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The Role of Emotional Intelligence in Occupational and Athletic Performance

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## Abstract

This paper reviews empirical studies on the relationship between emotional intelligence and occupational, academic, leadership, and athletic performance. Emotional intelligence, as distinct from general intelligence, reflects an array of non-cognitive capabilities, competencies and skills that influence one's ability to adapt to environmental demands and pressures. The relative predictive capacity of general versus emotional intelligence is evaluated, vis-à-vis indices of performance and achievement. While general intelligence is a heavily researched predictor of success, there is less, though growing, evidence of the predictive value of emotional intelligence. The evidence to date does indicate a clear distinction between these types of intelligences and researchers are beginning to detail the specific roles each play in predicting performance. While methodological difficulties in this research make generalizations weak, it appears clear that emotional intelligence does contribute to predictions of performance on some tasks and in some settings.

## The Role of Emotional Intelligence in Occupational and Athletic Performance

Interest in emotional intelligence has arisen out of the long-standing search for a set of measurable tendencies and capabilities that, in addition to or in place of IQ, may serve as valid predictors of scholastic, occupational, athletic, and life success. This construct is becoming increasingly recognized as an important aspect of intelligence in addition to the traditional aspects of intelligence as measured by standard IQ tests; namely, verbal and mathematical ability. The idea that emotional intelligence (EI) can lead to personal and professional success has created much excitement among the general public, psychologists, and personnel selection specialists (Salovey & Sluyter, 1997). The purpose of the present review is to evaluate the role of emotional intelligence in occupational and athletic performance.

### General Intelligence

For years, cognitive intelligence, as indicated by IQ scores, has dominated the traditional view of human potential and represented one of the most important predictors of future success. Traditional IQ tests, such as the Stanford-Binet Intelligence test developed in 1905 by French psychologist Alfred Binet and psychologist Theodore Simon, and the Wechsler Adult Intelligence Scale (WAIS-R, developed by David Wechsler) were early attempts to measure intellectual intelligence and achievement to produce numerical scores to reflect individual differences. These tests attempted to measure varied aspects of functioning including comprehension, memory, perceptual discrimination and general measures of performance. All in all, intelligence was considered to reflect a general knowledge made up of specific abilities.

There has been much effort dedicated to identifying types of intelligence. For example, Thorndike (1920) labeled three kinds of intelligence: concrete intelligence (the ability to understand and manipulate objects), abstract intelligence (the ability to understand and

manipulate verbal and mathematical symbols) and social intelligence (the ability to understand and relate to people). Contemporary scholars, such as Howard Gardner, have expanded upon these early distinctions; specifically, Gardner (1983) revisited the notion of social intelligence as a personal intelligence that includes both interpersonal and intra-personal intelligences. These two intelligences are amongst a host of five other multiple intelligences that include linguistic, musical, spatial, logical-mathematical, and bodily kinesthetic. Importantly, Gardner has suggested that the capacities to manage one's own feelings, as well as those of others are represented in the two related intelligences— interpersonal and intra-personal intelligence—that today are understood as important components of emotional intelligence.

### Emotional Intelligence

Recently, Goleman (1995) has stimulated tremendous public interest in *emotional intelligence* by making strong claims concerning the contribution of emotional intelligence to individual success. Goleman has argued that success in the workplace is highly related to emotional intelligence. He asserted that intellectual intelligence (i.e., IQ) contributed 20% towards life success and that the remaining 80% could be attributed to emotional intelligence. This claim has resonated loudly within the popular press and the scientific community. But despite the fact that these claims appeared in reputable books and magazines, there is little or no evidence in peer-reviewed journals to support this claim.

### *Assessment of Emotional Intelligence*

Like all study on psychological constructs, operational definitions of the construct are a principal step for research into the impact of that construct. Researchers within this field of study have detailed aspects of social competency and/or interpersonal and intra-personal intelligence. Two seminal figures in this area are Reuven Bar-On and Peter Salovey; the former developing

the most widely used scale of EI and the latter developing the breadth of the construct (Bar-On, 1996; Mayer, Caruso, & Salovey, 2003). Such developments have allowed researchers to evaluate the predictive ability of this construct for performance and achievement. What is more, while these abilities are considered to be stable, they are also amenable to learning and modification (Slaski & Cartwright, 2003). With respect to the predictive ability of EI, research is beginning to mount on the relationship of EI to success in personal relationships and family functioning (Schutte, John, Bobik, Coston, Greeson, Jedlicka, Rhodes, & Wendorf, 2001; Paulo, Lopes, Salovey, & Straus 2003). While clearly outside the area of task or occupational performance, these findings suggest that EI appears to be important for personal and social functioning.

Bar-On has operationally-defined emotional intelligence as “an array of non-cognitive capabilities, competencies and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (Stein & Book, 2000, p. 14). These capabilities used to cope with life effectively represent a collection of knowledge that includes emotional self-awareness, assertiveness, empathy, and problem solving. He views this concept as an ability, and he states that “emotional intelligence helps to predict success because it reflects how a person applies knowledge to the immediate situation; to measure emotional intelligence is to measure one’s common sense and ability to get along in the world” (Bar-On, 1996, p. 1).

Other researchers such as John Mayer and Peter Salovey (1995; Caruso, Mayer, & Salovey, 2002; Mayer, Caruso & Salovey, 2000) hold a much broader conceptualization of this construct, including both emotional and cognitive abilities. For example, Mayer, Caruso and Salovey, (2000) suggest that EI reflects a composite of four distinct emotional reasoning abilities, which they refer to as *branches*. Here, EI includes the ability to perceive emotions, to

access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to regulate emotions effectively to promote emotional and intellectual growth.

Salovey and Pizarro (2003) summarize these abilities as follows:

*Perceiving emotion* is the ability to recognize the feelings of one's self and others. It involves paying attention to and accurately decoding emotional signals in facial expressions, tone of voice, or artistic expressions. The ability to perceive emotions accurately within oneself is related to the ability to assess it in others.

*Using emotions to facilitate thought* refers to a person's ability to take feelings into account when reasoning and problem solving. This ability describes how emotion affects the cognitive system and how emotions can be used for more effective decision-making.

*Understanding emotions* requires the ability to label emotions and recognize that there are groups of related emotional terms. Understanding the antecedents of emotions is one of the most critical components of emotional intelligence. For example, one may or may not recognize that annoyance can lead to anger, if the cause of the annoyance continues to get worse.

Understanding how emotions change over time is critical in dealing with others, and in self-understanding.

*Managing emotions* is based on an understanding that it is often better to experience feelings rather than to deny or repress them. It may be healthier to work with one's feelings and the feelings of others, and to regulate feelings. For example, directing anger toward motivating goal accomplishment may be more adaptive than directing it at the object of one's anger at the present time, or simply repressing it (p. 263).

According to Mayer and Salovey (1995), these definitions connect intelligence and emotion because emotion can make cognition (i.e., thought) more intelligent, and, one can think

intelligently about emotions. In its broadest sense, Mayer and Salovey suggest that emotional intelligence can be understood not only as the possession of tacit knowledge of how emotions work, but also as having an ability to use this knowledge in one's own life.

#### Evaluations of the EI-Performance Relationship

Popular writers on the subject, such as Daniel Goleman, have asserted that emotional intelligence "can be as powerful, and at times more powerful than IQ... that EI may be the single most important factor predicting job/occupational success, especially within a given job category or profession" (Goleman, 1995, p. 34). Of no surprise, industrial and organizational psychologists have been long-interested in predictors of occupational success besides IQ performance; the possibility of a relationship between EI and occupational success appears promising. For example, Bachman, Stein, Campbell, and Sitarenios (2000) examined this relationship in a study that compared more-and less-successful account officers (debt collectors) on measures of emotional intelligence, using the Bar-On Emotional Quotient Inventory (EQ-I). Bar-On's EQ-I is a reliable paper-and-pencil instrument designed to measure emotional intelligence in individuals 16 years of age and older. The EQ-I consists of 133 items that reflect five composite factors of EI; namely, intra-personal, interpersonal, adaptability, general mood and stress management. The EQ-I contains 15 sub-scales of emotional intelligence that reflect these five factors. Bachman et al. found that overall higher levels of emotional intelligence were associated with increased (and more successful) collections by the account officers. Other accounts, such as that of Stein & Book (2000) have reported EQ-I differences amongst successful and unsuccessful US Air Force recruiters. While few in number, it appears that reports are surfacing suggesting a material relationship between EI and job performance.

Research has extended beyond performance on debt collections and Air Force recruitment. There has been recent interest in determining whether high levels of EI are related to elevated levels of performance of cognitive tasks. For example, Lam and Kirby (2002) investigated whether emotional intelligence would account for increases in individual cognitive-based performance, over-and-above the level attributable to traditional general intelligence. These investigators used the Burley Logical Reasoning Test to measure individual performance, and the Shipley Institute of Living IQ Scale to measure general intelligence. Emotional intelligence and its components (e.g., perceiving, understanding, and regulating emotions) were measured with the Multifactor Emotional Intelligence Scale (MEIS; Mayer et al., 1997). The findings indicated that emotional intelligence, particularly perceiving emotions and regulating emotions, contributed to cognitive-based performance over-and-above the level attributable to general intelligence. However, the EI component of *understanding emotions* did not contribute to predictions of individual cognitive-based performance, over-and-above the level attributable to general intelligence. These findings were indeed important as they demonstrate the interrelatedness of emotional and cognitive abilities and lend support to Mayer and Salovey's (1995) provocative suggestion that emotion can raise the level of cognitive abilities.

Other researchers have attempted to evaluate the relationship between emotional intelligence and cognitive performance, as measured by academic achievement. For example, Newsome, Day, and Catano (1999) attempted to determine the relationships among emotional intelligence, personality, cognitive ability, and academic achievement. Emotional intelligence was assessed using the EQ-I, personality was assessed with the 16PF and cognitive ability was assessed with the Wonderlic Personnel Test. One hundred eighty university students completed these scales and their grade point average (GPA, measured on a 4-point scale) served as the



index of academic achievement. Although both cognitive ability and personality (in terms of extraversion and self control) were significantly associated with academic achievement, there was no evidence that EI can predict academic achievement. Newsome et al. suggested that disparities in the conceptualization and measurement of EI account for their failure to support a positive relationship between EI and performance.

While interpersonal and intra-personal competencies may not increase our GPA, such competencies may serve us well on tasks requiring such competencies. Fox and Spector (2000) reasoned that people use their personal competencies to achieve favourable outcomes in a job-interview situation. These researchers measured three components of emotional intelligence that were empathy, self-regulation of mood, and self-presentation, as well as general intelligence. Participants were required to engage in a simulated job interview that included the completion of several paper and pencil tests, as well as a (videotaped) structured interview. General intelligence was measured with the Wonderlic Personnel Test and emotional intelligence was measured with the *Interpersonal Reactivity Index* (IRI; Davies, 1996) and the Trait Meta-Mood Scale (TMMS; Salovey et al., 1996). The latter scale measures abilities associated with Salovey's definition of emotional intelligence, such as those assessed on the MEIS (Mayer et al., 1997). Overall, the results failed to demonstrate any relationship between several of the emotion variables and interview outcomes, except for the mood itself (i.e., positive affectivity), which played a key role in the interview process. The candidate's positive affectivity (e.g., being interested, excited, proud) may simply make him or her appear more attractive to the interviewer, and therefore induce greater liking and perceptions of similarity.

## Evaluations of EI and Leadership

In addition to performance, emotional Intelligence has been linked to leadership ability. It has been proposed, for example, “that emotional intelligence accounts for 80 percent of leadership skill” (Stein & Book, 2000, p. 239). Their reasoning is that in the process of social interactions, emotional awareness and regulation are important factors affecting the interaction between leaders, with other individuals. Several researchers have provided empirical evidence that emotional intelligence, particularly, empathetic skill, predicts leadership quality and performance (Wolff, Pescosolido, & Druskat, 2002; Wong & Law, 2002). Other research, in contrast, suggests a limited role for emotional intelligence in predicting leadership ability, accounting for only a small portion of variance in leadership skills. Buford (2002) assessed whether emotional intelligence may contribute to ratings of managerial effectiveness and leadership performance. Sixty-nine university department managers completed the EQ-I, the NEO Personality Inventory-Revised, The Multifactor Leadership Questionnaire 5X, and a measure of general management effectiveness. After controlling for personality traits and years in management, self-reports of total EI accounted for a small portion of variance in self-reports of management and leadership effectiveness. Buford suggests measurement and methodological shortcomings (e.g., range restriction, rater selection or test validity) serve as the basis for this weak support. Future research using alternative scales not relying on self-assessments may bear out this hypothesis. Of course, the data obtained may represent the fact that there is simply no relationship.

Any variable used to predict leadership ability and performance requires operational definitions of the latter; namely, what skill sets are necessary to lead organizational success? Weinberg and McDermott (2002) compared and contrasted 20 sport and business leaders’

perceptions of organizational effectiveness, in the area of group dynamics. The latter include leadership, group cohesion and communication. Using qualitative methods, their results revealed that most sport and business leaders agreed on the factors relating to organizational and sport success. These similarities provide us with important information associating the psychological characteristics involving people in sports (i.e., athletes) and business. Effective communication skills were seen as essential to success in both organizational domains. Although a variety of effective communication techniques were cited, the most important were effective empathetic skills and listening skills that include reflective listening, paraphrasing the message, and providing consistent nonverbal cues. These very same communication skills, at the core of leadership, are integral to all notions of emotional intelligence. Notable in this Weinberg and McDermott study was that critical communications skills differed between the business and athletic context: business leaders cited honesty and reflective listening as keys, whereas sport leaders focused on the importance of positive feedback and reinforcement. Importantly, both groups of leaders consensually agreed that communication skills were essential for success. Despite the apparent difference of these contexts, leadership success appears to reflect the cornerstone aspects of emotional intelligence, namely, communication skills. It seems, then, that those in business domains may inform predictions within athletic domains.

#### EI and Athletic Performance

Athletics is a domain that has been both shrouded in mystery and celebrated for millennia. Over this time, the importance of psychological characteristics has become increasingly important, as levels of kinesthetic skill appear to have ascended to ceiling limits. However, that athletic performance is varied begs the question of what, if any, psychological characteristics may account for such variations in performance? For some time, researchers have

examined the personality profiles of athletes (Eysenck, Nias, & Cox, 1982; Geron, Furst, & Rotstein, 1986; Dowd & Innes, 1981); however, there is a rarity of study evaluating the predictive power of psychological traits on athletic performance.

Today, athletes are amongst the most financially compensated individuals in the business world; to the athletes themselves, sport IS business. This high-stakes game involves assembling the maximum amount of information that would allow one to predict the likelihood of athletic success. Professional teams have an enormous financial interest in whether or not an athlete can make the transition from the amateur ranks to the “big leagues.” To enhance their predictive abilities, organizations hire several personnel to track the performance of the athlete (i.e., scouts), to enhance the performance of the athletes (i.e., trainers and coaches), and finally to make the actual selection of players based on all information available (i.e., directors of player development). The task is one of personnel selection, certainly not an unusual task; however, the predictive variables used are most often indices of kinesthetic ability, in contrast to the verbal and quantitative abilities often used to select personnel in non-athletic fields.

In athletics, the personnel selection-task is one of determining the current skill level and potential ability of every player available. In professional athletics, this selection takes place during a process referred to as “the draft.” Professional sport is filled with examples of highly-touted “prospects” that did not materialize into high performers. While it is true that kinesthetic abilities are amenable to change and improvement, psychological characteristics undoubtedly enhance the execution of those skills and it is here that athletic potential may be realized or not. It is a wonder that there has been so little research aimed at identifying those psychological characteristics, possessed by an athlete, that may support and maintain the execution of their high-level kinesthetic abilities. There is no mistaking that psychological characteristics such as

motivation, mastery, communication skills and leadership are invaluable to the execution of our skills, whether kinesthetic or cognitive. While difficult to evaluate apart from performance, when athletes fail to succeed, it is apparent that the largely stable kinesthetic skills are not likely the culprit; rather, variations in psychological states or conditions may be the key. Personnel specifically hired to identify prospects for eventual success appear to have overlooked a key factor seemingly important to future athletic performance. As a result, athletic coaches, trainers and general managers face the task of improving their teams' performance and would benefit greatly from understanding and identifying those factors critical for eventual success. Clearly, the high-stakes game of selecting prospects would be informed by such information.

Coaches in professional sport play a key role in player development and performance. This has prompted some investigators to evaluate coaches' perspectives about what psychological factors may contribute to athletic success. Giacobbi, White, Roper and Butryn (2002) conducted an open-ended semi-structured interview with 10 NCAA Division 1 coaches. The NCAA Division 1 is the highest-tier athletic group within U.S. collegiate competition. It is amongst these players that professional athletes are most often selected for the four largest team sports in North America, namely basketball, baseball, football and hockey. The coaches were asked to discuss their experiences while coaching those athletes who made increasing-progress on their team. The coaches identified athletes who made substantial progress as being (a) highly competitive, (b) self-motivated and mastery, (c) empathetic to teammates, (d) able to manage emotions, (e) able to tolerate frustration and (f) receptive to instruction. Moreover, the coaches identified the following factors as essential for athletic success: one-on-one instruction, familiarizing oneself with the individual athlete, and creating a supportive/positive team atmosphere. Clearly, the keys to athletic performance and success have considerable overlap

with factors reflecting emotional intelligence and amongst those with the greatest contact with the athletes, that is, the coaches' interpersonal and intra-personal skills are identified as keys to success.

Athletic organizations employ personnel (i.e., scouts) whose sole task it is to evaluate the potential of athletes, a task carried out by tracking their performance and familiarizing themselves with the prospect. These scouts evaluations and predictions play an enormous role in whether prospects are selected by professional teams. With this in mind, Karp (2000) used scouts' ratings of achievement (based upon initial draft expectations) to examine personality factors that would predict eventual hockey success. The 16PF test was used on 126 hockey players, drafted between 1987 and 1994. Six professional scouts rated each of 126 hockey players on questions that assessed player achievement/success, based upon initial draft expectations. An analysis revealed that personality, as measured by the 16PF, significantly discriminated among players who had achieved or underachieved, based upon their initial draft expectations. Greater athletic success and achievement was associated with (a) higher levels of abstract thinking (*higher B scores*), (b) higher levels of emotional reactivity (*higher C scores*), (c) higher levels of competitiveness, stress-tolerance and boldness (*higher H scores*), (d) lower levels of anxiety (*lower Q4 scores*). Importantly, while physical ability ratings did determine initial draft selection, these ratings did not significantly contribute to the prediction of athletic success. These findings indicate that player selection programs that consider psychological variables, such as emotional intelligence, could be both a valid and reliable predictor of athletic success. Factors of the 16PF that measure social competencies and emotional reactivity appear, then, to predict eventual hockey success; this finding lends value to the inclusion of this information when evaluating the potential for hockey success.

Because the field of athletics has become so competitive, everyone has heard stories of athletes who were told they were too small, or that they were not strong enough to succeed, but because of their internal drive, determination and relentlessness, have gone on to be successful and highly productive athletes. For example, Stein and Book (2000) identify a professional hockey player who was playing in the minor leagues and biding his time to get a chance to prove himself. His name is Adam Mair and he had never played a National Hockey League (NHL) game in his life. The parent team, Toronto Maple Leafs, decided to call up Mair, and he was outstanding. He scored a goal, becoming only the second player in Maple Leaf history to debut in the playoffs and score a goal. The authors note that they weren't the least bit surprised by his performance, because they had tested his emotional intelligence (with the EQ-I), along with 28 other Maple Leaf prospects, and found that Mair stood out from all the rest. In fact, they had marked him the most likely to succeed in whatever field he attempted (Stein & Book, 2000, p. 231). Adam Mair, after five years, is still playing in the NHL.

Emotions are undoubtedly powerful motivators of behaviour (Hanin, 2000, p. 6). Athletic performance, because of its competitive nature, involves a high degree of fluctuation in emotional type and intensity. It is commonly believed that when emotions (e.g., anger, frustration, impulsivity) are intertwined with performance, they tend to interfere with task achievement (Ashforth & Humphrey, 1995). Pensgaard & Duda (2003) evaluated this hypothesis with elite athletes participating in the 2000 Olympic games. Sixty-one athletes responded to a multi-sectioned questionnaire, within two-weeks of the games, measuring the frequency and intensity of emotions, relationships between emotional responses and reported coping-effectiveness, and the degree to which emotions and perceived coping effectiveness predicted Olympic performance. The results indicated that objective performance (e.g., placing) was

associated with the athlete's ability to manage several dysfunctional emotions (e.g., anger, sadness, fear). The single best predictor of objective performance was "perceived coping effectiveness." This ability of *perceived coping effectiveness* is similar to one of Mayer and Salovey's branches of emotional intelligence, namely, *managing emotions*. It appears, then, that athletic success and performance can be predicted by factorial components of emotional intelligence (e.g., managing emotions, stress tolerance, impulse control, optimism).

### Conclusion

This review of the literature provides suggestive evidence to support the use of psychological testing of employees, such as commercial and athletic, to screen for non-cognitive or non-kinesthetic factors that predict achievement in business and sports. The value of emotional intelligence in predicting occupational and athletic success is diverse, and the seemingly contradictory results may reflect methodological or assessment inconsistencies (i.e., sample size, testing instruments, and statistical analysis). In addition, inconsistent findings may reflect substantive differences in situational-specific circumstances unique to a setting (e.g., empathy may or may not be important, depending on the task). Interpersonal and intra-personal competencies, then, still appear to play a role in success across settings.

The use of ability measures to predict performance has a long-standing history, despite the fact that such measures fall short of considerable predictive power. This shortcoming of ability measures will leave open the search for other variables that may moderate these ability-performance relationships. As a possible moderator variable, there appears to be much opportunity and need to identify the role of interpersonal and intra-personal competencies, such as emotional intelligence, in predicting performance, both in boardrooms and on ice-surfaces. Clearly, part of this task involves fine tuning our understanding of such competencies and



identifying situation-specific tasks that discriminate their predictive power. Emotional intelligence and the competencies that it includes may inform this century as general intelligence served the last century in our ability to predict performance. While these competencies have categorically served us well, much research is still needed to make clear the mechanisms by which it has served us.

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Running head: EMOTIONAL INTELLIGENCE, SPORT, HOCKEY

Moderating Effects of Draft Rank and Emotional Intelligence on the Success  
of Professional Hockey Players

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## Abstract

The purpose of the present study was to evaluate the relative value of previous hockey performance as measured by draft rank, and emotional intelligence for predicting current success of professional hockey players. Two indices of hockey success were used, namely number of NHL games played and number of NHL points. Each served as the criterion variable in a multiple regression analysis. The predictor variables included draft rank and total score on the EQ-I, along with its 5 composite scores and 15 sub-factor scores. The findings indicate that individual draft rank and subfactor measures of emotional intelligence did not predict either index of player success. Ancillary analyses indicated that one measure of EQ-I did indeed predict one measure of hockey performance; specifically, impulse control was negatively related to NHL penalty minutes ( $r = -.32$ ). The findings indicated that although it is the single factor most commonly used to predict hockey success and upon which compensation is based, draft rank, by itself, does not predict hockey success. Non-hockey skills, such as emotional intelligence also did not uniquely contribute to the prediction; however, when considered together, draft rank and the five subfactors of the EQ-I, did significantly predict hockey success, as measured by the number of NHL games played, indicating that success is likely based on a consideration of hockey skills and emotional skills.

## Moderating Effects of Emotional Intelligence on the Success Of Professional Hockey Players

The idea that Emotional Intelligence (EI) can lead to personal and professional success has created much excitement among the general public, business managers, academics, and consultants. Interest in this area has arisen out of the search for a set of measurable tendencies and capabilities that, in addition to or in place of IQ, may serve as valid predictors of success and performance. Goleman (1995) stimulated tremendous public interest in *emotional intelligence* by making strong claims concerning the contribution of emotional intelligence to individual success. Goleman has argued that success in the workplace is highly related to emotional intelligence. He asserted that intellectual intelligence (i.e., IQ) contributed 20% towards life success and that the remaining 80% could be attributed to emotional intelligence.

Emotional Intelligence is a construct developed by Yale psychologists Salovey and Mayer. With increasing usage of emotional intelligence by managers and scholars, researchers have proposed many definitions of emotional intelligence. Bar-On called it “an array of non-cognitive capabilities, competencies and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (Stein & Book, 2000, p. 14). These capabilities (e.g., emotional self-awareness, assertiveness, empathy, problem solving) represent a body of knowledge used to cope with life effectively. However, one definition appears to consider both emotions and cognition equally. According to Mayer, Caruso and Salovey, (2000), emotional intelligence reflects not a single trait or ability but, rather a collection of distinct emotional reasoning abilities. It includes the ability to perceive emotions, to access and generate emotions to assist

thought, to understand emotions and emotional knowledge, and to regulate emotions effectively to promote emotional and intellectual growth.

Several studies have examined the relationship between emotional intelligence and academic, occupational or leadership performance (Bachman, Stein, Campbell, & Sitarenios, 2000; Stein & Book, 2000; Newsome, Day, & Catano, 1999; Fox & Spector, 2000; Weinberg & McDermott, 2002). Bachman, Stein, Campbell, and Sitarenios (2000) examined the relationship between emotional intelligence, as measured by the Bar-On Emotional Quotient Inventory (EQ-I), and occupational success in a study that compared more and less successful account officers (debt collectors). Bachman et al found that an overall higher level of emotional intelligence was associated with increased and more successful collections. Similarly, unpublished reports cited in the book "The EQ Edge" has suggested that emotional intelligence scores on various sub-scales have been used to differentiate between successful and unsuccessful US Air Force recruiters (Stein & Book, 2000, p. 224).

Emotional intelligence has seldom been used in predicting talent in other professions, including athletics but over the last thirty years, an increasing amount of attention has been devoted to the field of athletics, including the psychological traits that athletes may possess (Eysenck, Nias, & Cox, 1982; Geron, Furst, & Rotstein, 1986; Dowd & Innes, 1981). Karp (2000) used scouts' ratings of achievement based upon initial draft expectations to examine personality factors that would predict eventual hockey success. The 16PF test was administered to 126 hockey players drafted between 1987 and 1994. In addition, six professional scouts rated each player on questions that assessed player achievement/success based upon initial draft expectations. An analysis



revealed that scores on the 16PF significantly discriminated among players who had achieved from those who underachieved based upon their initial draft expectations. Greater success and achievement was associated with higher B scores (more abstract thinking), higher C scores (more emotionally reactive), higher H scores (more bold, competitive, able to handle stress) and lower Q4 scores (more calm, less anxious). Although physical ability ratings did determine initial draft selection, they did not significantly contribute to the prediction of achievement. It appears that a player selection program that takes into account psychological variables could be both a valid and reliable predictor of success and performance. Perhaps emotional intelligence is one such variable, however, little research has been examined whether emotional intelligence is important for athletic success.

Recently, Stein and Book (2000) identified a professional hockey player who was playing in the minor leagues and biding his time to get a chance to prove himself. His name is Adam Mair and he had never played an NHL game in his life. The parent team, Toronto Maple Leafs, decided to call up Mair, and he was outstanding. He was the second player in Maple Leaf history to debut in the playoffs and score a goal. The authors note that they weren't the least bit surprised by his performance, because they had tested his emotional intelligence (with the EQ-I), along with 28 other Maple Leaf prospects, and found that Mair stood out from all the rest, and they had marked him the most likely to succeed in whichever field he attempted (Stein & Book, 2000, p. 231). However, this example must be supported by more data.

The purpose of the present study is to evaluate the power of emotional intelligence when used to predict differences in eventual success of professional hockey

players who were presumed, at an earlier point, to become successful National Hockey League (NHL) mainstays. Because the field of athletics has become so competitive, in order to be successful it has become critically important to make appropriate draft selections. It is generally maintained that players who are drafted earlier in the NHL draft are more skilled, highly touted prospects than those drafted at later rounds. The most obvious predictor variable of a player's success is kinesthetic skills, indexed by draft rank. Hence, hockey scouts use draft rank as a predictor of eventual NHL success. However, draft rank and NHL success is an imperfect relationship and the eventual success of even high-draft players is rather variable. Given that we cannot perfectly predict NHL games played or other indices of performance (e.g., goals, assists, points and penalty minutes) based on draft rank, it was proposed that emotional intelligence would add to the prediction of number of NHL games played.

It was explored whether overall emotional intelligence and its distinct emotional reasoning abilities would positively contribute to hockey success over-and-above the level explained by draft rank. I have operationally defined hockey success as the total number of NHL games played, along with secondary outcome measures such as goals, assists, points and penalty minutes. The EQ-I scores and draft rank measures served as predictors of "athletic success. This prediction was based on the notion that athletic success depends on both physical skills and on those non-physical skill sets that are subsumed by the construct of emotional intelligence. These include teamwork, cooperation, initiative, leadership, emotional resilience, and motivation. Moreover, it was predicted that athletes with high levels of emotional intelligence are better able to tolerate frustration and are better able to delay gratification. These factors, taken together, will

enhance the predictive power of draft rank (an index of kinesthetic ability) to explain a greater proportion of variance in number of NHL games played. Other measures of hockey success (goals, assists, minutes played, penalty minutes) may also be predicted by emotional intelligence. For example, stress management, a subscale on the EQ-I, that assesses stress tolerance and impulse control, might be a predictor of number of penalty minutes. That is, players with low scores on this EQ-I subscale might be predicted to have a higher number of penalty minutes. I formulated the following predictions:

*Prediction 1:* The rank at which a player was drafted, an index of their likelihood of success, would be related to their actual success, that is, the higher the player was drafted, the more games he would play in the NHL, and the more points he would score.

*Prediction 2:* In addition to draft rank, measures of emotional intelligence would contribute to success.

*Prediction 3:* Specific EQ-I subscales, namely *impulse control* and *frustration tolerance*, would predict the number of penalty minutes; the less impulse control and frustration tolerance, the more time that player would spend in the penalty box.

## Method

### *Participants*

The participants were 70 professional hockey players currently playing either in the National Hockey League (NHL) or the American Hockey League (AHL). (The AHL is an affiliate league of the NHL. This is where the parent club places a player who is not yet ready to make the next step, or who has been demoted because a better player assumed his playing position on the team). The players ranged in NHL experience from 3 games to 1016 games played ( $M = 228$  NHL games). The players ranged in age from 23

to 36 years ( $M = 28.8$  years,  $SD = 3.82$ ) and the mean years-of-professional experience was 10.17. Participants were contacted by telephone and/or e-mail from their respective teams on the basis of NHL experience. Players currently playing in the AHL with no NHL experience were excluded from this study. Archival data of player's performance statistics were retrieved from the NHL Players Association Database.

### *Materials*

Emotional intelligence was measured using the Bar-On Emotional Quotient Inventory, commonly known as the EQ-I. The EQ-I is a reliable instrument designed to measure emotional intelligence in individuals 16 years of age and older. It consists of 133 items and takes approximately 35 minutes to complete. It produces scores for 5 composite factors (e.g., intra-personal, interpersonal, adaptability, general mood and stress management), and 15 sub-scales of emotional intelligence. The Intra-personal composite contains five sub-scales: Emotional Self-Awareness, Self-Regard, Self-Actualization, Assertiveness and Independence. The Interpersonal composite contains three sub-scales: Empathy, Interpersonal Relationship, and Social Responsibility. The Adaptability composite has three sub-scales: Problem Solving, Reality Testing, and Flexibility. The Stress Management scale has two sub-scales: Stress Tolerance and Impulse Control. The General Mood composite includes two sub-scales: Happiness and Optimism. In addition to emotional intelligence scores, the EQ-I has validity checks in the form of positive and negative impression scores and a response inconsistency score.

Players completed the EQ-I measure either online, or by regular mail, depending on player preference. However, the majority of participants were more obligated to complete the questionnaire at their own time and return it later by regular mail. Each

participant received a folder containing all the necessary materials (i.e., written instructions, Bar-On EQ, and response sheets). There was a primary contact person on each team that ensured optimal understanding of what was required of each player to perform the task as accurately and honestly as possible. Players also completed a consent form and it was made clear to each of them that participation in this research was voluntary. The participants understood that they could withdraw at anytime without penalty, and that all scores would be kept strictly confidential.

### *Design and Procedure*

This was a correlational study in which the hockey players were evaluated on their scores of Emotional Intelligence and on information regarding their draft rank. League status (NHL vs. AHL) was not used as a criterion variable because status may change at any time and this instability was not desirable in a criterion variable. Number of NHL games played was used as the criterion measure in a multiple regression analysis with EQ-I and draft rank as predictor variables. This analysis would help identify the predictive power of these two variables on hockey success. In addition, ancillary correlational analysis was conducted to evaluate the relationship between secondary outcome measures of hockey success (goals, assists, total points and penalty minutes) and the two main measures of interest, draft rank and EQ-I scores. Further analysis was conducted to determine if the total EQ-I scores of the athletes measured up to the normative data of the general population.

## Results

Descriptive statistics providing the mean values for the emotional intelligence measures and player's performance were computed for all variables (i.e., draft rank, games played, empathy) assessed and are shown in Table 1. Given that overall total emotional intelligence scores are a composite of all the inter-scale items, significant correlations were expected between those variables on the EQ-I. Thus, zero-order correlations between all variables were calculated and shown in Table 2.

**Table 1:** Descriptive statistics for the measures of emotional intelligence and player's statistics.

Variables	Mean	Std. Deviation	N
Draft rank (DR)	111.94	85.83	70
Total games played (TGP)	227.57	264.51	70
Years since draft (YSD)	10.17	3.82	70
Total EQ-I score (TEQI)	103.58	12.81	70
Intra-personal (ITRP)	105.21	12.41	70
Interpersonal (ITP)	101.21	12.50	70
Stress management (SM)	103.88	11.95	70
Adaptability (AD)	100.78	14.20	70
General mood (GM)	105.25	11.22	70
Self regard (SR)	108.64	9.57	70
Emotional self-awareness (ES)	99.25	14.04	70
Assertiveness (AS)	104.41	13.01	70
Independence (IN)	105.24	12.10	70
Self-actualization (SA)	102.92	13.43	70
Empathy (EM)	98.22	14.57	70
Social responsibility (SRS)	100.5	12.33	70
Interpersonal relationship (IR)	103.18	12.67	70
Stress tolerance (ST)	104.24	12.89	70
Impulse control (IC)	102.38	12.76	70
Reality testing (RT)	103.7	14.36	70
Flexibility (FL)	101.84	13.27	70
Problem solving (PS)	95.87	15.02	70
Optimism (OP)	103.94	11.64	70
Happiness (HA)	105.95	11.76	70
Total goals (TG)	24.42	38.68	70
Total assists (TA)	40.41	60.71	70
Total points (TP)	64.98	97.20	70
Penalty minutes (PM)	226.88	358.19	70

**Table 2: Inter-scale Correlation on the EQ-I and Player's Statistics**

EQ-I	DR	TGP	YSD	TEQI	ITRP	ITP	SM	AD	GM	SR	ES	AS	IN	SA	EM	SRS	IR	ST	IC	RT	FL	PS	OP	HA	TG	TA	TP	PM
DR	1	-0.21	-0.24*	-.02	.01	-.17	.11	-.03	-.04	.11	.01	-.11	-.01	.09	-.14	-.17	-.12	.02	.16	-.02	.00	-.06	.01	-.09	-.27*	-.20	-.23	-.06
TGP	-	1	.65**	-.17	-.10	-.04	-.24*	-.13	-.28*	-.17	-.04	.04	.04	-.21	-.08	.06	-.11	-.06	-.34**	-.17	-.09	-.05	-.31**	-.16	.85**	.88**	.89**	.66**
YSD	-	-	1	-.22	-.13	-.10	-.33**	-.17	-.20	-.17	-.10	-.04	-.02	-.20	-.11	.00	-.10	-.21	-.35**	-.15	-.20	-.07	-.22	-.13	.50**	.55**	.54**	.44**
TEQI	-	-	-	1	.93**	.75**	.73**	.92**	.83**	.74**	.76**	.67**	.58**	.80**	.55**	.54**	.69**	.74**	.49**	.85**	.70**	.73**	.76**	.73**	-.25*	-.23	-.24*	-.01
ITRP	-	-	-	-	1	.62**	.58**	.82**	.79**	.81**	.78**	.79**	.72**	.83**	.44**	.40**	.62**	.67**	.31**	.75**	.62**	.68**	.74**	.68**	-.18	-.17	-.18	.06
ITP	-	-	-	-	-	1	.41**	.60**	.66**	.49**	.68**	.34**	.31*	.55**	.83**	.81**	.84**	.45**	.25*	.54**	.47**	.47**	.55**	.62**	-.14	-.11	-.13	.03
SM	-	-	-	-	-	-	1	.64**	.50**	.48**	.47**	.41**	.37**	.43**	.35**	.34**	.33**	.82**	.83**	.66**	.40**	.51**	.54**	.38**	-.30*	-.24*	-.27*	-.22
AD	-	-	-	-	-	-	-	1	.69**	.61**	.68**	.60**	.50**	.71**	.43**	.45**	.52**	.64**	.45**	.91**	.74**	.82**	.65**	.60**	-.24	-.22	-.23	.06
GM	-	-	-	-	-	-	-	-	1	.78**	.55**	.48**	.47**	.75**	.33**	.31**	.79**	.60**	.26*	.64**	.56**	.51**	.85**	.89**	-.30*	-.30*	-.31*	-.12
SR	-	-	-	-	-	-	-	-	-	1	.44**	.52**	.58**	.72**	.18	.22	.53**	.55**	.22	.54**	.51**	.47**	.70**	.68**	-.20	-.16	-.18	-.07
ES	-	-	-	-	-	-	-	-	-	-	1	.53**	.36**	.51**	.56**	.45**	.62**	.49**	.32**	.67**	.41**	.58**	.45**	.55**	-.13	-.11	-.11	.05
AS	-	-	-	-	-	-	-	-	-	-	-	1	.60**	.51**	.30*	.24*	.31**	.58**	.13	.54**	.40**	.54**	.54**	.36**	-.06	-.04	-.05	.15
IN	-	-	-	-	-	-	-	-	-	-	-	-	1	.48**	.15	.17	.35**	.48**	.13	.41**	.44**	.41**	.54**	.33**	-.10	-.07	-.08	.16
SA	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.40**	.34**	.57**	.45**	.28*	.59**	.58**	.59**	.70**	.65**	-.22	-.24*	-.24*	-.03
EM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.77**	.52**	.32**	.27*	.42**	.30*	.36**	.31**	.30*	-.13	-.14	-.14	.01
SRS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.41**	.36**	.21	.44**	.23	.42**	.32**	.27*	-.05	-.01	-.02	.06
IR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.37**	.18	.44**	.50**	.36**	.62**	.75**	-.19	-.16	-.17	-.06
ST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.36**	.64**	.44**	.50**	.61**	.44**	-.16	-.11	-.13	-.02
IC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.49**	.23	.36**	.28*	.19	-.32**	-.31*	-.32**	-.34**
RT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.52**	.68**	.59**	.58**	-.24*	-.22	-.23	.01
FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.36**	.50**	.50**	-.15	-.18	-.17	.13
PS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.53**	.41**	-.18	-.14	-.16	-.02
OP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.53**	-.39**	-.34**	-.37**	-.13
HA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-.14	-.19	-.17	-.08
TG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.91**	.97**	.45**
TA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.99**	.41**
TP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	.43**
PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

\* Correlation is significant at the 0.05 level (2-tailed)

\*\* Correlation is significant at the 0.01 level (2-tailed)

**EQ-I Abbreviations:** DR=Draft Rank; TGP=Total Games Played; YSD=Years Since Draft; TEQI=Total EQ-I Score; ITRP=Intra-personal; ITP=Interpersonal; SM=Stress Management; AD=Adaptability; GM=General Mood; SR=Self-Regard; ES=Emotional Self-Awareness; AS=Assertiveness; IN=Independence; SA=Self-Actualization; EM=Empathy; SRS=Social Responsibility; IR=Interpersonal Relationship; ST=Stress Tolerance; IC=Impulse Control; RT=Reality Testing; FL=Flexibility; PS=Problem Solving; OP= Optimism; HA=Happiness; TG=Total Goals; TA=Total Assists; TP=Total Points; PM=Penalty Minutes

The primary predictions were not borne out, that is, the results did not support Prediction 1: draft rank did not predict hockey success as measured by the number of NHL games played ( $r = -.21, p > .05$ ) or points scored ( $r = -.23, p > .05$ ). The results also did not support Prediction 2: total EQ-I scores did not uniquely predict hockey success, in terms of the number of NHL games played ( $r = -.17, p > .05$ ). However, contrary to what was expected, there was a significant correlation found between total EQ-I scores and total goals ( $r = -.25, p < .05$ ), and the relationship was negative; and between total EQ-I scores and total points ( $r = -.24, p < .05$ ), and the relationship was also negative.

Because I was interested in the impact of emotional intelligence on hockey success, over and above the level attributed to draft rank, I entered draft rank first into all ordered predictor regression models, along with the five composite factors of emotional intelligence (e.g., intra-personal, interpersonal, adaptability, general mood and stress management) and found that when these factors were considered together, they did indeed predict hockey success as measured by the total number of NHL games played, explaining 19% of the variance,  $R^2 = .192, F(1,63) = 8.48, p < .001$ . The results supported Prediction 3: *impulse control* did indeed predict the number of penalty minutes, and the relationship was negative ( $r = -.32, p < .001$ ). When examining the analysis to determine if the total EQ-I scores of the athletes measured up to the normative data of the general population, the results demonstrated that the athletes scored significantly higher  $t(69) = 2.34, p < .05$ .



## Discussion

The present study explored whether overall emotional intelligence and its distinctive emotional reasoning abilities or draft rank, or both would predict athletic success. Draft rank alone, an index of hockey success at the junior level, was not a contributor to hockey success. This was somewhat surprising as the higher the player is drafted, the more success that player is presumed to experience. Not surprisingly, past hockey success is thought to be a predictor of future hockey success. Past hockey success is used by scouts to evaluate the likelihood of future hockey success, and these scouts recommend to the Directors of Player Personnel where to draft an athlete: the greater the likelihood of future success the higher one drafts an athlete. Thus, high draft choices, by definition, are presumed to be very likely to have NHL success, that is, to play many games and to score many points. High drafts are believed to be “good bets” and it turns out that this appears to be not true. Perhaps the success of these athletes is likely based on a combination of both hockey skills and emotional skills. Possibly this accounts for why Draft rank was not by itself associated with hockey success in the present study, but that Draft rank and the 5 composite factors of emotional intelligence did indeed significantly contribute to hockey success, as measured by the number of NHL games played.

It is interesting to note that the athletes in this study revealed a negative relationship between total EQ-I scores and total points. The reason for this finding may be that the athletes in the current investigation who score more points are less attuned to their emotional states, that is, the players who score more points are more aggressive and that skill level/hockey skills are independent of emotional skills. It may be that emotions experienced when competing at the highest level are diverse in nature with respect to the

role that each player contributes to the teams' success. In different words, it may be that the players in the present study who score more points scored less on the EQ-I than those players that have the role of playing defense.

Of little surprise was the negative relationship between one EQ-I subscale, namely impulse control, and penalty minutes. The lower one's impulse control, the more time that player spent in the penalty box. As we know penalties are assigned in hockey when players break the rules of the game; it seems that players are more prone to break the rules of the game when they cannot control their impulses.

### *Limitations*

The fact that these players scored significantly higher on the EQ-I than the general population possibly indicates a *truncated range* of scores at the high end of the scale; meaning it is possible that we didn't get to see the whole range of scores that may exist within the entire population of professional hockey players, and only a much larger sample would be able to determine otherwise. It is a challenge to collect data when athletes compete at this level, and, therefore, it is understandable why sample sizes will often be low when conducting research among elite athletes during critical times of the playing season.

The sample was admittedly not a random sample, but rather a *convenience sample*, one that was accessed because of the authors' familiarity with some of the players. However, this should not pose as a restriction from continuing to do research among members of this population and perhaps using different methodological approaches in order to capture more in-depth emotional information from these elite athletes. Also, there may have been a *selection bias* in that the participants were only

those players who gave consent and were willing to take the time to complete the measure. While these may be regarded as a weaknesses limiting the generalize ability of these findings, it must be said that this group of athletes, like most professional athletes, are a cloistered group of which we know very little about. This study is one of few that has tapped into the psychological characteristics of unique individuals.

### *Future Directions*

The present study demonstrated that emotional intelligence alone did not predict hockey success. It revealed that the most commonly used standard to predict hockey success, namely draft rank, was no more effective a predictor. Hence, the best “hockey-minds” in the business have not figured out an effective means of predicting whether a player will be successful, and they wage a lot of money on their selections, in the hopes that they materialize. Why is the past performance of an amateur athlete not a good predictor of his future professional success? Outside of hockey where cognitive skills are presumed to be important, there appears to be little relationship between your IQ at one point in time and your eventual occupational success. Thus, we face the same problem with young athletes.

Those in the business of selecting amateur athletes would be well advised to be cautious about placing great confidence in the eventual success of an amateur athlete simply on the basis of his performance in the amateur ranks. This is a very sober warning because the amount of money waged on these young men will very likely not be realized in terms of hockey success. These predictions, it seems, are no better than chance predictions (at draft time) of eventual success.

It is expected the research findings of the present study would be of value for Directors of Player Personnel who wage tremendous amounts of money on players that they predict will be successful NHL players. At the present time, those directors have difficulty making accurate predictions of eventual success as the ratings obtained by team scouts are exclusively based on indices of kinesthetic ability, such as a junior player's goals and assists. The present student could expand the range of skills that scouts and directors of player personnel might consider before waging such resources on the promise of professional success of the junior athlete. The findings may also be of value to many parents who have a vested interest in honing the athletic (i.e., kinesthetic) skills of their children, as there is evidence that one is able to develop and learn these emotional intelligence abilities to enhance success (Slaski & Cartwright, 2003). Emotional intelligence may become an important tool, not only in predicting occupational and academic success, but also in predicting the success and performance of athletes in the professional ranks.

In general, this study points to the need to consider the complex interrelationship between emotional skills and athletic skills to predict success and performance in the applied work with elite athletes. Perhaps more detailed and longitudinal research of athletes from the time they are drafted until eventual NHL success will help unravel some of the questions concerning the contribution of emotional skills to athletic success.

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