher project performance.

CHAPTER 6

CONCLUSION

While emotional intelligence continues to be heralded in the media as a panacea for increasing performance, and the supreme predictor of success the research shows there is still a lot of work to be done to fully understand its impact. Nonetheless, a growing body of research does suggest that in certain situations emotional intelligence can positively contributed to performance. This research sought to better understand the relationship between a team's emotional intelligence and the team's performance on a project. What was learned is that only certain components of emotional intelligence correlate to increased project performance. Specifically the social elements of emotional intelligence: social competence, social awareness, and relationship management.

These findings have several practical applications. Since emotional intelligence is a trainable skill it is possible that training to improve social components of team averaged emotional intelligence will lead to increased project performance. The social components of team averaged emotional intelligence can also be used to assign project teams to the appropriate projects based on their skill sets. Lastly, different combinations of project team members can be assessed upfront by utilizing team averaged emotional intelligence, leading to the optimal pairing of team members.

REFERENCES

Bradberry, T., & Greaves, J. (2009). *Emotional Intelligence 2.0*. San Diego, CA: TalentSmart.

Butler, C., & Chinowsky, P. (2006). Emotional Intelligence and Leadership Behavior in Construction Executives. *Journal of Management in Engineering*, *22*(3), 119–125. doi:10.1061/(ASCE)0742-597X(2006)22:3(119)

Cherniss, C. (2010). Emotional Intelligence: Toward Clarification of a Concept. *Industrial and Organizational Psychology*, *3*(2), 110–126. doi:10.1111/j.1754-9434.2010.01231.x

Chien, I. C., Seo, M.-G., & Tesluk, P. E. (2012). Emotional intelligence, teamwork effectiveness, and job performance: The moderating role of job context. *Journal of Applied Psychology*, *97*(4), 890–900. doi:10.1037/a0027377

Côté, S. (2014). Emotional Intelligence in Organizations. *Annual Review of Organizational Psychology and Organization Behavior*, *1*, 459–488.

Côté, S., & Miners, C. T. H. (2006). Emotional Intelligence, Cognitive Intelligence, and Job Performance. *Administrative Science Quarterly*, *51*(1), 1–28. doi:10.2189/asqu.51.1.1

Druskat, V. U., Mount, G., & Sala, F. (2013). *Linking Emotional Intelligence and Performance at Work: Current Research Evidence With Individuals and Groups*. Psychology Press.

Druskat, V. U., & Wolff, S. B. (2001, March). Building the Emotional Intelligence of Groups. *Harvard Business Review*, 80–90.

Feyerherm, A. E., & Rice, C. L. (2002). EMOTIONAL INTELLIGENCE AND TEAM PERFORMANCE: THE GOOD, THE BAD AND THE UGLY. *International Journal of Organizational Analysis*, *10*(4), 343–362. doi:10.1108/eb028957

Frye, C. M., Bennett, R., & Caldwell, S. (2006). Team Emotional Intelligence and Team Interpersonal Process Effectiveness. *American Journal of Business*, *21*(1), 49–58. doi:10.1108/19355181200600005

Gibbs, N. (1995, October 2). EMOTIONAL INTELLIGENCE: THE EQ FACTOR. *Time*, Cover story.

Goleman, D. (2006). *Emotional Intelligence: Why it can matter more than IQ (Original Print - 1995)*. Random House LLC.

Goleman, D., Boyatzis, R., & McKee, A. (2013). *Primal Leadership, with a New Preface by the Authors: Unleashing the Power of Emotional Intelligence*. Harvard Business Press.

Grant, A. (2014, January 2). The Dark Side of Emotional Intelligence. Retrieved October 26, 2014, from http://www.theatlantic.com/health/archive/2014/01/the-dark-side-of-emotional-intelligence/282720/?single_page=true

Jordan, P. J., Ashkanasy, N. M., Härtel, C. E. J., & Hooper, G. S. (2002). Workgroup emotional intelligence: Scale development and relationship to team process effectiveness and goal focus. *Human Resource Management Review*, *12*(2), 195–214. doi:10.1016/S1053-4822(02)00046-3

Jordan, P. J., & Troth, A. C. (2004). Managing Emotions During Team Problem Solving: Emotional Intelligence and Conflict Resolution. *Human Performance*, *17*(2), 195–218. doi:10.1207/s15327043hup1702_4

Koman, E. S., & Wolff, S. B. (2008). Emotional intelligence competencies in the team and team leader: A multi-level examination of the impact of emotional intelligence on team performance. *Journal of Management Development*, *27*(1), 55–75. doi:10.1108/02621710810840767

Lindebaum, D., & Cassell, C. (2012). A Contradiction in Terms? Making Sense of Emotional Intelligence in a Construction Management Environment. *British Journal of Management*, *23*(1), 65–79. doi:10.1111/j.1467-8551.2010.00729.x

Lindebaum, D., & Fielden, S. (2011). "It"s good to be angry': Enacting anger in construction project management to achieve perceived leader effectiveness. *Human Relations*, *64*(3), 437–458. doi:10.1177/0018726710381149

Love, P., Edwards, D., & Wood, E. (2011). Loosening the Gordian knot: the role of emotional intelligence in construction. *Engineering, Construction and Architectural Management*, *18*(1), 50–65. doi:10.1108/09699981111098685

Lynn, A. B. (2002). *The Emotional Intelligence Activity Book: 50 Activities for Developing EQ at Work*. AMACOM Div American Mgmt Assn.

Mayer, J. D., DiPaolo, M., & Salovey, P. (1990). Perceiving Affective Content in Ambiguous Visual Stimuli: A Component of Emotional Intelligence. *Journal of Personality Assessment*, *54*(3-4), 772–781. doi:10.1080/00223891.1990.9674037

Newsome, S., Day, A. L., & Catano, V. M. (2000). Assessing the predictive validity of emotional intelligence. *Personality and Individual Differences*, *29*(6), 1005–1016. doi:10.1016/S0191-8869(99)00250-0

O'Connor Jr., R. M., & Little, I. S. (2003). Revisiting the predictive validity of emotional intelligence: self-report versus ability-based measures. *Personality and Individual Differences*, *35*(8), 1893–1902. doi:10.1016/S0191-8869(03)00038-2

Parker, J. D. A., Summerfeldt, L. J., Hogan, M. J., & Majeski, S. A. (2004). Emotional intelligence and academic success: examining the transition from high school to university. *Personality and Individual Differences*, *36*(1), 163–172. doi:10.1016/S0191-8869(03)00076-X

Phelps, E. A. (2006). Emotion and Cognition: Insights from Studies of the Human Amygdala. *Annual Review of Psychology*, *57*(1), 27–53. doi:10.1146/annurev.psych.56.091103.070234

Rode, J. C., Mooney, C. H., Arthaud-Day, M. L., Near, J. P., Baldwin, T. T., Rubin, R. S., &

Bommer, W. H. (2007). Emotional intelligence and individual performance: evidence of direct and moderated effects. *Journal of Organizational Behavior*, *28*(4), 399–421. doi:10.1002/job.429

Sunindijo, R., Hadikusumo, B., & Ogunlana, S. (2007). Emotional Intelligence and Leadership Styles in Construction Project Management. *Journal of Management in Engineering*, *23*(4), 166–170. doi:10.1061/(ASCE)0742-597X(2007)23:4(166)

Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job performance. *Journal of Applied Psychology*, *88*(3), 500–517. doi:10.1037/0021-9010.88.3.500

Tett, R. P., & Guterman, H. A. (2000). Situation Trait Relevance, Trait Expression, and Cross-Situational Consistency: Testing a Principle of Trait Activation. *Journal of Research in Personality*, *34*(4), 397–423. doi:10.1006/jrpe.2000.2292

Turner, R., & Lloyd-Walker, B. (2008). Emotional intelligence (EI) capabilities training: can it develop EI in project teams? *International Journal of Managing Projects in Business*, *1*(4), 512–534. doi:10.1108/17538370810906237