EMOTIONAL INTELLIGENCE : A REQUISITE FOR SCHOOLS

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DEDICATION

O Lord !

Lead me from untruth to truth

Lead me from darkness to light

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ABSTRACT

Emotional intelligence has been widely accepted in the world of work since 1995 and has had a tremendous impact on our understanding of the contribution that emotional reasoning makes to the quality and functioning of the workplace. Recently, the educational sector has made some timid attempts to study the impact of emotional intelligence. New theories of intelligence have been developed and studies now concentrate on establishing the contribution that emotional intelligence makes to over-all educational achievement. The aim of this research was to study the relationship between emotional intelligence and academic achievement of sixty (60) sixteen to eighteen year old students in two Auckland schools. The Bar-On Emotional Quotient Inventory: Youth Version (Bar-On EQ-i: YV) Short Form Questionnaire was be given to these students and matched with their end of year results. The working hypothesis was that there is a positive correlation between student's EQ score and their end of year results.

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ABBREVIATIONS

ECI	Emotional Competency Inventory
EI	Emotional Intelligence
EQ	Emotional Quotient
EQI	Emotional Quotient Inventory
EQ MAP	Emotional Quotient Map
IQ	Intelligence Quotient
MEIS	Multifactor Emotional Intelligence Scale
MSCEIT	Mayer, Salovey, Caruso Emotional Intelligence Test

INTRODUCTION

Emotional intelligence as described by Mayer & Salovey (1997), is the ability to perceive one's own and others' feelings and emotions, to use these emotions to guide one's thoughts and action. EI is also important to promote both intellectual and emotional growth. Given the state of our societies and our schools today, the ability to recognise our own and other emotions and to harness emotions positively is needed. Schools traditionally more interested in the 3 R's have only recently begun to recognise the value of Emotional Intelligence (EI). On the other hand, after the publication of Goleman's 1995 book on Emotional Intelligence, EI received wide acclaim and has enjoyed impressive success in the business world. Cheniss & Goleman (2001) suggest that a proficient executive with high emotional intelligence learns more readily, deftly and quickly than others. This finding indicates that there is an urgent need to determine whether emotional intelligence, now widely trained for in the world of work, can be justifiably adopted in education to improve achievement.

Emotional intelligence has not to date been widely adopted by the world of education and fails to teach the emotional skills that equip students with the tools they need to face a challenging society. In spite of the numerous changes in strategies, policies and curricula implementation, both at school level and policy level, there is often a mismatch between the expectations of the society and the learning outcomes of the students.

A series of studies conducted by Goleman (1995), Chatterjee(2000), Le Metais(1997) among many others, indicate that students who were intellectually the brightest in school

are often not the most successful, either in business or in their personal lives. Moreover, the school physiognomy has completely changed over the years with students coming to school with behavioural disorders and psycho-socially related problems. It is evident that schools today face many disruptive factors that act against the provision of quality education.

Disruptive students in secondary schools are a world-wide phenomenon and concern. Crime, in and around schools such as drugs, bullying, threatens the well-being of students, school staff, and communities and impedes learning and student achievement. The demographic profile of students is changing. (Archer & Cooper, 1998; Kiracofe, 1993, p.62).

> . . . compared with students in the past, students today arrive on campus with more problems as a result of dysfunctional family situations, with more worries and anxieties about the future and about the serious problems facing them in modern society, with an increased awareness of their own personal demons, and with a greater willingness to seek psychological and psychiatric help.

Whitaker (1996) predicts future students will be more "troubled on the whole while society continues to be more and more neglectful and harmful to children and adolescents." Stone and Archer (1990) conclude from their review of the literature that there is sufficient evidence from many quarters indicating that the level of psychopathology in students had increased significantly during the 1980's and would continue to increase. Later survey research supports this prediction (Heppner, Kivlighan, Good, Roehlke, Hills & Ashby, 1994)

The growing list of serious student problems and concerns suggests that students have a greater occurrence of emotional discomfort. Students are likely to experience one or more of the following: (a) the pain of acute or chronic negative affect, (b) fear of feeling, (c)

emotional numbing, (d) perplexing emotional reactions, (e) emotional conflict of ambivalence, or (f) experiences associated with "unfinished" or inadequately expressed affect (Gold, 1996, Mahoney, 1995; McWhirter, 1995;).

McWhirter (1995) made a case for students who present at counselling centres to obtain an emotional education, that is an opportunity to develop greater emotional knowledge and skills that parallel and support the development of academic intellectual abilities. Robertson and Freeman (1995) had similar ideas when they developed a ten-session psycho-educational group model for university men who struggle with the identification and expression of feelings.

Parker, Summerfeldt, Hogan, and Majeski (2002) found a close correlation between emotional intelligence and academic success in high school. Successful students, aged between 17 and 19 years, scored better than the unsuccessful student due to better management of their emotional intelligence, specifically, their intrapersonal abilities, adaptability and stress management.

Emotional intelligence is a conceptual framework for understanding individual differences in the abilities to: (a) perceive, appraise, and express emotion accurately in self and in others; (b) assimilate emotion and thought; (c) understand, analyse, and reason with emotions; and (d) regulate emotions in self and in others adaptively (Salovey & Mayer, 1990; Mayer & Salovey, 1997). There are other competing definitions of emotional intelligence in the literature (Bar-On, 1997, Goleman, 1995, Payne,1986), Salovey and Mayer's definition is more narrowly defined and accepted in the psychological community

(Sternberg,1997; Sternberg, 2000). Salovey and Mayer, (1997 p17) define emotional intelligence as

> the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to reflectively regulate emotions in ways that promote emotional and intellectual growth .

Recently, there has been a proliferation of literature that concerns the applicability of the concept of emotional intelligence to various domains of life including: parenting and child care (Gottman, 1997; Shapiro, 1997; Myers, 1997; Taylor, Parker, & Bagby, 1999); business management, leadership, and organizational behaviour (Cooper & Sawaf, 1997; Simmons & Simmons, 1997; Abraham, 1999; Morand, 2000); work environment and professional careers (Weisinger, 1997); self-help and self-improvement (Epstein, 1998; Steiner & Perry, 1997; Ryback, 1997); and education (Salovey & Sluyter, 1997; Greenspan, 1989; Greenspan 1997; Stone-McNown & McCormick; 1999). EI has also been applied to individual psychotherapeutic treatment (Greenspan, 1997; Segal, 1997; DeBeauport, 1996; Payne, 1986; Taylor, 1990).

This present study is motivated by the changes in the world of education and society at large and to changes in our understanding of the relationship of emotional intelligence given the positive outcomes and successes in the business world. It is imperative that the relationship between emotional intelligence of students and their academic achievement be examined. A positive relationship would suggest that achievement could be improved by implementing a course of study based on improving students' emotional skills and abilities. That could eventually lead to more successful results in terms of overall holistic and life-long education outcomes.

CHAPTER 1

Background research on emotional intelligence

Introduction

Emotional intelligence is a fairly new and therefore still developing concept. New understandings and applications emerge as more and more researchers find applications in new areas and contents. In order to ensure that the most recent findings are included, an extensive search of refereed journals, non-refereed journals, books, and the Internet has been conducted to determine what researchers have found about EI and the ways in which it is linked to achievement.

Since the 1940's numerous attempts have been made to widen the concept of intelligence to include emotions and to identify a clear relationship between intellectual achievement and emotions. The various stages can be summarized as progressive attempts to relate achievement to personality and ability which have finally led to the concept of emotional intelligence.

1.1 Literature Review

1.1.1 Relationship between achievement and personality

In the 1940s and 1950s, there were several attempts to establish a relationship between achievement and personality, but these attempts were not very successful (Barton, Dielman & Cattell, 1972). In 1968, Cattell and Butcher tried to relate both school achievement and

creativity to ability, personality, and motivation. These researchers succeeded in showing the importance of personality to academic achievement; however they could not link motivation to intelligence.

In 1972, Barton, Dielman and Cattell assessed more fully the importance of both ability and personality variables in the prediction of academic achievement. One of the conclusions they reached was that intelligence together with the personality factor, conscientiousness, predicted achievement in all areas. Personality tests measured whether the participants were reserved or warm hearted, emotionally unstable or emotionally stable, undemonstrative or excitable, submissive or dominant, conscientious or not, shy or socially bold, tough-minded or tender-minded, zestful or reflective, self-assured or apprehensive, group dependent or self-sufficient, uncontrolled or controlled, relaxed or tense.

1.1.2 Multiple intelligences

In 1983, Howard Gardner introduced his theory of Multiple Intelligences, which revolutionised the concept of intelligence and gave way to theories like Emotional Intelligence. Gardner (1983) argued that "reason, intelligence, logic, knowledge are not synonymous " and proposed a new view of intelligence that was adopted by schools. Gardner expanded the concept of intelligence to include seven areas: music, mathematical and linguistic abilities, spatial relations, interpersonal knowledge, bodily-kinesthetic, and the personal intelligences, interpersonal feelings and intentions of others. Gardner defined intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural setting" (Gardner & Hatch, 1989, p 4).

In addition to biology, Gardner (1983) argues that culture plays a large role in the development of the intelligences. All societies value different types of intelligences. The cultural value placed upon the ability to perform certain tasks provides the motivation to become skilled in those areas. Thus, while particular intelligences might be highly evolved in many people of one culture, those same intelligences might not be as developed in the individuals of another. Ultimately, Gardner opened new doors to new frontiers in the perception of intelligence one of these being emotional intelligence.

1.1.3 Emotional intelligence

Emotional intelligence can be defined as the degree to which individuals understand themselves and their ability for self-management and is a measure of how well individuals relate to others (Mayer & Salovey, 1993). Specifically speaking, EI includes the ability to identify emotions, recognise strengths, acknowledge weaknesses and take personal responsibility for actions, (Goleman, 1998). It involves empathy, the ability to appreciate diversity and to respect others, manage emotions, assess situations and react to them (Goleman, 1995). EI also involves setting goals and solving problems. It facilitates effective and positive communication necessary to establish and maintain relationships and to negotiate conflicts. In brief EI is the ability to acquire the essential skills to socialise and interact with others in diverse and changing environments, home, school, work and in public places, (Bar-On & Parker, 2000). In other words, emotional intelligence is the base on which affective learning develops and on which it relies for reality checks.

In 1985, Dr. Reuven Bar-On conceived the term "Emotional Quotient "(EQ) to describe his conception of intelligence. He explained Emotional Intelligence through the reflection of

our ability to deal successfully with other people and with our feelings. After 17 years of research, he developed the BarOn EQ-i, which was the first scientifically developed and validated measure of emotional intelligence. Results from this questionnaire, BarOn Emotional Quotient Inventory (EQ-i), reflect one's ability to deal with daily environmental challenges and predict one's successes in life, including professional and personal pursuits (Abraham, 1999). The test covers five areas: intrapersonal, interpersonal, adaptability, stress management and general mood (Mirsky, 1997).

The term Emotional Intelligence appeared in a series of academic articles by John D. Mayer and Peter Salovey (1990, 1993, and 1995). Their landmark article presented the first model of emotional intelligence. However, the term "emotional intelligence" did not become a part of our everyday vocabulary until Daniel Goldman's 1995 book, *Emotional Intelligence*. In this book he stated that intelligence as measured by traditional intelligence tests contributes only about twenty percent to success in life, and other forces contribute the rest. Emotional intelligence, luck, and social class are among those other factors. He further states that existing data implies emotional intelligence can be as powerful and sometimes even more powerful than IQ; that emotional competencies can be taught and improved in children; and that emotionally intelligent people are more likely to succeed in everything they undertake.

Goleman (2001) considers that most measured intelligence is of cognitive or technical expertise, but that other abilities tied to the affective domain, which is what emotional intelligence tests measure, are crucial to performance. His premise is that emotional intelligence involves the affective domain in conjunction with the cognitive domain and that a balanced development of both means that the person is prone to do better.

All emotional intelligence models share the common basic concept that. "emotional intelligence refers to the abilities to recognise and regulate emotions in ourselves and in others" (Goleman, 2001, p. 14). There are basically four domains that emotional intelligence measure. Although the names may differ from theorist to theorist and test to test, the domains are basically the same: self-awareness, self-management, social awareness and relationship management.

1.1.4 Emotional intelligence and achievement

Parker, Creque, Harris, Majeski, Wood and Hogan's 2002 study indicates that in order to improve the academic standard in schools that emotional intelligence programmes, which would have a strong impact on achievement should be developed. Pool (1997), senior editor of Educational Leadership, stated that emotional well being is a predictor of success in areas of academic achievement and job success among others. Finnegan (1998, p.23) argues that schools should foster the emotional intelligence that leads "to achievement from the formal education years of the child and adolescent to the adult's competency in being effective in the workplace and in society".

Cangelosi and Petersen (1998) argue that students often experience failure in school, at home, with friends, and on the job because they have poor communication skills. In January 2000, Coover & Murphy conducted a study that examined the relationship between self-identity and academic persistence and achievement in a counter stereotypical domain. The study revealed that the higher the self-concept and the self-schema, the more positive the self-descriptions, the better the academic achievement. This study found that self-

identity improves through social interaction and communication with others, which in turn enhances achievement.

1.1.5 Teaching emotional and social skills

Teaching emotional and social skills at school are very important, as these skills positively affect academic achievement, personal adjustment and the ability to get along with others concurrently and for the future. Elias, Gara, Schuyler, Brandon-Muller, & Sayette, (1991), argue that teaching these emotional and social skills that are internalised have a long-term effect on achievement. Richardson and Evans (1997) explored methods for teaching social and emotional competence within a culturally diverse society. Their purpose was to help students connect with each other; interpersonally as well as develop their intrapersonal understanding, and emotional intelligences. They argued that these intelligences are essential for personal accomplishment.

According to Ediger (1997), emotions, feelings, and values are vital for a person's well being and achievement in life. He points out that science teachers need to stress the affective domain, as it should not be separated from the cognitive domain. Quality and control of emotions and feelings help students reach their best potential in the classroom. Students who are aversive and think negatively have difficulty concentrating for long periods and have more difficulty in achieving their potential than others.

At La Salle Academy, a private school in Providence, Rhode Island, students were given lessons in emotional intelligence across the curriculum. These lessons were part of an exhaustive program in social and emotional education called "Success for Life." (Pasi, 1997). The Self-Science project (June 2001) was designed to teach specific emotional

intelligence skills and to improve the classroom climate. The preliminary findings showed that emotional intelligence increased cooperation in class, and improved student, teacher and classroom relationships. Moreover, it helped to increase students' focus and learning. Parker et. al (2002 a) concluded that academic success was strongly associated with emotional intelligence in students transiting from high school to university. Parker et al, (2002 b) research on academic success in high school and its relevance to emotional intelligence found that emotional intelligence was a significant predictor of academic success.

1.1.6 Emotional intelligence and its impact on workplace

Abisamra (2000, p3) describes the mission of a conference on emotional intelligence held in Chicago in September 1999 as being to "provide the most comprehensive learning forum on emotional intelligence and its impact in the workplace." Linkage Incorporated (2000, p. 12) claimed that "research shows that well-developed EI distinguishes individual star performers and plays an important role in determining which organisations will outperform the competition, due in part to higher retention rates, better morale and heightened results."

Emotional literacy is essential for success in adulthood (Elias, 1991) and social and emotional skills are crucial to succeed in the workplace. The National Association of Colleges and Employers in its "Job Outlook 2001" listed the 10 most important qualities employers seek. The qualities were communication skills, honesty/integrity, teamwork skills, interpersonal skills, motivation/initiative, strong work ethic, analytical skills, flexibility/adaptability, computer skills and self-confidence. All but analytical skills and computer skills were considered social or emotional skills.

1.1.7 The impact of emotional intelligence on schools

As educators began to realize the value of these skills, they looked for programs that developed student' emotional intelligence. There are many quality programmes being implemented in schools worldwide. They go by various names, such as character education, social and emotional learning, pro-social skills, peer mediation, and so on.

Six Seconds, an international organisation for the promotion of emotional intelligence in schools, considers the importance of emotional intelligence, its direct, profound and immediate impact and long lasting effects to be tremendous to all those who are part of the school environment, staff and students alike. There are three systemic benefits to a school-wide emotional intelligence approach. First, it serves, as an umbrella under which prevention programmes primordial for the well being of the students, can be coordinated. Second, this systemic approach improves overall academic performance, as increased emotional intelligence has been shown to have a significant impact on academic learning. Students who cannot cope emotionally are unable to concentrate and focus on what is being taught. Lack of concentration affects students' attitude and motivation and all these in turn affect the wellbeing and achievement of students.

McCluskey (1997) believes that there is currently a tendency to consider schools as organic wholes that grow and develop. Students' actions and knowledge are interrelated and interact within the surrounding school environment. He describes schools as places where pupils can learn about social behaviour from daily exchanges. Among other things, stress on internal communication and in particular the impact of daily negotiations between the participants in the school is considered as fundamental to its proper running. Critics argue

that it is only through greater collaboration of all actors that real improvement of school performances can occur.

1.1.8 Introducing emotional intelligence in schools

Scientific research on how the brain develops indicates that the formation of emotional skills is more effective in the "formative" years from birth to the late teens. Given existing social structures, educational settings would be the primary setting for intervening positively with this age group. Ironically, emotions rarely have a place in schools. Beyond early childhood centres and to some degree early primary school, almost all efforts are concentrated on cognitive skills or the 3R's.

The introduction of a curriculum that includes social and emotional skills for schools and society would have far reaching positive implications. Schools that create a learning environment that fosters positive attitudes and emphasise the feelings and emotions of students, prepare their students to function more effectively.

The following skills could be introduced in the school curriculum to help prepare a socially and emotionally aware society. (McCown, 1998; Goleman, 2001)

- Self-awareness is a basic emotional skill, which involves the ability to recognise and interpret feelings and includes greater awareness of the relationship between thoughts, feelings and actions.

- Managing emotions involves skills in recognising and realising what is behind feelings. Beliefs have a fundamental effect on individuals' ability to act and influence ways in which things are done. It is essential that individuals find ways to deal with anger, fear, anxiety and sadness

- Empathy is the ability to read a situation and understand the feelings of the others, take their perspective into account and to act appropriately. It is important to listen to others without becoming emotionally overwhelmed. It is important to distinguish between what others do or say and one's own personal reactions and judgements.

- Communication is important to assess what and how others are feelings. Feelings such as enthusiasm and optimism or pessimism and negativity are contagious. A key asset is being able to express personal concerns without anger or passivity.

- Co-operation involves knowing how and when to take the lead and when to follow. It is essential to learn how to help people work together towards common goals to recognise the value of the contribution of others and to encourage their participation. At the same time, there is a need to take responsibilities and to recognise the consequences of decisions and acts and follow through on commitments.

- Conflict resolution skills are important as people in conflict are generally locked into a self-perpetuating emotional spiral in which the declared subject of conflict is rarely the key issue. The alibility to focus on the resolution of the conflict and not the emotionality that goes with it is essential.

This literature review has covered the definitions of EI, the correlation between emotions and achievement, and the significant research findings in various fields where EI has been implemented and the various views that researchers have published about emotional intelligence. It drew on the research that examined the relation between emotions and intelligence, the theoretical concept of multiple intelligences and the ways in which EI fits into the wide panoply of intelligences. This review supported the position that EI was necessary in schools due to significant changes in educational environment. EI can create positive learning environments and improve the well being and over all performance of students. The emphasis has been to draw on the developmental path of emotional intelligence and its relevance to improving academic achievement.

1.2 Contribution of the Thesis

The initiative for this thesis is in response to the research of Parker, Creque, Harris, Majeski, Wood & Hogan (2002). One conclusion from their findings suggested that there was a strong need to replicate their study in other high schools with students from more diverse ethnic background. If other research support the finding that there is a strong correlation between academic achievement and emotional intelligence then there will be room for research on how to implement emotional intelligence in schools. This research thus adds a new perspective in the assessment of a different kind of intelligence relevant to students' achievement. Its gives a new insight into assessing, abilities, skills and the much needed social and emotional competencies of students.

1.3 Objective of the thesis

The main objectives of the thesis are to:

1. Assess the emotional intelligence quotient of students at two New Zealand High Schools.

2. Analyse and standardise the academic end of term results of the students.

3. Correlate their end of term results with their emotional intelligence quotient.

4. Determine the strength of the relationship between emotional intelligence quotient and academic achievement.

1.4 Structure of the Thesis

The thesis is divided into seven parts. The introduction provides an overview of emotional intelligence and extends the rationale for and the background to this research.

Chapter 1, the literature review; examines the various studies on the relationship between achievement and personality, the multiple intelligences and emotional intelligence as well as issues related to its definition. The relationship between emotional intelligence and achievement, the impact of emotional intelligence on the work place and schools and the various attempts to introduce emotional intelligence in schools are also reviewed. Given what is known about EQ, this chapter outlines the contribution that this thesis can make toward a better understanding or the relationship between students' EQ and their achievement. .

Chapter Two focuses on the ways in which emotional intelligence is assessed and measured, on the latest measures of emotional intelligence and describes what these assessments actually measure. A more in-depth evaluation of the BarOn EQI and the MSCEIT emotional tests is given and a rationale for the use of the BarOn Emotional Quotient Inventory: Youth version, the measurement used for this particular study. The emphasis is on the main features of this measurement test, particularly its validity and reliability.

Chapter Three examines the design, the methods, the procedures, and the limitations of the study. It describes the techniques used to collect the data, the population sampled, and the ethical issues that were addressed and the relevant technical details of the BarOn Emotional Quotient Inventory Youth version.

Chapter Four explains the analysis procedures that were used and the results of the study. It describes the ways in which the data was collected, that is, the administration of the BarOnYV to students in two high schools and the arrangements made with the schools to obtain the students' end of term results. An explanation is given of the procedures used to transform students' end of term results into standard scores and to then correlate these with the standard scores from EQi results.

Chapter Five provides a discussion of the interpretation of the result, which affirms the correlation between emotional intelligence and academic achievement. The final chapter draws conclusions regarding the research and makes recommendations for further work in this particular field.

CHAPTER 2

Selecting a measure of emotional intelligence

Introduction

With the introduction of a new concept of EI a new way of thinking about emotional intelligence was conceived. Successive theoretical concepts and models of emotional intelligence and a wide range of tests have appeared since 1990 to measure EI. Some of these tests are user friendly, non-scientific while others are highly complex and scientific. Some of the tests are said to measure personality or emotional traits rather than EI. There is such panoply of tests that it is important to clarify which test measures what. Mayer & Salovey (1997) emphasise that it is essential to measure emotional intelligence as a type of intelligence similar to cognitive intelligence. BarOn (1997), Cooper and Sawaf (1997) and Goleman, Boyatzis & Rhee (2000) examine EI in terms of emotional competence.

This chapter summarises the various trends in the measurement of emotional intelligence that have occurred since 1990. It looks at the recent tests, which purport to capture and measure emotional intelligence, rather than personality as an entity. It compares tests used to measure emotional intelligence quotient in various fields and outlines the rationale for the selection of the BarOn Emotional Quotient Inventory: Youth Version for this research.

2.1 Emotional intelligence and emotional competence tests

The major trends in the testing of emotional intelligence can be summarised under two headings: emotional intelligence tests and emotional competence tests. Emotional intelligence tests assess the ability to recognise and use emotions while the emotional competence tests assess personal and social skills.

Various theoretical assumptions have generated similar, but different models of emotional intelligence. Salovey and Mayer (1990) and Mayer, Salovey & Caruso (2000) formulated models based on intelligence. BarOn (1988) devised his model based on personality theory, namely, well being and performance theory. Goleman (1998) defined his in terms of a theory of performance. However, all these models share common basic concepts. They all look at four major domains of emotional intelligence, self-awareness, self-management, social awareness, and relationship management. (Goleman, 2001).

Mayer et al. (2000, p. 1) considered emotional intelligence to be "the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others". On the other hand, BarOn and others have preferred to examine EI through the exploration of emotional competencies. They have looked at the emotional and social skills that lead to superior overall performance. Boyatzis and Coleman have stated that:

> Emotional intelligence is observed when a person demonstrates the competencies that constitute self-awareness, self-management, social awareness and social skills at appropriate times and ways in sufficient frequency to be effective in the situation. (Boyatzis, Goleman & Rhee, 2000, pg. 3)

Mayer (2000) and others based their test on the foundations of the theory of personality. Goleman and partners (1998) built theirs on the basis of performance in the workplace and

BarOn placed his test in a personality and performance perspective. Cooper & Sawaf (1997) went further by mapping the environment, competencies for performance, and outcome measures.

2.1.1 The Multifactor Emotional Intelligence Scale (MEIS)

The MEIS (Mayer, Salovey & Caruso, 1999), was published as a scale of EI. The test was based on a decade of theoretical and empirical work and was similar to a test of traditional intelligence. It could be measured as an ability for which there were correct answers. Moreover, the domain of EI was sizable in that it could come up with diverse tasks to measure it, everything from recognizing emotion in facial expressions to understanding how emotions might combine to form other emotional experiences (Table 2.1). After administering the test to 503 adults and 229 adolescents, it was found that performance on those diverse tasks was correlated positively across samples. A factor analysis of those tasks indicated that they could be defined by one general factor, and that they fell into three or four subgroups of skills that correspond to the model of emotional intelligence that had been designed.

Table 2.1

Overview of the Four-Branch Model of Emotional Intelligence		
Branches	**Description of Measure**	**Relation to Intelligence and Personality**
Perceiving Emotion	Ability to identify emotions in faces, pictures	Inputs information to intelligence
Facilitating Thought with Emotion	Ability to harness emotional information and directionality to enhance thinking	Calibrates and adjusts thinking so that cognitive tasks make use of emotional information
Understanding Emotion	Ability to comprehend emotional information about relationships, transitions from one emotion to another,	Central locus of abstract processing and reasoning about emotions and emotional information

	linguistic information about emotions	
Managing Emotion	Ability to manage emotions and emotional relationships for personal and interpersonal growth	Interface with personality and goals

(Mayer, Salovey & Caruso, 1999)

The MEIS represented a great step forward when compared to earlier ability scales and included many tasks that interrelated well. One of the great advances of the MEIS over the earlier, more limited ability measures is that it was the first attempt to introduce an "expert" criterion for deciding on a correct answer. The earlier tests had relied on general consensus scoring; that is, the index of correctness was the degree to which the individual agreed with the response of the general group. In MEIS, two of the authors provided their own estimation of the optimal answers to the test and the scores were measured against the expert criterion. The MEIS contains 12 subscales to correspond to the four-branch model. Table 2.2 shows the subscales tested:

Table 2.2

MEIS Measures

Subscales	**Measures**
Perceiving and expressing Emotions	• Relating emotions to variety of faces representing distinct emotions. • Rating emotional content of pieces of music • Rating the feelings in variety of computer generated designs • Rating emotional contents of stories
Assimilating Emotion in Thought	• Test takers imagine an event that could make them have a particular feeling. They then describe it on ten semantic differential scales. • Test their mood judgement of fictional characters in a story.
	• Ability to analyse blended and complex emotions. • Testing the progression of emotional

Understanding Emotions	reactions. • Testing the degree of emotional transition • Testing feelings and reactions of relativity.
Reflectively Regulating emotions	• Managing feelings of others. • Managing feelings of self.

(Mayer, Salovey & Caruso, 1999)

2.1.2 Mayer-Salovey-Caruso Emotional Intelligence Test

A new version of the MEIS is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), which improves the psychometric qualities of the MEIS. The MSCEIT is a 141-item ability scale that uses tasks similar to those of the MEIS to measure the four branches of emotional intelligence (Table 2.1):

1. Perceiving Emotions - The ability to perceive emotions in oneself and others, as well as in objects, art, stories, music, and other stimuli.
2. Facilitating Thought - The ability to generate, use, and feel the emotions necessary to communicate feelings and or to employ them in cognitive processes.
3. Understanding Emotions - The ability to understand emotional information, how emotions combine and progress through emotional transitions, and to appreciate such emotional meanings.
4. Managing Emotions -The ability to be open to feelings, and to modulate them in one'self and others so as to promote personal understanding and growth.

The constructs in the MSCEIT are parallel to those assessed by MEIS. The branch labels and subtests for the MSCEIT vary somewhat from those for the MEIS, (Table 2.3).

Like the MEIS, the MSCEIT has been scored using a general consensus criterion and scored using experts. The MEIS used only two authors as experts while the MSCEIT had

21 members of the International Society of Research in Emotion (ISRE) to answer the MSCEIT questions. The MSCEIT was then scored according to an expert-consensus criterion, based on the proportion of experts from ISRE who answered each item in a particular way. Over 2,000 participants' scores on the MSCEIT were calculated either by general, or by expert consensus scoring. The correlation between the two sets of scores was r = .98. That figure is well above that of the r = .26 found with the MEIS (Mayer, Salovey, Caruso & Sitarenios, 2001)

Table 2.3

MSCEIT Measures

Subscales	**Measures**
Perception of Emotion	• Relating emotions to variety of faces representing distinct emotions. • Rating emotional content of landscapes • Rating emotion in abstract design
Emotional facilitation	• Test takers imagine an event that could make them have a particular feeling. They then describe it on ten semantic differential scales. • Test their mood judgement of fictional characters in a story. • Judge similarities between an emotional feeling and other internal experiences.
Understanding Emotions	• Ability to analyse blended and complex emotions. • Testing the progression of emotional reactions. • Testing the degree of emotional transition • Testing feelings and reactions of relativity.
Managing emotions	• Managing feelings of others. • Managing feelings of self.

Mayer, Salovey, Caruso & Sitarenios, 2001)

2.1.3 Emotional Competency Inventory

Goleman views EI as a set of competencies that can be measured by the Emotional Competency Inventory (ECI). The ECI measures motives, attitudes, skills, knowledge, behaviours or other personal characteristics that distinguish superior performers. The instrument is designed for use in the workplace as a development tool for employees, not for hiring or rewarding decisions. The employees' scores reflect feedback from the boss, peers, and those who report to them. Developed by Richard Boyatzis and Daniel Goleman, this new measure, ECI, is designed to assess competencies from the following areas:

- **Self-Awareness**: Knowing one's internal states, preferences, resources, and intuitions
- **Emotional Self-Awareness**: Recognizing one's emotions and their effects
- **Accurate Self-Assessment:** Knowing one's strengths and limits
- **Self-Confidence:** A strong sense of one's self-worth and capabilities
- **Self-Management:** Managing ones' internal states, impulses, and resources
- **Self-Control:** Keeping disruptive emotions and impulses in check
- **Trustworthiness:** Maintaining standards of honesty and integrity
- **Conscientiousness:** Taking responsibility for personal performance
- **Adaptability:** Flexibility in handling change
- **Achievement Orientation**: Striving to improve or meeting a standard of excellence
- **Initiative:** Readiness to act on opportunities
- **Social Awareness:** Awareness of others feelings, needs, and concerns
- **Empathy**: Sensing others' feelings and perspectives, and taking an active interest in their concerns
- **Organizational Awareness:** Reading a group's emotional currents and power relationships

- **Service Orientation:** Anticipating, recognizing, and meeting customers' needs

- **Social Skills:** Adeptness at inducing desirable responses in others
- **Developing Others:** Sensing others' development needs and bolstering their abilities
- **Leadership:** Inspiring and guiding individuals and groups
- **Influence:** Wielding effective tactics for persuasion
- **Communication:** Listening openly and sending convincing messages
- **Change Catalyst:** Initiating or managing change
- **Conflict Management:** Negotiating and resolving disagreements
- **Building Bonds:** Nurturing instrumental relationships
- **Teamwork & Collaboration:** Working with others toward shared goals. Creating group synergy in pursuing collective goals.

This test is particularly relevant for business and is not appropriate for use with students in a school environment. Consequently, this test was covered as an example of the ways in which EI tests are used in other settings so is not covered in depth.

2.1.4 The Emotional Quotient Map (EQ Map)

The EQ Map is an extensively researched, norm-tested and statistically reliable instrument used to measure emotional intelligence. It is self-administered, confidential, and easy-to-use and understand. The EQ Map comes with a questionnaire, scoring grid, interpretation guide, and action planning worksheets.

The EQ Map integrates over 90 distinct bodies of research on emotional intelligence. It is divided into five aspects each with 20 scales. Its overall focus is on EQ Awareness, EQ Competencies, EQ Values/Beliefs, and Life Outcomes. The integrated assessment looks into the essence and complexity of life and pinpoints the strengths and vulnerabilities of the individual. The factors in the EQ Map are directly related to a person's ability to stay emotionally healthy under pressure, develop trusting relationships, and creatively sense and pursue opportunities for the future.

The 20 scales within the five facets of the EQ map measure emotional intelligence and the effect it has on the person's life, personally and professionally. The five sections or facets of the EQ map measure include:

1. **Current Environment** that includes individuals' present environment and current circumstances both at home and at work.
2. **Awareness**, which assesses the basic awareness of emotions within individuals and between them and others. This facet deals with the content and the source of emotions and ability to articulate or address them successfully.
3. **Emotional Competencies,** which are five scales that explore fundamental skills and behaviour patterns which individuals have developed over time to respond to the people, events and circumstances of life.
4. **Emotional Values & Attitudes** that are patterns of thinking and feeling from which individuals' actions flow. The six scales of this facet of the EQ Map explore beliefs or personal principles that guide actions and frame life, and values. They explore those deeply felt ways in which individuals act consistently with what they say and in accordance with what is most important in their life and work.

5. **Life Outcomes,** which gauge the general health, quality of life, relationship quotient and optimal preferences of people.

The EQ Map, which is designed for developmental purposes in the field of work, is not suitable to use for employment selection or promotion or to use with student in a school environment.

2.1.5 BarOn EQ-i Measures

Based on 19 years of research by Dr. Reuven BarOn who has tested on over 48,000 individuals worldwide, the BarOn Emotional Quotient Inventory is designed to measure a number of constructs related to emotional intelligence. BarOn uses EQ (Emotional Quotient) to describe his view of emotional intelligence as " an array of non-cognitive skills " that are useful in predicting success in specific areas of life. BarOn believes that interrelated emotional, personal and social abilities influence our overall ability to effectively cope with life (BarOn, 2000, p. 78).

Since individuals' abilities are influenced by their emotional and social intelligence BarOn's (1997) interest was in learning about the emotionally and socially competent behaviour. According to BarOn's model, general intelligence is composed of both cognitive intelligence, as measured by IQ, and emotional intelligence as measured by EQ. The BarOn model is multifactorial and relates potential for performance rather than performance itself. It is a more process-oriented model rather than an outcome model.

The BarOn model is comprised of five major dimensions, intrapersonal, interpersonal, adaptability, stress management and general mood. The EQ-i is a self-report, that is, a reflection of individuals own answers to the test questions rather that what they might actually do. The EQi provides a valid and reliable assessment of the individuals' effectiveness to deal with the pressure of daily life (BarOn 2000). The BarOn EQ-i consists of 133 items. It gives an overall EQ score as well as scores for five composite scales and their 15 sub-scales which are shown in Table 2.4.

Table 2.4

BarOn EQI

The Meta-Factors	Factors of Emotional and Social Intelligence Measures
Intrapersonal EQ	• Emotional Self-Awareness • Assertiveness • Self-Regard • Self-Actualization • Independence
Interpersonal EQ	• Empathy • Social Responsibility • Interpersonal Relationship
Adaptability EQ	• Reality Testing • Flexibility • Problem Solving
Stress Management EQ	• Stress Tolerance • Impulse Control
General Mood EQ	• Optimism • Happiness

2.1.6 The BarOn EQi YV

BarOn EQi YV is an adapted version of the EQi designed to measure the emotional intelligence of young people aged 7 to 18 years old. This test is similar to the EQi as it measures individuals' ability to understand themselves and others, to relate to people, to adapt to changing environment demands, and to manage emotions. BarOn and Parker

(2000c, p. 320) describe the EQi YV as "A unique integration of theoretical knowledge, empirical sophistication, and state of the art psychometric techniques".

Moreover the test is valid and reliable; it has a large normative base of nearly 10,000. It provides variety in testing by having gender and specific norms for four different age groupings between 7 and 18 years. It also has multi dimensional scales that assess major features of emotional intelligence. The test also has a positive impression scale, a correction factor and an inconsistency index to minimise any bias response from the young students. The measures of the BarOn EQi YV are shown in table 2.5.

Table 2.5

Scales Measured in the BarOn EQi YV

Scales
Total Emotional Intelligence
Interpersonal
Intrapersonal
Adaptability
Stress Management
General Mood
Positive impression
Inconsistency index

BarOn & Parker (2000, p1)

2.2 The MSCEIT and the EQ-I

A comparative study of the MEIS and the subsequent MSCEIT and EQI indicates that the two tests are not correlated. They are, in fact, two measures testing different aspects of EI.

The MSCEIT based on the Mayer-Salovey model of emotional intelligence is more convergent with traditional measures of intelligence. This observation is consistent with the

authors' intention to measure emotional intelligence as an entity and to examine the construct at an ability level (Goleman & Cherniss, 2001). The MSCEIT seeks to establish its validity and utility of a new form of intelligence rather than testing the non intellective factors related to emotionally intelligent behaviour.

BarOn EQ-i comes from a different perspective. As Bar-On (2000, p33) notes, emotional intelligence refers to non-cognitive capabilities, competencies and skills and is "an array of emotional, personal, interpersonal abilities that influence one's ability to succeed in coping with environmental demands and pressures". He further notes that his model relates to emotionally intelligent behaviour. The BarOn to a degree overlaps with traditional measures of personality. The EQi is more interested in the role of emotion in social functioning and well being.

The MSCEIT measures fundamental abilities of emotional intelligence in an objective manner, and the EQ-i measures the non-intellectual factors that impact emotionally intelligent behaviour as reported by individuals.

Table 2.6 clearly shows the MSCEIT as a test of intelligence. Moreover the measures are too complex to use in a classroom situation.

Table 2.6

The MSCEIT as a measure of intelligence

Branches	**Relation to Intelligence and Personality**	**Measures**
Perceiving Emotion	Inputs information to intelligence	• Relating emotions to variety of faces representing distinct emotions. • Rating emotional content of pieces of music • Rating the feelings in variety of computer generated designs • Rating emotional contents of stories
Facilitating Thought with Emotion	Calibrates and adjusts thinking so that cognitive tasks make use of emotional information	• Test takers imagine an event that could make them have a particular feeling. They then describe it on ten semantic differential scales. • Test their mood judgement of fictional characters in a story.
Understanding Emotion	Central locus of abstract processing and reasoning about emotions and emotional information	• Ability to analyse blended and complex emotions. • Testing the progression of emotional reactions. • Testing the degree of emotional transition • Testing feelings and reactions of relativity.
Managing Emotion	Interface with personality and goals	• Managing feelings of others. • Managing feelings of self.

(Mayer & Salovey 1997)

Table 2.7 provides a comparison between the EQi measure and the MSCEIT. It identifies the five factors the EQi measures and the four factors the MSCEIT measures. When compared, the EQi seems to measure a larger domain than the MSCEIT.

Table 2.7

Comparative analysis of the EQI and MSCEIT measures

EQi	MSCEIT
Intrapersonal Emotional self-awareness, assertiveness, self-regard, self-actualization, independence	Perceiving Emotion Understanding Emotion
Interpersonal Empathy, interpersonal relationship, social responsibility	Managing Emotion
Stress Management Problem solving, reality testing, flexibility	
Adaptability Stress tolerance, impulse control	
General Mood happiness, optimism	Facilitating Thought with Emotion

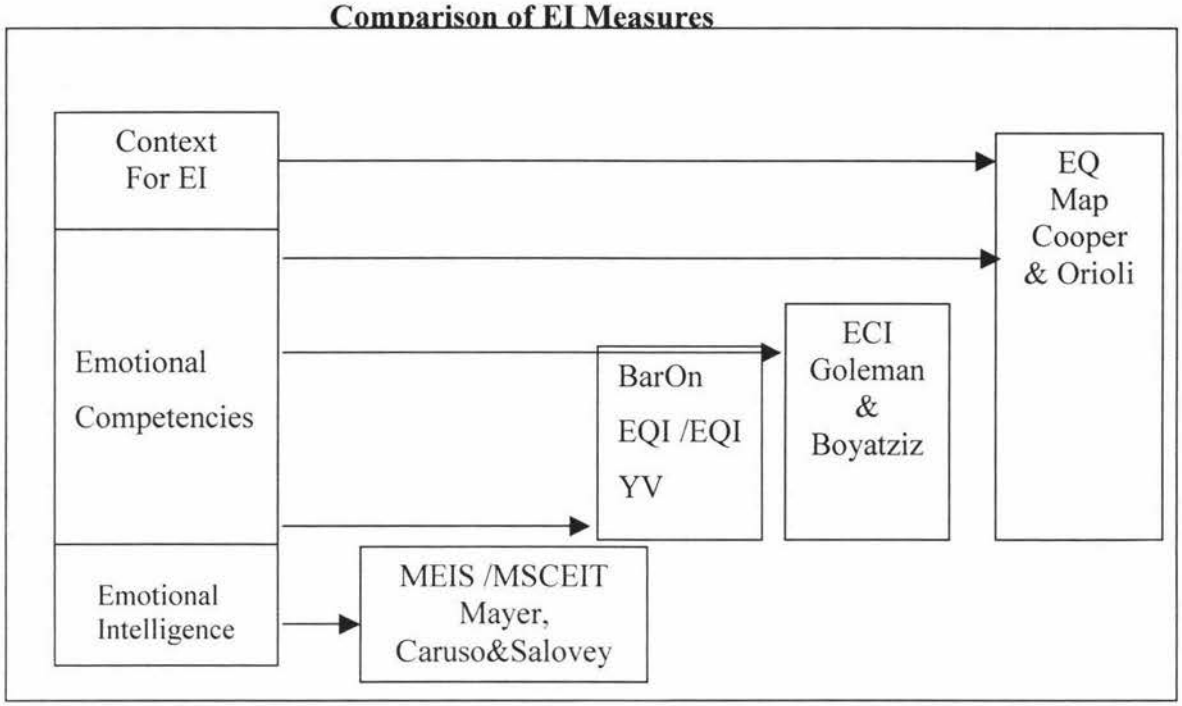
To sum up, it can be said that the Mayer-Salovey model views emotional intelligence as being similar to intelligence and the MSCEIT is a test of emotional intelligence of emotional ability or a measure of emotional aptitude. On the other hand, the Bar-On model sees emotional intelligence as a set of non-cognitive competencies. The EQ-i is a self-report measure and examines aspects of emotionally intelligent behaviours.

2.3 Comparison of EI Measures

The several divergent theories of EI seem to confer that there is great diversity in measuring EI. Each measure represents the theoretical approach of the authors, yet they all have one common goal which is to measure the abilities and traits related to recognising and regulating emotions within individuals and between themselves and others (Emmerling & Goleman, 2003). All theories seek to understand how individuals perceive, understand,

utilise and manage emotions for effectiveness. Figure 2.1 show a comparison of the EI measures discussed and the level at which they interact under the EI umbrella.

Figure 2.1



Adapted version of (Cherniss &Goleman, 2001)

2.4 Rationale for EQi YV

The number of tests designed to measure EQ reviewed here indicate the complex and complicated task in choosing the one that best suited the purposes of this result. After analysing the various measures of EI, the EQI YV was seen as most appropriate for various reasons. The fundamental one being that this measure provides a wide array of possibilities to use with students. It has been designed for people between 7 to 18 years old, and the sampled population was 18 years old students. Moreover, the test was to be used with both male and female students and the EQi YV offered the gender specification norm.

Furthermore, the test is a sixty-item questionnaire that can easily be administered without major disruptions to the schools' timetable. The questions are in simple and unambiguous language, which prevents bias. This measure has been tested for its reliability and validity. There was an attempt to use the other measures, namely the MSCEIT and the EQ Map. Unfortunately, they were not appropriate for students and as they needed to be modified, however, due to doubts about their validity after modification they were not retained for use.

Availability of an appropriate and reliable test for students was another complicating factor. The only one that suited the age of the students sampled was the EQi YV. Since Parker et al. (2002) had used this test in their research it was felt to be appropriate for this research.

CHAPTER 3

Methodology

Introduction

The purpose of this thesis was to establish a relationship between students' emotional intelligence (EI) and their academic achievement at school. The BarOn EQi YV, which defines EI as "the ability to understand one's self and others, the ability to relate to peers and family members and the ability to adapt to changing environmental concerns and demands", was used to measure students' EI (BarOn & Parker, 2000, p. 1). Academic achievement was measured using students' end of term academic results. Results from the BarOn EQi YV and the corresponding achievement marks of thirty students from each of two high schools in Auckland, New Zealand were obtained and converted to standard scores. These standard scores were then used to determine if there was a correlational between students' EQ standard scores and their end of terms standard scores (EOTSS). A *t* test determines if a significant correlation exists between the two variables. If there is a significant correlation, a necessary condition for regression analyses (Baron & Kenny, 1986; Holmbeck, 1997), then a multiple regression is to be performed to take into account the school and individual factors. A further hierarchical multiple regression would allow the independent variables to be entered so that the importance of each variable controls for variables entered earlier in the process. Separate regression analyses could also examine the correlational relationship to include school and gender.

3.1 A Case Study

This research used the principle of the case study as tool of investigation. The epistemological orientation of this case study is post-positivism, that is the meaning of a process or experience constitutes the knowledge to be gained from an inductive, hypothesis or theory-generating model of inquiry, rather than a deductive, hypothesis- or theory-testing mode (Merriam, 1998). In this particular research the hypothesis is that there is a positive relationship between emotional intelligence and academic achievement.

The case study is an appropriate strategy for answering research questions, which ask how, why and which factors control outcomes (Robson, 1993). Gall et. al. (1996) classify case studies by purpose, which they differentiate as description, explanation, or evaluation. The purpose of this case study is descriptive; it looks for constructs to organize the data collected from the survey and to relate these to the results of the students surveyed. It also relates the results to other research findings, themes, which identify the salient features of the case. This case study is also exploratory. This research seeks to find out the degree to which EI is linked or related to academic achievement in high schools.

3.2 Selection of the Schools

Two High schools were invited to participate in the study. The schools were selected due to their geographic area and accessibility. The schools have a large population and were selected with this common variable of school size in mind. School size is a key variable in the determination of the range of emotional intelligence and academic standard that the school can offer in the population sampled. In New Zealand, schools are categorized using a scale of 1 – 10 deciles, with one being the lowest and ten the highest. For the purpose of

this research a decile 3 and a decile 7 school were chosen. School A is a decile 7 coeducational High school with a population of 1729 students. School B is a decile 3 Boy's High school with a population of 1122 students. . The schools have mixed ability students in terms of academic performance at national level. School A, the coeducational High School, is situated in the central region of Auckland and is a representative of the cultural mix present in New Zealand society. School B, the Boys High school is situated in a western suburb of Auckland and has lower academic achievement scores than the coeducational High School but with the same cultural mix. Due to the proximity to the end of year examinations, these were the only two schools that agreed to participate in the study.

3.3 The research Sample and population

Four classes, each with 30 to 35 students from the list of six classes at year 11 level, were randomly selected from each school. The selected classrooms were visited and the research project was carefully explained to the students in order to ensure that they could make an informed decision as to whether or not they wanted to volunteer to participate in the survey. It was emphasised that participation was voluntary and there would be no penalty for non-participation. The Information Sheet about the research survey was put on an overhead and was read to students before they decided to volunteer. Thirty students were randomly selected from the total number who volunteered. Those who wished to volunteer were asked to put their student identification number on a piece of paper that was collected. The students' identification numbers were read out as they are chosen, so that the students knew who had been randomly selected to participate. A venue and a time for the questionnaire to be administered were written on the board for the students who had been selected. They

were given a consent form to sign and were asked to bring this on the day they were going to fill in the questionnaire. One exclusion criterion was based on age, that is, only students 16 to 18 years of age were chosen. The rationale for this age range is that ethically students' aged sixteen do not need parental consent to participate in research and 18 was the maximum age criteria for the EI test that was used. First permission was granted from the schools and second, the students gave permission for the researcher to access their academic term results on their consent forms. At the time of the administration of the questionnaire the Information Sheet was again explained to ensure that participants' consent was informed and they understood their rights. School personnel then released the selected students' end of term marks to the researcher with only their students school identification numbers on them.

3.4 The BarOn EQi YV questionnaire

The BarOn EQi YV questionnaire designed specifically for children and youth aged 7 to 18 years consists of 60 items distributed across 7 scales a total emotional intelligence, interpersonal, intrapersonal, adaptability, stress management, general mood and positive impression. The seven scales measure a wide range of abilities that characterise emotional intelligence. Responses from the 60 items generate seven raw scores that are converted to standard scores. The BarOn EQi YV includes a scale that assesses item response consistency.

The BarOn EQi YV uses a 4 four point Likert style format in which respondents are asked to rate the extent to which item applies to them. The response options range from "Very Seldom True of Me," "Seldom True of Me," "Often True of Me," "Very Often True of

Me". The higher the scores are the higher the levels of emotional intelligence. The questionnaire takes 20 to 25 minutes to administer and the Multi-health QuickScore form is used to score the respondent's questionnaire. The profile display of the Quick Score form provides a visual display of the respondent's scores and their comparisons with an appropriate normative group. The conversion of raw scores to standard scores is made when the profile is completed.

3.4.1 Pilot testing

The questionnaire has been tested on large samples of children and adolescents from various locations in the United States and Canada. It has been widely used, so there was no need to pilot the questionnaire. The readability of the test is that of a North American fourth grade reading level or about a 10 year old level, which means it would be rated as a very low reading difficulty level.

3.4.2 Reliability

Reliability is the extent to which a test yields the same result on repeated trials and the internal reliability is the extent to which tests assess the same characteristic, skill or quality. It is a measure of the precision between the measuring instruments used in a study. This type of reliability often helps researchers interpret data and predict the value of scores and the limits of the relationship among variables. Goetz and LeCompte (1984, p. 221) consider that 'continual data analysis and comparison refine constructs'. A number of analyses have been conducted to determine the reliability of the BarOn EQi YV scales and the scales have been found to be reliable in measuring the constructs they were meant to measure.

Test reliability indicates that a second administration of the instrument would more or less produce the same results as the first. The internal reliability coefficients for 16-18 age groups for both males and females are shown in Table 3.1. The internal reliability was measured with Cronbach's alpha, which provides a summary coefficient that varies between 0.00, which is considered as poor reliability, and 1.0 considered as perfect reliability. Overall the coefficients were satisfactory across the normative groups as they ranged between .83 and .90.

Table 3.1

Internal Reliability Coefficient for BarOn EQi YV Scales

Gender	
BarOn EQi YV Scales	**16 – 18 yrs**
Males	
Intrapersonal	.83
Interpersonal	.82
Adaptability	.87
Stress Management	.90
Total EQ	.89
General Mood	.87
Females	
Intrapersonal	.87
Interpersonal	.82
Adaptability	.87
Stress Management	.89
Total EQ	.89
General Mood	.90

(BarOn &Parker 2000, p 43)

Test-retest reliability is an index of score consistency over a short period of time, namely several weeks. A test-retest coefficient is a statistical measure that is obtained by administering the same test twice, with a certain amount of time between administrations, and then correlating the two score sets. It tells how much an individual's normative score is likely to change on retesting within a short timeframe. If the test has parallel forms,

alternate-form reliability serves much the same purpose as retest reliability, but with reduced practice effect. The BarOn EQi YV test reliability used an interval of three weeks, which produced convincing results as shown in Table 3.2. (BarOn & Parker, 2000, p. 43). According to BarOn and Parker (2000) the test –retest reliabilities for the various scales were excellent.

Table 3.2

Test Retest Reliability Coefficient (3 Weeks) For BarOn EQi YV Scales

Scale	Coefficient
Intrapersonal	.84
Interpersonal	.85
Adaptability	.88
Stress Management	.88
Total EQ	.89
General Mood	.77

3.4.3 Validity

The validity of an instrument measures the extent to which it accurately measures the construct that it was designed to assess. For example, there are some tests that purport to measure EI, but are instead said to measure personality. The BarOn EQi YV has been tested and the scale structure is appropriate both empirically and theoretically. (BarOn & Parker, 2000c). Two different types of validity have been used, the factorial validity and the construct validity. Results show that the EQi YV scales do identify core features of EI in children and adolescents.

3.5 Data Collection

Sixty students, thirty students from each of two schools, participated in the survey. The signed consent sheets were collected from the students and the researcher again explained to them the nature of the research and rationale for using the BarOn EQi YV. Students were given the BarOn EQi YV QuickScore form, which is a paper and pencil format, and were asked to write only their student identification number, not their names on the form. The researcher explained to them the importance of marking the response that they thought best represented what they thought or felt. They were seated in such a way that other students could not see their responses. A teacher and the researcher were always in the room to make sure there was no disruption to the process. Students then circled the responses that they thought was most appropriate without interference or interruption. Once they had completed their forms, they were collected and sealed. The ends of term results were collected from the school personnel after the administration of the questionnaire.

3.6 Data analysis

The response sheets were separated from the scoring sheet and the profile form. The forms were checked to make sure that the responses had been clearly transferred to the scoring sheet and the data were then converted into the students' emotional profile using the profile form. The raw score from the BarOn YV were tabulated and analysed using Microsoft Excel. The frequency distribution was calculated and analysed and finally the correlation between emotional problems and achievement was analysed.

3.7 Code of Ethics

This researcher has made sure not to fabricate, falsify, or misrepresent authorship, evidence, data, findings, or conclusions. Nor has the researcher knowingly or negligently used professional roles for fraudulent purposes. The research conceptions, procedures, results, and analysis are reported accurately and sufficiently in detail to allow knowledgeable, trained researchers to understand and interpret them.

While selecting research population, care was taken not to discriminate on the basis of gender, sexual orientation, physical disabilities, colour, social class, religion, ethnic background, national origin, or other attributes not relevant to the evaluation of academic or research competence. The only criterion in this research was the age barrier, as only students 16 to 18 years old were involved.

It was important that the research populations' rights to privacy were respected. The integrity of the institutions within which the research occurred has been respected and the schools' names have not been disclosed nor identified in anyway. The schools adamantly requested anonymity both for their institutions and their students. The researcher has faithfully adhered to this request.

Participants, and their guardians, in a research study have the right to be informed about the likely risks involved in the research and of potential consequences for participants, and to give their informed consent before participating in research. The aims of the investigation were communicated to informants and participants and appropriate representatives of institutions, and they were kept updated about any significant changes in the research

program. They were given an information sheet, which was verbally explained to them. Students were asked to fill in a consent form before participating in the research.

Cultural, religious, gender, and other significant differences within the research population were given appropriate attention and consideration in the planning, conduct, and reporting of this research. Care was taken to ensure that the research techniques did not have negative social consequences, for example, experimental interventions that could have deprived students of important parts of the standard curriculum. The research was conducted after school examinations and students were told that their participation was strictly voluntary and that they had the right not to participate or to not answer any part or the whole of the questionnaire.

Sensitivity to the integrity of ongoing institutional activities was a primary concern and appropriate institutional representatives were informed of possible disturbances in such activities, which could result from the conduct of the research. Understandably, the researcher has worked in concert with the responsible people at the two high schools.

Finally, all university guidelines regarding ethics have been addressed while conducting this research.

CHAPTER 4

Results

Introduction

The end of term results of sixty students', aged 16 to 18 years of age, and their scores on the BarOn EQi YV generated the data for this study. Individual students' BarOn EQi YV scores and their end of term results were both converted to standard scores and then correlational coefficients were determined. These coefficients were then correlated with the student's emotional profile. If there is a significant correlation between EI and end of terms standard scores (EOTSS), which is a necessary condition for regression analyses (Baron & Kenny, 1986; Holmbeck, 1997); then a multiple regression would be performed to take into account the school and individual factors. A hierarchical multiple regression would allow the independent variables to be entered so that the importance of each variable controls for variables entered earlier in the process. Separate regression analyses could also examine the correlational relationship to include school and gender.

4.1 The BarOn EQi YV Questionnaire.

The BarOn EQi YV Questionnaire contains sixty short questions and is written at a fourth grade readability level, which approximately that of a 9-10 year old. The questions use a rating scale of 1 to 4, Very Seldom True of Me (1), Seldom True of Me (2), Often True of Me (3) and Very Often True of Me (4).

4.1.1 Percentage of answered questionnaire

The questionnaires were administered to students at pre-arranged times, dates and venues, so there was a 100% response rate and all questions were answered on the questionnaires.

4.1.2 The QuickScore Form

Participants circle their appropriate answers, which are transferred to a grid system that assigns the responses a numerical score. The grades are then manually transferred in two boxes; the white and shaded boxes along six columns (A, B, C, D, F, and G) and the column grades are summed. Column A is the Intrapersonal Score, Column B the Interpersonal Score, Column C the Stress management Score, Column D the Adaptability Score, and Column F the Positive Impression score. The Column E score is a measure of the Total Emotional Quotient and is calculated by following a formulae. The totals for A, B, C, and D are divided by corresponding numbers (6 for A, 12 for B and C, and 10 for D). These four scores are then added and multiplied by 5.

4.1.3 Inconsistency Index

An inconsistency index determines if participants have been inconsistent in their responses. If the inconsistency index total is ten or greater than ten then the student's responses are considered to be inconsistent. After calculating the index, it was found that out of the sixty questionnaires only four were found to be inconsistent, as their total inconsistency index was greater than ten. The questionnaires of these students were not rejected but analysed, paying particular attention to the areas where the inconsistencies may have occurred.

4.1.4 Profiling The Scores

The BarOn EQi YV forms generate a series of raw scores. These raw scores are converted into standard scores on the appropriate column on the profile form. Standard scores are presented for both males and females. The information is also available according to four age groups, (7-9 years old, 10-12 years old, 13-15 years old and 16-18 years old). The forms are profiled according to the gender of the profiled. In order to profile the candidate, the raw scores are transferred from the total boxes at the bottom of the scoring page to appropriate columns on the profile sheet according to the age group and gender.

4.1.5 Scoring and Profiling Examples

The respondent of this example is a 17 years old female. Figure 4.1 shows a completed response sheet. The respondent has encircled her response to each item choosing from 1 –4. Figure 4.2 shows the scoring page after the responses have been transferred into corresponding boxes along each item. The scores are then summed vertically along each appropriate column. The total EQ score and inconsistency index are calculated according to instructions provided. Figure 4.3 shows a completed profile form. The raw scores for each profile have been plotted according to the gender and the age group.

4.1.6 Interpreting Scale Scores

In this particular study the most important and relevant profile is the Total EQ profile. Standard scores are interpreted using the guidelines in Table 4.1.

Table 4.1

Interpretive Guidelines for Standard Scores

Range	Guidelines	
130+	Markedly High	Atypically well developed emotional and social capacity.
120-129	Very High	Extremely well developed emotional and social capacity.
110-119	High	Well developed emotional and social capacity
90-109	Average	Adequate emotional and social capacity
80-89	Low	Underdeveloped emotional and social capacity, with some room for improvement.
70-79	Very Low	Extremely underdeveloped emotional and social capacity, with considerable room for improvement.
Under 70	Marked Low	A typical impaired emotional and social capacity

(BarOn EQi YV Technical Manual (2000, p.18)

The total EQ scores give a general indication of how emotionally and socially intelligent the respondent is in general. One can pinpoint specific strengths and weaknesses by examining the individual scale of scores (BarOn & Parker, 2000, p.19)

Figure 4.1

Bar On EQI YV form

BarOn EQ-i:YV

by Reuven Bar-On, Ph.D. & James D. A. Parker, Ph.D.

Name: _____ **Gender:** **Male** **Female** (Circle One)

Birthdate: ____/____/____ (Month Day Year) **Age:** _____ **Today's Date:** ____/____/____ (Month Day Year)

Instructions: Read each sentence and choose the answer that best describes you. There are FOUR possible answers. 1 = Very Seldom True of Me; 2 = Seldom True of Me; 3 = Often True of Me; and 4 = Very Often True of Me. Tell us how you feel, think, or act MOST OF THE TIME IN MOST PLACES. Choose one, and only ONE answer for each sentence, and circle the number that matches your answer. For example, if your answer is "Seldom True of Me," you would circle the number 2 on the same line as the sentence. This is not a test; there are no "good" or "bad" answers. Please circle an answer for every sentence.

	Very Seldom True of Me	Seldom True of Me	Often True of Me	Very Often True of Me
1. I enjoy having fun.	1	2	3	4
2. I am good at understanding the way other people feel.	1	2	3	4
3. I can stay calm when I am upset.	1	2	3	4
4. I am happy.	1	2	3	4
5. I care what happens to other people.	1	2	3	4
6. It is hard to control my anger.	1	2	3	4
7. It is easy to tell people how I feel.	1	2	3	4
8. I like everyone I meet.	1	2	3	4
9. I feel sure of myself.	1	2	3	4
10. I usually know how other people are feeling.	1	2	3	4
11. I know how to keep calm.	1	2	3	4
12. I try to use different ways of answering hard questions.	1	2	3	4
13. I think that most things I do will turn out okay.	1	2	3	4
14. I am able to respect others.	1	2	3	4
15. I get too upset about things.	1	2	3	4
16. It is easy for me to understand new things.	1	2	3	4
17. I can talk easily about my feelings.	1	2	3	4
18. I have good thoughts about everyone.	1	2	3	4
19. I hope for the best.	1	2	3	4
20. Having friends is important.	1	2	3	4
21. I fight with people.	1	2	3	4
22. I can understand hard questions.	1	2	3	4
23. I like to smile.	1	2	3	4
24. I try not to hurt other people's feelings.	1	2	3	4
25. I try to stick with a problem until I solve it.	1	2	3	4
26. I have a temper.	1	2	3	4
27. Nothing bothers me.	1	2	3	4
28. It is hard to talk about my deep feelings.	1	2	3	4
29. I know things will be okay.	1	2	3	4
30. I can come up with good answers to hard questions.	1	2	3	4

Items continued on back page...

Figure 4.2

BarOn EQI YV Scoring page

BarOn EQ-i:YV Scoring Page

by Reuven Bar-On, Ph.D. & James D. A. Parker, Ph.D.

Name: ______________________________ **Gender: Male Female** (Circle One)

Birthdate: ___/___/___ (Month Day Year) **Age:** ______ **Today's Date:** ___/___/___ (Month Day Year)

Instructions: Transfer the circled numbers into the boxes across each row, as indicated at the top of the scoring grids. Each circled number will be copied once. To obtain raw scores for scales A, B, C, D, F, and G, add the numbers in each column and enter the sum in the box at the bottom of the column. See instructions below for scoring scale E.

Transfer each circled number below into the box that looks like this.

Transfer each circled number below into the box that looks like this.

A B C D E F G

Item #									Item
31	4	3	2	1	1	2	3	4	1
32	4	3	2	1	1	2	3	4	2
33	4	3	2	1	1	2	3	4	3
34	4	3	2	1	1	2	3	4	4
35	1	2	3	4	1	2	3	4	5
36	4	3	2	1	4	3	2	1	6
37	1	2	3	4	1	2	3	4	7
38	4	3	2	1	1	2	3	4	8
39	4	3	2	1	1	2	3	4	9
40	4	3	2	1	1	2	3	4	10
41	4	3	2	1	1	2	3	4	11
42	4	3	2	1	1	2	3	4	12
43	4	3	2	1	1	2	3	4	13
44	4	3	2	1	1	2	3	4	14
45	4	3	2	1	4	3	2	1	15
46	1	2	3	4	1	2	3	4	16
47	4	3	2	1	1	2	3	4	17
48	4	3	2	1	1	2	3	4	18
49	1	2	3	4	1	2	3	4	19
50	4	3	2	1	1	2	3	4	20
51	4	3	2	1	4	3	2	1	21
52	4	3	2	1	1	2	3	4	22
53	1	2	3	4	1	2	3	4	23
54	1	2	3	4	1	2	3	4	24
55	4	3	2	1	1	2	3	4	25
56	4	3	2	1	4	3	2	1	26
57	4	3	2	1	1	2	3	4	27
58	1	2	3	4	4	3	2	1	28
59	4	3	2	1	1	2	3	4	29
60	4	3	2	1	1	2	3	4	30

To calculate "E," divide each of the scale totals (A to D) by its corresponding number beneath the column, calculate the equation provided, and write the result in the box marked "E."

(round to the nearest whole number)

÷ 6 ÷ 12 ÷ 12 ÷ 10

(round to one decimal place) ☐ + ☐ + ☐ + ☐ = ☐ x 5 = E

Inconsistency Index Guide

Is the Inconsistency Index TOTAL 10 or greater? ☐ yes ☐ no

Inconsistency Index

Raw Score

Absolute Difference

Figure 4.3

BarOn EQi YV profile for females

BarOn EQ-i:YV Profile for Females

Name: _____ **Gender:** Male Female (Circle One)

Birthdate: ____/____/____ (Month / Day / Year) **Age:** _____ **Today's Date:** ____/____/____ (Month / Day / Year)

F1 = Females 7 to 9 years of age
F2 = Females 10 to 12 years of age
F3 = Females 13 to 15 years of age
F4 = Females 16 to 18 years of age

A. Intrapersonal Scale
B. Interpersonal Scale
C. Stress Management Scale
D. Adaptability Scale
E. Total EQ
F. General Mood Scale
G. Positive Impression Scale

	A				B				C				D				E				F				G				
SS	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	SS
120																													120
119																													119
118																													118
117																													117
116																													116
115																													115
114	19																												114
113		18																											113
112			18	19																									112
111																													111
110	18																												110
109		17		18																									109
108			17			43				38		38					63		61	62		51		49					108
107					43		42		37		37		33	32	31	31		61			51		49			17	16	16	107
106	17							43		37		37					62		60	61				48					106
105		16		17		42			36		36						61	60			50	50							105
104			16		42		41			36		36	32	31	30	30			59	60			48	47					104
103								42			35						60	59				49			18				103
102	16					41			35	35		35							58		49		47	46		16			102
101		15		16	41		40				34		31	30	29	29	59	58		59		48					15	15	101
100			15			40		41	34	34									57		48		46						100
99												34	30				58	57		58		47		45					99
98	15			15	40		39		33	33	33			29	28				56						17				98
97		14				39						33				28	57	56		57	47	46	45	44		15			97
96			14		39			40		32	32		29	28					55										96
95									32			32			27		56	55		56	46		44	43			14	14	95
94	14			14		38	38			31	31					27			54			45					13	94
93		13	13		38			39	31			31	28	27			55	54		55				42	16				93
92						37				30	30				26			53	53		45	44	43						92
91				13			37		30			30				26	54									14			91
90	13				37			38					27	26				52	52	54	44	43	42	41			13		90
89		12	12			36			29	29	29	29			25		53					45						13	89
88							36									25		51	51	53		42	41	40					88
87				12	36					28	28		26	25			52				43				15				87
86	12					35		37	28			28			24			50	50	52		41		39		13			86
85		11	11				35			27	27		25			24	51				42		40						85
84					35	34			27			27		24				49	49	51		40		38			12	12	84
83				11				36		26	26				23		50						39						83
82	11								26			26	24			23		48	48	50	41				14				82
81		10	10		34	33	34			25	25			23			49					39		37		12			81
80				10								25			22			47	47		40		38						80
79								35	25	24			23			22	48			49		38		36			11		79
78	10				33	32	33				24	24		22				46	46				37					11	78
77		9	9						24	23					21		47			48	39	37		35	13				77
76				9		31		34			23		22	21		21		45	45				36			11			76
75					32		32		23	22		23					46			47	38	36		34					75
74	9		8								22		21		20			44	44										74
73		8		8	31	30		33	22	21		22		20		20	45	43		46		35	35				10		73
72							31				21								43		37			33	12			10	72
71										20		21	20		19		44	42		45			34						71
70	8		7		30	29			21					19		19			42		36	34		32		10			70
69		7		7				32		19	20	20					43	41					33						69
68							30		20				19		18				41	44		33		31					68
67					29	28				18	19	19		18			42	40			35				11		9		67
66	7		6					31	19							18			40	43		32	32	30				9	66
65	6	6		6	<28	<27	<29	<30	<18	<17	<18	<18	<18	<17	<17	<17	<41	<39	<39	<42	<34	<31	<31	<29	<10	<9	<8	<8	65

4.2 Computation of Students' Marks

The data collected from the sixty participants from both schools was analysed to determine if there was a overall positive correlation between emotional intelligence and academic achievement. Due to the differences in the academic marking criteria used by the two schools, the data from each school was analysed separately and interpreted as two separate case studies. To further document and reinforce the existence of the correlational relationship between emotional intelligence and academic results statistical descriptive measures were carried out using the EQiYV interpretive guidelines.

4.2.1 Schools A and B: Computation of EQ and Academic achievement using the interpretive guidelines

The students' marks from both schools were converted into percentages and then to standard scores in order to ensure mark equivalence before running the correlation analysis with their EQ results. Table 4.4.1 shows the marks of school A and B categorised according to the interpretative guidelines of the BarOn EQi YV technical manual (2000, p. 18).

Table 4.2.1

School A and School B: Computation of Marks, EQ Scores and their Means

EQ Range	Students EQ	Students Marks	EQ Mean	Marks mean
130+	130	76	130	76
120-129				
110-119	119	88		
	117	72		
	117	65		
	117	50		
	115	62	113.8	70
	113	68		
	113	69		
	113	75		
	111	65		

	111	77		
	110	69		
	110	80		
90-109	109	67		
	107	91		
	107	75		
	105	75		
	105	42	97.9	61.12
	105	45		
	105	59		
	105	67		
	104	75		
	103	71		
	101	82		
	101	83		
	101	88		
	101	36		
	97	56		
	96	77		
	96	55		
	96	54		
	96	55		
	96	30		
	95	55		
	95	69		
	94	73		
	94	55		
	92	32		
	93	54		
	92	64		
	90	69		
	90	63		
	90	42		
	90	44		
	90	57		
	90	57		
80-89	88	49		
	87	40		
	86	46		
	86	31	85.1	34.9
	86	20		
	84	36		
	82	36		
	82	21		

70-79	78	33		
	76	53		
	76	40		
	71	38	74.4	39
	71	31		
Under 70	65	17	65	17

Table 4.2.1 provides a good indication of the distribution of marks in each EQ range. One student had an EQ score of 130+, but no one scored in the range of 120 – 129 and only one student scored an EQ under 70.

The EQ scores of 130 and 70 were considered as outliers as they show a marked difference from the overall trend. They have therefore been eliminated for analysis sake.

BarOn and Parker (2000) in the technical manual consider that the standard scores for the BarOn EQiYV have a mean of 100 and a standard deviation of 15. In this present study the EQ mean for both school A and B is 97.4 and the standard deviation is 12.2. This small difference between the two means and standard deviations is not significant, the two closely match and the difference could be due to sample size. Because they are similar there was not a threat to validity and reliability, so the manual guidelines were used to interpret this data set.

A comparative analysis of the EQ mean and the mark mean according to the cluster of EQiYV standards shows that when EQ mean decreases from 113.8 to 97.9 the mark mean falls from 70 to 61.1. A further drop in the EQ mean to 85.1 leads to a fall in the mean in the end of term mark mean to 34.9. When EQ mean reaches 74.4 the mark mean slightly increases to39. Nevertheless the overall trend shows a drop in marks as EQ declines. The

descriptive analysis shows that when using the BarOn technical manual guidelines the trend shows a positive relationship between EQ and marks.

4.2.2 School A and School B: Computation of the Emotional Quotient Mean against the Mark Frequency Using Statistical Descriptive Summary Measures

The marks for school A and B have been clustered in a frequency range and the mean of the emotional quotient scored in this range has been computed. The mark frequency has been calculated to differentiate students in terms of academic abilities. Students have been placed in four frequency groups. The frequency groups have been worked out from the median and the quartiles to measure the non-central locations and the median has been used to split the ordered array in half. Consequently, the values were calculated using the following:

1. The median = $\frac{n+1}{2}$ ordered array = $\frac{61}{2}$ =30.5 = $\frac{55+55}{2}$ = 57

2. 1st Quartile = $\frac{(n+1)}{4}$ ordered array = $\frac{61}{4}$ = 15.25 = 15 = 42

3. 3rd Quartile = $\frac{3(n+1)}{4}$ ordered array = $\frac{183}{4}$ = 45.75 = 72

* (ordered array) means that the raw data are placed in ascending order

Table 4.2.2

School A and School B: Computation of Marks and EQ scores and Means According to Statistical Descriptive Summary Measures

Students Marks	Students EQ	Marks Mean	EQ Mean
17	65		
20	86		
21	82		
30	96		
31	71	31.5	82.6
31	86		
32	92		
33	78		
36	82		
36	84		
36	101		
38	71		
40	76		
40	87		
42	90		
42	105		
44	90		
45	105		
46	86		
49	88	50.9	94.9
50	117		
53	76		
54	93		
54	96		
55	94		
55	95		
55	96		
55	96		
56	97		
57	90		
57	90		

59	105		
62	115		
63	90		
64	92		
65	111		
65	117		
67	105	65.5	103.8
67	109		
68	113		
69	90		
69	95		
69	110		
69	113		
71	103		
72	117		
73	94		
75	104		
75	105		
75	107		
75	113		
76	130	79.6	107.1
77	96		
77	111		
80	110		
82	101		
83	101		
88	101		
88	119		
91	107		

Table 4.2.2 shows the Emotional Quotient Mean for each frequency range of marks. The mark distribution has been classified in four ability groups depending on the marks students scored. The marks of the students range from 17 to 91. The four groups are 17 – 40, 42 – 56, 57 – 72 and 73-91. The cut off of these marks were worked out from the quartile and median scores. This distribution provides a wide range of marks from low ability to high

ability. Therefore the marks were classified into four achievement groups that that would better represent a difference in EQ change that corresponds to mark changes.

Table 4.2.2 provides a good indication of the distribution of marks in each of the four EQ ability groups. A comparative analysis of the mark mean and the EQ mean shows that when the mark mean increases from 31.5 to 50.9 the EQ mean also increases from 82.6 to 94.9. A further increase in the end of term marks mean to 65.5 leads to a rise of EQ mean to 103.8. When mark mean reaches 79.6 the EQ mean climbs to 107.1. The descriptive analysis shows that when using the statistical descriptive summary measures the trend shows a positive relationship between marks and EQ.

4.2.3 Correlation analysis

The correlation analysis is used to measure the strength of the association between numerical variables. In this particular case the correlation between emotional intelligence quotient of students and the students' end of term marks was determined. In order to analyse the correlation between the two items, the coefficient of correlation of the two variables are measured. The value range is from –1 for perfect negative correlation to +1 for perfect positive correlation. Once the coefficient is obtained the data is used to test for the existence of correlation. In this present study the Microsoft Excel was used to calculate the overall coefficient of Correlation for the sixty students from both schools A and B, which is shown in Table 4.2.4

Table 4.2.3

Coefficient of Correlation for School A and B

School A & B	Coefficient of Correlation
	0.686652

4.2.4 Correlation analysis

The correlation analysis is used to measure the strength of the association between numerical variables. In this particular case the correlation between emotional intelligence quotient of students and the students' end of term marks. In order to analyse the correlation between the two items, the coefficient of correlation of the two variables are measured. The value range is from –1 for perfect negative correlation to +1 for perfect positive correlation.

In this present study the Microsoft Excel was used to calculate the coefficient of Correlation for both schools A and B. Once the coefficient is obtained the data is used to test for the existence of correlation.

4.2.4 Testing for the existence of Correlation for School A and B

Once we have computed the Coefficient of correlation, we can use the results to determine whether there is evidence of a statistically significant association between the emotional intelligence quotient and academic achievement. Using the following assumption the correlation is tested. The population correlation coefficient p is hypothesized as equal to 0. Thus, the null and alternative hypotheses are:

H_0: $p = 0$ (There is no correlation)

H_1: $p \neq 0$ (There is correlation))

The t-test statistic for determining the existence of a significant correlation between emotional intelligence quotient and academic achievement is given by formula in Figure 4.4

Figure 4.4

$$\frac{r - p}{\sqrt{\frac{1 - r^2}{n - 2}}}$$

where t is the test statistic which follows a t distribution with n – 2 degrees of freedom, r the coefficient of correlation, p the population correlation coefficient and n number of students.

Using the formula in Figure 4.4 and testing for the null hypothesis we have

$$t = \frac{r}{\sqrt{\frac{1 - r^2}{n - 2}}}$$

$$= \frac{0.686652}{\sqrt{\frac{1 - (0.686652)^2}{58}}}$$

$$= 7.19$$

Where r = 0.686652, n= 60 .

Using the 0.05 level of significance (appendix 5 for critical values of *t*), because $t = 7.19 > t_{58} = 2.0017$ we reject the null hypothesis. We therefore conclude that there is evidence of a strong association between students' marks and emotional intelligence quotient in school A and B.

Case Study A

4.3 Computation of Students' Marks in School A

In school A, the students' marks were in percentages. For analysis students' marks for Science, Maths and English were computed and an average of these marks was calculated. Students' marks show a wide distribution ranging from 21 to 91. This provided a seventy-point range from the student who scored the lowest mark to the highest mark.

4.3.1 Total EQ Score for Students of School A

Students' emotional profile was transferred from the profile sheet. Table 4.3.2 shows the emotional profile of students at school A. The BarOn EQi YV assesses the emotional profile of the students at 7 different scales, these being:

A. Intrapersonal Scale

B. Interpersonal Scale

C. Stress Management Scale

D Adaptability

E. Total EQ Scale

F. General Mood Scale

G. Positive Impression Scale

Table 4.3.1 summarises the description of each of the scale measured in the test. For the sake of this research the Total EQ Scale is measured as the formula Σ [A/6 +B/12 +C/12 +D/10] x 5 (BarOn &Parker, 2000, p19). In this study the factors F and G are not considered.

Table 4.3.1

Scales Description

Intra Personal Scale	Students understand their emotions and are able to express and communicate their feelings and needs.
Interpersonal Scale	Students have satisfying interpersonal relationship. They are good listeners and understand and appreciate the feelings of others.
Adaptability Scale	Students are flexible, realistic and effective in managing change. They positive in their daily transactions
Stress Management Scale	Students are calm and work well under pressure. They are rarely impulsive, without any emotional outburst.
Total EQ Scale	A sum total of the above worked out in using the formula in the scoring page.
General Mood Scale	Students are optimistic and have a positive outlook.
Positive Impression Scale	Students create positive self impression

(Adapted from BarOn & Parker, 2000, p 19)

The BarOn EQiYV provides an inconsistency index; a score of 10 or above means that the student's responses are not consistent. BarOn & Parker (2000c) considers that these inconsistencies need to be mentioned and computed with the others. Only one out of the thirty candidates showed a score over 10 therefore was considered inconsistent. In this research only the students' Total EQ score was considered and compared to their academic achievement.

Table 4.3.2

BarOn EQi Profile for Students of School A

Student	A	B	C	D	E	F	G	Inconsistency
1	101	76	89	76	82	93	112	6
2	98	100	95	116	104	102	107	1
3	67	87	105	75	76	65	5	5
4	105	103	101	102	105	98	85	6
5	124	128	123	130	130	116	130	2
6	90	77	109	84	90	73	68	5
7	98	90	105	102	101	93	101	2
8	113	106	88	111	107	106	118	8
9	94	90	105	80	92	104	96	5
10	90	109	115	84	101	101	101	5
11	101	122	84	111	105	73	85	**12**
12	116	80	99	75	96	98	85	4
13	101	116	111	96	111	73	9	5
14	99	119	99	123	113	85	107	6
15	67	109	78	96	78	65	96	3
16	90	80	101	87	90	88	101	3
17	105	106	113	108	113	116	107	3
18	116	96	84	101	101	67	89	2
19	91	120	73	113	95	81	108	4
20	94	79	115	91	95	88	124	5
21	105	83	112	119	110	93	107	1
22	91	103	102	85	93	102	112	3
23	83	106	98	101	86	93	107	2
24	109	110	99	102	110	101	112	5
25	112	113	112	97	119	84	101	8
26	87	79	89	94	82	78	101	8
27	109	103	118	101	115	102	130	5
28	101	66	97	94	87	97	89	2
29	98	96	104	82	84	74	101	3
30	83	79	121	101	97	97	118	5

4.3.2 Computation of EQ and Academic achievement scores in school A

The aim of this research was to determine if there was a correlation between academic achievement and emotional intelligence. In order to do this students' individual total EQ scores were computed and compared with their academic achievement results, in this case their end of term results. Table 4.3.3 shows the total emotional quotient of the students from school A in comparison with their academic achievement grades. The marks are tabled in an ascending order, from the lowest to the highest. Only the total EQ standard column form the BarOn EQiYV profile has been used. An EQ of 110+ is considered to be above average and an EQ of 90 is considered as below average (BarOn & Parker (2000c, p. 18). Like wise an average end of term mark of 75+ is considered as above average and an average mark of 45- is considered as below average.

Table 4.3.3
Students Total EQ and Average Marks In school A

Student	EQ	Average Marks %	Student	EQ	Average Marks %
1	82	21	27	115	62
9	92	32	13	111	65
15	78	33	17	113	68
26	82	36	20	95	69
29	84	36	21	110	69
28	87	40	2	104	75
23	86	46	11	105	75
3	76	53	14	113	75
12	96	54	5	130	76
22	93	54	24	110	80
19	95	55	7	101	82
10	97	56	18	101	83
6	90	57	25	119	88
16	90	57	30	101	88
4	105	59	8	107	91

4.3.4 Computing the Mark Frequency Mean against the Emotional Quotient Mean In School A

In a descriptive analysis the mean is used to represent the properties of the central tendency. The marks for school A have been clustered in a frequency range and the mean of the emotional quotient scored in this range has been computed. The mark frequency has been calculated to differentiate students in terms of academic abilities. Students have been placed in four frequency groups. The frequency groups have been worked out from the median and the quartiles to measure the non-central locations and the median has been used to split the ordered array in half. Consequently, the values were calculated using the following:

1. The median = $\frac{n+1}{2}$ (ordered array) = $\frac{31}{2}$ = 15.5 = $\frac{59+62}{2}$ = 60.5

2. 1st Quartile = $\frac{(n+1)}{4}$ (ordered array) = $\frac{31}{4}$ = 7.77 = 8 = 53

3. 3rd Quartile = $\frac{3(n+1)}{4}$ (ordered array) = $\frac{93}{4}$ = 23.5 = 76

* (ordered array) means that the raw data are placed in ascending order.

Table 4.3.4 shows the Emotional Quotient Mean for each frequency range of marks. The mark distribution in school A has been classified into four ability groups depending on the marks students scored. The students' end of term achievement marks ranged from 21 to 91. The four groups are 21 – 46, 53 – 59, 62 – 75 and 76-91. This distribution provides a wide

range of marks from low ability to high ability. Therefore the marks were classified in four groups showing students' level of academic achievement in a way that would better show a difference in EQ change when marks change from high to low.

Table 4.3.4

Computation of mean score for frequency range of marks in school A using statistical descriptive measures

Marks	EQ		Frequency group	Marks Mean	EQ Mean
21	82				
32	92				
33	78				
36	82		**1**	34.8	84.4
36	84				
40	87				
46	86				
53	76				
54	96				
54	93				
55	95		**2**	55.6	92.7
56	97				
57	90				
57	90				
59	105				
62	115				
65	111				
68	113		**3**	69.7	108.2
69	95				
69	110				
75	104				
75	105				
75	113				
76	130				
80	110				
82	101		**4**	84	110

83	101				
88	119				
88	101				
91	107				

Table 4.3.4 provides a good indication of the distribution of EQ in each mark range. While the mean is a measure of central tendency, that is, it is a single score that describes the entire distribution; the standard deviation is the measure that shows dispersal of scores around the mean. To summarise the previous analyses, the standard deviation for EQ in Table 4.3.5 shows that when the EQ mean is as low as 84.4 the standard deviation is only 4.5. When the EQ mean increases, the standard deviation also increases, this is clearly seen in groups 2 and 4. In group 3 the standard deviation increases when compared to group 1 but is lower than in group 2 and 4. The skewness explains the manner in which data are distributed, namely that, a positive skewness arises when there are some unusually high values and a negative skewness arises when there are some unusually low values. In group 1 the skewness is 0.4, there is one low EQ score of 76. In group 2 there is again one low EQ score of 76, while in group 3 the low EQ score is 93 but in group 4 there is a high EQ score 0f 130.

Table 4.3.5

School A: Summary of Descriptive Analyses for Each Frequency Group

EQ Analysis	*Group 1*	*Mark Analysis*	
Mean	84.4	Mean	34.8
Standard Deviation	4.5	Standard Deviation	7.7
Skewness	0.42	Skewness	-0.6
Range	14	Range	25
Minimum	78	Minimum	21
Maximum	92	Maximum	46

EQ Analysis	*Group 2*	*Mark Analysis*	
Mean	92.7	Mean	55.6
Standard Deviation	8.3	Standard Deviation	2
Skewness	-1	Skewness	0.4
Range	29	Range	6
Minimum	76	Minimum	53
Maximum	105	Maximum	59
EQ Analysis	*Group 3*	*Mark Analysis*	
Mean	108.25	Mean	69.75
Standard Deviation	6.606274	Standard Deviation	4.920801
Skewness	-1.24813	Skewness	-0.23139
Range	20	Range	13
Minimum	95	Minimum	62
Maximum	115	Maximum	75
EQ Analysis	*Group 4*	*Mark Analysis*	
Mean	109.8571	Mean	84
Standard Deviation	11.05183	Standard Deviation	5.259911
Skewness	1.180425	Skewness	-0.18279
Range	29	Range	15
Minimum	101	Minimum	76
Maximum	130	Maximum	91

4.3.4 Correlation analysis

Correlation analysis is used to measure the strength of the association between numerical variables. In this particular case the correlation analysis was between students' emotional intelligence quotient and their end of term marks.

The correlation between the two scores, the coefficient of correlation of the two variables is measured. The values range from –1 for perfect negative correlation to +1 for perfect positive correlation. Microsoft Excel was used to calculate the coefficient of correlation for

students of schools A. Once the coefficient was obtained the data was used to test for the existence of correlation.

The coefficient of correlation as worked using the correlation tool analysis of Microsoft Excel is shown in Table 4.3.6.

Table 4.3.6

Coefficient of Correlation for School A

School	Coefficient of Correlation
A	+0.740583

4.3.5 Testing for the existence of Correlation

Once the Coefficient of correlation are computed and the results determined whether there was evidence of a statistically significant association between students' emotional intelligence quotients and their academic achievement as measured by their end of term marks, using the following assumption the correlation was tested. The population correlation coefficient p is hypothesized as equal to 0. Thus, the null and alternative hypotheses are:

H_0: $p = 0$ (There is no correlation)

H_1: $p \neq 0$ (There is correlation)

The t-test statistic for determining the existence of a significant correlation between emotional intelligence quotient and academic achievement is given by formula in Figure 4.4

$$t = \frac{r - p}{\sqrt{\frac{1 - r^2}{n - 2}}}$$

where t is the test statistic which follows a t distribution with n – 2 degrees of freedom, r the coefficient of correlation, p the population correlation coefficient and n number of students

Fig 4.4

Using the formula in Figure 4.4 and testing for the null hypothesis a high positive correlation was found. (above .70 = high correlation) between students' academic achievement and their Emotional Intelligence.

$$t = \frac{r}{\sqrt{\frac{1 - r^2}{n - 2}}}$$

$$= \frac{0.740583}{\sqrt{\frac{1 - (0.740583)^2}{28}}}$$

$$= 5.832$$

Where $r = 0.740583$, n= 30.

Using the 0.05 level of significance (appendix 5 for critical values of t), because $t = 5.832 > t_{28} = 2.0484$ the null hypothesis is rejected. Therefore it can be concluded that there is evidence of an association between students' marks and emotional intelligence quotient in school A.

4.3.6 School A: Computation of EQ and Academic Achievement Scores Using BarOn EQi YV guidelines

This set of analysis uses the standard scores interpreted using the guidelines (BarOn & Parker (2000c, p. 18). The EQI scores of students in school A were grouped according to the guidelines and a descriptive analysis was run. This analysis would confirm or reject the observation made in the earlier analysis using the marks as variable for grouping.

Table 4.3.8 shows the students marks grouped according to the EQ range as per the BarOn Technical Manual Interpretive Guidelines as shown in table 4.1 on page 46 of this document. The EQ mean and the mark mean for each range were calculated in order to study and fluctuation in marks as the EQ range drops or increases.

Table 4.3.7

School A: Students' Marks Grouped According to EQ Range Using the BarOn Interpretive Guidelines

EQ Range	Students EQ	Students Marks	EQ mean	Mark Mean
130+	130	76	130	76
120-129				
110-119	119	88		
	115	62	113	72.42
	113	68		
	113	75		
	111	65		
	110	69		
	110	80		
90-109	107	91		
	105	75		
	105	59	99	69.3
	104	75		
	101	82		
	101	83		
	101	88		
	97	56		
	96	54		

	95	55		
	95	69		
	90	57		
	90	57		
80-89	87	40		
	86	46	84.75	35.75
	84	36		
	82	21		
70-79	76	53	76	53

Table 4.3.7 provides a good indication of the distribution of marks in each EQ range. In the first group there was no need for any analysis as only one student had an EQ score of 130 and no student had a score in the range of 120-129. Likewise, in the lowest range only one student had an EQ score of 76. Therefore descriptive analysis was run for only three ranges of EQ. The mean mark drops from 76 to 72.43 when EQ moves down from 130 to 113. The mark mean goes down to 66 with a decrease in the EQ man to 98.13 and the mark means drastically falls to35.8 when EQ mean reaches 84.2. Finally the mark mean picks up to 53 when EQ mean is at 76.

Table 4.3.8

School A: Descriptive Analysis for each Frequency Group

EQ Analysis	***Group 3***	***Mark Analysis***	
Mean	113	Mean	72.43
Standard Deviation	3.21	Standard Deviation	9.14
Minimum	110	Minimum	62.00
Maximum	119	Maximum	88.00
EQ Analysis	***Group 4***	***Mark Analysis***	
Mean	98.13	Mean	66
Standard Deviation	5.69	Standard Deviation	16
Minimum	90.00	Minimum	32
Maximum	107.00	Maximum	91
EQ Analysis	***Group 5***	***Mark Analysis***	
Mean	84.2	Mean	35.8

Standard Deviation	2.28	Standard Deviation	9.23
Minimum	82	Minimum	21
Maximum	87	Maximum	46

The descriptive analysis shows that when using the BarOn technical manual guidelines the trend shows a positive relationship between EQ and marks.

4.4 Gender: Analysing the relationship between EQ and Marks in School A by gender

This study enables a comparative study of the relationship between EQ and academic performance from a gender perspective. School A had fifteen male respondents and 15 female respondents in the questionnaire exercise. This population was randomly selected without any emphasis on gender as criteria. Although the study sample may be small it does provide some interesting results. Table 4.3.9 shows the EQ scores and academic performance of students from school A by gender.

Table 4.4.1

EQ scores and marks by gender in school A

Females			Males	
EQ Scores	Marks		EQ Scores	Marks
82	36		78	33
82	21		92	32
84	36		76	53
86	46		97	56
87	40		96	54
93	54		90	57
95	55		90	57
95	69		111	65
101	88		107	91
101	83		130	76
104	75		105	75
110	69		113	68
110	80		113	75
115	62		105	59
119	88		101	82

4.4.1 Correlation analysis

The correlation analysis between students' emotional intelligence quotient and their end of term marks were analysed from a gender perspective. The coefficient of correlation was obtained using Microsoft Excel. The result for both males and females are shown in Table 4.4.2 Once the coefficient was obtained the data was used to test for the existence of correlation.

Table 4.4.2

Coefficient of Correlation for School A by Gender

Gender	Coefficient of Correlation
Female	+ 0.823033
Male	+ 0.678544

In regard to gender the coefficient of correlation was computed and the results determined whether there was evidence of a statistically significant association between male students' and female emotional intelligence quotients and their respective end of term marks. The following assumption was tested. The population correlation coefficient p is hypothesized as equal to 0. Thus, the null and alternative hypotheses are:

H_0: $p = 0$ (There is no correlation)

H_1: $p \neq 0$ (There is correlation)

The t-test statistic for determining the existence of a significant correlation between emotional intelligence quotient and academic achievement is given by formula in Figure

4.4. Using the formula in Figure 4.4 and testing for the null hypothesis a higher positive correlation was found in females than in males.

Using the following formula the existence of correlation was worked out for the females candidates in school A.

$$t = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}}$$

$$= \frac{0.823033}{\sqrt{\frac{1-(0.823033)^2}{13}}}$$

$$= 5.224$$

Where $r = 0.823033$, n= 15.

Using the 0.05 level of significance (appendix 5 for critical values of t), because $t = 5.224 > t_{13} = 2.1604$ the null hypothesis is rejected. Therefore it can be concluded that there is evidence of an association between female students' marks and emotional intelligence quotient in school A.

Using the following formula the existence of correlation was worked out for the males candidates in school A.

$$t = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}}$$

$$= \frac{0.6785440}{\sqrt{\frac{1-(0.678544)^2}{13}}}$$

$$= 3.33$$

Where $r = 0.678544$, n= 15.

Using the 0.05 level of significance (appendix 5 for critical values of t), because $t = 3.33 > t_{13} = 2.1604$ the null hypothesis is rejected. Therefore it can be concluded that there is evidence of an association between male students' marks and emotional intelligence quotient in school A.

Case Study B

4.5 School B: Conversion of Students' NCEA Grades to Marks

In school B the situation was different. The school had computed students' marks using the new criteria used for the National Certificate of Educational Achievement (NCEA) examination. A student would score either an "Excellence" denoted by "E", a "Merit" denoted by "M", an "Achieved" denoted by "A" or a "Not Achieved" denoted by "NA"; "Excellence" being the highest and "Not Achieved" the lowest. The students had been offered different subjects and once more an average of their grades was calculated. The concept of measuring average marks against emotional intelligence was used by Parker et al. (2000).

For statistical purposes it was important to convert the grades into marks. For this purpose the grades "Achieved, Merit and Non Achieved" were converted using the following assessment and certification rules and procedures for secondary school. (http://www.nzqa.govt.nz/ncea/results/gradeaverages.html). The New Zealand Qualification Authority (NZQA) used the conversion below to calculate grade averages and report them on the interim results notices that students received in January 2004. Grade averages indicate an idea of what a student's average performance is across a group of achievement standards.

Process used to calculate grade averages

1. The result that a student earns for each achievement standard is assigned a numerical grade value.

Table 4.5.1

Numerical Grade Value

Results	Grade value
Excellence	4
Merit	3
Achieved the standard	2
Not achieved the standard	0

2. For each standard, the student's grade value is multiplied by the number of credits set for that standard. This generates a raw score for each achievement standard.

3. The raw scores for individual achievement standards are added together to obtain a total raw score for a group of standards, e.g., English or research or practical science skills.

4. NZQA calculates the maximum possible score for that group of standards.

5. The raw score for the individual student is divided by the maximum possible score.

6. This number is then multiplied by 100 to make a score on a 0 - 100 point scale.

Worked example

The following table shows the set of results Student A received for English. A achieved the standard 'Study Extended Text', so to calculate a grade average, a grade value of 2 is allocated. This grade value is multiplied by the credit value to gain a raw score (credit value (2) x grade value (2) = raw score (4)).

In the table below, all the raw scores A got for English are added to give a total raw score of 61 out of a maximum possible score of 96. A score of 61/96 is equal to a grade average of 64.

Table 4.5.2

Average grades converted in percentage

ENGLISH							
Achievement standards	Credits awarded if standard achieved	**Grade value achieved by Alex**				Raw score = credits x grade value	Maximum possible raw score
		Not achieved (0)	Achieved (2)	Merit (3)	Excellence (4)		
Creative Writing	3	-	-	3	-	3x3=9	3x4=12
Formal Writing	3	-	-	3	-	3x3=9	3x4=12
Study Extended Text	2	-	2	-	-	2x2=4	2x4=8
Study Short Text	2	-	2	-	-	2x2=4	2x4=8
Oral or Visual Text	2	-	-	-	4	2x4=8	2x4=8
Read Unseen Text	3	0	-	-	-	3x0=0	3x4=12
Speaking	3	-	-	-	4	3x4=12	3x4=12
Drama or Media	3	-	-	3	-	3x3=9	3x4=12
Research	3	-	2	-	-	3x2=6	3x4=12
	24	0	2	3	4	61	96

A's grade average is expressed as 64 on a scale of 0 - 100.

Last updated: Thu Sep 16 10:55:24 NZST 2004

The students' average NCEA grades were computed and Table 4.5.2 shows the students' average grade in their end of term examination as a percentage. The conversion of the students' grades to a percentage mark was important in order to standardise the assessment format used in both school A and B. Table 4.4.3 shows the converted mark using the above formula.

4.5.1 Total EQ Score for respondents in School B

Students' emotional profile was transferred from their profile sheet. Table 4.5.3 shows the emotional profile of students at school B. The emotional profile from the BarOn EQi YV assesses seven different dimensions of emotional intelligence:

A. Intrapersonal Scale

B. Interpersonal Scale

C. Stress Management Scale

D. Adaptability

E. Total EQ Scale

F. General Mood Scale

G. Positive Impression Scale

The BarOn EQi YV provides an inconsistency index and 3 out of the 30 participants obtained a score of 10 or over, so were therefore considered to be inconsistent in their responses. This represented a 10% inconsistency for students in school B and for the sake of this research only the score representing the Total EQ was considered and compared to the academic achievement of the students

Table 4.5.3

BarOn EQi Profile for Students of School B

Student	A	B	C	D	E	F	G	Inconsistency
1	105	90	97	96	101	95	79	7
2	130	103	99	90	117	70	113	5
3	105	122	94	114	111	116	124	7
4	105	119	125	94	117	111	113	5
5	109	106	88	120	109	108	129	**16**
6	98	90	121	94	105	93	90	0
7	90	92	99	84	90	95	96	**10**
8	113	65	76	78	71	65	74	8
9	86	74	93	72	76	73	68	9
10	94	116	88	90	94	103	118	7
11	86	74	72	87	71	68	85	9
12	90	93	95	90	90	101	101	3

13	94	93	101	96	96	90	101	4
14	75	112	107	81	90	85	107	5
15	90	77	95	90	86	88	85	8
16	86	65	103	65	65	65	79	8
17	90	103	99	99	96	103	79	6
18	105	90	101	102	103	88	101	1
19	101	80	99	105	96	83	113	3
20	109	93	121	102	113	98	124	2
21	101	80	32	90	92	93	96	3
22	109	109	86	114	107	118	130	5
23	128	78	99	88	86	98	74	**11**
24	98	116	117	117	117	116	96	9
25	98	84	101	78	88	88	101	6
26	86	90	99	96	90	95	101	3
27	86	100	99	96	94	80	96	3
28	109	96	103	96	105	108	101	3
29	109	90	103	102	105	102	129	2
30	94	122	84	93	96	101	118	6

4.5.2 Computation of EQ and Academic achievement scores in School B

Table 4.4.4 shows the total emotional quotient of the students in school B in comparison with their academic achievement grades. The table represents the total emotional quotient compared to the average grades of students from school B. The marks are tabled in an ascending order, from the lowest to the highest. The marks are tabled in an ascending order, from the lowest to the highest. Only the total EQ standard column form the BarOn EQiYV profile has been used. An EQ of 110+ is considered to be 'above average' and an EQ of below 90- is considered to be 'below average' (BarOn & Parker, 2000c, p. 19) Like wise an average mark of 69+ is considered as 'above average' and an average mark of 40- is considered as 'below average',

Table 4.5.4

School B: Students EQ and Average Marks

EQ	Marks %
117	65
117	50
117	72
113	69
111	77
109	67
107	75
105	67
105	42
105	45
103	71
101	36
96	77
96	55
96	30
96	55
94	73
94	55
92	64
90	69
90	42
90	63
90	44
88	49
86	31
86	20
76	40
71	38
71	31
65	17

4.5.3 Computing the Emotional Quotient Mean against the Mark Frequency in School B

In a descriptive analysis the mean is used to represent the properties of the central tendency. The marks for school B have been clustered in a frequency range and the mean of the emotional quotient scored in this range has been computed. The mark frequency has been calculated to differentiate students in terms of academic abilities. Students have been placed in 4 frequency groups. The frequency groups have been worked out from the median and the quartiles to measure the non-central locations and the median has been used to split the ordered array in half. Consequently, the values were calculated using the following:

1. The median = $\frac{n+1}{2}$ ordered array = $\frac{31}{2}$ =15.5 = $\frac{55+55}{2}$ = 55

2. 1st Quartile = $\frac{(n+1)}{4}$ ordered array = $\frac{31}{4}$ = 7.77 = 8 = 42

3. 3rd Quartile = $\frac{3(n+1)}{4}$ ordered array = $\frac{93}{4}$ = 23.5 = 69

* (ordered array) means that the raw data are placed in ascending order

Table 4.5.5 shows the Emotional Quotient Mean for each frequency range of marks. The mark distribution in school B has been classified in 4 ability groups depending on the marks students scored. The marks of the students range from 21 to 91. The four groups are 21 – 46, 53 – 59, 62 – 75 and 76-91. This distribution provides a wide range of marks from low ability to high ability. Therefore the marks were classified in 4 groups that determines their level of achievement in a way that would better show a difference in EQ change when

marks are higher. It should be noted that the mark distribution in school B is not as wide as in school A. This may be due to the use of average grade according to the NCEA criteria rather than percentage. Even if the marks have been converted to percentage for the sake of this study, they still reflect an average mark of the student in the subject rather than a precise percentage mark.

Table 4.5.5.

School B: Computation of Mean Score for Frequency Range of Marks

EQ	Marks		Frequency group	EQ Mean	Marks Mean
65	17				
86	20				
96	30				
86	31		**1**	78.7	29.6
71	31				
71	38				
76	40				
105	42				
90	42				
90	44				
105	45		**2**	97.9	48.5
88	49				
117	50				
96	55				
94	55				
101	56				
90	63		**3**	102.3	63.7
92	64				
117	65				
109	67				
105	67				
90	69				

113	69				
103	71		4	103.8	72.8
117	72				
94	73				
107	75				
96	77				
111	77				

Table 4.5.5 provides a good indication of the distribution of EQ in each mark range. While the mean is a measure of central tendency, that is, it is a single score that describe the entire distribution; the standard deviation is the measure that shows dispersal of scores around the mean. The standard deviation for EQ in Table 4.5.5 shows that when the EQ mean is as low as 78.7 the standard deviation is 11. When the EQ mean increases, to 98.1 the standard deviation is 10, which is more or less the same as in 1. Similarly, in group 3 the EQ mean increases to 101.4, the standard deviation is 9.7, slightly lower than in groups 1 and 2. Likewise in group 4 when the mean is 104, the standard deviation is 10. Consequently the standard deviation in each group varies from 9.7 to 11. The skewness explains the manner in which data are distributed, namely that, a positive skewness arises when there are some unusually high values and a negative skewness arises when there are some unusually low values. In group 1 the skewness is 0.4, there is one low EQ score of 76. In group 2 there is again one low EQ score of 76, while in group 3 the low EQ score is 93 but in group 4 there is a high EQ score 0f 130.

Table 4.5.6

School B: Descriptive Analysis for each frequency group

EQ Analysis	*Group 1*	*Mark Analysis*	
Mean	78.7	Mean	29.6
Standard Deviation	11	Standard Deviation	8.5
Skewness	0.4	Skewness	-0.4
Minimum	65	Minimum	17
Maximum	96	Maximum	40
EQ Analysis	*Group 2*	*Mark Analysis*	
Mean	98.1	Mean	47.7
Standard Deviation	10	Standard Deviation	5.3
Skewness	1	Skewness	0.4
Minimum	88	Minimum	42
Maximum	117	Maximum	55
EQ Analysis	*Group 3*	*Mark Analysis*	
Mean	101.4	Mean	62.4
Standard Deviation	9.7	Standard Deviation	5
Skewness	0.4	Skewness	-0.9
Minimum	90	Minimum	55
Maximum	117	Maximum	67
EQ Analysis	*Group 4*	*Mark Analysis*	
Mean	104	Mean	73
Standard Deviation	10	Standard Deviation	3.2
Skewness	-0.1	Skewness	0.1
Minimum	90	Minimum	69
Maximum	117	Maximum	77

4.5.4 School B: Correlation analysis

The correlation analysis is used to measure the strength of the association between numerical variables. In this particular case we will determine the correlation between emotional intelligence quotient of students and the students' end of term marks.

In order to analyse the correlation between the two items, the coefficient of correlation of the two variables are measured. The value range is from –1 for perfect negative correlation to +1 for perfect positive correlation.

In this present study the Microsoft Excel was used to calculate the coefficient of Correlation for both schools A and B. Once the coefficient is obtained the data is used to test for the existence of correlation.

The coefficient of correlation was worked using the Correlation tool analysis of Microsoft Excel is shown in Table 4.5.7

Table 4.5.7

Coefficient of Correlation for School B

School	Coefficient of Correlation
B	+0.626723

4.5.5 Testing for the existence of Correlation

Once we have computed the Coefficient of correlation, we can use the results to determine whether there is evidence of a statistically significant association between the emotional intelligence quotient and academic achievement. Using the following assumption the correlation is tested. The population correlation coefficient p is hypothesized as equal to 0. Thus, the null and alternative hypotheses are:

H_0: p =0 (There is no correlation)

H_1: $p \neq 0$ (There is correlation))

The t-test statistic for determining the existence of a significant correlation between emotional intelligence quotient and academic achievement is given by formula in Figure 4.4

$$t = \frac{r - p}{\sqrt{\frac{1 - r^2}{n - 2}}}$$

where t is the test statistic which follows a t distribution with n – 2 degrees of freedom, r the coefficient of correlation, p the population correlation coefficient and n number of students

Fig 4.4

Using the formula in Figure 4.4 and testing for the null hypothesis we have

$$t = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}}$$

$$= \frac{0.626723}{\sqrt{\frac{1-(0.626723)^2}{28}}}$$

$$= 4.255$$

Where $r = 0..626723$, $n = 30$.

Using the 0.05 level of significance (appendix 5 for critical values of t), because $t = 4.255 > t_{28} = 2.0484$ we reject the null hypothesis. We therefore conclude that there is evidence of an association between students' marks and emotional intelligence quotient in school B or moderate correlation.

The correlation in school B is not as strong. This is a reflection of what happens in an all male school. The Manual does note strength of the relationship with gender differences. BarOn & Parker (2000) note that female students then to score significantly higher than males. This present research also confirms the same tend in school A. Since school B is a boys school the less strong correlation reflect male the findings of the gender studies.

4.4.6 School B: Computation of EQ and Academic Achievement Scores Using BarOn EQi YV Interpretive Guidelines

This set of analyses utilises the interpretative guidelines for standard scores (BarOn & Parker (2000c, p. 18) that are shown in Table 4.1 (p. 46) of this document. Table 4.4.7 shows the EQ scores of students in school B grouped according to these interpretative guidelines with their corresponding EOTSS. A descriptive analysis was run, which shows the means scores of these two variables in each category. This analysis would confirm or reject the observation made in the earlier analysis that used students' marks as variable for grouping. The EQ mean and the mark mean for each range was calculated in order to study the fluctuation in marks as the EQ range increases or decreases.

Table 4.5.8

School B: Students' Marks Grouped According to EQ Range Using the BarOn Interpretive Guidelines

EQ Range	Students EQ	Students Marks	EQ mean	Mark Mean
130+				
120-129				
110-119	117	65		
	117	50	115	66.6
	117	72		
	113	69		
	111	77		
90-109	109	67		
	107	75		
	105	67	97.7	57.2
	105	42		
	105	45		
	103	71		
	101	36		
	96	77		
	96	55		

	96	30		
	96	55		
	94	73		
	94	55		
	92	64		
	90	69		
	90	63		
	90	42		
	90	44		
80-89	88	49		
	86	31	86.7	33.3
	86	20		
70-79	76	40	77.7	31.5
	71	31		
	71	38		
	65	17		

The BarOn interpretive guidelines, (see Table 4.1, p. 46 of this document) ,provides a good indication of the distribution of marks in each EQ range. No student had an EQ score of 130+, or in the range of 120 – 129. A comparative analysis of the EQ mean and the mark mean shows that when EQ mean decreases from 115 to 97.7 the mark mean also fall from 66.6 to 57.2. A further drop in the EQ mean to 86.7 leads to a drastic fall of the end of term mark mean to 33.3. Finally, when EQ mean reaches 77.7 the mark mean falls again to 31.5.

The descriptive analysis shows that when using the BarOn technical manual guidelines the trend shows a positive relationship between EQ and marks

4.6 Multiple Regressions Performed to Examine the Relationship between EQ and Academic Marks

Multiple regressions were performed to examine the relationship between EQ and academic marks while taking into account school and individual factors. This type of hierarchical multiple regressions allowed the independent variables to be entered separately to assess the importance of each variable controlling for variables entered earlier in the process.

Pearson product-moment correlations were obtained for relationships between variables of interest (see Table 4.6). Significant correlation is a necessary condition for regression analyses, in that a relationship must be established between variables prior to model testing (Baron & Kenny, 1986; Holmbeck, 1997).

Table 4.6

Correlations between variables included in predictive models (N =56).

	1	2	3	4
1. Marks	1.00			
2. EQ	.67**	1.00		
3. School	-.32*	-.19	1.00	
4. Gender	.11	.03	-.62**	1.00

Note. *$p < .05$, **$p < .001$

Separate regression analyses were run to examine the relationship between EQ and average marks in order to include school and gender as possible correlates without entering them simultaneously into the same regression. Separate regressions had to be run for school and gender because the two were found to be highly correlated ($r = -.62$, $p < .001$). This high

correlation may be due to the fact that one school is all male and one is co-educational. High correlations between independent variables can be problematic because it increases the risk for multicollinearity. Multicollinearity comes about when two or more of the variables are very highly correlated or because almost all of the variance in one variable can be accounted for by a set of other predictors, this shared variance can mask or falsely enhance relationships. To reduce the risk of multicollinearity, separate regressions were run such that school and gender were not included in the same prediction equations. However, since EQ was only correlated with the outcome variable of marks it can be included in both the regression with gender and with school.

4.7 Results of the multiple regressions to predict outcome of average marks by school and by gender.

To predict the outcome of average marks two multiple regression equations were calculated. In the first analyses the independent variable of school was entered on the first step with EQ entered on the second step. As seen in Table 4.7 the regression model of school and EQ was good for predicting marks and explained 47% of the variance in marks. Regression coefficients indicate that school A had significantly lower marks than school B and that high EQ predicted higher marks than low EQ.

Table 4.7

Hierarchical regression predicting Average Marks.

	ß	*SE*
School	-.20*	.62
EQ	.63**	.14

Note. $*p < .05$, $**p < .001$ *Model Goodness of Fit* - $F(2,53) = 25.267, p<.001$, *Amount of Variance Explained* - Adjusted $R^2 = .469$

The second multiple regression to predict average marks included gender instead of school. The independent variable of gender was entered on the first step with EQ entered on the second step. As seen in Table 4.7.1, the regression model of school and EQ was good for predicting marks and explained 44% of the variance in marks. EQ predicted a positive change in marks, while gender was not a significant predictor. Comparing standardized regression coefficients for school (β = -.20, $p < .05$) and gender (β = .09) the indication is that school is a better predictor of academic marks than gender. This may be due to differences in decile, school makeup (co-ed vs. single-sex), or unmeasured factor. Further research would determine the factors that make academic marks a better predictor than gender.

Table 4.7.1

Hierarchical regression predicting Average Marks.

	β	*SE*
Gender	.09	.23
EQ	.67**	.14

Note. $*p < .05$, $**p < .001$ *Model Goodness of Fit* - $F(2,53) = 22.249, p<.001$, *Amount of Variance Explained* - Adjusted $R^2 = .436$

CHAPTER 5

Discussion

Introduction

Overall analysis confirms the hypothesis that there is a positive correlation between emotional intelligence and academic achievement. The correlation between students' end of term marks and their emotional intelligence level show a moderate to strong correlation that cannot be neglected. Although the study was conducted in two schools that differ in terms of decile ratings and gender composition, valid conclusions can be drawn from the data. The analysis of the data shows a wide range in the level of emotional intelligence among students of both schools. The analysis has been conducted from two perspectives, the mark perspective where the statistical descriptive measures were used to observe any relationship between student's marks and their EQ and the EQ perspective where the BarOn technical interpretive guideline was used. The overall trend of the study clearly indicates that the higher the emotional intelligence quotient, the higher the academic marks. Finally a genre comparative study was carried out in school A to study the trend between males and females EQ and marks relationship.

5.1 Marks Analysis in School A and School B

One major task in this study was the compilation of students' marks. At school A the end of term marks were given in terms of percentage and the students had the same subject combination. Consequently, it was easier to compile their marks and work out a mark

average for students. The end of term marks at school B was given in terms of the new NCEA achievement grades and the students' subject options were greater. Thus, converting these marks to percentages that were equivalent to School A meant the computation of marks was more complex.

On the whole there was a wide distribution of marks at school A, students scored between 21% to 88%. The difference in achievement was equally distributed and made clear distinction among able, average and less able students. This wide range of marks enabled a good analysis of the relationship between the students EQ and their academic achievement.

The grading system at school B, yielded marks that were more clustered, so it was difficult to distinguish between the able, average and less able students. At times, it was very difficult to compare individual marks and the only tangible analysis could be done in studying the mark clusters. For this reason the grades at school B had to be converted to percentages.

The methods used to assess the students indicate clearly that there is a distinction between the able and less able students in terms of their EQ scores.

5.2 EQ Analysis in School A and School B

In both schools A and B, students scored a wide range of score for their total emotional quotient. In school A students scored from 76 to 130 and in school B 65 to 117. According to the interpretation guidelines for standard scores Table 4.1, a score of 130+ is considered as being markedly high – atypically well developed emotional and social capacity. A score

of 115 is interpreted as being "high – well developed emotional and social capacity" and a score of 65 as being "very low – extremely underdeveloped emotional and social capacity". No student scored 120 to 129, which is considered as "very high and extremely well developed emotional and social capacity." Nevertheless in school A, the lowest score was 76 which is already considered as "underdeveloped emotional capacity, in school B, one student scored 65 which is interpreted as "marked low – atypical impaired emotional and social capacity." This low score confirms the fact that students may have problems in expressing their emotional competencies and that this could lead to a poor academic performance.

5.3 Analysis of Marks and EQ in School A and School B

The various statistical tools used in this research are geared at looking at any tangible relationship between students' marks and their emotional intelligence quotient. The analytical tools used are the computation of the emotional mean in each cluster of marks for each school and compare it with the mark frequency mean in each cluster for each school using the statistical descriptive measures. Secondly, the BarOn technical manual interpretive guidelines were used to study EQ of students grouped in EQ ranges and each range mean was compared with mark frequency. This gives an indication as to whether there is any relationship between the two variables.

Figure 5.3.1 shows the relationship between the marks and emotional intelligent quotient of students in School A using the statistical descriptive measures. The graph shows that as the cluster of marks increases the level of emotional intelligent quotient increases. The graph shows an upward trend in the level of emotional quotient as marks increase. An increase in

the mean mark from 34.8 to 55.6 shows an increase of 10.4% in EQ, which climbs from 84 to 92.7. An increase in the mark mean, from 55.6 to 69.7 shows a more consequent increase in EQ, namely, 16.7%, from 92.7 to 108.2. Then there is a slight decrease of 1.4% in the EQ mean from 108.2 to 109.8 as the marks increase from 69.7 to 84.

The graph shows that there is a consequent increase in EQ when the marks increase from a middle range to a high range. This would mean that there is a significant increase in EQ between students who score an achieved grade and those scoring a merit grade. There is only a slight increase in EQ as marks move from a merit grade to an excellence grade.

Figure 5.3.1

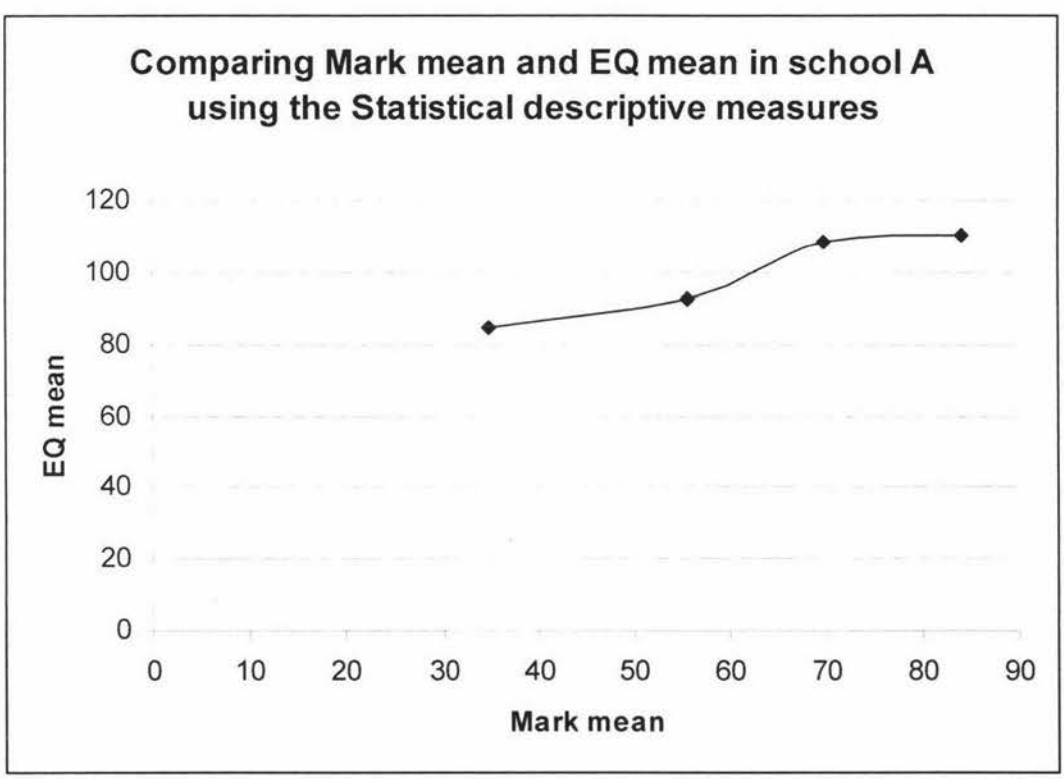


Figure 5.3.2 shows the relationship between the marks and emotional intelligent quotient of students in School A using the BarOn interpretive guidelines. The graph shows that on the whole as the cluster of marks increases the level of emotional intelligent quotient increases.

The only exception is the bottom grouping where the EQ range is lower than the previous group, but the end of term mark mean is higher. This is due to the fact that only one student scored an EQ of 76 but a mark of 53 while in the previous EQ range of 84.7 students scored an average mark of 35.7. Nevertheless, the graph shows an upward trend in the level of emotional quotient as marks increase. An increase in the mean mark from 35.7 to 69.3 shows a consequent increase of 16.8% in EQ, which climbs from 84.7 to 99. An increase in the mark mean, from 69.3 to 72.4 shows an increase in EQ, namely, 14.1%, from 99 to 113. Finally, when mark mean moves from 72.4 to 76 the EQ mean increases by 15% from 113 to 130.

The graph shows that there is a consequent increase in EQ when the marks increase from a Lower range to a high range. This would mean that there is a significant increase in EQ between students who score an achieved grade and those scoring a merit grade. There is a consequent increase in EQ as marks move from a merit grade to an excellence grade.

Therefore, both the statistical descriptive measures and the interpretive guidelines analysis confirm that there is a strong relationship between emotional intelligence and academic achievement.

Figure 5.3.2

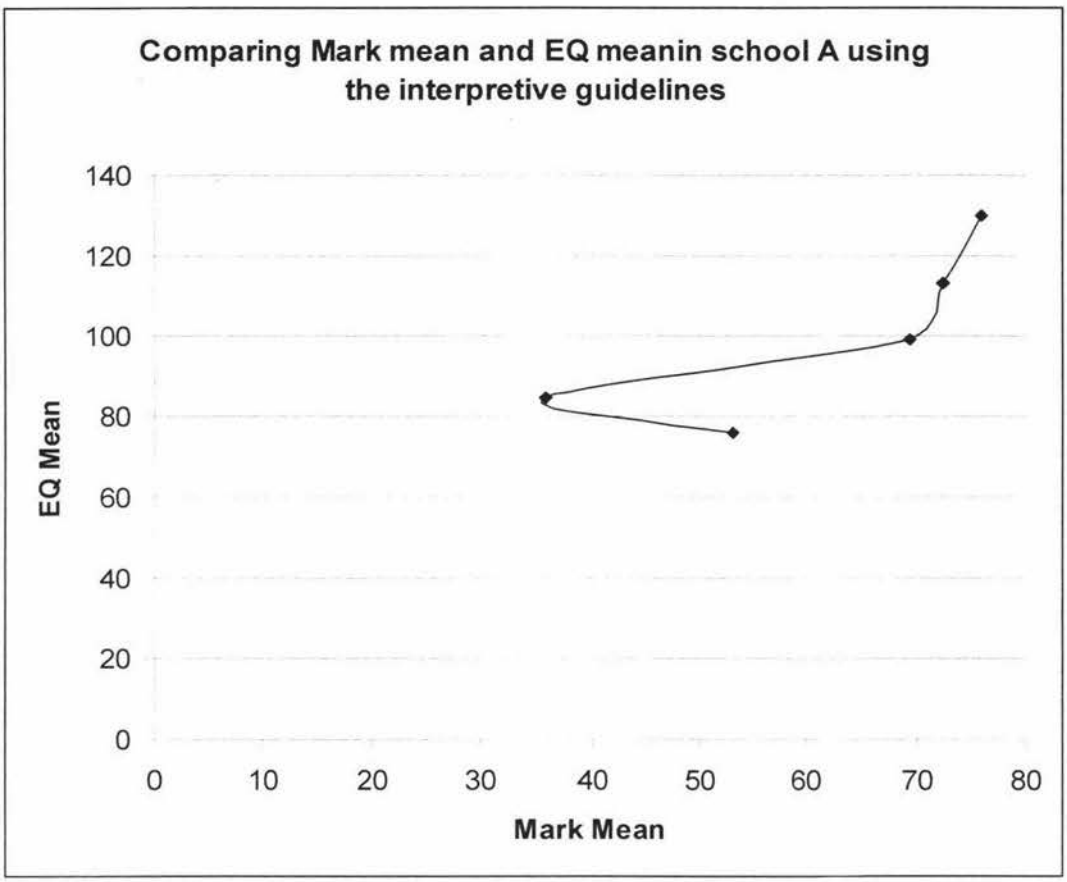


Figure 5.3.3 shows the relationship between the marks and emotional intelligent quotient of students in school B using the statistical descriptive measures. The graph shows that as the average mark increases the level of emotional intelligent quotient also increases. There is a dramatic increase in EQ as marks go up from 29.6 to 48.5. The EQ of students increases by 24.4%, from 78.7 to 97.9. When marks mean increases from 48.5 to 63.7 there is a slight increase of 4.5% in the EQ mean, it moves from 97.9 to 102.3. Finally when marks mean increases from 63.7 to 72.8, the EQ mean increases by 1.46%. Although the graph shows that the increase in EQ is not consequent when marks mean increases from 48.5 to 72.98,

there is a significant increase in EQ level as marks move from 29.6 to 48.7. Therefore there is a marked increase in EQ when marks move from a Not Achieved to an Achieved. Once more the graph shows an upward trend in the level of emotional intelligence as the marks increases

Figure 5.3.3

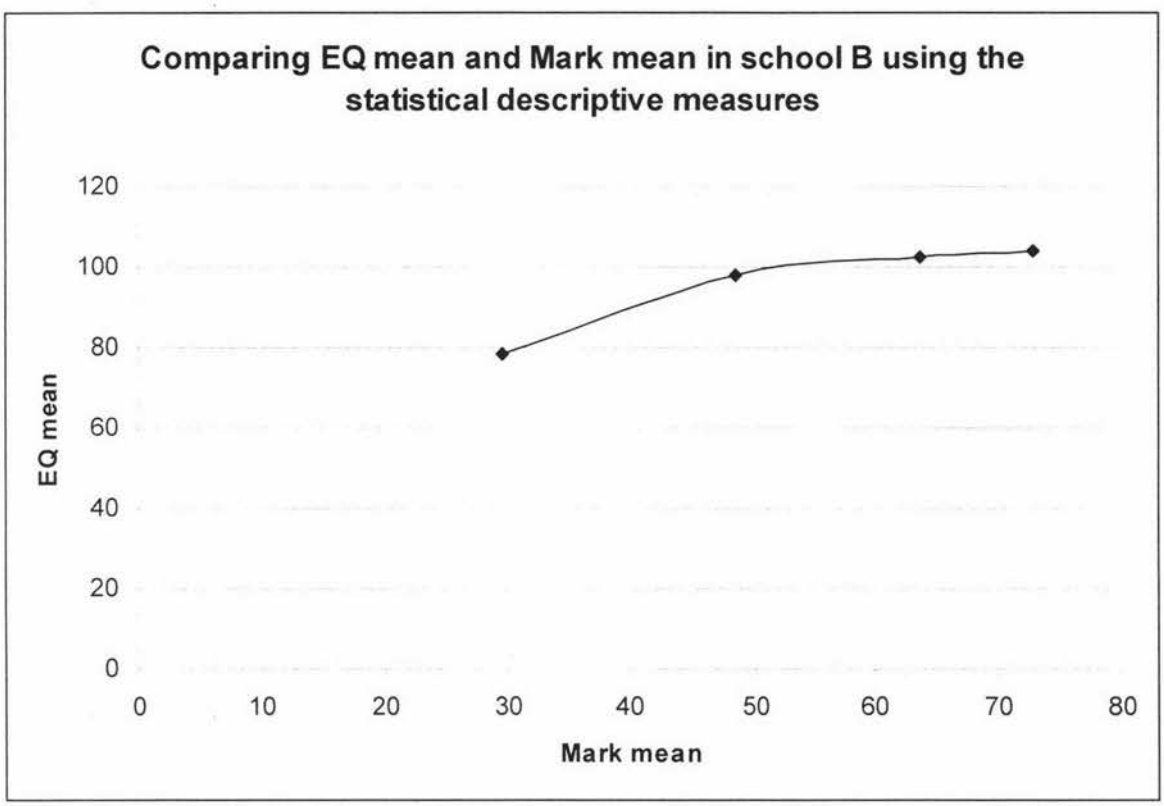


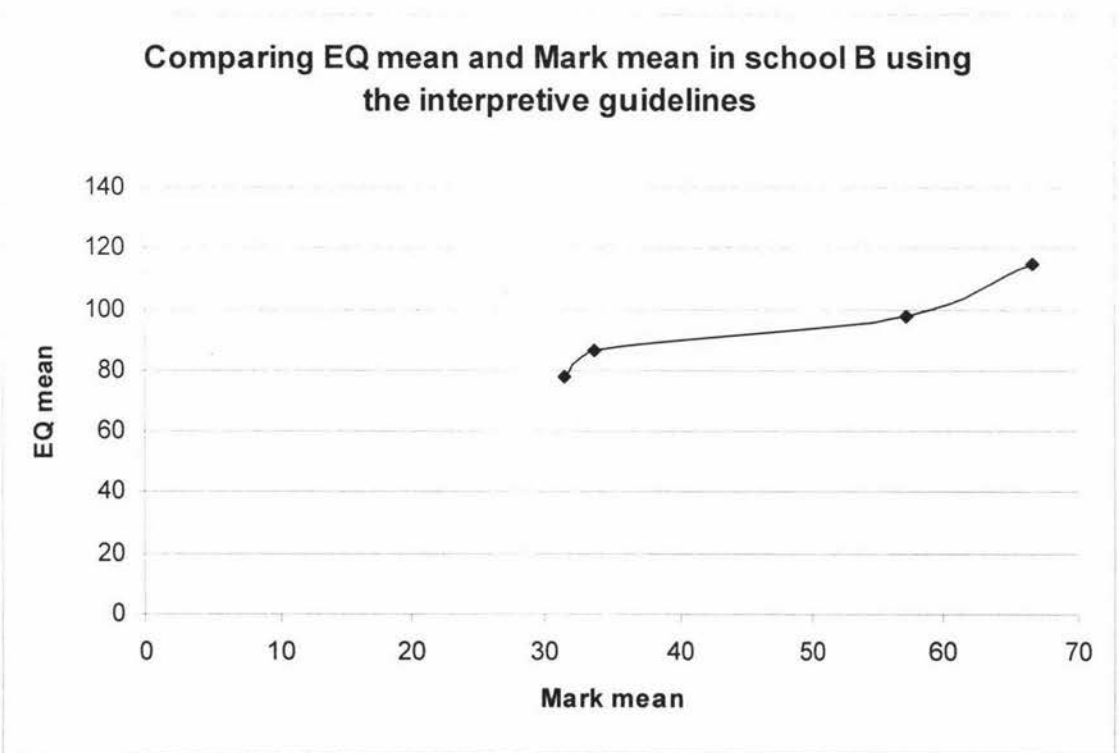
Figure 5.3.4 shows the relationship between the marks and emotional intelligent quotient of students in School A using the BarOn interpretive guidelines. The graph shows that on the whole as the cluster of marks increases the level of emotional intelligent quotient increases. The graph shows an upward trend in the level of emotional quotient as marks increase. An increase in the mean mark from 31.5 to 33.7 shows a consequent increase of 11.6% in EQ, which climbs from 77.7 to 86.7. An increase in the mark mean, from 33.7 to 57.2 shows a

sharp increase in EQ, namely, 12.7%, from 86.7 to 97.7. Finally, when mark mean moves from 57.2 to 66.6 the EQ mean considerably increases by 17.7% from 97.7 to 115.

In this analysis the graph shows that there is a consequent increase in EQ when the marks increase from a Lower range to a high range. This would mean that there is a significant increase in EQ between students who score an achieved grade and those scoring a merit grade. There is a consequent increase in EQ as marks move from a merit grade to an excellence grade.

Therefore, both the statistical descriptive measures and the interpretive guidelines analysis confirm that there is a strong relationship between emotional intelligence and academic achievement.

Figure 5.3.4



An analysis of data of both schools worked out as a single case study using both the descriptive measure and the interpretive guidelines concludes that there is a marked relation ship between the marks of students and the emotional intelligence quotient of students.

Figure 5.3.5 shows the relationship between the marks and emotional intelligent quotient of students in school A and B using the statistical descriptive measure. The graph shows that on the whole as the cluster of marks increases the level of emotional intelligent quotient increases. The graph shows an upward trend in the level of emotional quotient as marks increase. An increase in the mean mark from 31.5 to 50.9 shows a consequent increase of 14.9% in EQ, which climbs from 82.6 to 94.9. An increase in the mark mean, from 50.9 to 65.5 shows an increase in EQ, namely, 9.3%, from 94.9 to 103.8. Finally, when mark mean moves from 65.5 to 79.6 the EQ mean increases by 3.1% from 103.8 to 107.1.

In this analysis the graph shows that there is a consequent increase in EQ when the marks increase from a Lower range to a high range. This would mean that there is a significant increase in EQ between students who score a non achieved grade and those scoring an achieved grade likewise there is a marked increase between students who score an achieved grade and those who scored a merit grade. There is a slight increase in EQ as marks move from a merit grade to an excellence grade.

Figure 5.3.5

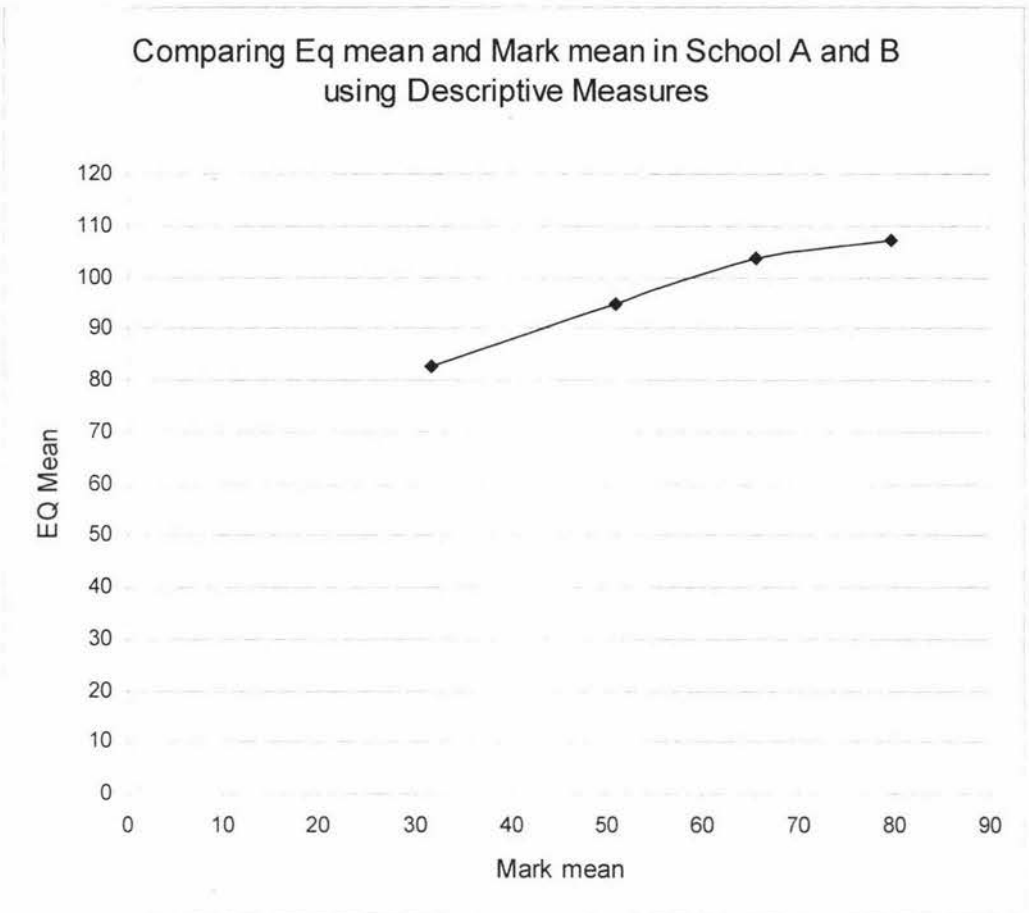
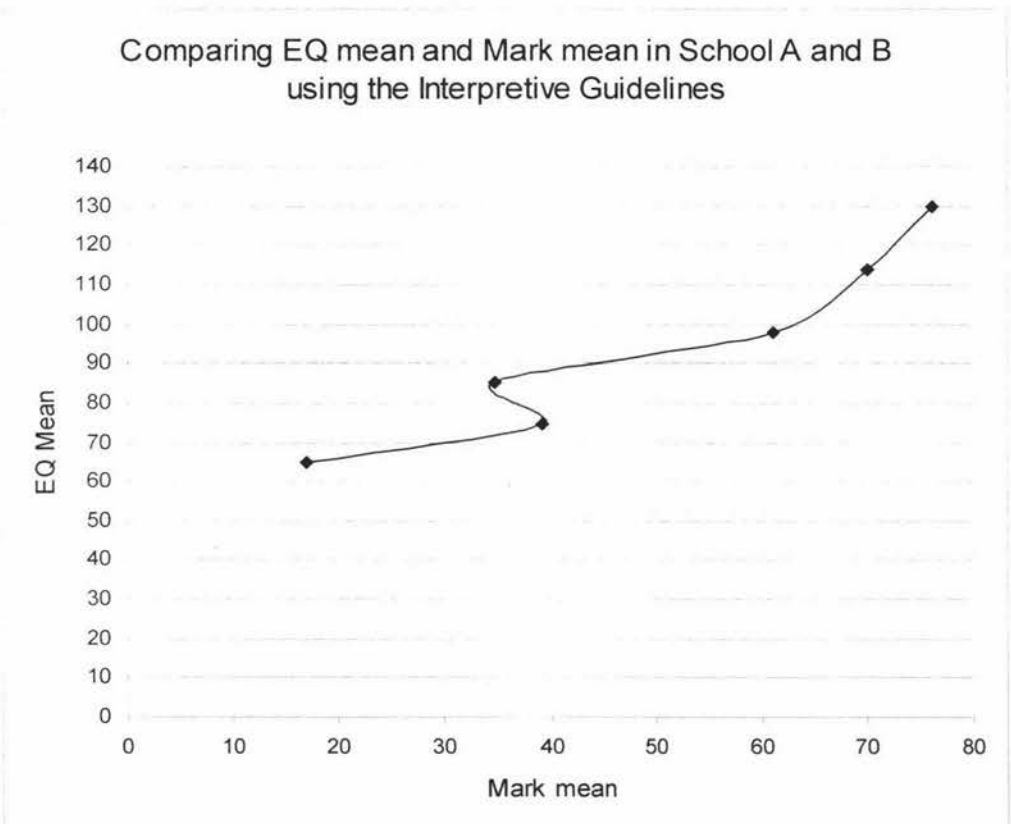


Figure 5.3.6 shows the relationship between the marks and emotional intelligent quotient of students in school B using the BarOn interpretive guidelines. The graph shows that as the average mark increases the level of emotional intelligent quotient also increases. There is a dramatic increase in EQ as marks go up from 17 to 39. The EQ of students increases by 14.4%, from 65 to 74.4. Then marks mean decreases from 39 to 34.9 and there is an increase of 14.4% in the EQ mean, it moves from 74.4 to 85.1. When marks mean increases from 34.9 to 61.1, the EQ mean drastically increases by 15%. Finally, when the mark mean

climbs to 70 the EQ mean increases by 16.2%. Although the graph shows an increase in EQ when marks mean decreases creases from 39 to 34.9, there is a significant increase in EQ level as marks move from 34.9 to 70. Therefore there is a marked increase in EQ when marks move from a Not Achieved to an Achieved and an achieved grade to Merit and excellence. Once more the graph shows an upward trend in the level of emotional intelligence as the marks increases

Figure 5.3.6



Therefore, both the statistical descriptive measures and the interpretive guidelines analysis confirm that there is a strong relationship between emotional intelligence and academic achievement.

5.4 Comparing the standard scores for Total EQ of school A and B with BarOn EQiYV standard scores for Total EQ

The Bar on standard scores for Total EQ has a mean of 100 and a standard deviation of 15 while the mean for school A and B is 97.4 and the standard deviation is at 12.2. Considering the fact that this research has been done using a smaller population the mean and standard deviation gives a more or less identical analysis. Students who scored an EQ of 110 or more can be considered as above average, and this study has found out that 12 students scored 110 or more were considered to have a high, well developed emotional and social capacity. Seventy-three students had an EQ of 90-109, considered as having an average, adequate emotional and social capacity. Thirteen students scored 89 or less and were considered to have low or very low emotional and social capacity.

5.5 The Correlation Coefficient analysis in School A and B

The correlation of coefficient examines the extent to which scores of one variable relate to another. The scattergram in Figure 5.4.1 represent the two sets of scores, the EQ and percentage marks of students in school A, plotted one against the other. Figure 5.4.1 shows that the points are scattered about a straight line. This shows that there is a positive correlation between students EQ and their end of term marks. The correlation coefficient in school A is +0.740583 and according to Table 5.1 there is a high correlation which shows a marked relationship between students' EQ and their end of term marks in school A.

Figure 5.4.1

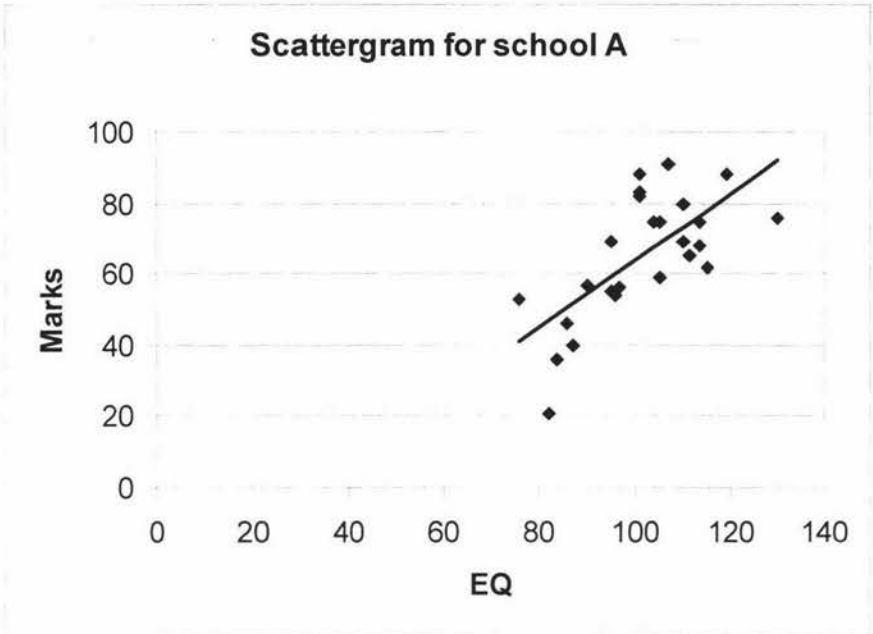


Figure 5.4.2 shows that the points representing the intersection of students' EQ and their end of term marks in school B are scattered about a straight line. This shows that there is a positive correlation between the two variables. The coefficient of correlation is calculated at +0.626723. According to Table 5.1 there is a moderate correlation which shows that there is substantial relationship between students' EQ and their end of term marks in school B.

Figure 5.4.2

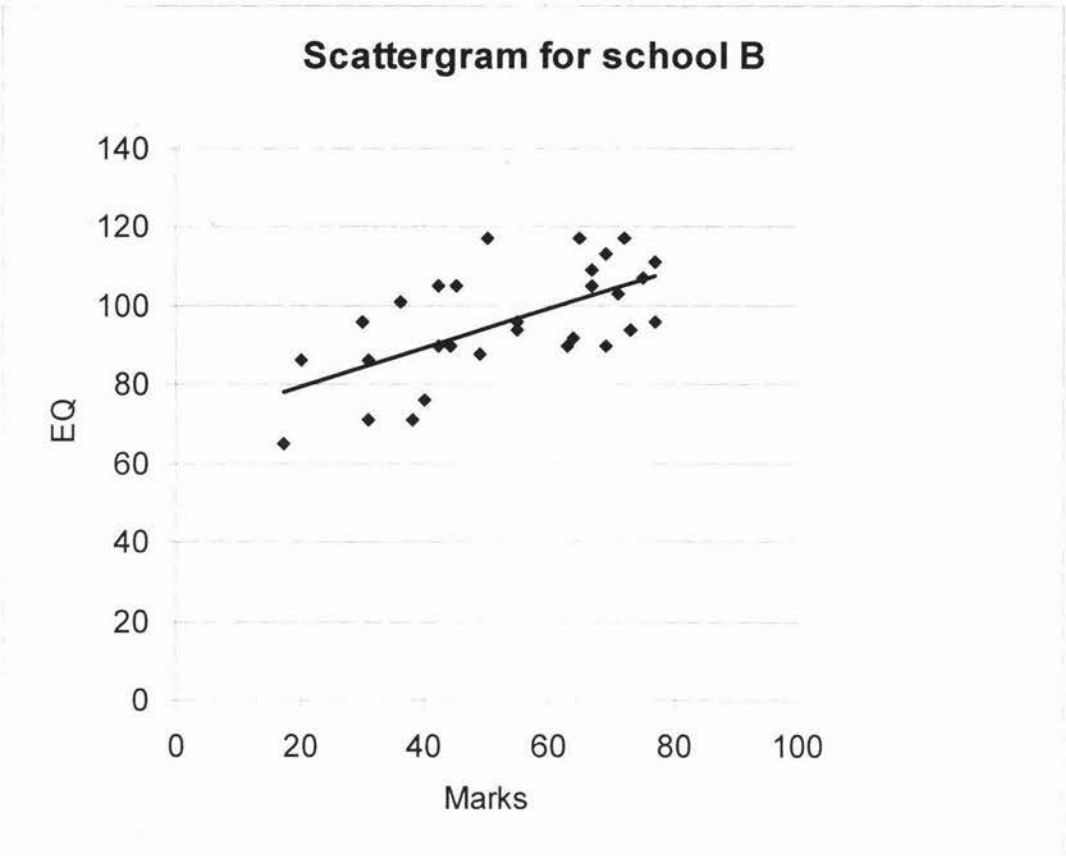


Figure 5.4.3 shows that the points representing the intersection of students' EQ and their end of term marks in both school A and B are scattered about a straight line. This shows that there is a positive correlation between the two variables. The coefficient of correlation is calculated at +0.686652. According to Table 5.1 there is a moderate correlation which shows that there is substantial relationship between students' EQ and their end of term marks in school A and B.

Figure 5.4.3

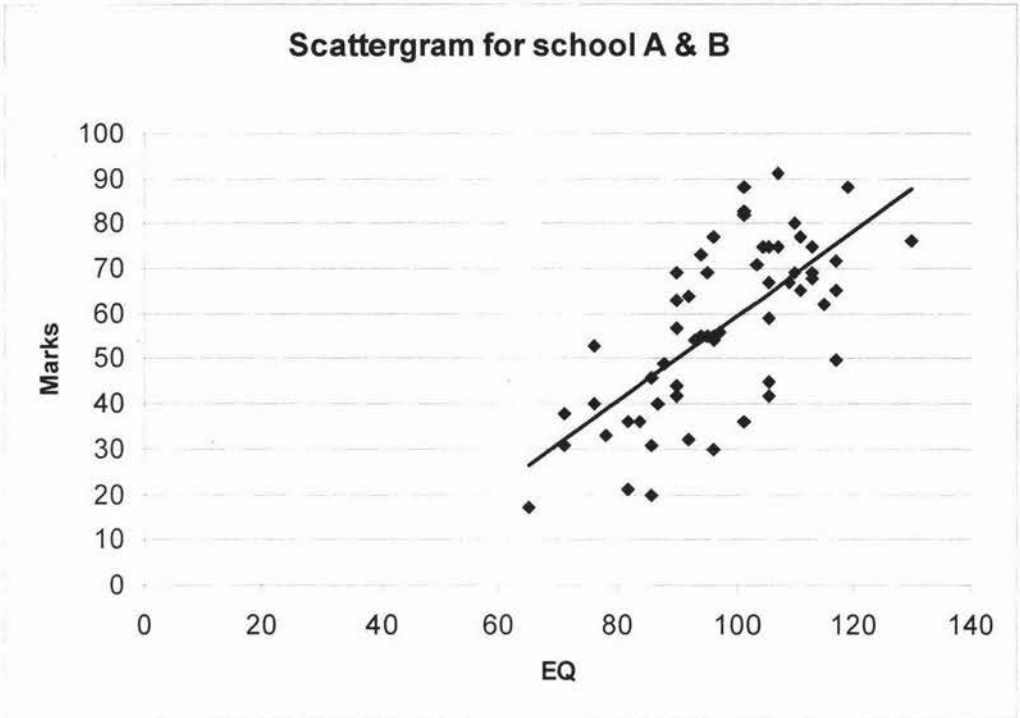


Table 5.1

Degree of relationship indicated by size of coefficient

0.90 – 1.00	Very high correlation	Very strong relationship
0.70 – 0.90	High correlation	Marked relationship
0.40 – 0.70	Moderate correlation	Substantial relationship
0.20 – 0.40	Low correlation	Weak relationship
Less than 0.20	Slight correlation	Relationship so small as to be negligible

(Burns, 1994, p. 183)

5.6 Testing the existence of Correlation for School A and B.

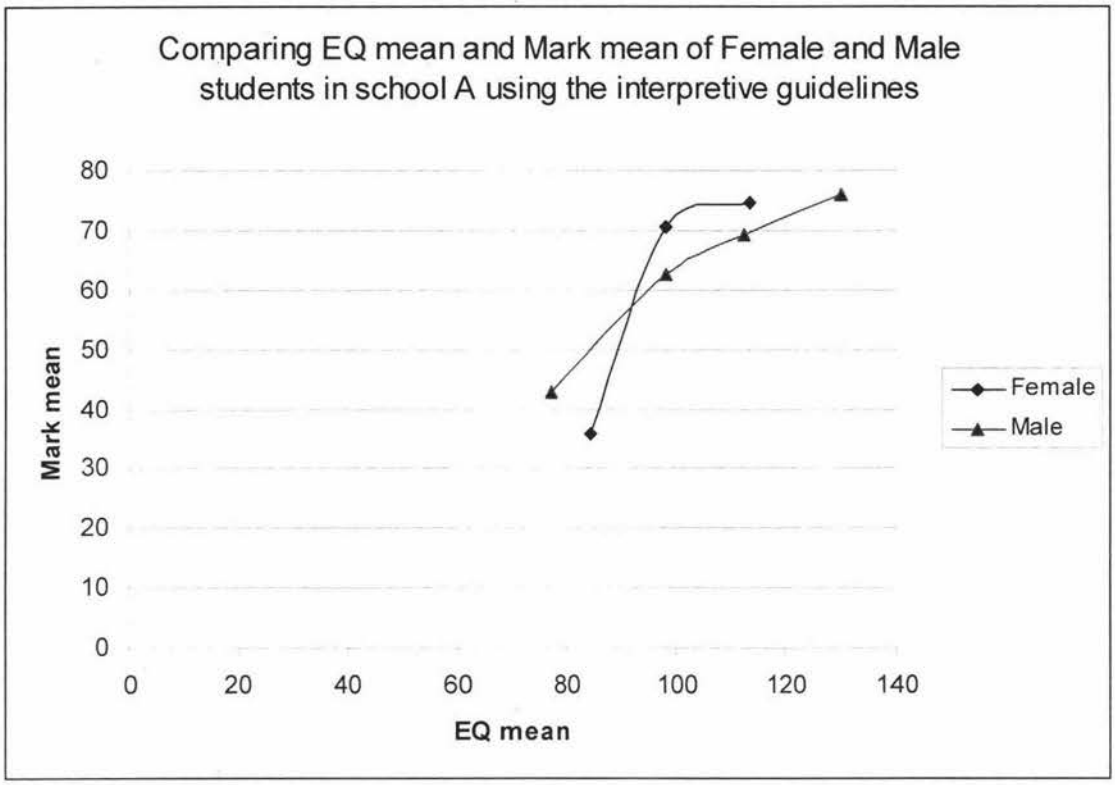
The t-test used to test for correlation for both school A and B showed the evidence of an association between students' EQ and their end of term marks. In both cases the null hypothesis were rejected. Once proved that there is a correlation between the two, it is

important to determine the strength of the relationship in a more precise way. This is done using the coefficient of the determination which determines what percentage of the total variance of variable X is due to the variance of variable Y (Burns, 1994). Using the formula, (r2 x 100, where r= correlation of coefficient). Consequently the coefficient of determination for school A = 55% and that in school B = 39% and the coefficient of determination for school A and B combined is 47%. These results confirm that there is a marked relationship between students' EQ and their end of term marks in School A and in School B a substantial relationship.

5.7 Comparing EQ and mark relationship by gender in school A

Figure 5.6.1 shows the relationship between the marks and emotional intelligent quotient of students in school A by gender using the BarOn interpretive guidelines. The graph shows that as the average mark of female student increases the level of emotional intelligent quotient increases considerably. There is also a dramatic increase in EQ as marks of males students go up. When the EQ mean of female students increases by 16.5%, from 84.2 to 98.1, the mark mean increases by 97.2%. A further increase of EQ mean by 15.6%, from 98.1 to 113.5 indicates an increase of 5.8% in the mark mean, from 70.6 to 74.7. The graph shows a comparative increase in the marks of students when EQ mean climbs. An 27% increase in the EQ mean of male students, from 77 to 98.1 shows a 44% increase in the mark mean, from 43 to 62.5. When EQ mean increases by 14.4% from 98.1 to 112.3 the mark mean further climbs from 62.5 to 69.3 and finally when the EQ mean is at 130 indicating a 15.7 increase, the mark mean increases by 9.6%. The graph shows a significant increase in EQ as marks surge from a non-achieved grade to an achieved or merit grade. The EQ increase is less significant when grades move from 'merit' to 'excellence'.

Figure 5.6.1

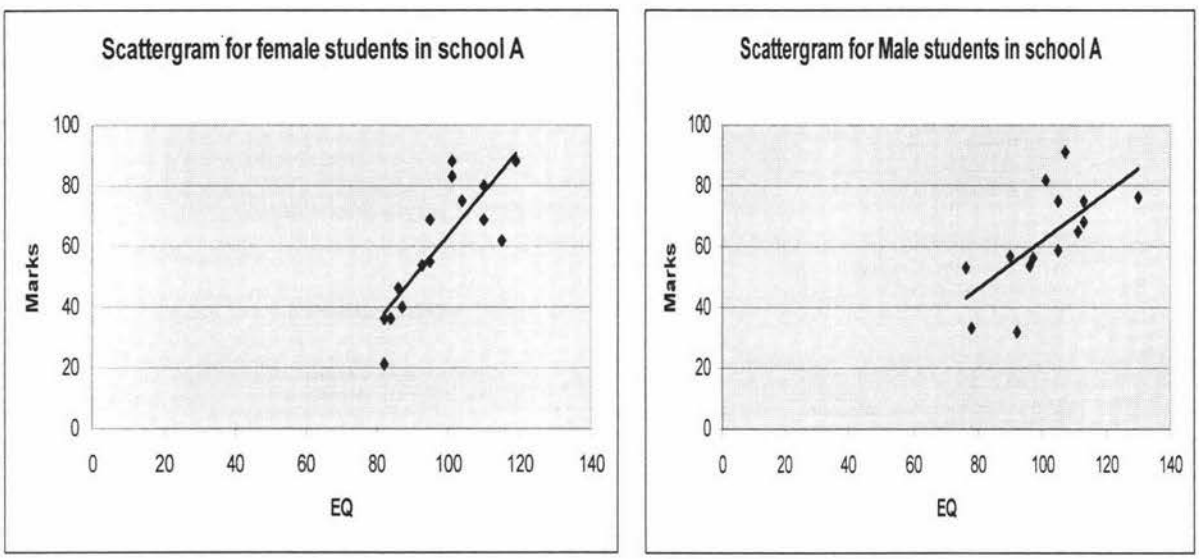


The correlation between EQ and academic achievement is stronger in female students than in male students. Figure 5.6.2 shows that the points representing the intersection of students' EQ and their end of term marks for both male and female students in school A and are scattered about a straight line. This shows that there is a positive correlation between the two variables. The coefficient of correlation is calculated at +0.678544 for male students and +0.823033 for female students.

According to Table 5.1 there is a moderate correlation, which shows that there is substantial relationship between students' EQ and their end of term marks for male students in school A and a high correlation for female students. Using the formula, r2 x 100, where r=

correlation of coefficient, the coefficient of determination for male students in school A = 46% and that of female students = 67.7%.

Figure 5.6.2



These results confirm that there is a stronger relationship between female students' EQ and their end of term marks in school A than male students.

CHAPTER 6

Conclusion

Introduction

This study will hopefully add to other research findings that attention to emotional intelligence in the curriculum would have a positive effect on students' achievement. In spite of its limitation, the present study confirms what Parker et. al. (2000) conclude, that is, emotional intelligence is closely related to academic achievement. One of the goals of this research was to corroborate the hypothesis that there is a positive correlation between emotional intelligence and academic achievement. Consequently there is now room for research in implementation of programmes of study to improve students' emotional intelligence in order to improve their academic achievement.

6.2 Conclusions

This study has confirmed that there is a positive correlation between emotional intelligence and academic achievement. The academic potential of students is in direct relation with their level of emotional intelligence. Results in the two schools where students have been surveyed confirm a strong correlation between the two. We introduced a reliable and valid approach to evaluate students' ability in the educational sector. The BarOn EQi YV was used as the primary tool to confirm the association between emotional intelligence and achievement.

This research is not limited to testing the emotional quotient, but to indicate that there is a strong relationship between emotional intelligence and academic achievement. The confirmation is not an end in itself, it should be used as an indicator to include emotional intelligence in school curriculum and thereby improve the academic competency of the learners.

6.3 Recommendations

An important aspect of the study is the measurement of students' emotional intelligence and its relation to academic achievement. Nevertheless, this study was limited to only two schools and consequently, is a fairly small population. There is an urgent need to conduct a study with a large population from schools throughout the country to assess the need for an increased emphasis on emotional intelligence and its contribution to academic achievement.

This study has correlated total emotional intelligence with academic achievement. There is a need to look at the various EQ sub-scores, namely; the Intrapersonal skill, the Interpersonal skill, the Stress management skill, the Adaptability skill, and the Positive Impression skill, of the students and find the contribution each makes to academic achievement. This present study shows that in both School A and School B there are associations between the various EQ sub-scores and Academic achievement. When marks are low, emotional intelligence and the other EQ subs-cores are also low and when marks are high the EQ and other subs-cores are also high.

Moreover, there is room to analyse the EQ difference in the three score ranges used to assess students' performance, namely achieved, merit and excellence. This should be

carried out using a large cohort to determine whether there is a distinctive change in EQ from one grade to another.

Furthermore, this study indicates that there is a stronger correlation with female students' EQ and their academic achievement than is with male students. A larger study would definitely show some interesting results.

While the aim of this study was to look into the correlation between emotional intelligence and academic achievement, the study has come up with some very interesting data. Analysis shows that 21.6% of the cohort studied scored and EQ score of 89 or less considered as low and underdeveloped emotional and social capacity and out them 8.5% had an EQ score of 79 or less having a very low and extremely underdeveloped emotional and social capacity. The marks of these students are also very low confirming a very strong correlation between emotional intelligence and academic achievement. There is room for concern for those 21.6% who might show some atypical behaviour.

There is a strong need to address the issue of emotional intelligence, and based on the conclusion of this study it is time to invest the necessary resources and know how to improve the emotional intelligence of students and then access its effect on their academic performance.

Education is holistic, regardless of the particular skills and knowledge learners acquire, therefore it is important to consider improving not only the competency of the learner but their wellbeing. Attention to the key aspects of emotional intelligence in schools would enhance students' ability to function effectively and would optimise learning. The

possibility of using a curriculum based on emotional intelligence will have a critical impact on the potential of the learner and consequently provide a better performance.

More research will be needed to understand the contribution of emotional intelligence in the development and growth of the individual. We have just begun to examine the effect and application of emotional intelligence in the education setting; we recommend that more research be carried out as an extension of this thesis. The MSCEIT Youth Version has already been pilot tested and is available to researchers. Studies using the MSCEIT YV could be used to evaluate students' EQ and correlate it with their academic achievement. This may provide additional data to confirm a correlation between emotional intelligence and academic achievement.

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