

Self Reported Emotional Intelligence and its Relationship to Academic Success

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Abstract

Emotional intelligence (EI) is a relatively new psychological construct and is the focus of much debate. This debate is centered on the differences in the way EI is conceptualised and measured between the ability and the mixed model schools of thought. The ability model considers EI to be a form of intelligence similar to cognitive skill and can thus, be observed in an objective manner. In contrast, the mixed model considers EI to be a mix of cognitive and personality traits. Mixed model EI is typically assessed using self-report measures. Both models of EI have reported some good evidence to link the construct with organisational and personal well-being.

This research had two main goals. The first goal was to address a common criticism of the mixed model. Researchers from the ability model routinely discredit mixed model approaches to EI by proposing that in essence, they are measuring personality and not intelligence. This study tests this criticism by including a measure of personality as well as EI to assess their relative contribution in explaining academic success. The second goal was to better understand the role of age and EI. The literature suggests a small linear relationship between these variables but the better studies suggest the effect of EI plateaus during mid-life. Thus, the hypotheses were tested by using two age groups; < 35 years old and ≥ 35 years. In addition, the study used a longitudinal design, collected both objective and subjective data and controlled for the effect of gender and social desirability.

A self report survey was made available to approximately 3,220 first year university students via a web link at the start of term. After deleting cases that failed

to meet some criteria, data from 185 surveys were used for the analyses. The response rate was some 6% but it is not known whether all students considered the survey invitation. The sample contained 139 females and 46 males studying a range of subjects in both part time and full time capacity. While the sample may be considered small, the proportion of gender, mode of study and mean age was similar to the total number of first year students. During this period, the researcher obtained the students tertiary entrance rank as an indicator of intelligence.

The survey was repeated at the end of term by the students and each student's grade point average (GPA) was also collected at this time. Hierarchical multiple regression was used to test the hypotheses that EI would explain additional variance in the GPA after the variance explained by TER and personality in the younger sample (H1) but not in the older sample (H2).

The obtained Cronbach alpha for each of the scales suggested they had good reliability. The coefficient ranged from .71 for the social desirability scale to .87 for the emotional intelligence scale. In the 17 to 34 year age group, the TER score explained 31% of the variance, personality did not explain any variance, while EI added a further 2% (total $R^2 = 33\%$, $p < .05$). This finding suggested that EI is distinct from personality and that at least in this age group, EI played a significant contribution in explaining GPA. In the older age group, TER explained 10% of the variance, personality explained an additional 12% and EI did not explain any further variance (total $R^2 = 23\%$, ns). This finding suggested that for older participants EI does not assist in explaining GPA.

The conclusions of this study make two contributions to the literature. In response to criticisms levied by ability theorists, the results suggested that the mixed model EI measure used in this study is distinct from personality. Second, the results suggested that EI was able to predict GPA in a younger age group but not in an older age group. This suggests that EI and age may be related in a linear manner until the mid life years before reaching an asymptote or perhaps declining. This study had a number of methodological strengths but it is the case that there are some limitations that must also be considered.

Declaration

I declare that the work presented in this dissertation is to the best of my knowledge and belief, original, except as acknowledged in the text, and that the material has not been submitted either in whole or part for a degree at this or any other university.

The submission of this thesis is in fulfillment of the requirements of the Master of Business at CQ University Australia.

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Signed:

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1 Chapter One - Perspectives on Intelligence

The heart is half a prophet.

Yiddish Proverb

1.1 Introduction

Despite over a century of debate, there is no standard definition of intelligence. Indeed, Sternberg stated “there seems to be almost as many definitions of intelligence as there are experts asked to define it” (quoted in Gregory, 1998). Regardless, there is some general agreement on what makes up intelligence. There are two major schools of thought on the nature and properties of intelligence. Some researchers argue there is a general form of intelligence from which other forms of intelligence originate (Spearman, 1904; Eysenck, 1982), while others adopt an alternate multiple theory of intelligence (Gardner, 1983; Sternberg, 1985). Gardner (1983) contends that the traditional notion of intelligence is limited and posits that intelligence is not reliant on one single ability; rather intelligence is comprised of a variety of forms of intelligence, including non-cognitive abilities. More recently, Salovey and Mayer (1990) argued for a new construct known as Emotional Intelligence (EI).

The purpose of this chapter is to provide a backdrop to the development of Emotional Intelligence. More specifically, the chapter will examine the nature of emotion, the nature of intelligence and the subsequent development of EI. The way we use emotions to enhance our thinking (Mayer, Caruso, & Salovey, 2000) is critical

to the concept of EI. Therefore, the utility for emotions will be firstly examined from a historical basis.

1.2 Historical Background

It has been argued that emotions are the antithesis of reason. Plato and Descartes proposed that pure rational thought must be devoid of emotions. However, the ability to divorce rational thought and emotions is contested in both historical and contemporary writings. Pascal, the French mathematician and physicist of the seventeenth century once claimed, "the heart has its reasons of which reason knows nothing"(Pascal, nd). The importance of emotions in society was also recognised by Darwin (1872) who declared "emotions to be of importance to the welfare of mankind" (p. 367), thereby acknowledging that emotions influence behavior. James (1890 Cited in Woznic,1990) stated that if emotions are abstracted from our consciousness "we find that we have nothing left behind, no mind-stuff" (p.744). So too, Nietzsche (1957) once declared, "there is more intelligence in thy body than in thy best wisdom" (p.26).

Traditional and contemporary intelligence theorists have also recognised the significance of emotions. The founder of the first measure of general intelligence, Binet, argued that emotions are a component of intelligence (1886 cited in Kaufman & Kaufman, 2001). Weschler (1950) called for a "re-orientation in our concept of general intelligence" (p. 78) by acknowledging that factors other than cognitive intelligence contribute to achievement in learning.

Research in the field of neurobiology also support the proposition that pure reason, that is reason that is free from emotion, does not exist (Bechara, Damasio, & Damasio, 2000; Damasio, 1994; Fineman, 2003) . Challenging the dualist proposition of a clear separation between mind and body, Damasio (1994) claims that all reason is moderated by interactions with the body. To support this position, Damasio draws upon the case of Phineas Gage to argue that certain parts of the brain are dedicated to the social dimensions of reasoning.

Phineas Gage suffered significant damage to the brain, yet his intellectual ability was not impaired. Gage displayed no impairment or restrictions in speech, movement, memory or the ability to learn. However, while his cognitive ability remained unchanged there were significant behavioural changes. The damage manifested itself in radical changes to his personality. Although previously considered an affable and sociable person, he was now unable to conform to social conventions, or maintain any sense of responsibility. Gage showed no sense of commitment to his work and become virtually unemployable. The brain damage seriously impaired Gage's rational decision making and judgement; everyday social interactions and negotiations presented a challenge for him. Gage's case exemplifies Gardner's (1983) position that emotions assist a person to make sense of their environment and guide appropriate behaviour. This illustrative case and other similar cases led Damasio (1994) to conclude that without the ability to assign emotional significance to events, decision making and reasoning is impaired.

In summary, emotions are central to human life (Darwin, 1972). Emotions provide essential information about how we interact and understand our environment. In

order to make good decisions individuals must take into consideration the emotional as well as cognitive aspects of decision making. Therefore, emotions help us make informed decisions.

1.3 Intelligence

As previously noted, despite a relatively long history there is not an agreed definition of intelligence. As a result, there is a multiplicity of views in the way intelligence has been construed. While intelligence is generally considered by two schools of thought, a further distinction can be made by considering intelligence in three separate classes. The general (g) intelligence model (Spearman 1927), the hierarchical model (Horn & Cattell, 1967; Carroll, 1993) and finally, the multiple abilities model (Thorndike, 1920; Gardner, 1983).

The first person to put forward a testable theory of human intelligence was Spearman (1904). Despite being developed over 80 years ago, the Spearman model of intelligence is considered the benchmark for all intelligence theory (Bickley, Keith & Wolf, 1995). Spearman (1904:1927) proposed a general theory of intelligence that asserted cognitive ability is primarily made up of a general (g) intelligence factor and a (s) specific factor. The g factor was considered to be a common ability that is measured across all intelligence tests, and accounts for some 74% of common variance in intelligence scores (Spearman, 1927). According to Spearman the remaining variance must be explained by the s factor. The s factor is considered to be test related and therefore differs from test to test. Most recently, it has been argued

that the emergence of the second factor acted as a catalyst for the development of a multiple abilities approach to intelligence (Horn & McArdle, 2007).

The second perspective on intelligence is the hierarchical model (Carroll 1993). While Spearman's (1927) model essentially argued that g was at the core of all cognitive ability, Carroll suggested that intelligence was made up of much more than general intelligence. Carroll (1993:1997) proposed a three-stratum model of cognitive abilities. The first Stratum I consisted of 60 narrow abilities, such as the ability in basic arithmetic and the ability to discern between musical pitch. Stratum II was comprised of broader abilities such as crystallized (G_c) and fluid (G_f) intelligence. As proposed by Horn and Cattell (1967) G_f is defined as the capacity to think logically and solve problems. This capacity was considered to exist independent of acquired knowledge. In contrast, G_c is defined as the ability to use skills, knowledge and experience and thought to grow over time. Carroll's final level, stratum III, represents an overarching general intelligence or g . Noting the overlap between Carroll's (1993; 1997) three stratum theory of intelligence (1993; 1997) and Cattell-Horn's (1967) crystallized and fluid model of intelligence the models were subsequently combined by McGrew (2009) to form the Cattell-Horn-Carroll (CHC) intelligence theory (McGrew 2009). The CHC model proposes that intelligence is a product of the interaction between personality and cognitive ability (Messick 1992).

Sharing some similarities to the CHC intelligence theory, the third class of intelligence is based on frames of mind, or multiple intelligences (Gardner, 1983). Gardner argued that the scope of psychometric tests of intelligence was limited since such tests generally only included certain facets of intelligence, such as linguistic,

logical and some aspects of spatial intelligence. However, Gardner (1983) proposed that intelligent behaviour does not arise from a single unitary quality of the mind but from a composition of seven bands of mental energy. For example, Gardner believed that intelligence consists of both intrapersonal and interpersonal intelligence. Gardner proposed that intrapersonal intelligence included abilities such as self-awareness and understanding.

Although there is no single accepted model of intelligence, there is general agreement that tests of intelligence show some validity in predicting success (Horn 1991; Neisser et al, 1996). Furthermore, a number of researchers advocate cognitive intelligence as being the benchmark for predicting job performance (Hunter & Hunter 1984; Ree & Earles, 1992). For example, Ree and Earles (1992) argue that if employers were to base employment decisions on intelligence alone then overall performance would be maximised. In a large meta-analysis of over 32,000 employees Hunter and Hunter (1984) examined the relationship between intelligence and job performance across a variety of professions. Hunter and Hunter (1984) reported significant correlations between intelligence and job performance in professional-managerial jobs ($r=.58$), technical jobs (.56), moderately complex jobs (.51), semi-skilled jobs ($r=.41$) and unskilled jobs ($r=.23$). The results of their study suggests that intelligence tends to be more highly correlated with skilled jobs.

While some researchers (Hunter & Hunter, 1984; Ree & Earle, 1992) maintain that general mental ability can predict job performance in all jobs, others argue that the importance of intelligence is dependent on the role (Woodward & McAuley, 1983). For example, the relationship between intelligence and job performance for medical

professionals is dependent on the context. A plethora of studies have reported moderate correlations between intelligence and success in medical professionals within a university setting (Feldman-Barrett, 2001; McMullen, 2003; Wagner et al. 2001; Lewis et al 2005). However, within a clinical setting, while limited, the relationship is much weaker (Woodward & McAuley, 1983). In a study of graduate medical interns, Woodward and McAuley (1983) reported low correlations between intelligence and the performance of medical interns. The results suggest that contrary to the research of Hunter and Hunter (1984), intelligence may not be important to all highly skilled roles.

Although there is generally strong support for the use of intelligence as a predictor of performance some researchers refute the high regard in which intelligence is held (Neisser et al, 1996; Sternberg & Wagner, 1993; Weschler, 1944). Indeed, Weschler (1944) acknowledged that intelligence should be used in conjunction with other forms of assessment. Similarly, Neisser et al (1996) argued that the use of intelligence tests in selection and recruitment alone ignores important aspects of mental ability, such as the contribution of non-cognitive abilities.

Furthermore, evidence is accumulating that demonstrates the limitations of intelligence as a predictor of success. Intelligence predicts roughly 5% to 10% of the variance in job performance (Sternberg & Wagner, 1993) and 10 to 20% of the variability in determining academic performance (Mayer & Salovey, 1997; Ransdell, 2001; Sternberg, 2006). Therefore, while the utility of intelligence in predicting academic success shows twice the variance of that predicting job performance, the 80% of unexplained variance suggests that other abilities must play a role in

explaining performance. As academic success is at the core of this study the relationship between intelligence and academic success will be examined in greater detail in section 3.2.

In summary, despite the popularity and validity of intelligence tests, the sole use of cognitive models to measure intelligence continues to be scrutinized (Gardner, 1983; Thorndike, 1920;). It is clear that standard intelligence tests do not explain all the variance in performance. Therefore, in order to maximise the prediction of success there is a need to supplement intelligence tests with a range of measures (Neisser et al, 1996; Weschler, 1944).

1.4 Emotional Intelligence

While the study of emotions and intelligence *per se* has a long history, it is only recently that the construct of EI has emerged. However, its origins may be traced to some of the original thinking and development of intelligence at the turn of the 20th century. The multi-intelligence work of Thorndike (1920) was in direct contrast to the single utility of intelligence proposed by Spearman (1904). Thorndike proposed that intelligence could be broken into three dimensions: mechanical, abstract and social. Mechanical intelligence was deemed to be the ability to visualise relationships among objects and to understand how the physical world works. Abstract intelligence was considered to be the ability to understand and manage ideas and abstractions.

The third dimension in Thorndike's model, social intelligence, was considered to be the ability to understand and manage people. In contrast to the many tests developed to measure mechanical and abstract intelligence only a few were developed

to assess social intelligence. Despite the theorising with respect to the existence of social intelligence, the ability to measure social intelligence has proved to be problematic. In particular, measures of social intelligence showed poor construct validity, with both convergent and divergent validity ranging from .34 to .39. This resulted in Thorndike and Stein (1937) concluding that the ability to deal with people had not yet been satisfactorily measured (p. 284). Regardless of the methodological limitations in measuring social intelligence (Cronbach, 1960), the notion of non-cognitive factors continued to be included in subsequent conceptualisations of intelligence (Gardner, 1983).

As noted earlier, Gardner argued that intelligence is not a single cognitive ability. It is a distinct set of mental abilities, one of which is intrapersonal intelligence. Gardner (1983) argued that intrapersonal intelligence is the capacity to be introspective and concerned mainly with emotions. Individuals were thought to distinguish, label and draw upon their emotions as a way of guiding behaviour and understanding the world (Gardner, 1983; Salovey & Mayer, 1990)

The construct of intelligence as an array of multiple abilities (Gardner, 1983) and the research examining the interaction of mood and thought (Palfai & Salovey, 1983) were influential contributors to the development of EI. As an academic construct, EI was first defined by Salovey and Mayer (1990). In a short space of time EI has created a wave of interest in both academia and popular culture (Goleman, 1995), resulting in the construct being considered one of this decades' best known fields of research (Matthews, Roberts, & Zeidner, 2004). However, this is not to suggest that there is a single unified understanding of EI. More precisely the popularity of EI has

created a schism in the field that has resulted in two major models of EI. The ability model proposes EI is primarily cognitive in nature (Mayer & Salovey 1997). In contrast, the mixed model, also known as the trait model (Bar-on 1997; Goleman 1995) considers EI to be comprised of a mixture of cognitive, social and emotional aspects.

1.5 Aims and Scope

The aim of this thesis is to examine the utility of EI in predicting academic success among commencing university students, after controlling for intelligence and personality. The literature suggests that traditional academic success predictors, which are generally cognitive in nature, are somewhat limited in explaining academic success. For example, intelligence is shown to explain only 10 to 20% of the variance in predicting academic success (Mayer & Salovey, 1997).

The literature indicates that a number of non-cognitive factors may also help in explaining academic success (Nofle & Robins, 2007; Poropat, 2009). While personality plays a dominant role in predicting academic success, EI has recently been advanced as an additional predictor of such outcomes (Di Fabio & Palazzeschi, 2009; Song et al, 2010). Despite a relationship being established between EI and academic success, there is some confusion over the concept of EI. Therefore, this study will investigate the impact of EI on academic success, whilst controlling for both intelligence and personality. Moreover, the literature suggests a relationship between age and EI and second goal of this research was to better understand the role of age on EI.

1.6 Overview of Thesis

This chapter has revealed there is considerable interplay between intelligence and emotions. Indeed, the study of EI developed as a result of the relationship that exists between reason and emotion. However, while emotions are recognised by philosophers, psychologists, sociologists, anthropologists and neurologists as playing an important role in our daily lives, until recently the role of emotions has been disregarded in the study of organisations.

The second chapter of this thesis discusses the nature and components of EI. This chapter provides a historical background to the construct and critiques the two key theoretical perspectives of EI. In particular, a distinction is made between those models which view EI as cognitive in nature and those models which see EI as a mixture of cognitive and personality traits. The debate between the ability and mixed model is one of the foci of this thesis. Measures from both models will be critically evaluated, with the strengths and weaknesses of each addressed. Furthermore, the impact of the fundamental differences between models of EI will be addressed in the context of establishing their respective construct validity.

Chapter three of the thesis will present the significance of EI and explore the ability of EI to explain success in a variety of settings. It will examine the specific application of EI in organisational, health and educational settings. Given the aim of the study, a specific focus will be the review of the literature regarding the relationship between EI and academic success. Academic success will be defined and the literature examining traditional predictors of academic success such as

intelligence, matriculation scores and personality will be discussed. More importantly, this chapter will focus on some of the limitations of existing studies examining EI and academic success.

Chapter four outlines the methodology to be employed in the thesis. In particular, the research study will aim to address some of the limitations in the literature. For example, the methodology used in this research will involve the use of subjective and objective measures. Furthermore, the chapter will present a rationale for the data analysis strategy. Chapter five will present the findings of the research study. The final chapter of this thesis will discuss the findings of this study, the implications of the study and make some recommendations for future research.

2 Chapter Two –Emotional Intelligence

2.1 Models of Emotional Intelligence

There are two major conceptual models that aim to explain the nature of EI (Spielberger, 2004). The four branch ability model defines EI as “*the ability to perceive, understand, manage and use emotions to facilitate thinking*” (Mayer & Salovey, 1997 p.190). Ability theorists, such as Mayer and colleagues consider EI as being primarily cognitive in nature and therefore, argue that EI should be regarded as a form of intelligence.

In contrast, the mixed model approach considers EI as a cross section of interrelated emotional and social competencies, skills and facilitators that impact intelligence behavior (Bar-on, 1997; Bar-on, 2000). Mixed model theorists generally view EI as being non-cognitive in nature and to reflect behavioural tendencies rather than abilities (Petrides & Furnham, 2000). The mixed model approach is also known as a trait or self report model of EI.

The following section will discuss the ability and mixed model approach of EI. In particular, section two will provide a descriptive and analytical review of the two approaches.

2.1.1 The Ability Model Approach to Emotional Intelligence

“emotional intelligence is not the opposite of intelligence, it is not the triumph of heart over head -- it is the unique intersection of both” Caruso, 2002

The ability model of EI has undergone some changes since its development. Salovey and Mayer (1990) originally developed a model that was concerned with the way by which people manage their moods. The Trait Meta Mood Scale (TMMS) model explored the interaction between emotions and intelligence and assessed an individual's perceived emotional competencies (Salovey & Mayer 1990; Salovey et al 1995). Salovey and Mayer originally defined EI as *“a form of social intelligence that involves the ability to monitor one's own and others emotions, to discriminate among them, and to use this information to guides ones thinking and actions”* (p.189). The original model (see Figure 2.1) suggested that emotions are comprised of three mental categories: a) appraising and expressing emotions in self and others, b) regulating emotion in self and others and c) using emotions in adaptive ways. It should be noted that although the TMMS was created as a measure of mood regulation, the TMMS is commonly used as a measure of overall EI (Zeidner 2009; Burns, et al 2007, Gohm & Clore, 2002, Salovey et al, 2002).

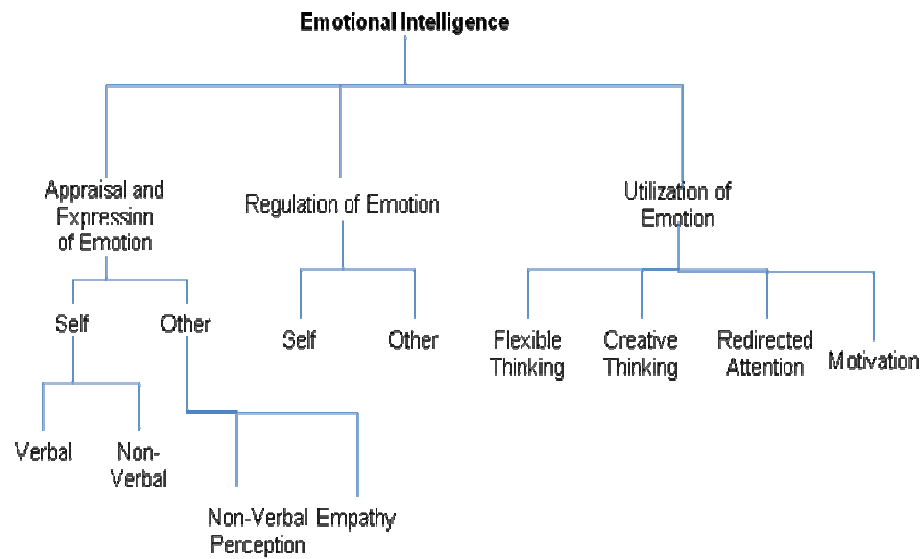


Figure 2-1: Salovey and Mayer's 1990 Model of Emotional Intelligence

Source: Salovey & Mayer, 1990 p. 190

The gap between a definition that proposes intelligence and a measurement tool that implied a trait resulted in some confusion. Indeed, critics such as Landy (2005) argue that it is difficult to develop a coherent theory of EI when the conceptual foundation is unclear. In response to such criticism, Mayer, Roberts and Barsade (2008) clarified that the initial model failed to clearly conceptualise and define EI as an ability. However, they stated that the notion of EI as an ability had always guided their work. Thus, in their revised definition Mayer, Salovey and Caruso (2004) propose EI to be *the capacity to reason about emotions and of emotions to enhance thinking. It includes the ability to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulation emotions so as to promote emotional and intellectual growth* (p. 197).

Mayer, Salovey and Caruso's (2004) revised definition now clearly situates EI within the intelligence hierarchy, it highlights the interaction between emotions and thought, and differentiates EI from being a non-cognitive trait (Ashkanasay & Daus, 2002; Zeidner, Matthews & Roberts, 2009). Fundamental to the ability model is the focus on mental abilities. The model clearly asserts that people reason about emotions and use emotions to assist in reasoning.

More formally, the ability model is also known as the four branch model of EI. As shown in Figure 2.2, the ability model clearly illustrates the alignment of abilities within each branch, describing four areas of capacities or skills that together constitute EI (Mayer & Salovey, 1997:2002).

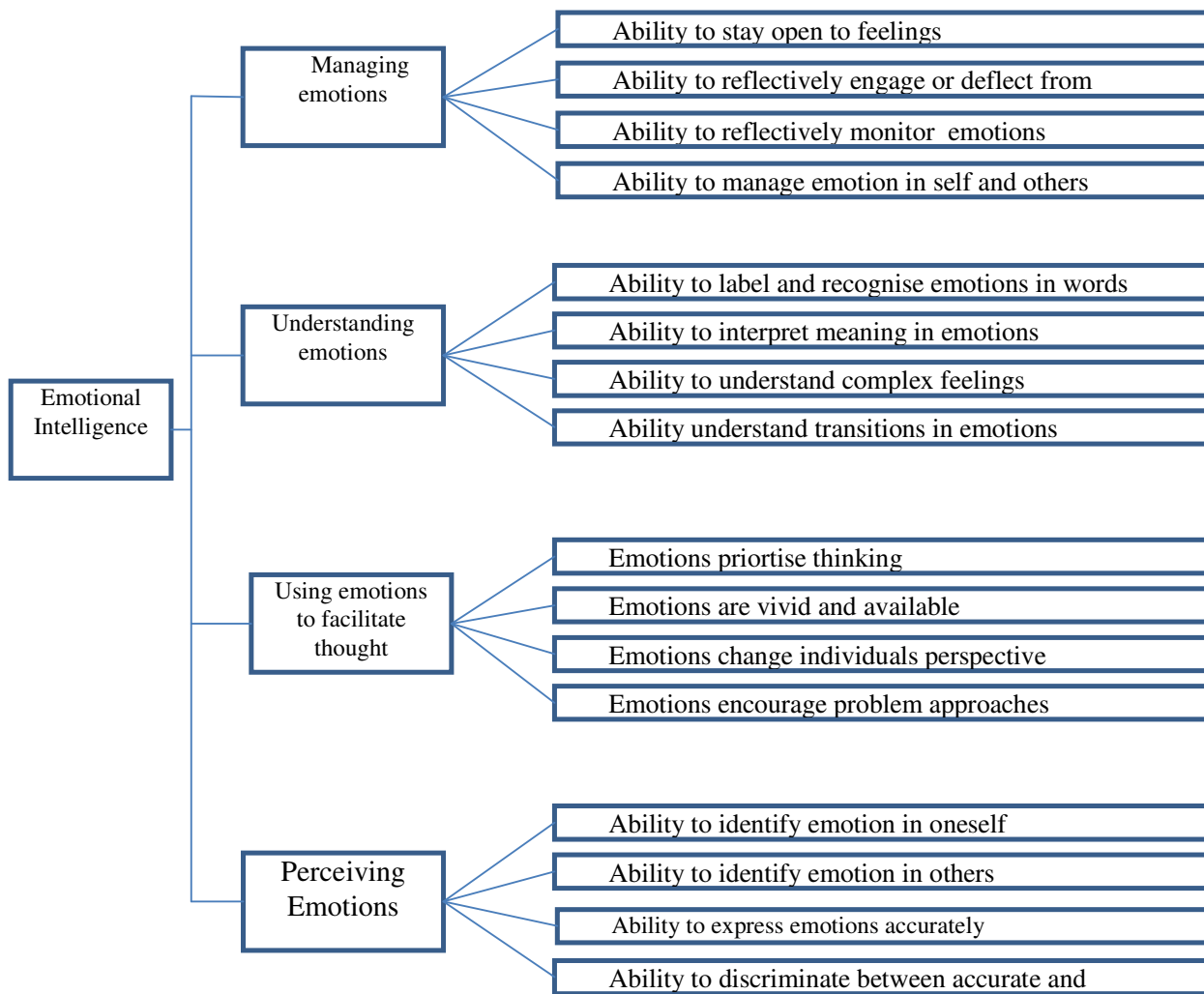


Figure 2-2: Mayer and Salovey's 1997 Model of Emotional Intelligence

The first branch is concerned with emotional perception. Emotional perception and expression refers to an individual's basic ability to identify emotion. This involves individuals being aware of their own and others emotions, as well as being able to monitor these emotions. For example, individuals with good emotional perception are better able to differentiate between and adequately express emotions (Mayer & Salovey 1997).

The second branch examines emotional facilitation of thought. Emotional facilitation, or use of emotion, is the ability to generate emotions to assist in processing information in cognitive related activities. The generation of emotions allows individuals to better assess a given situation. Mayer and Salovey (1997) argue that if an experienced emotion is not favourable, the ability of individuals to generate alternative emotions may be useful.

The third branch of the ability model focuses on emotional understanding. This branch refers to the ability to reason about emotions in order to understand a situation better and try to predict how emotions will change. It is argued that understanding emotions leads to a greater appreciation of the meaning of emotions. For example, understanding emotions enables individuals to use appropriate emotions and emotional expression in any given situation (Mayer & Salovey 1997).

The final branch is emotional management. Emotional management involves the ability to manage emotions in oneself and others (Salovey, Mayer, & Caruso 2002). In addition, this branch includes the ability to integrate emotions and thought for more effective decision making. The ability of individuals to process and express the most

appropriate emotion in a given situation assists individuals to formulate strategies in which decisions can be made. For example, the emotional management branch assesses how the reading of emotions in others affects one's actions and behaviours.

Mayer and Salovey (2002) have argued that individuals differ in respect to their abilities within each of the four emotional branches. The branches are set in a sequential order, with perceiving emotions positioned at the base level. The first branch represents relatively basic psychological processing, such as the perceiving and expressing emotions, and the final branch comprises of more complex reflective processing. In addition, the abilities tend to develop both within and across branches. Within each branch, emotional abilities tend to develop in stages. For example, in perceiving emotion, a person's ability to recognise basic emotions in faces is likely to precede the ability to detect the faking of emotional expressions (Mayer & Salovey, 1997, p. 10). Individuals with higher EI would be expected to progress quickly through the abilities and are also more likely to master each level.

As previously noted, the ability model (Mayer & Salovey, 1997) maintains that EI is a cognitive ability that fits within the criteria of intelligences. This claim needs to be examined in the context of some accepted criteria for defining intelligence. To be considered as an intelligence, the EI construct must meet a certain criteria based on its conceptualisation, correlation with accepted measures of intelligence and that the construct demonstrates a capacity to develop over time (Mayer, Causo, & Salovey, 2000).

Conceptually, measures of intelligence must reflect some form of mental performance (Carroll, 1993). In the MSCEIT, a well used measure of EI, emotional-related abilities are assessed across four broad branches. In particular, the first branch of the MSCEIT assesses the ability perceive and appraise emotion. Within this branch individuals are shown a series of faces representing a variety of emotions. The test taker must then determine the authenticity of the emotions by answering on a five point scale whether the emotion was definitely not present (1) or definitely present (5) (Mayer, Caruso, & Salovey, 2000). Moreover, the ability to perceive emotions is assessed on a variety of stimuli (Mayer, Caruso, & Salovey, 2000). For example, one task assesses a person's perception of emotions based on viewing photographic images, while the second task presents the same images based on computer generated images.

Secondly, intelligence measures should be moderately correlated to each other, yet be distinct from other established measures of intelligence (Roberts, Schulze & Macann, 2008; Carroll, 1993). For example, Mayer et al (2003) reported each of the four branches within the MSCEIT showed unique variance and were also moderately correlated with other mental abilities such as verbal intelligence ($r=.36$).

The third criteria for an intelligence test is that intelligence should develop with age and experience (Binet and Simon as cited in Fancher, 1985). This proposition is generally supported by research. A number of researchers have identified a positive relationship between age and EI (Schiebe & Carstenen 2011; Carstensen et al, 2000; Mayer, Caruso, & Salovey, 2000). However, there is a paucity of studies that have examined how EI changes over the life span.

2.1.2 The Mixed Model Approach to Emotional Intelligence

The mixed model approach to EI essentially proposes that EI is not purely a cognitive construct. In contrast to the ability approach to EI, which emphasizes cognition, the mixed model approach to EI generally includes aspects of personality and motivation (Roberts, Zeidner, & Matthews, 2001). Furthermore, mixed models of EI tend to be embedded within a personality framework and therefore, draw from personality variables such as empathy and optimism (Petrides & Furnham, 2000).

The most common mixed model of EI is presented by Bar-on (1997). The Bar-On model is heavily influenced by social intelligence theorists (Thorndike, 1920). Bar-on (1997 p. 14) defines EI as, “*an array of non-cognitive abilities, competencies and skills that influence one’s ability to succeed in coping with environmental demands and pressures*”. As indicated in Figure 2.3, the Bar-on model consists of five key components. The intrapersonal competency includes elements such as self regard, emotional self awareness, assertiveness, independence and self actualisation. In addition, the intrapersonal component examines aspects of self-awareness and self expression. The interpersonal component considers social awareness and interpersonal relationship. Included within this competency is empathy, social responsibility and interpersonal relations. The next competency is stress management. Stress management aligns to emotional management and regulation and examines stress tolerance and impulse control. This is followed by the competency of adaptability. Adaptability includes reality testing, flexibility and problem solving. Adaptability is sometimes referred to as the change management aspect. The final

competency is general mood and involves aspects of self motivation such as optimism and happiness.

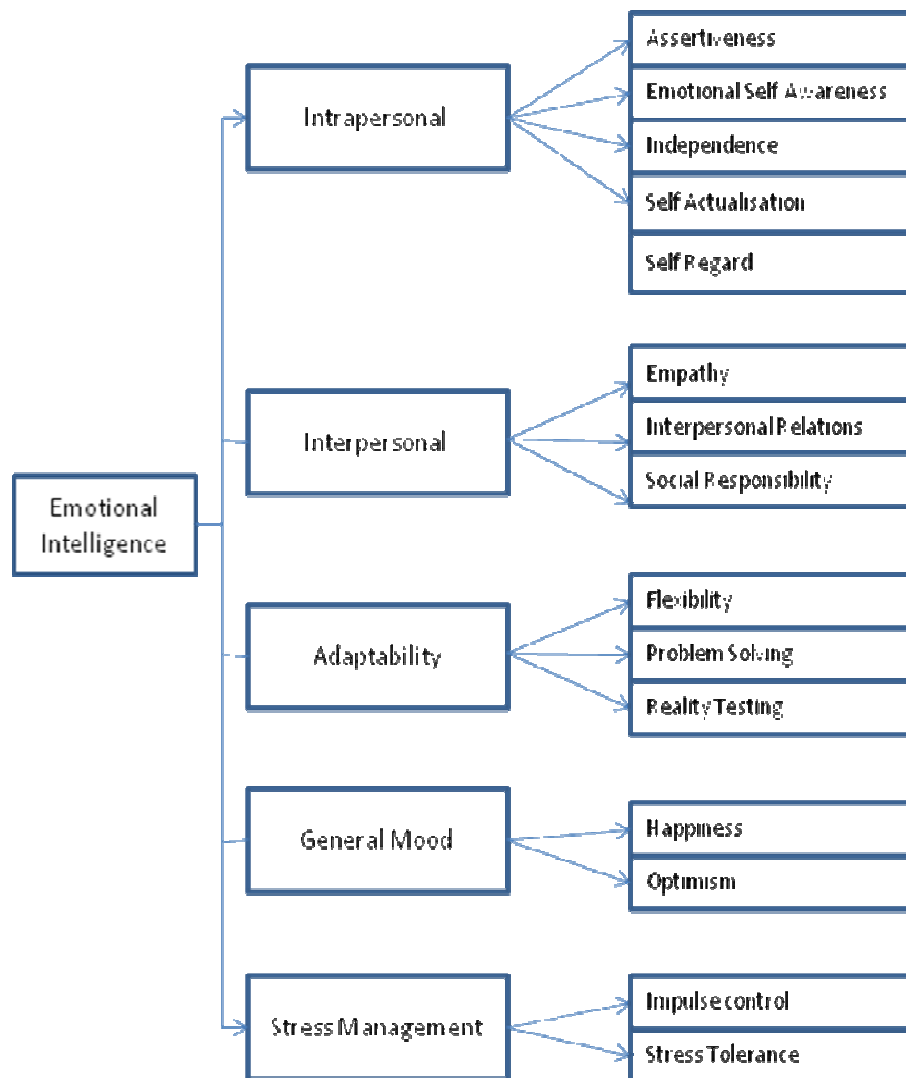


Figure 2-3 Key competencies of the Bar-on Model of Emotional Intelligence

A number of researchers are particularly skeptical in regards to the use of mixed measures of EI (Conte, 2005; MacCann et al 2003, Matthews, Roberts, & Zeidner, 2004). In particular, Mathews, Zeidner and Roberts (2003) argue that personality

measures of EI lack discriminant validity. More specifically, they argue that in practical application mixed models of EI becomes redundant when personality is also controlled for. Furthermore, the unsubstantiated assertions of the benefits of EI by mixed model theorists such as Goleman (1995) tends to pollute all mixed models (Ashkanasay & Daus, 2005; Conte, 2005; Maccann et al, 2003).

In addition, mixed models of EI tend to adopt a self report methodology, thus are subject to some criticism on the degree to which the answer may contain bias (Ciarrochi, Chan, & Bajgar, 2001; Mayer, Salovey, & Caruso, 2000). For example, self report measures require an individual to accurately assess their response to a stimulus. As such an individual's self perception may be biased in situations where they feel the need to respond in a socially desirable way. Mixed model explanations of EI are therefore, open to this criticism.

Indeed, it is acknowledged that self report measures may be influenced by social desirability bias. Recent research has shown that self report measures of EI are vulnerable to faking effects (Day & Carroll, 2008). In a study of undergraduate students ($n=229$) Grubb and McDaniel (2007) reported that when respondents were instructed to fake, they increased their EQ-I scores by .83 of a standard deviation.

Other literature suggests the effects of faking may be minimal. Whitman et al's (2008) study of undergraduate students ($n=300$) concluded that while it is possible to "fake good", the ability to increase EI scores is limited. For example, in order to fake the correct answer, individuals must possess the emotional knowledge to allow faking to occur. Furthermore, Kirk, Schutte and Hine (2008) reported a small non significant

correlation ($r=.02$) between the AES and the Marlowe-Crowne Social Desirability Scale (MC-SDS).

It is noteworthy that the terminology, “mixed model” EI was proposed by Mayer and colleagues (1997) rather than the proponents of alternate conceptualisations of EI. As a consequence the term mixed model is not universally accepted. In particular, while agreeing that two theoretical models of EI exist, Petrides and colleagues argue that EI researchers also need to take into consideration the way the construct is measured (Perez, Petrides, & Furnham, 2005; Petrides, Frederickson, & Furnham, 2002; Petrides & Furnham, 2001).

In summary, scientific researchers are currently in debate over the validity and viability of EI. At the center of this debate is the schism that exists in the field of EI. The ability theorists argue that EI is a mental ability that fits distinctly within the hierarchy of intelligences (Mayer, Salovey, & Caruso, 2000), whereas the mixed model approach views EI as an interaction between cognition and personality (Bar-on, 2000; Goleman, 1999;). This has led to some controversy on what it means to be emotionally intelligent.

Regardless of the theoretical approach, many believe EI to be a scientifically viable construct and therefore, can be psychometrically measured (Ashkansay & Daus, 2005). The following section will provide a critical analysis of some of the more popular instruments that have been developed to measure EI.

2.2 Measures of Emotional Intelligence

For a measure to be considered empirically useful and conceptually justifiable it must be psychometrically sound (Kline, 2005; Anastasi, 1988). Central to the evaluation of any measure is its reliability and validity. The term reliability refers to the instruments ability to remain consistent over time. For example, a measure's reliability, sometimes known as internal consistency, indicates the degree to which the results can be consistently attained over time and across varying situations (Sarantakos, 2005). One way of determining a measure's reliability is for the same respondents to complete the measure on at least two occasions and examine the agreement between the two results.

The variety of EI tools differ significantly in terms of their measurement properties. In terms of reliability, the majority of measures from both the ability and mixed model perspectives demonstrate adequate internal consistency (Conte, 2005). In regards to the validity of EI test scores, this shows a good deal of variation depending on whether the assessments are conducted 'within' or 'between' the two models of EI. Within both conceptual models, EI is considered to exhibit sound validity. It is only when comparing EI across the ability and mixed approach issues of validity arise. For example, the ability model proposes EI to be a form of intelligence and tends to measure EI through a performance based methodology (Mayer, Salovey, & Caruso, 2000). In contrast, mixed models of EI, consider EI in broader terms, and tend to adopt a self report methodology (Bar-on, 2000; Goleman, 1995). In addition, there is also some blending of these approaches. Much of the criticism concerning EI

is directed towards validity. Therefore, section 2.3 will specifically address the effect of conceptual differences on EI's validity.

While accepting the two model characterisation of EI, Ashkanasay and Daus (2003) propose that EI measures should be considered in terms of three research streams or frameworks. This approach takes into consideration the argument made by Petrides and colleagues, (Perez, Petrides & Furnham, 2005; Petrides, Frederickson, & Furnham 2002; Petrides & Furnham, 2001) that a better understanding of EI may be possible by considering the form of measuring, in addition to the theoretical position.

The first stream of EI research is based on the ability model (Mayer & Salovey, 1997) and is measured via performance based testing such as the Multi-factor Emotional Intelligence Scale (MEIS) and the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT). The second stream is also based on the ability model but utilises self-report and peer based measures. Commonly used ability based measures which are operationalised by self report measures include the Wong and Law EI scale (WLEIS; Wong & Law, 2002), the Workgroup Emotional Intelligence Profile, Version 3 (WEIP-3; Jordan et al 2002), and the Assessing Emotions Scale (AES; Schutte et al, 1998). The third stream expands on Mayer and Salovey's (1997) model and includes measures of personality and affect (Boyatzis & Sala, 2004; Goleman, 1995). Measures such as the Emotional Quotient Inventory (EQ-i; Bar-On, 1997; Bar-On, 2000) and Emotional Competency Inventory (ECI; Goleman, 1995) may be considered to fit within the third stream.

2.3 A Framework for interpreting Measures of Emotional Intelligence

Stream One

The first stream of EI research is based on Mayer and Salovey's (1997) ability model of EI and makes use of the MEIS or MSCEIT. The MSCEIT is more than a text based survey; it is a 141 item instrument that requires individuals to interpret emotion related abilities across the four branches.

It is widely accepted that traditional intelligence tests include multiple strategies to examine the variable of interest. In this light, EI has three scoring techniques. The offering of alternate scoring techniques is based on addressing the difficulty in determining objectively correct responses to emotional content (Robert, Zeidner, & Mathews, 2001). Furthermore, the use of a variety of scoring keys demonstrates that EI shows convergence amongst the criteria for the scoring of correct answers.

The earlier measure of the four branch model, the MEIS was scored using three separate approaches; consensual, expert and target scoring (Mayer, Salovey, & Caruso, 2000). In targeted scoring the test taker is asked to determine what emotions are being depicted by the individual (the target) portrayed in the image. The test taker must then evaluate and describe the emotions the targeted individual may have experienced. The test takers response is compared to the targets recounted emotions, with the targeted individual's response being deemed correct.

Targeted scoring is criticised for two reasons. The first is concerned with possible bias in the target who may wish to represent themselves in the best possible light.

Second, is the assumption that the target is able to correctly express the emotions they had experienced (MacCann et al., 2003; Roberts, Zeidner, & Matthews, 2001). As a result of such criticism the use of targeted scoring is no longer offered in the MSCEIT.

In consensual scoring individuals are awarded points for each answer that matches exactly with a population of test takers. The consensual scoring was derived from a normative sample of the population (n=5000). Participants were drawn mainly from the United States and included some data from non-western societies such as the Philippines, India and Sri Lanka. Participants were aged from 17 to 79 years of age (Mayer, Caruso, & Salovey, 2000; Papadogiannis, Logan, & Sitarenios, 2009). This form of scoring assumes that the majority response is the correct answer. Moreover, as data is regularly added to the sample the correct response may change over time.

Some researchers suggest that consensual scoring may be flawed due to cultural differences in recognising and responding to emotions (Matthews, Roberts, & Zeidner, 2004). In particular, even within western societies cultural differences exist. For example, Roberts, Zeidner & Matthews (2001) argue the traditional British belief that a 'stiff upper lip' is always the best response to emotional problems, contrasts significantly with American beliefs.

The expert scoring method compares a respondent's answer with the opinion of experts in the field. Experts identify the best response based on their knowledge of psychological models of emotion (Mayer, Caurso, & Salovey, 2000). For example, responses that approximately reflect the expert's response is deemed correct.

The expert scoring method also draws some criticism. This is generally based on the assumption that the 'expert' answer is absolute. This method assumes that the experts knowledge of emotions directly translates into EI. Moreover, there is concern voiced over who is entitled to be the expert (MacCann et al, 2003). Although perhaps this argument is somewhat narrow in perspective, the inability to provide one universally agreed answer has led some researchers to conclude that EI cannot be considered an intelligence (Brody, 2004; Matthews, Roberts, & Zeidner, 2004).

Nevertheless, taking scoring issues aside, the MSCEIT has strong reliability and being a performance measure has the advantage of directly assessing the individual's ability of a given task. The obtained reliability co-efficient for each of the four branches ranges from .80 to .91, and an overall coefficient of $r=.91$ (Mayer, Salovey, & Caruso, 2004). A limited number of studies report on the consistency of the MSCEIT over time. Brackett and Mayer (2003) reported a test-retest reliability of .86 over a three week period. However, the age range in this sample was fairly narrow (17 to 20 year age range) given some studies suggest EI increases until the midlife period (Mayer et al 2003).

While validity of the measures will be presented in section 2.4, generally, the MSCEIT shows evidence of acceptable convergent and divergent validity. Mayer, Salovey and Caruso (2000) report correlations ranging from .32 to .36 between the MSCEIT and verbal IQ and small to moderate correlations ranging from .13 to .24, are reported between the MSCEIT and personality assessed using the Big Five (Mayer, Salovey, & Caruso, 2000). The low correlations between EI and the Big Five suggest that ability EI is not a personality variable.

The MSCEIT has a number of strengths, yet has attracted some criticism in terms of its conceptualisation and measurement. The conceptualisation of the ability model is questioned by trait based researchers such as, Petrides, Furnham and Mavroveli (2007). Petrides and colleagues argue that since emotions are subjective, it is not possible for emotions to be operationalised as an ability. Furthermore, intelligence researchers such as Brody (2004) assert that the MSCEIT tests an individual's knowledge of emotions and not the ability to perform tasks that are related to emotions. This would seem to negate its categorisation as an intelligence, as cognitive ability tests must assess the ability to solve problems within the given domain.

An additional criticism of the MSCEIT is its factor structure (Gignac, 2005; Palmer et al, 2005, Rossen, Kranzler & Algina, 2008). A factor analysis of 450 university students conducted by Palmer et al (2005) indicated a poor fit for the one and two factor structure. Palmer and colleagues (2005) question the close fit statistics reported by Mayer et al's, (2003), stating that the reported close-fit statistics are inaccurate, and there is an overestimate of the degree of fit for each model (p.288). More specifically, they question the constraining of two branches of the model to be equal in order establish an acceptable four factor solution.

More recently Rossen, Kranzler and Algina, (2008) were also unable to replicate the four branch model proposed by Mayer, Salovey and Caruso (2002). Similarly, Rossen and colleagues reported that neither the one or two factor model provided a good fit to data. These results raise some questions over the optimal structure of the MSCEIT.

Stream Two

The second stream of EI research, proposed by Ashkansay and Daus (2005), includes measures that are based on Mayer and Salovey's ability model, but are assessed using self report or peer based measures. Some EI measures that fit within this category include the Workgroup Emotional Intelligence Profile (WEIP-3; Jordan et al 2002) and the Assessing Emotions Scale (AES; Schutte et al, 1998).

The WEIP-3 is a self report measure that consists of 27 items and is scored on a seven point likert scale. The scale contains two factors; the ability to deal with own emotions and the ability to deal with others emotions. High correlations are reported between the overall score and two factors; .89 and .87 respectively. Therefore, the authors propose that the measure can be used either as uni-dimensional or as two separate scales. The WEIP-3 shows satisfactory internal consistency for the full scale (.86), and adequate convergent validity in relationship to similar constructs (Jordan et al 2002). For example, in establishing convergent validity, Jordan et al (2002) reported significant correlations between two of the dimensions of the TMMS (Salovey & Mayer, 1990). More specifically, moderate correlations were found between the WEIP-3 and clarity of moods (.24) and repair of moods (.28).

The AES (Schutte et al, 1998) measures EI by asking participants about an array of emotional intelligence characteristics (Schutte et al, 1998; Schutte, Malouff, & Bhullar, 2009). Schutte et al (2008) define EI as *"the interrelated abilities of effectively perceiving emotion in the self and others, using emotion to enhance*

decision making, understanding emotions, and regulating emotions in the self and others” (p.103). The current AES scale draws heavily from Salovey and Mayer’s original model of EI (Salovey & Mayer, 1990).

The AES has 33 items across three factors; 13 items measure ‘appraisal and expression of emotion’, 10 items measure ‘utilisation of emotion’, and 10 items measure the ‘regulation of emotion’. Based on principal component analysis the authors concluded that the AES is largely a single factor and should be used as a unitary scale (Schutte et al, 1998). However, others (Austin et al, 2004; Ciarrochi, Deane, & Anderson, 2002; Petrides & Furnham, 2000;) have reported that the AES is more closely aligned Mayer and Salovey’s (1997) four factor model; perception of emotion, managing one’s own emotions, managing others emotions and utilisation of emotion, and thus the model fits within the stream two model.

The AES has been widely used by researchers. A number of studies have found the AES to have strong reliability and sufficient predictive and discriminant validity (Goldenberg, Matheson, & Mantler, 2006, Kirk, Schutte, & Hine, 2008; Petrides & Furnham, 2000; Saklofske, et al. 2007;). Schutte et al (2008) reported a mean alpha reliability of .87 across 47 studies. Test re-test reliability is reported at .78 over a two week period (Schutte et al. 1998) which is within acceptable standards (Anastasi, 1988). Nonetheless, it would be useful to demonstrate the degree to which the test scores are stable over a longer period of time.

Correlations between the AES and mixed models of EI tend to be moderate to high. For example, Brackett and Mayer (2003) reported a correlation of .43 between

the EQ-i and AES. In contrast, correlations between the AES and the MSCEIT (stream one) tend to be much smaller (.18), suggesting a small overlap between the mixed and ability measures (Brackett & Mayer, 2003). Bastian, Burns and Nettlebeck, (2005) found a near zero correlation (.02) between the AES and MSCEIT in their study of undergraduate students (n=246). The small correlation between the AES and the MSCEIT suggests the AES is indeed a mixed measure despite its initial conceptualisation as an ability model. Moreover, Schutte's and colleagues (1998) conceptual framework has become clearer over time, with the author referring to the measure in subsequent studies as a "trait" approach to emotional intelligence (Kirk et al. 2008).

Stream Three

The third stream of measures include broader based measures of EI (Daus & Ashkanasay, 2003). These measures of EI tend to include cognition, personality and affective abilities. Measures within this approach would include Goleman's Emotional Competence Inventory (ECI; Goleman, 1995) and Bar-on's Emotional Quotient Inventory (EQ-i; Bar-on, 1997).

The most popular of the broad based mixed model measures is the EQ-i (Bar-on, 1997). The EQ-i is based on Bar-on's (1997) conceptualisation of EI (see Table 2.1) and is made up of 133 items. Bar-on's (1997) model shares some similarities with Mayer and Salovey's (1997) conceptual model of EI. For example, Mayer and Salovey's (1997) perception of emotions branch, which encompasses the ability perceive and understand one's own emotions is markedly similarly to Bar-on's Intrapersonal factor. However, in contrast to Mayer and Salovey (1997), Bar-on defines EI as an '*an array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures*' (p 117).

EQi Scale	Competency and Skills Assessed
<i>1. Intrapersonal</i>	<i>Self-awareness and self-expression:</i>
Self-Regard	To accurately perceive, understand and accept oneself
Emotional Self-Awareness	To be aware of and understand one's emotions
Assertiveness	To effectively and constructively express one's emotions and oneself.
Independence	To be self-reliant and free of emotional dependency on others.
Self-Actualization	To strive to achieve personal goals and actualize one's potential.
2. Interpersonal	Social awareness and interpersonal relationship
Empathy	To be aware of and understand how others feel.
Social Responsibility	To identify with one's social group and cooperate with others.
Interpersonal Relationship	To establish mutually satisfying relationships and relate well with others.
3. Stress Management	Emotional management and regulation
Stress Tolerance	To effectively and constructively manage emotions.
Impulse Control	To effectively and constructively control emotions.
4. Adaptability	Change management:
Reality-Testing	To objectively validate one's feelings and thinking with external reality.
Flexibility	To adapt and adjust one's feelings and thinking to new situations.
Problem-Solving	To effectively solve problems of a personal and interpersonal nature.
5. General Mood	Self-motivation:
Optimism	To be positive and look at the brighter side of life.
Happiness	To feel content with oneself, others and life in general

Table 2-1 EQ-i Scales, Competencies and Skills Assessed (Bar-on, 2005)

The EQ-i reports good ($r=.93$) internal consistency (Petrides & Furnham, 2001) but some researchers are concerned with the validity of the measure (Landy, 2005; Locke, 2005; MacCann et al, 2003; Zeidner, Matthews, & Roberts, 2009). It has been suggested that the EQ-i does not demonstrate discriminant validity. For example, the EQ-i and measures of personality are highly correlated (Derksen, Kramer, & Katzko, 2002; Leary, Reilly, & Brown, 2009). Although it would be expected the EI measures within this stream would be correlated, when measures are too highly correlated, one of the measures is redundant.

In testing the EQ-i's relationship with the Myer Briggs Type Indicator, Leary, Reilly and Brown (2009) reported moderate significant correlations between extroversion and both the total EQ-i ($r=.41$) score and the interpersonal subscale ($r=.51$). In addition, O'Connor and Little (2003) reported moderate to very large correlations between the EQ-i and the 16PF personality measure. More specifically, significant correlations were found between some dimensions of the Big Five (extraversion .33, anxiety .76, and independence .43). In a small study ($n=40$) Bar-On (1997) investigated the relationship between the EQ-i and intelligence and reported a low correlation ($r=.12$). Similarly, in a much larger study ($n=873$) Derksen, Kramer & Katzko (2002) reported an even smaller correlation of .08 between the EQ-i and the General Adult Mental Ability scale. Despite its namesake, Bar-on (2005) the EQ-i is not argued to be a measure of intelligence and the low correlations between Intelligence and EQ-i support that notion that the EQ-i is not positioned within the intelligence hierarchy.

Some researchers argue that the moderate to high correlations between mixed model EI and personality measures are evidence of failing to establish discriminant validity (Davies, Stankov, & Roberts, 1998; Dwanda & Hart, 2000). This criticism is appropriate from an ability perspective of EI. However, the moderate correlations between the EQ-i and personality are evidence of convergent validity within a mixed model perspective.

2.4 The Relationship between Models of Emotional Intelligence, Personality and Intelligence

As noted earlier, an important aspect in establishing the validity of a construct is in determining the construct validity or nomological network (Cronbach & Meehl, 1955). One component for testing the nomological network is to examine the measures convergent validity. Schwab (1980) refers to convergent validity as the extent to which alternative measures of the construct share variance. A second component of the nomological network is discriminant validity. Discriminant validity requires that a test does not correlate too highly with tests from which it should differ (Schwab 1980). In the case of EI, given the disparate conceptualisations, determining convergent and divergent validity between ability and mixed models is complicated.

In order to further examine the validity of EI the following section will conduct a review of EI and similar constructs. It will firstly examine the correlations between measures of EI based on their theoretical underpinning, i.e. between ability and mixed models. It will then review literature that examines the relationship between EI and intelligence and EI and personality.

2.4.1 The Relationship between Ability and Mixed Models of Emotional Intelligence

The field of EI is punctuated by conceptual differences. Some researchers argue that EI is an ability and therefore fits within the intelligence domain (Mayer & Salovey, 1997). In contrast, others argue EI is situated within the personality domain (Petrides & Furham, 2004). As indicated in section 2.2, construct validity is generally supported within the separate approaches to EI (i.e. ability or mixed). It is only when examining the relationship between the ability and mixed approach that the issue of construct validity is highlighted. However, given the different theoretical positions of EI this is expected.

A number of studies have examined the relationship between ability and mixed measures of EI and generally report weak to non significant correlations. Brackett and Mayer (2003) reported a small and non significant correlation ($r=.18$) between the MSCEIT and the AES. Similar findings have been reported by Goldenberg, Matheson and Mantler (2006) who reported an even smaller and non significant correlation ($r=.04$) between the MSCEIT and the AES. Likewise, Ciarrochi, Caputi, & Mayer (2003) also reported a small non significant correlation ($r=.15$) between the MSCEIT and the Levels of Emotional Awareness Scale (LEAS; Lane et al 1990).

2.4.2 The Relationship between Emotional Intelligence Measures and Cognitive Intelligence

A number of studies have supported the notion that ability EI is moderately correlated with cognitive intelligence. “A number of studies have shown that the

MSCEIT has positive moderate correlations with crystallised intelligence measures such as verbal and knowledge based tests. Moderate to strong correlations are reported between ability EI and the Wonderlic Personnel test ($r=.45$) (Schulte, Ree et al, 2004), Verbal SAT scores ($r=.35$) (Brackett, Mayer, & Warner, 2004) and the Vocabulary Scale of the Army Alpha test of intelligence ($r=.36$) (Mayer, Caruso, & Salovey, 2000). Similarly, Bastian, Burns, & Nettlebeck (2005) reported moderate significant correlations between the MSCEIT and verbal ($r=.26$) and non-verbal ability ($r=.27$) tests. However, weaker correlations were reported between the MSCEIT and fluid intelligence (Roberts, Schultz & Maccann, 2008). The evidence therefore suggesting that the MSCEIT measures a form of crystallized intelligence and thus can be learnt.

In contrast, mixed models generally show small to weak correlations with intelligence. Newsome, Day and Catano (2000) and Schutte et al (1998) report small non-significant correlations between mixed model EI and some measures of intelligence. Similarly, Wong and Law (2002) reported low correlations between the Eysneck Intelligence test and two scales from their trait model of EI between; others emotion appraisal ($r=-.16$) regulation of emotion ($r=-.19$), and both were significant.

Therefore, empirical evidence validates a dual conceptualisation of EI. More specifically, that ability EI is cognitive in nature and can be learnt (Roberts et al 2008; Daus & Ashkanasy, 2005; Mayer, Caruso, & Salovey, 2000), while the mixed model interpretation of EI is considered to comprise of non-cognitive abilities (Petrides & Furnham, 2002; Schutte et al, 1998)

2.4.3 The Relationship between Emotional Intelligence and Personality

The relationship between EI and personality has been heavily discussed in the literature. Weak to small correlations are reported between ability EI and personality, whereas trait EI measures show moderate to strong significant correlations. Brackett and Mayer (2003) reported very small correlations ($r=.08$) between the MSCEIT and the overall Big Five personality measure. However, moderate correlations were reported between the MSCEIT and openness ($r=.25$) and agreeableness ($r=.28$).

Generally speaking mixed models of EI are closely tied with personality theory and therefore, unsurprisingly correlations between mixed models of EI and personality tend to vary from moderate to very strong. In particular, both the EQ-i and ECI (Goleman, 1995) show particularly high correlations with personality. Brackett and Mayer (2003) found highly significant correlations between the EQ-i and neuroticism, extraversion, agreeableness, and conscientiousness factors (r 's = .27 to .57). Sala (2002) reported moderate correlations ranging from .22 to .49 between Goleman's ECI Emotional and three of the Big Five; extroversion, openness, and conscientiousness.

The literature examining the relationship between the AES and personality is less clear. In particular, there is some disparity in the strength of the relationship (Brackett & Mayer, 2003; Schutte et al, 1998;). As shown in Table 2.4, correlations reported by Schutte and colleagues (1998) and Brackett and Mayer (2003) were markedly different. With the exception of 'openness to experience' conflicting results may be

attributed to the sample used by Schutte and colleagues (1998). In comparing the studies, Schutte's study was based on a small sample size of 23 participants, whereas Brackett and Mayer (2003) sample consisted of 207. Thus, the low correlations reported by Schutte et al (1998) may be attributed to the inadequacy of the sample size.

	Dimensions of the Big Five				
	E	A	C	ES	O
Schutte et al 1998	.28	.26	.21	.28	.54*
Brackett and Mayer 2003	.32*	.09*	.25*	.19*	.43*

E = Extraversion, A = Agreeableness, C =Conscientiousness, ES = Emotional Stability, O = Openness to Experience

* correlated at $p < .05$

Table 2-4 Correlations between the Assessing Emotions Scale and the Big Five

While critics of the mixed model interpretation of EI cite the overlap between trait EI and personality as evidence of poor validity, the same data is used by some trait theorists as further evidence for their position. Petrides and colleagues (2005;2007) argue that since trait EI is positioned at the lower order of a personality hierarchy, one should expect moderately sized correlations between EI and personality measures.

More generally, significant evidence exists that supports the notion that trait EI is more than personality (Cherniss et al, 2006; Derksen, Kramer, & Katzko, 2002; Law, Wong, & Song, 2004;). The results from a meta-analysis of 69 independent studies published before 1995 ($n=4158$) indicated that trait EI measures added substantial

validity over the variance explained by the Big Five in predicting performance outcomes. These ranged from .06 for conscientiousness to .29 for openness to experience (Van Rooy & Viswesvaran, 2004). In a subsequent meta-analysis of studies conducted post 1995 ($n=3156$), Van Rooy et al (2005) argued that while mixed models of EI show significant correlations with the Big Five. The results show that mixed EI explains significantly more variance in the dependent variable. Moreover, in a study of first year undergraduate students, Song et al (2010) reported that while moderate to strong significant correlations were found between the WLEIS and dimensions of the Big Five (r 's ranged from .29 to .55), that trait EI showed unique variance in predicting success after controlling for personality. Thus, strengthening the argument that EI is a unique contributor in explaining performance.

Furthermore, Brackett and Mayer (2003) argued that although EI may be related to personality it is “one aspect of personality that is likely to fall outside the factor space of the Big Five” (p.9). These findings seem to support Petrides, Furnham and Mavroveli (2007) who argue that there is expanding evidence that trait EI adds incremental validity in relation to a wide range of dependent variables over the variance explained by personality measures such as the Big Five (Extremera & Fernández-Berrocal, 2005; Saklofske et al, 2003).

In summary, evidence is accumulating that shows mixed models of EI add unique variance in predicting success (Extremera & Fernandez-Berrocal, 2005; Saklofske et al, 2003; Song et al, 2010; Van Rooy & Viswesvaran, 2004). However, there is still significant criticism on the overlap between personality and trait EI (Brackett & Mayer, 2003; Daus & Ashkanasy, 2003; Davies, Stankov, & Roberts, 1998; Saklofske

et al, 2003). Therefore, despite some evidence to support the notion that personality is relatively distinct from trait EI, some ability EI researchers contend the relationship between personality and mixed models of EI to be a major concern.

One way to address any overlap between EI and personality is to include both constructs into the research design (Conte, 2005; Kluemper, 2008). This more robust research design allows for a greater examination of the overlaps between the constructs and allows the data to show the additional incremental predictive validity afforded by each of the respective constructs.

2.5 Individual Differences in Emotional Intelligence

A number of individual differences have been proposed to impact on EI. In particular, a number of studies have examined the influence of gender and age on EI. It has been argued that women are better able to perceive emotions than men (Mayer & Geher, 1996) and that EI increases with age (Mayer, Caruso, & Salovey, 2000). Thus, it might be assumed that older individuals and women may show greater emotional intelligence. However, empirical evidence does not conclusively support this view. This section will review the evidence between gender, age and EI.

2.5.1 Gender

In comparing men and women, it is generally supported that women are better connected with their emotions (Mayer & Geher, 1996). For example, women tend to show higher levels of understanding about their emotions and are better able to express and describe emotions (Feldman-Barrett et al, 2000).

The majority of studies find that females score higher than men in EI (Austin et al, 2005; Brackett & Mayer, 2003; Brackett et al. 2006; Ciarrochi, Chan, & Bajgar, 2001; Goldenberg, Matheson, & Mantler, 2006; Joseph & Newman 2010; Schutte et al, 1998; Van Rooy, Alonso, & Viswesvaran, 2005). Significant gender differences have been reported on the MSCEIT with women tending to score higher than men (Brackett & Mayer, 2003; Brackett et al. 2006; Goldenberg, Matheson, & Mantler, 2006; Joseph & Newman 2010; Van Rooy, Alonso, & Viswesvaran, 2005). In a sample of 275 undergraduate students, Brackett et al (2006) found that on average women scored much higher on the MSCEIT. Similarly, Goldenberg, Matheson & Mantler (2006) found higher results for women than men in their study of adults. Goldenberg and colleagues (2006) were also able to examine the gender differences by each of the four branches in the MSCEIT and reported females scored higher on each branch except for the ‘understanding of emotions’ branch.

Numerous studies using trait EI measures have also indicated a tendency for females to score higher than males (Austin et al, 2005; Brackett et al, 2006; Ciarrochi, Chan, & Bajgar, 2001; Goldenberg, Matheson, & Mantler, 2006, Schutte et al, 1998; Van Rooy, Alonso, & Viswesvaran, 2005). Schutte et al (1998) reported that females tended to score significantly higher than males on the AES scale. In contrast, Brackett and Mayer (2003) reported no gender differences. While both these studies used the AES and had a large number of female participants, one difference that may explain the conflicting result is age. Schutte and colleagues employed an older cohort (M=29.27 years, SD 10.23) compared to Brackett and Mayer’s (2003) younger

university students ($M=18.93$ years, $SD\ 1.51$). This raises the possibility that age, not gender may explain the difference.

These studies provide some support for a link between gender and EI. However the evidence is not conclusive and given the proposition that a person's EI will increase as a result of maturity (Mayer, Caruso, & Salovey, 2000) it is surprising that the studies have failed to control for effect of age. Thus, it is difficult to ascertain whether there is a significant relationship between gender and EI or, if this relationship may also be influenced by age.

2.5.2 Age

The relationship between age and EI is imbued with some assumptions. It is a commonly held belief that aging leads to greater emotional awareness of self and others. In addition, there is also the perception that with age comes experience. Together these culminate in the belief that older individuals tend to make their decisions with a balance of rationality and emotions. However, empirically the relationship between age and EI is less clear.

Some researchers report that EI develops with age (Bar-on, 1997; Depape et al, 2006; Jordan et al, 2002; Mayer, Caruso, & Salovey, 2000) whereas others' maintain EI to be a relatively stable construct over time (Petrides, Furnham, & Mavroveli, 2007). These differences do not seem to be explained purely in terms of the theoretical perspective; (i.e. ability or mixed). To better understand the influence of age on EI, the following section will examine literature based on the conceptual model, commencing with studies using trait measures of EI.

Trait studies

There have been some conflicting results about the link between age and trait EI. A number of studies report small but significant correlations between age and EI (Derksen, Kramer, & Katzko, 2002; Parker et al, 2005; Van Rooy, Viswesvaran, & Pluto, 2005). Parker et al (2005) conducted a longitudinal study to examine the long term stability of EI (using the EQ-i) on 238 first year university students. The sample was predominately female (191 women, 47 men) with a mean age of 19.17 (SD=.65). The results showed a significant increase in EI for students between their first and second year of study. Despite the relatively 'short' period of elapsed time, the change in EI was attributed by the authors to the maturation of the individuals. In a larger study (n=873) Derksen, Kramer and Katzko (2002) examined the relationship between trait EI and age by analysing the relationship in 10 year age groups. The results indicated that EI increased until age 35 to 44 years before beginning to plateau in the 45 to 54 age group.

In contrast, Goldenberg, Matheson and Mantler (2006) found no age differences using a trait EI approach. In a study of 18 to 83 years old and predominately female (3:1 ratio), Goldenberg, Matheson and Mantler (2006) failed to find a significant relationship between age (M=38.4 years) and the AES. The inability to find a linear relationship may be due to the large age range in this study. Thus, it may be the case that the age range cancelled out any differences in the sample.

Ability Models

A core proposition of the ability model is that EI fits the criteria of intelligence (Mayer, Caruso, & Salovey, 2000; Mayer, Roberts, & Barasade, 2008). One of three criteria to be met in order to be considered standard cognitive intelligence is that the abilities must develop with age and experience (Binet and Simon as cited in Fancher 1985). Therefore, it might be expected that a linear relationship may be found between ability EI and age.

A number of studies have supported the assertion that ability EI is malleable and can be learned and developed over time. In order to test the link between EI and age Mayer, Caruso & Salovey (2000) compared total EI scores between adolescent (12 to 16 years) and adult sample (17 to 70 years). Mayer, Caruso and Salovey (2000) reported that adults scored higher on an ability test of EI than adolescents. However, the study had some significant limitations. In particular, the study did not assess the development of EI across all branches. Although branches one, two and three were assessed, only some elements of those branches were included. The omission of all elements of EI negates the strength of this finding. Furthermore, there may be some limitation to Mayer and colleagues study, given the adolescents EI was measured by the MSCEIT, a tool specifically designed for 17 year olds and over. The use of the MSCEIT in a younger than recommended population has however been used in numerous studies (Ciarrochi, Chan, & Bagjar, 2001; Mayer, Caruso, & Salovey, 1999) and may be attributed to the absence of measures targeting adolescents at the time.

A number of researchers have sought to better understand the age related changes in EI. An increasing number of studies suggest that emotional experience and

regulation continue to develop well into the second half of life (Carstensen et al, 2000; Carstensen, Fung, & Charles, 2003; Schaie, 2001). For example, in a study adults aged from 18 to 94 years ($M=55$ years, $SD\ 20.4$), Carstensen and colleagues reported that emotional regulation continues to increase well into old age. Indeed, Schiaie (2001), a leading researcher in the field of cognitive development argues that EI reaches a peak in midlife

Kafetsios (2004) examined the relationship between age and EI by looking at the data in age groups. In the study of 239 adults aged 19 to 66 ($M= 38.7$ years, $SD\ 13.5$) Kafetsios (2004) reported that total EI gradually increased to approximately 50 years of age before it plateaus (refer Table 2.5). In particular, the biggest increase to the mean occurred between the 22 to 29 years age group and the 30 to 39 years age group. While it may be argued that some of the age groups in Kafetsios' study are small and may be unstable estimates, the study does support Derksen, Kramer and Katzko (2002) who similarly reported that mixed EI plateaus in midlife.

Number	N= 105	N= 24	N=62	N=46
Age Band	22-29	30- 39	40-49	50 – 66
Mean total score on MSCEIT	41.8	44.07	44.59	44.13
	(SD 3.59)	(SD 3.11)	(SD 4.79)	(SD 4.6)

Table 2-5 Ability EI and Age Differences

Source: Kafetsios 2001

This is not to say that all ability EI studies report a positive link between EI and age. A number of studies have failed to demonstrate a relationship between the MSCEIT and age (Ciarrochi, Chan, & Bajgar, 2001; Day & Carroll, 2004; Holt, 2007; Palmer et al, 2005;). Day and Carroll (2004) found age (M=21.44 years, SD 4.68) to be significantly related to only one subscale of the MSCEIT and age was negatively related to emotional perception. Furthermore, in a study of university students (Mean age: 22.5, SD 9.6), Holt (2007) reported a non-significant and negative relationship ($r=-.057$) between the total MSCEIT score and age. It is possible that the younger sample used by Day and Carroll (2004) and Holt (2007) limited the ability to detect a relationship.

In summary, regardless of the model, there is some evidence to argue a linear relationship between age and EI until midlife before meeting an asymptote. More specifically, the relationship peaks approximately during the midlife years and then

plateaus (Derksen, Kramer, & Katzko, 2002; Kafestios, 2004). These results suggest that age may play an important role in the predictive nature EI.

2.6 Criticisms of Emotional Intelligence

Before closing this chapter it is important to highlight the overall status of EI. The field is generally divided into an ability or mixed explanation of the construct.

However, while there are many proponents, the study of EI has its share of critics. This includes its tenuous link to Thorndike's social intelligence (Landy, 2005), the conflicting perspectives on the same construct, the irony in reasoning about emotions (Locke, 2005) and its measurement properties (Comte, 2005; Landy, 2005).

Landy's (2005) detailed historical review of the literature led him to conclude the link between EI and social intelligence has been greatly elaborated. Thorndike's (1920) comments concerning social intelligence were made in a popular magazine article in which Thorndike speculated that since intelligence could not fully explain behaviour, the possibility existed that other forms of intelligence may be present. In effect, this speculation was in opposition to Spearman's model of a dominant 'g' factor. Other than this single article, Thorndike did not discuss the existence of social intelligence or otherwise in a scientific publication.

Locke (2005) argued that EI "is an invalid concept" (p. 425). Locke's review proposed the term has become so diffused that it cannot represent a pure construct. In making this assessment Locke may be guilty of including the various definitions offered by the ability and mixed perspectives. However, it seems the case that even within the ability model the picture is less than clear. Locke proposed that Salovey

and Mayer's (1990) definition is overly broad. At a conceptual level Locke argued that emotions are "automatic productions of the subconscious mind" (p. 427) and therefore, it is not possible to reason about emotions.

Landy (2005) and Locke (2005) are united in pointing out that the definition of EI is a moving target and therefore, its measurement tools are also in a state of change. This prevents the ability to rigorously assess the construct. This criticism may be overly harsh given that EI has only existed as a construct since 1990. It is reasonable for the field to change in response to theoretical refinement or clarification (Mayer, Roberts, & Barasade, 2008) and subsequent research findings.

Conte (2005) argues that while ability EI may be distinct from measures of personality, measures of ability such as the MSCEIT have failed to provide incremental validity over measures of general mental ability. Although this may be argued as evidence that ability EI fits within the domain of intelligence, it does illicit some concerns. For example, for a construct to be useful, it must add value in addition to already established constructs (Anastasi, 1998).

Finally, there is also some scepticism on the validity and reliability of some measures of EI. More specifically, (Landy, 2005) argues much of the data on drawn from the MSCEIT, EQ-i and ECI is held in proprietary databases. As a consequence, claims concerning EI cannot be scientifically validated and independently assessed.

2.7 Chapter Summary

This chapter provided some background in order to understand EI. In particular, the field is dominated by two contrasting positions. The ability perspective considers EI to be cognitive in nature whereas in contrast, the mixed model is comprised of a mixture of both cognitive and non-cognitive elements. Within each of these perspectives there is good support for their theoretical or conceptual bases. For example, each of these models reports good internal measurement properties for their respective scales but the evidence for the validity of these measures is more circumspect.

The fact that the overlap between the ability and mixed models is small is further support that each position is unique, but this does not answer which, if either, is emotional intelligence. For example, Landy (2005) and Locke (2005) have both questioned whether we need a new type of intelligence rather than construing EI as intelligence applied within the domain of emotions.

While the ability and mixed perspectives of EI clearly show a conceptual difference, the measurement of the construct is less clear, with some inconsistencies between the concept and methodology. Daus and Ashkanasay (2003) bring some structure to this literature by considering the research to fall into three streams.

- Stream one is the ability perspective of EI assessed via objective performance measures
- Stream two is the ability perspective of EI examined via subjective self report measures

- Stream three is the mixed model interpretation of EI assessed via subjective self report measures

Finally, EI appears to be influenced by gender and age, but the evidence is mixed. Studies using ability and mixed measures of EI tend to report that females have higher EI. However, these studies do not appear to have controlled for age. While there are few studies that have included a wide age distribution, the better studies seem to suggest a link between age and EI. More specifically, EI appears to increase until the mid-forties before they begin to plateau. At the very least this suggests that future studies should control for age differences in the sample or at the very least examine the relationship using age groups.

3 Chapter Three – Emotional Intelligence and Academic Success

For the past two decades research in the area of EI has seen tremendous growth. To some extent, the escalation in interest may be explained by the publication of the popular culture book “Emotional Intelligence” by Goleman (1995). Goleman (1995) suggested that EI is better able than intelligence to explain success in life. While many of Goleman’s claims are repudiated (Ashkanasay & Daus, 2003; Caruso, Mayer, & Salovey, 2002; Mayer, Roberts, & Barasade, 2008), some of his assertions are supported by literature, albeit to a lesser degree.

Historically, predictors of success usually consist of cognitive measures, such as general intelligence or mental ability. However, these predictors tend to leave a considerable amount of variance unexplained. For example, Weschler (1950) was troubled by the “*large residue of unknown elements*” (p. 81) with intelligence tests in explaining test performance. It would seem then that in addition to intelligence, there are other factors that contribute to success.

This chapter focuses on academic success. In particular, it will explore and critically assess the current literature examining EI and intelligence, personality and academic success. Much of the interest in EI is centered on the assumption that EI can increase productivity or predictability of success in the workplace or academic institutions. Therefore, this chapter will firstly begin with an examination of the utility of EI as a predictor of success in a number of domains.

3.1 Emotional Intelligence as a Predictor

There has been increased interest in the ability of EI to explain performance across a variety of settings. These settings tend to be positioned in three broad domains such as health, organisations and education. Research also suggests that the inability to cope may be detrimental to both mental and physical health (Petrides, Perez-Gonzalez, & Furnham, 2007; Schutte et al, 2007). For example, it has been claimed that individuals with a high degree of emotional intelligence are better able to cope and adapt with changing environments (Bar-on, 1997; Goleman, 1998). From an organisational perspective, attention to the role of EI in business has been attributed to two key factors; the need for organisations to strive to understand new ways of improving performance and the need for managers to better understand workplace behavior (Jordan, Ashkanasy, & Ashton-James, 2006). While from an educational perspective, educators see the potential of EI in regards to its association with academic performance (Parker et al, 2004; Schutte et al, 1998) and disruptive or deviant behavior (Petrides Frederickson, & Furnham, 2004).

3.1.1 Health

Most recently, there has been an increased notion that EI may be an important aspect of psychological health. In particular, a number of researchers have proposed a nexus of relationships between EI and a range of health outcomes such as life satisfaction (Bastian, Burns, & Nettelbeck, 2005), stress (Schutte et al, 2002) and coping (Ciarrochi, Dean, & Anderson, 2002).

Life satisfaction refers to a cognitive evaluation or judgment that individuals make about their life (Diener et al, 1985) and is considered one of the most important human values (Salovey & Mayer, 1990). Several studies have examined the relationship between EI and life satisfaction with generally consistent results (Bastian, Burns & Nettlebeck, 2005; Carmeli, Yitzhak-Halevy, & Weisberg, 2009, Ciarrochi, Chan, & Caputi, 2000; Palmer, Donaldson, & Slough, 2002)

A study of first year psychology students by Bastian, Burns and Nettlebeck (2005) examined the effects of EI, (using both ability and trait EI instruments) on a number of life skills. Bastian and colleagues (2005) report that higher EI showed significant correlations with higher life satisfaction, coping ability and lower anxiety.

Furthermore, in a moderately sized study of undergraduate students, Ciarrochi, Chan and Caputi (2000) reported a relationship between EI and life satisfaction ($r=.28$) using an ability model. An interesting feature of this study is that the measure of life satisfaction was broad and included satisfaction with relationships and work situations. Therefore, these findings suggest that the ability to manage and perceive emotions may affect overall positive mood. Similarly, in a smaller study of adults, Palmer, Donaldson and Slough (2002) reported a positive significant correlation ($r=.26, p<0.01$) between overall ability EI and life satisfaction. Law, Wong and Song (2004) examined the incremental validity of EI over personality in predicting life satisfaction. They reported that EI explained an additional 5% of the variance beyond that already explained by personality. This finding is some evidence to support the mixed model position that EI is distinct from personality.

Overall these findings provide empirical support for the notion that EI accounts for individual differences in life satisfaction using both ability and trait EI. This is consistent with Salovey and Mayers (1990) assertion that high EI individuals experience higher levels of well-being.

Interest in mental health issues is currently an important topic with the cost of mental illness to Australian organisations estimated to be billions of dollars. In particular, depression alone is estimated to cost Australian organisations in excess of \$3.5 billion a year.

A number of researchers have established an association between EI and both positive and negative psychological outcomes. It has been argued that high EI may help individuals in avoiding stressful situations (Bar-on, 1997). Moreover, Mathews, Zeidner and Roberts (2002) propose that EI may be more important than intelligence in predicting how individuals will adapt in stressful environments. For example, individuals with the ability to regulate their emotions are better able to detach themselves from stressful situations. Indeed, an extensive literature has suggested that EI is linked to stress and depression in organisational settings (Oginska-Bulik, 2005; Schutte et al, 2002).

Oginska-Bulik (2005) examined the relationship between EI job stress and health, and found higher levels of EI were significantly linked with lower levels of perceived stress. In another study, Ciarrochi, Dean and Anderson (2002) found that some abilities across the four branches of EI were correlated with job stress in a study of university students. More specifically, students that scored higher on management of

others emotions' were better able to cope with stress. Correspondingly, Schutte et al's (2002) study of retail employees suggested that those with higher levels of emotional intelligence were able to maintain positive mood.

Furthermore in series of studies, Petrides and colleagues (2007) examined the relationship between trait EI and a number of health related criteria. The first study of 166 adults, found that after controlling for personality, EI was incrementally associated with less rumination and better coping. In a second, study, Petrides, Perez-Gonzalez and Furnham (2007) reported that trait EI showed criterion and incremental validity, over the Big Five dimensions in predicting dysfunctional attitudes. These findings suggest that even when controlling for personality, trait EI has implications across a range of psychological variables.

Similarly, Schutte and colleagues (2007) conducted a meta-analysis of studies including some 7000 participants, examining the relationship of trait EI and well-being. Schutte et al (2007) reported that high EI was related to better health. More specifically, trait EI was correlated with mental health ($r=.29$) psychosomatic health ($r=.31$) and physical health ($r=.22$). The results of this meta-analysis indicate that a low EI score may indicate an increased risk for the development of health problems.

3.1.2 Organisations

The study of emotions in organisations is a relatively new field. However, research on emotions has flourished with an abundance of conferences, journals and books dedicated to the area. One of the reasons for the meteoric interest is that understanding emotions may provide greater productivity in organisations. For

example, empirical research indicates that higher levels of EI are linked with job satisfaction (Sy, Tram, & O'Hara, 2006; Wong & Law, 2002), group effectiveness (Jordan & Troth, 2004; Quoidbach & Hanseene, 2009), leadership (Kerr et al, 2006; Rosete & Ciarrochi, 2005;) and job performance (Joseph & Newman 2010; Van Rooy & Viswesvaran, 2004; Wong & Law, 2002).

Job satisfaction is the positive attitude an individual has towards their job. It is suggested that individuals with a higher level of EI are more satisfied with their job (Lopes et al, 2006). Yet, there is a relative dearth of studies that have examined the impact of EI on job satisfaction.

However, there is evidence that suggests EI plays a significant role in the work environment. For example, in a study of food service workers, Sy, Tram and O'Hara (2006) reported a significant correlation ($r=.30$) between EI and job satisfaction. Similarly, in a study of nursing staff, Guleryuz et al (2008) reported similar results ($r=.24$). While both these studies were industry specific, Wong and Law (2002) reported a strong positive effect ($r=.41$) between EI and job satisfaction, regardless of the nature of the job.

Organisations are settings that require social interaction between individuals. The interaction between employees is increasing as teamwork becomes more prevalent in organisations (Jordan et al, 2002). Emotional regulation and emotional awareness are key factors affecting the quality of social interactions (Wong & Law, 2002). According to Gardner (1995 p. 22), "accurately determining moods, feelings and other mental states in oneself (intrapersonal intelligence) and in others (interpersonal

intelligence) and using the information as a guide for behaviour” define some key components of EI.

An increasing number of studies have begun to examine the relationship between EI and group effectiveness. Jordan and Troth (2004) reported moderate correlations between EI and group effectiveness, citing that whilst intelligence may be the strongest predictor of performance in individuals, emotions may be more important when dealing with groups. More recently, Quoidbach and Hansenne's (2009) study of nursing teams ($n=421$) established a significant relationship between EI, particularly emotional regulation, and aspects of team performance ($r=.31$). Taken together, these findings suggest that the ability to manage and be aware of emotions in both self and others may affect organisational performance.

Further to the evidence suggesting EI contributes to creating more effective and cohesive team, some researchers have reported that EI and team performance may increase as a function of the time spent together, or as the team matures (Jordan et al 2002). In a study examining the group performance of undergraduate students ($n=448$), Jordan and colleagues (2002) reported that while team performance for low EI teams was initially low, this increased over a five week period such that the team was now able to perform at levels equal to their higher EI counterparts.

Leadership involves the ability to influence people (Daft & Pirola-Merlo, 2009). Successful leaders are those considered to be transformational or charismatic individuals who project visions that inspire and motivate people (Ashkanasy & Daus, 2002; Daft & Pirola-Merlo, 2009). Charismatic leaders appeal to followers at an

emotional level. Leaders harness and direct the power of emotions to improve follower satisfaction, morale, motivation and overall, enhance an organisations effectiveness (Daft & Pirola-Merlo, 2009).

There is a logical and strong connection between EI and leadership (Goleman, 1998; Daus & Ashkansay, 2002; Humphrey, 2002). For example, Humphrey (2002) contends that strong emotional skills result in improved and successful leadership. Moreover, Sternberg (1997) argued that social intelligence is said to be of higher importance than general intelligence in affecting job success in leaders. A number of researchers have proposed that EI is subsumed under the social intelligence umbrella (Bar-on 1997).

A number of researchers have established a strong association between EI and leadership effectiveness. Rosete and Ciarrochi (2005) examined the impact of EI on leadership effectiveness on a sample of middle aged management executives and reported a significant relationship ($r=.26$ $p < .05$) between EI and leadership effectiveness. The study measured effectiveness through a performance rating system, which measured how well the leader achieved business outputs over the financial year.

Similarly, Kerr et al (2006) found a stronger significant correlation ($r=.39$) between supervisor ratings of managers and EI. The importance of EI and leadership was illustrated in a recent study of senior executives. Stein et al (2009) found that high profile executives showed significantly higher total EI scores than the general population. These studies suggest that leaders tend to exhibit high levels of EI.

Therefore it may be beneficial for organisations to develop EI skills within their staff development program.

Taken together these findings support the notion that an individual's EI, may be a key determinant in leadership effectiveness. Moreover, Rosete and Ciarrochi's (2005) study indicated that the effectiveness of a leader translates directly into organisational effectiveness. Therefore, indicating that EI may prove an important tool in the selection and recruitment of leadership roles.

Although research has clearly established that general cognitive ability is the strongest predictor of job performance (Gottfredson, 1998; Ree & Earles, 1992; Schmidt & Hunter, 1998) there still remains a considerable amount of unexplained variance in performance that may be explained by other factors. For example, Sternberg and Wagner (1993) assert that cognitive ability accounts for approximately 5 to 10% of the variance in job performance.

A growing number of studies have shown that EI plays a significant role in predicting job performance (Joseph & Newman, 2010; Lopes et al, 2006; Wong & Law, 2002). In a small study (n=44) of professional and administrative staff, Lopes et al (2006) examined the relationship between job performance and ability EI and reported EI was moderately related to work performance. Similarly, Wong and Law (2002) reported a correlation of .21 between job performance and a trait measure of EI.

Furthermore, in a meta-analysis of 19 independent studies, utilising both trait and ability models, Van Rooy and Viswesvaran (2004), reported an operational validity of

$r=.24$ in predicting job performance in a variety of employment settings. A strong feature of this study is that the authors controlled for the contribution of personality. More specifically, Van Rooy and Viswesvaran (2004) reported moderate to high incremental validity of .14, .17, .18 and .29 for extraversion, emotional stability, agreeableness and openness to experience respectively. However, while still significant the relationship between EI and conscientiousness was weaker (.06).

While supporting the notion that EI predicts job performance Joseph and Newman (2010) propose that when examining the incremental validity of EI that both the model (ability v's mixed) and the method of collection (performance v's self report) must be considered. In a meta-analysis of 171 studies examining the relationship between EI and job performance Joseph and Newman (2010) found that EI reported incremental validity over cognitive intelligence and personality in all classifications of EI. Notably, the study reported that although ability EI showed incremental validity over personality and cognitive intelligence in predicting job performance (performance based ability EI- 1.5% and self report-ability EI - 1.7%) it is only when using a mixed model of EI that substantial increase variance (15.7%) was found. As such concluding that "*mixed models of EI show the greatest promise for generalizable prediction of job performance*" (Joseph & Newman, 2010 p. 72).

3.1.3 Education

Early research on academic success has focused on the impact of cognitive intelligence, such as standardised intelligence tests and the role of the students past performance. However, more recently the increased awareness that non cognitive

factors may impact performance has forged new interest in the education sector. This can be attributed, in part, to a number of factors. First, the theory of multiple intelligence (Gardner, 1993) caught the attention of many educators. This was coupled with the emergence of the popular culture book, “Emotional Intelligence” by Goleman (1995). Goleman’s book argued that EI may be at the core of educational success. Goleman claimed that EI was linked to pro-social behavior and perhaps more famously, quoted that “*EI was as powerful, and at times, more powerful, than IQ*” (Goleman, 1995 p.34).

It has been argued that EI becomes of particular importance in situations that require significant interpersonal interaction (Rode et al, 2007). In attaining an education individuals typically attend school which like organisations, are social environments. Therefore, the ability for an individual to interact and build relationships with those around them is important to everyday activities. .

A number of studies have sought to investigate the relationship between EI and interpersonal relationships in school environments. Brackett, Mayer and Warner (2004) found that lower EI was related to poor quality peer relations. In further work, Brackett et al (2006) conducted a study of 291 university undergraduates and established a link between ability EI and overall social competence. Whilst both samples contained males only, these studies do suggest that individuals lower in EI may have trouble in establishing meaningful social interactions. Further support is reported by Lopes, Salovey and Straus (2003) who found emotional regulation to be correlated with indicators of quality of social interaction. More specifically, Lopes

and colleagues (2003) report a moderate correlation ($r=.27$) between individuals self perception of the quality of their relationships with others and the managing emotions branch of the MSCEIT.

Furthermore, academic institutions can place significant stress on individuals. In particular, the transition from high school to university is particularly stressful (Lecompte, Kaufman, & Rousseeuw, 1983; McInnis, 2001, Tinto, 1975). First year students are faced with significant challenges. On top of adapting to a new environment, students are required to work at a harder level as well as dealing with an increased level of independence and responsibility (McInnis, James, & McNaught, 1995; McKenzie & Schweitzer, 2001). In addition, many students are also required to balance their study with employment.

These challenges can lead to increased levels of stress (Lecompte, Kaufman, & Rousseeuw, 1983). According to Ashkansay et al (2005), EI should augment a person's ability to cope with time pressures and performance anxiety. Clear associations have also been established between emotional intelligence and psychological well-being (see section 3.1.1).

3.2 Academic Success

This section will discuss the predictors of academic success. A number of studies have shown that academic success, as measured by GPA, is related to a multitude of success outcomes over an individual's lifetime. For example, individuals who attain a higher GPA tend to enjoy greater rates of employment and employment success (Battin- Pearson et al, 2000). In contrast, low GPA tends to be associated with more

negative outcomes. For instance, low GPA has been correlated with high suicide (Beer 1992) and increased rates of substance abuse (Balso, Giuliano, & French, 2010; Singleton, 2007).

It will commence with an examination of cognitive predictors of academic success, such as intelligence and student's past performance. Non-cognitive predictors will then be examined, with particular focus on EI as a predictor of student GPA. Firstly, it will begin with a brief background on the emergence of predictors of academic success.

Universities are keenly interested in understanding the predictors of academic success in students. The criteria for entrance into university has undergone some changes over the past 300 years. For example, prestigious institutions such as Harvard, Yale and Princeton initially enrolled students based on their social standing (Karabel, 2005). This practice has given way to a primarily competitive process based on educational achievement. Despite evidence that traditional tests of intelligence typically account for approximately 25% of the variance in academic performance, intelligence remains one of the most important factors in determining academic achievement (Gardner, 1983; Hunter & Hunter, 1984).

Recent empirical research has begun to question the reliance on cognitive factors alone (Rode et al, 2007). Furthermore, an increasing number of institutions are also engaging in additional methods to select students. For example, there has been much debate on the selection process in the highly competitive study of medicine. While some (Koenig, Sireci, & Wiley, 1998) maintain that cognition is at the forefront of

success in medicine, others argue that interpersonal qualities, such as those subsumed under the umbrella of EI, are of equal importance (Mercer & Chiavorili, 2006). The initiative to consider non-cognitive factors for the intake of medical students was in part supported by the notion that certain personal characteristics such as empathy, are required to become successful medical practitioners. For example, it is acknowledged that interpersonal skills enhance a medical practitioners performance (Austin et al, 2007b; Lievens et al 2005; Mercer, 2007; Mercer & Chiavorili, 2006). .

The recognition that interpersonal skills, in addition to the intellectual ability, may be beneficial to the performance of medical practitioner's has resulted in some universities to modifying their selection criteria. In addition to standard university entrance tests, a student's ability is also assessed in the Undergraduate Medicine and Health Sciences Admission Test (UMAT) and a face to face interview. The purpose of the interview is to assess the individual's communication skills and motivation to study medicine, whereas the UMAT tests verbal and non-verbal skill and the student's emotional capacity (Mercer, 2007). Emotions are measured through three facets; identifying emotions and feelings; explaining actions and emotions, and the prediction of feelings, responses and behaviour (Mercer & Chiavaroli, 2006).

The highly competitive entry procedures into law studies has also come under some scrutiny in an attempt to recruit those candidates most likely to succeed. In a longitudinal study that examined the success factors in recruiting law students Shultz and Zedeck (2011) reported that although the LSAT was a good predictor of the first year GPA result, the LSAT was not a good predictor of lawyer competence. In testing new measures Shultz and Zedeck found that a broader array of testing including the

big five personality factors, emotional recognition, situational judgement, optimism and the ability to self monitor variables were a better predictor of professional and academic. For example the correlations between the LSAT and effectiveness ranged from .08 to .12. Whereas correlations between effectiveness factors and a combination of the LSAT and personality factors ranged between .20 and .30 (Shultz & Zedeck, 2011)

Moreover, an expanding body of research suggests that EI may play a pivotal role in predicting academic success (Palmer et al, 2005; Schutte et al, 1998; Song et al, 2010). However, more generally, in the selection of university recruits, predictors of academic success tend to be intelligence, a student's past performance and personality.

3.2.1 Intelligence

Since the early 1900s intelligence has remained a key factor in predicting academic success. Intelligence was viewed as an objective measure to test how individual differences could be used to predict educational outcomes. Consequently, Binet (1905) developed the very first measure of intelligence to measure a child's ability to succeed in school.

Clear links have been established that indicate cognitive intelligence is correlated with academic achievement (Busato, et al, 2000; Harris, 1940; Neisser al, 1996; Sternberg, 1997). In a longitudinal study of 409 European university psychology students, Busato and colleagues (2000) reported a small significant correlation

between intelligence and academic success in a student's first ($r=.15$) and third year of study ($r=.11$).

Ridgell and Loundsbury (2004) report moderate correlations between intelligence and grade point average (GPA; $r=.39$) in their study of British psychology students. Furthermore, in a study of non-discipline specific British undergraduate students, Chamorro-Premuzic and Furham (2008) reported an even stronger correlation (.43) between IQ and GPA.

Despite some inconsistencies in the strength of the relationship, it is recognised that intelligence plays a significant role in predicting academic success. However, the reliance on IQ alone is questioned (Newsome, Day, & Catano, 2000) and the limitations of intelligence in predicting academic success have been recognised for some time. Harris (1940) conducted a comprehensive review of the literature, including 328 studies over a 17 year period in the USA. Harris concluded that while intelligence was shown to predict academic success, it was less capable than using a combination of high school grades and intelligence. Subsequently, the combination of high school grades and general intelligence is generally considered as the student's past performance (Camera & Echternacht, 2000; Harris, 1940).

3.2.2 Students Past Performance

Globally, all graduates of secondary schooling are awarded with a final certificate based on their performance over a set period of time. However, the final certificate may not constitute the final measure of academic success used by universities to determine entry into higher education.

Although sharing a great deal of similarity, secondary school measures of academic success tend to differ slightly across the globe. In the UK, university enrolment is based in part, on the Graduate Certificate Secondary Education (GCSE) and on the Advanced Level General Certificate of Education (A Level). Entrance to university in the USA is relatively similar. While varying slightly across states, admission generally comprises of the student's high school GPA and their performance on a standardised exam, known commonly known as the SAT (Board, 2010).

University admission in Australia is closely aligned with the US model with slight differences between the states and territories. For the majority, enrolment in Queensland universities is based on the student's Overall Position (OP) score. The OP score represents the results of a student's top five subjects plus their result on the Queensland Core Skills (QCS) examination. The QCS represents a state-wide standard test of ability that is sat by all students at the start of their final term in high school. An OP score is scaled 1 (highest score) to 25.

However, the OP process is not the sole entrance criteria for university admission in Queensland. There are a number of reasons for the additional routes to university entrance. Firstly, some high school students choose not to undertake the specified Queensland Tertiary Admission Centre (QTAC) subjects that result in an OP. Second, students may also enter a Queensland university from other states or territories where the OP system is not used. Third, the demographics of university students is undergoing significant change, with universities currently recruiting a large number of mature-age students who do not tend to have an OP. Finally, in addition to

the OP score, some courses specify that enrolment is contingent on an interview, i.e. medical degrees.

As a result of these multiple pathways for university entrance in Queensland, not all students will have an OP score. This presents a major challenge in ensuring all university students are considered equally. In order to calculate a standardised measure for all potential university entrants all students are assigned a tertiary entrance rank (TER). The TER score is generated by QTAC and based on confidential internal schedules.

Nevertheless, despite some differences in the way matriculation scores are calculated, the GCSE, SAT and TER results generally report moderate to strong correlations with measures of cognitive intelligence. For example, while the external exam component of the GCSE is not regarded as an intelligence test, moderate to strong correlations between GCSE and IQ are consistently reported (Deary et al, 2007; Petrides, Frederickson, & Furnham, 2004;). In Britain, the correlation between IQ scores and school performance grades ranges between .4 and .7 (Deary et al, 2009; Mackintosh, 1998;). More specifically, in a large (n=70,000 plus) longitudinal study of British secondary students, Deary et al (2009) reported a correlation of .69 between the overall GCSE and the Cognitive Abilities Test.

There is a scarcity of studies that have examined the relationship between TER and intelligence. Bastian, Burns and Nettelbeck (2005) reported a moderate correlation ($r=.43$ $p<.01$) between TER and intelligence, as measured by Raven's Advanced

Progressive Matrices. Bastian and colleagues (2005) study indicates the TER shares similar correlations to intelligence, as GCSE.

Furthermore, similar to measures of intelligence, high school scores in the US report moderate to strong correlations with academic success. For example, a study commissioned by the US College Board reported a correlation of .47 between SAT and first year GPA (Sackett et al, 2009).

Similarly, in Australia the relationship between high school scores such as TER and academic performance in universities is well recognised (McKenzie, Gow, & Schweitzer, 2004; Mills et al, 2009; Murphy, Papanicolau, & McDowell, 2001). In a longitudinal study of university students across eight faculties (n=682), McKenzie, Gow and Schweitzer (2004) reported that the TER score was significantly correlated ($r=.41$) with academic achievement in the first semester of study. In a three year study, Murphy, Papanicolauou and McDowell (2004) also examined the link between TER and academic performance, by the discipline of study. Murphy and colleagues (2004) found that the strength of correlation between GPA and TER varied by discipline. More specifically, engineering, physical sciences and nursing reported consistently large correlations (ranging from .56 to .54), whereas education and health showed relatively small correlations (.24 to .28 respectively). These findings provide some support for Lewis (2004) who argued that past performance scores tend to be a better predictor of grades for science and engineering courses than social science subjects.

Furthermore, Murphy and colleagues (2004) identified three distinct patterns in their data. Students with high TER score (over 80), showed a weak but statistically significant relationship with GPA ($r=.04$) but no statistically significant relationship was found for students with mid range TER scores. The relationship between GPA and those students with a low TER scores was variable. For example, a negative correlation was found in the 1995 cohort, while a correlation of .48 was found in the 1997 cohort. This suggests the unique make up each cohort is a key factor in the relationship. Similarly, in a study of education students, Dickson, Fleet and Watt (2000) reported that students with a TER score of greater than 80 were significantly more likely to get a higher GPA than those students with a TER score below 80.

Although the utility of matriculation scores in predicting academic success is recognised, there are some limitations. A number of studies have indicated that the ability of matriculation scores to provide incremental validity after accounting for intelligence and personality is limited (Peers & Johnston, 1994; Richardson & Abraham, 2009). A meta-analysis of 20 studies by Peers and Johnston (1994) indicated that A level grades accounted for only 8% variance in explaining academic success. Similarly, in a prospective study of 737 British undergraduate students, Richardson and Abraham (2009) reported that GCSE/A Level explained only 4 to 8% of the variance in GPA. Furthermore, in a study examining the utility of SAT in predicting success, Gieser and Studley (2002) reported that SAT accounted for between 13% and 16% of the variance in GPA. These studies indicate that like cognitive intelligence, the use of students' past performance as a predictor still presents a large amount of unexplained variance in explaining academic success.

In summary, a number of studies have shown that intelligence, or indeed proxy measures of intelligence, such as a student's past performance can predict academic success. However, they do not fully explain academic success. This raises the possibility that, in addition to intelligence and matriculation scores, that non-cognitive factors such as personality and/or EI may play an integral role in influencing an individual's performance (Busato et al, 2000; Chamorro-Premuzic & Furnham, 2003; Di Fabio & Palazzeschi, 2009; Nofle & Robins, 2007 Poropat, 2009).

3.2.3 Personality

In addition to intelligence, the literature has also focused on the role of personality in explaining student success. There are several ways in which personality may be considered. One approach for considering the role of personality is to employ the Big Five framework developed by Costa and McCrae (1992). The authors pooled a large number of studies and extracted five key factors that make up personality; conscientiousness, openness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1992).

A number of studies have examined the relationship between the Big Five and academic success and have reported significant correlations. In a small longitudinal study of undergraduate university students, Chamorro-Premuzic and Furnham (2008) found that the overall personality score was significantly related to academic performance. However, when the relationship was examined by each of the factors only neuroticism (-.35) and conscientiousness (.39) were significant.

Noftle and Robins (2007) conducted a large study ($n=10,497$) examining the relationship between personality and college GPA. They reported that while correlations between personality and GPA were significant the results showed a good deal of variability. As expected high correlations were reported on conscientiousness ($r=.22$), while smaller correlations were reported between GPA and openness ($r=.06$), neuroticism ($r=.04$), agreeableness ($r=.03$) and extraversion ($r=-.02$). Moreover, using multiple regression, Noftle and Robins (2007) also reported that after controlling for SAT and high school GPA, personality added an additional 4% in predicting the students GPA score.

These findings were more recently confirmed by Poropat (2009) who conducted a comprehensive meta-analysis ($n=70,000$ plus) of the five factor model of personality and academic performance. Consistent with previous literature (Chamorro-Premuzic & Furnham, 2008; Noftle & Robins, 2007), Poropat reported significant correlations between conscientiousness and academic performance. A further strength to this study is that these findings were obtained after controlling for intelligence.

3.2.4 Emotional Intelligence

The literature so far has examined the viability of intelligence, students past performance and personality in predicting academic success. The research consistently reports moderate to strong correlations between these measures and academic success. However when examining their predictive validity a large amount of variance is left unexplained.

Most recently, there is increased interest in the notion that EI may be a possible factor that explains performance. Indeed, a number of studies have indicated that EI may predict university GPA (Palmer et al, 2005a; Schutte et al, 1998). In this section the literature examining the use of both ability and trait measures of EI are reviewed to examine how well they explain student success.

3.2.5 The Ability Emotional Intelligence Studies and Academic

Achievement

While the four branch ability model of EI generally shows criterion validity in predicting workplace success, it is less able to explain academic success. Moreover, research based on the four branch ability model has produced some conflicting evidence regarding the relationship between EI and academic success.

In a small study of university students O'Connor Jr and Little (2003) examined the relationship between EI and GPA. The findings of this study suggested a non-significant but small correlation ($r=.08$) between EI and GPA. However, this study had some limitations that may have obscured finding a stronger link. The sample was small ($n=90$) and consisted of a young adult sample ($M=20.4$ years, $SD 1.6$). One possible explanation for the failure to find a stronger link may be the influence of age. Empirically, EI is known to increase with age until the midlife years (Derksen, Kramer, & Katzko, 2001; Kafetsios, 2004; Schaie, 2001). Therefore, given the relatively young mean age of the sample, it is possible EI was in some earlier stage of development. For example, the presence of a linear relationship will weaken the value of a correlation coefficient.

Furthermore, Holt (2007) reported that overall ability EI was not significantly correlated to GPA in another study of American university students. However, a significant relationship was found between GPA and four of the MSCEIT subscales; emotional management (.23), social management (.30), managing branch (.29), emotional reasoning area (.22). This may indicate that only particular aspects of the MSCEIT are positively associated with intelligence.

Maccann and Roberts (2008) propose that it is the response format of EI measures that may influence the results. The MSCEIT is comprised of a variety of test formats including both multiple choice and likert style questioning. In a study of undergraduate students (n=207) Maccann and Roberts (2008) found that in testing the relationship of EI and intelligence only multiple choice response format branches tend to correlate more strongly with intelligence.

In contrast, a number of researchers have reported significant correlations between EI and academic performance (Ashkanasy & Daus, 2003; Di Fabio & Palazzeschi, 2009). In a study of 144 undergraduate students enrolled in a leadership course, Ashkanasy and Dasborough (2003) administered both ability (MSCEIT) and a mixed (WLEIS; Wong & Law 2002) measure of EI to examine the relationship between EI and performance, measured through two written pieces of assessment and a final exam. The results indicated that only ability EI was related to academic performance ($r=.20$). Interestingly, the trait measure resulted in a negative ($r=-.10$) and non significant relationship.

Barchard (2003) reported a correlation of .20 between EI and academic success in predominately female undergraduate students ($n=150$). However, once personality characteristics and cognitive abilities were taken into account this relationship was no longer apparent. In particular, Barchard (2003) reported that cognitive abilities and personality predicted 17% of the variance in explaining student performance. The inclusion of EI did not explain any further variance.

However, a more recent study of high school students (mean age=17.49, SD.66) indicated that EI, from both the ability and trait EI perspective, added incremental variance over and beyond personality and fluid intelligence. Using multiple regression Di Fabio and Palazzeschi (2009) reported intelligence predicted 10% of the variance and personality added a further 5%. The inclusion of an ability measure of EI (MSCEIT) yielded 7% more variance to the model, compared with 6% for a trait model of EI (EQ-i).

3.2.6 Trait Emotional Intelligence Studies

While there are a limited number of studies that establish a relationship between ability EI and academic success, there are many studies using trait/mixed measures of EI (O'Connor Jr & Little, 2003; Parker et al, 2004a; Parker, 2004b; Parker et al, 2005; Schutte et al, 1998; Song et al, 2010).

In a small study ($n=64$) of first year undergraduate students Schutte et al (1998) measured EI at the start of the academic year and found it to be significantly predict grade point average ($r=.32$) at the end of the year. Similarly, O'Connor Jr and Little (2003) and Parker et al (2004a) reported more modest correlations of $r=.23$ and $r=.20$

respectively. These latter studies were based on larger samples suggesting that the correlations may be a better indicator of the relationship.

A further study of 667 high school students by Parker et al (2004b) reported a moderate correlation ($r=.33$) between emotional intelligence (measured via EQ-i Youth) and GPA. In a subsequent study, Parker et al (2005b) studied the impact of EI in students transitioning from high school to university. Parker and colleagues determined academic success by having a GPA of three (i.e. pass) or greater and reported significantly higher EI scores in academically successful students.

Petrides and colleagues (2002) study of British secondary school students ($n=650$) also found significant interactions between EI and overall student performance on the GCSE. However, the interactions were found to be discipline specific. Mathematics and science showed little if any correlations with trait EI, whereas significant interactions were reported between English and trait EI. The authors report that not only were trait EI effects differentially associated with educational subjects, but that EI was more important in students with lower GCSE scores. The data indicated that high trait EI is associated with better academic performance in low IQ individuals. This parallels Carroll's (2004) assertion that individuals who are low on an ability related to performance can draw upon other abilities to increase performance.

Taken together the studies show a clear relationship between trait EI and academic success. However, a common weakness of these studies is they did not control for personality. This has particular relevance for studies that are based on a trait approach to EI, given that some mixed models of EI are criticised for their possible overlap

with personality (Maccan et al, 2003; Roberts, Zeidner, & Matthews, 2001).

Furthermore, all studies failed to control for the influence of general intelligence on academic success.

One way to better understand the contribution of a trait EI measure is to use them in conjunction with a personality measure (Conte, 2005; Landy, 2005). These studies would allow the contribution of each predictor variable to be assessed. For example, van der zee, Thijs & Schake (2002) support the incremental validity of trait EI in predicting success in academic and social life above traditional measures of academic intelligence and personality. However, the study made use of a self devised measure of EI and the sample was relatively small ($n=116$). Nevertheless, more recently, Song et al (2010) provided further empirical evidence of trait EI's ability to predict academic performance. In a study of first year undergraduate students, Song et al (2010) reported that trait EI predicted an additional 3% in explaining GPA after controlling for the Big Five and General Mental Ability. Song and colleagues reported that trait EI added an additional 3% over intelligence and personality in explaining GPA.

However, a small number of studies however were unable to establish a significant correlation between EI and academic success. Newsome, Day and Catano (2000) found essentially no correlation between trait EI and academic success ($r=.01$) among psychology students.

Brackett and Mayer (2003) were also unable to establish a significant correlation using either mixed or ability measures of EI when controlling for personality and

cognitive intelligence. Furthermore, in a study of German school students (mean age= 17.02, SD=0.77) Amelang and Steinmayr (2006) reported that neither trait nor ability models of EI contributed to the prediction of school performance.

The inconsistencies in findings could be attributed to a number of factors. Despite evidence of the developmental nature of EI, the majority of studies failed to control for age. In addition, some samples consisted of a very young and tight age band. For example, the studies of Brackett and Mayer, and Ameland and Steinmayr (2006) consisted of a very young adult sample. Therefore, the inability to find a correlation in these studies may be a consequence of age, as the individuals EI was at a nascent stage.

A number of studies attempted to assess too broad a range of competencies (Austin et al, 2005; Parker et al, 2004a). For example, Newsome, Day and Catano's (2000) sample consisted of students, ranging from first to fourth year students. This has particular relevance as it is argued that as students progress through academic studies their focus changes. A first year student may be exposed to adjusting to a new academic environment, making new relationships and potentially moving apart from parents (Gerdes & Mallinckrodt, 1994). Therefore it is suggested that EI may be of particular importance in a student's first year of university (Austin et al, 2005).

Finally, the large majority of studies have used cross sectional study designs. These designs have two main limitations. The first is that they do not allow causal inferences to be made about the nature of the relationship (Podsakoff, et al 2003; Rindfleisch et al, 2008). For example, does age impact on EI or does EI impact on

age. Second, in self report measures the relationships between variables of interest are susceptible to inflated correlations by common method variance. Common method variance occurs when two or more variables are collected from the same respondents and are measured by the same method to interpret the relationships (Podsakoff et al, 2003; Spector, 2006).

3.3 Summary and Research Hypotheses

There are a number of claims suggesting that EI is linked with better performance (Ashkansy & Daus, 2003; Schutte et al 1998; Song et al, 2010; van der zee, Thijs, & Schake, 2002). In this chapter the evidence was examined in relation to the role of EI across a number of organisational variables (e.g. job satisfaction, teamwork), health and in academic success. In particular, a detailed critique of the literature concerned with EI and academic success was undertaken given this is the area of research for this thesis study.

The main variable that has been used to account for academic success has been intelligence. In addition, the use of the student's past performance in conjunction with intelligence has proven to be a more powerful predictor but nonetheless, these variables together are unable to fully explain the variance in student success (Harris, 1940; Ridgell & Loundsbury, 2004).

In order to try to better explain student success the literature has examined the contribution of personality. There is sufficient evidence for the role played by conscientiousness in student success (Chamorro-Premuzic & Furnham, 2008; Nofle & Robins, 2007). More recently, the role of EI in further extending this literature has

come under scrutiny. The majority of studies that have examined the link between EI and academic success have found some support for such a relationship, irrespective of whether the measure is based on the ability or trait perspective of EI (Ashkanasay & Daus, 2003; Parker et al 2004b, Schutte et al 1998;). However, these studies also have a number of limitations.

The first limitation is that these studies are primarily cross sectional in design and therefore, do not allow some a causal inference to be made of the relationship. A second limitation is that few of the studies using a trait based EI measure have allowed for the role of personality (Schutte et al, 1998). This is particularly important since there is some argument that trait based measures of EI may well overlap with personality (Landy, 2005). Thus, a stronger research design in predicting student success is to use measures of EI and personality. This would allow for a finer assessment of the strength of the contribution (or otherwise) of each variable to the relationship.

A third limitation is that the variables in some studies were based on self report data giving rise to the problem of common method variance. It would be useful to use some objective data collection to limit the possibility of bias (Podsakoff, 2003). Finally, the majority of studies have employed young student samples. Given that that some of the better studies have identified a linear relationship between age and EI, the use of younger samples may not facilitate the identification of the link under investigation.

The aim of this research is to examine the link between trait based EI and academic success in a student sample. More specifically it will aim to address the criticisms made earlier of this research area. The first feature of this study is it will use a longitudinal design to examine the relationship between EI and GPA. Second, the study will include three main predictors; the students TER (as a proxy for intelligence), personality and EI. The use of these variables in a regression model will identify the contribution of each variable in the relationship. A third strength of this study is the collection of subjective and objective data in order to decrease the possibility of bias (Podsakoff, 2003). The fourth strength of this study is that it expects to find age related differences in the relationship between EI and GPA. These expectations are based on two studies (Derksen, Kramer, & Katzko, 2001; Kafetsios, 2004) that have shown that EI increases in a linear pattern until mid life before the relationship reaches a plateau.

The hypotheses to be examined in this study are:

H1: EI will provide incremental variance beyond that explained by TER and personality in accounting for GPA in the young age group.

H2: EI will not provide incremental variance beyond that explained by TER and personality in accounting for GPA in the old age group.

4 Chapter Four - Methodology

4.1 Introduction

The purpose of this chapter is to discuss the methodology for the study. The chapter presents the philosophical basis for the research, an overview of the research design and the procedures for data collection and analysis.

4.2 Research Paradigm

Paradigms refer to the basic set of beliefs or assumptions made about the nature of the world and acquisition of knowledge regarding the world (Burrell & Morgan, 1979). A paradigm can be objective or subjective. Objectivists argue that facts and reality exist independent from human perception. In contrast, subjectivists consider that the world does not exist independently, but is socially constructed (Bunge, 1993). This study will be based on an objectivist paradigm.

Ontology is concerned with the assumptions about the nature of the world, whilst epistemology deals with the acquisition of knowledge about the world (Weber, 1997). Ontological assumptions are a functional data modeling approach which reflects a realist or objective philosophy. Epistemologies can be classified into three categories: critical, interpretive and positive studies (Klein & Myers, 1999). Critical research studies tend to focus on the conflicts in society. Critical studies assume that social reality is historically constituted and that it is produced and reproduced by people. Interpretive studies are based on the assumption that individuals create their own meaning through their interactions with the world. The positivist approach, also

known as empiricism is based on the use of scientific methods that often rely upon quantitative data to act as proxies for knowledge. Positivists assume that reality is objective and therefore, can be described through independently measurable properties. The use of the scientific methods facilitates rigor in quantitative research.

4.3 Research Design

In contrast to many of the studies discussed in the literature review this study will use a longitudinal design. Data will be collected at two time points using a self-report survey and objective records from within the university's records. The study requires participants to complete a survey within the first two weeks of term one 2009 (time one) and in the final two weeks of the same term (time two). The rationale in repeating the full survey is to examine the test retest reliability of the EI measure in particular, since most studies have used a smaller time period to examine the stability of the measure. As an overview of the data collection (see Table 4.3), the participants completed a self report survey at time one and time two and the researcher collected the students TER and GPA scores respectively.

<i>Data collected by</i>	<i>Time 1</i>	<i>Time 2</i>
Participant	Survey	Survey
Researcher	TER	GPA

Table 4-3: An Overview of the Research Design

4.4 Procedures

4.4.1 Sample Selection

The population for the study included all first year undergraduate students studying full-time and part-time at the five regional campuses of CQ University (Rockhampton, Emerald, Gladstone, Mackay, Bundaberg) and students studying via distance education (n=3,220). The student's details were obtained from the student enrolment centre. The centre provided an electronic file that included the student number, age, gender, mode of study (e.g. on campus or flexible delivery mode) and email address. The overall mean age for the population was 29 years old (SD =10.13) and the majority of the population was female (65%).

4.4.2 Data Collection

The data were collected following approval for the study by Human Research Ethics Committee (H09/01-002). A copy of this approval can be found in Appendix A. In addition, permission to contact the participants and send two reminder emails was obtained from the Executive-Director of Corporate Services.

The recruitment of participants was undertaken using two strategies; email and direct contact. All students were contacted by email seeking their participation in the study. In addition, the researcher attended the larger classes at the Rockhampton campus only. Irrespective of the recruitment strategy all students received an invitation letter (Appendix B), an information sheet (Appendix C) and a consent form (Appendix D). The information sheet provided all pertinent details concerning the

study requirements in order to allow participants to make an informed decision. Participants were assured that involvement in the study was voluntary, anonymous and confidential. The consent form alerted participants to the fact that they were granting the researcher access to university records to obtain their TER and GPA score.

All participants could elect to complete the survey online or in hard copy. Less than five percent chose to complete their surveys in hard copy. The participants were also advised that they could elect to receive a statement of findings at the conclusion of the research. In addition, they were informed that a copy of the thesis would also be held in the CQ University library following completion of the study.

In an attempt to maximise the response rate the study was designed with the following features. First, the survey was restricted to the items of core interest only and therefore, this restricted the time burden of participation to approximately 20 minutes. Second, the survey was formatted in an attractive manner. Finally, as research indicates that incentives improve survey return rates (Church, 1993), participants that completed the survey at time one and time two were eligible to win a \$75.00 book voucher. The student number of participants who completed the surveys at both time points were entered into a random draw. The winner was drawn by the Executive Dean of the Faculty Arts, Business, Informatics and Education.

The survey was created and made available to participants via the encrypted web site SurveyMonkey™. The survey was available for a two week period at the start and end of term one 2009. The data was downloaded from SurveyMonkey™ as an

Excel spreadsheet and then imported into SPSS (V17.0) for analysis. In the case of surveys that were completed on paper, these were scored and entered into SPSS by the researcher.

Following the end of term one results the researcher collected the participants GPA from the university's records. The GPA was entered into the data file using the student number to match the data. In order to ensure participant privacy and confidentiality, all the data collected were securely stored electronically on a password protected CQ University server. The hard copy surveys were stored in a locked filing cabinet accessible to the researcher only.

4.4.3 Measures

The survey contained a total of 83 items and a copy of the survey can be found in Appendix E. The first section collected demographic data from the sample. Specifically, this included the student number, age, gender and mode of study (i.e. on campus or flexible delivery mode). The student number was collected for three reasons. Firstly, to match the survey data with the participants TER and GPA scores from the university records. Secondly, to match the time one and time two surveys to facilitate the test retest reliability of the scales. Thirdly, to identify the winner of the incentive prize for participation in the study.

The selection of measures for the key independent variables in this study were selected because they met two key criteria. First, each of the measures demonstrated sound psychometric properties. Second, the selection was based on parsimonious considerations (section 4.4.2) with each measure being widely used and freely

available for research purposes. Third, based on their previous application, all measures were deemed suitable for the current study.

Assessing Emotions Scale

The second section contained the 33 item Assessing Emotions Scale (AES; Schutte et al 1998). The AES is one of the most common mixed measures of EI (Holt, 2007) and as noted in Chapter two exhibits good (.89) internal reliability (Schutte et al, 2008) and sufficient validity (Goldenberg, Matheson, & Mantler, 2006; Kirk, Schutte, & Hine, 2008; Petrides & Furnham, 2000; Saklofske et al, 2007). The AES assesses a person's trait emotional intelligence by using a self-report survey. Sample items include; "*I am aware of my emotions as I experience them*" and "*I like to share my emotions with others*". The AES items are rated on a 5-point likert scale ranging from; 1 = strongly disagree to 5 = strongly agree. The sum of all items constitutes the scale score. A high score on the scale indicates higher emotional intelligence.

Core Self Evaluation Scale

The third section included the Core Self Evaluation Scale (CSES: Judge et al, 2003). There is evidence suggesting a significant overlap between personality and trait EI measures and therefore stronger studies include a measure of personality within their research design. One such measure is the Core Self Evaluation Scale (CSES). The CSES is a broad personality scale which measures four core traits; self esteem, generalised self-efficacy, locus of control and neuroticism (Judge et al, 2003). However, the scale has sufficient unidimensionality to be used as a single scale (Judge et al 2003). The measure consists of 12 items which are rated on a 5 point likert scale

ranging from; 1 = strongly disagree to 5 = strongly agree. Some sample items include; '*I am confident I get the success I deserve in life*' and '*I am filled with doubts about my competence*'. A high score on the scale indicates a positive self concept (Judge 2009).

The CSES scale has shown good internal reliability (.84) and retest reliability (.81) over a one month period (Judge et al, 2003). Confirmatory factor analyses indicates the four traits load on a common factor, which suggests the CSES can be used as a uni-dimensional scale. The factor loadings for the core items range between .55 and .85 (Judge, 2009). The CSES shows moderate correlations with dimensions of the Big Five personality model (conscientiousness $r=.33$, agreeableness $r=.26$, extraversion $r=.41$, openness to experience $r=.27$) (Judge & Hurst, 2008).

Social Desirability Scale

The final section of the survey contained the Marlowe-Crowne Social Desirability Scale (MC-SDS; Crowne & Marlowe, 1960). As social desirability may influence trait EI, the MC-SDS will be used as control variable. The MC-SDS consists of 33 items that cover ordinary behaviours that are considered desirable in society. For example, "*I never hesitate to go out of my way to help someone in trouble*", and "*No matter who I am talking to I am always a good listener*". Respondents select whether the statement is true or false in their case. Total scores range from 33 to 66 with higher scores indicating a greater predisposition for responding in a socially desirable way. The Kuder-Richardson reliability for the MC-SDS is reported to be .88 and the

test retest is reported to be .89 (Crowne & Marlowe, 1960). The MC-SDS is one of the most widely used social desirability measures (Loo & Loewin, 2004).

Tertiary Entrance Rank (TER)

The final independent variable is the participants TER. The TER is used as a proxy measure for intelligence and represents an objective measure of a student's past performance. The TER is a widely used predictor of academic performance (Muphy, Papanicolau, & McDowel, 2001; McKenzie, Gow, & Schweitzer, 2004; Mills et al, 2009). The TER is represented by a value between 0 – 99, with higher scores indicating stronger academic performance.

Grade Point Average (GPA)

The dependent variable in this study is academic success and this variable is represented by the student's grade point average (GPA). The GPA is routinely used as a criterion measure of academic success (Barchard, 2003; Bastian, Burns, & Nettelbeck, 2005; Di Fabio & Palazzeschi, 2009; Holt, 2007; Parker et al, 2004a; Song et al, 2010). GPA scores range from; 0 - Fail or Withdrawn Fail, 2 - Pass Terminating, 3 - Supplementary Pass or Pass Conceded, 4 - Pass, 5 - Credit, 6 – Distinction, and 7 - High Distinction.

4.4.4 Data Analysis Strategy

Sample Screening

A total of 352 students responded to the survey and this was approximately 11% of the possible student population. However, a number of records were discarded for the

following reasons. First, 38 students dropped out of the course before the end of term one and therefore, a GPA could not be calculated. Second, 18 students did not complete the EI scale at time one. Third, 22 students did not supply a valid student number, preventing the TER and GPA from being obtained, and one individual completed the survey twice at time one. Finally, a further 88 students were removed from the data set as they did not have a TER score. This comprised of 21 students who were high school students enrolled in pre-university classes, 44 students who were enrolled in preparatory university classes and 23 students who entered university through special enrolment (e.g. via music audition). The final sample comprised of 185 students and is described in Chapter Five.

Data Screening and Preparation

The data file collected via SurveyMonkey™ were checked to ensure that the data were not corrupted during the download and in addition, that the data were not damaged when imported into SPSS. The data collected was screened to ensure the integrity of the data prior to analyses. As such, all data were screened to ensure all values were within the expected range.

Scale scores for each of the variables were computed using SPSS. The distributions for each scale were examined for normality to ensure the assumptions underlying the use of inferential statistics were not violated. Indicators of normality were assessed by examining skewness, kurtosis and the Sharpiro-Wilk test statistic.

Data Analysis Procedures

A number of statistical procedures were used to examine the data. First, descriptive statistics were computed for all variables. Cronbach alpha was calculated to determine the internal reliability for each of the scales.

The correlations between the variables of interest were examined to ensure the relationship between the variables was not excessive. This is especially important given that high correlations may result in multicollinearity. The presence of multicollinearity in regression models may result in unstable estimates (Tabachnick & Fidell, 2001).

Hierarchical regression was employed to test the research hypotheses. Hierarchical regression was selected because it allows the contribution of each independent variable to be evaluated as it is entered into the model. Thus, the contribution of EI as distinct from other predictors may be assessed. Step one in the model included the control variables of gender and social desirability (MC-SDS). At step two, TER is entered into the model, followed by personality (CSES) and then EI (AES) at step three and four respectively.

The hypotheses are testing age related differences and this expectation is literature based. The correlation between age and EI in this sample was .15 ($p < .01$). This small overall correlation may indicate that any relationship is obscured by the wide age range in this sample. Indeed, the better studies suggest that EI increases until approximately 35 to 45 years of age before leveling off (Derksen, Kramer, & Kratzko, 2001; Kafetosis, 2004).

To decide where to split the data in order to create two age categories, a scatter plot was used to examine the distribution between age and AES (figure 4.1). The plot suggests that 35 years of age may be used as a cut-off point to split the sample. Applying this criterion suggests a positive relationship for those less than 35 years of age and a negative relationship for the older group.

To test these expectations two age groups were created; the 'young' group was made up of participants < 35 years of age (n =147) and the 'old' group was ≥ 35 years of age (n = 38). The correlation between these age groups and EI was .20 ($p < .05$) and -.24 respectively. These results support the expectation of age related differences in EI and justify the need to test the two hypotheses.

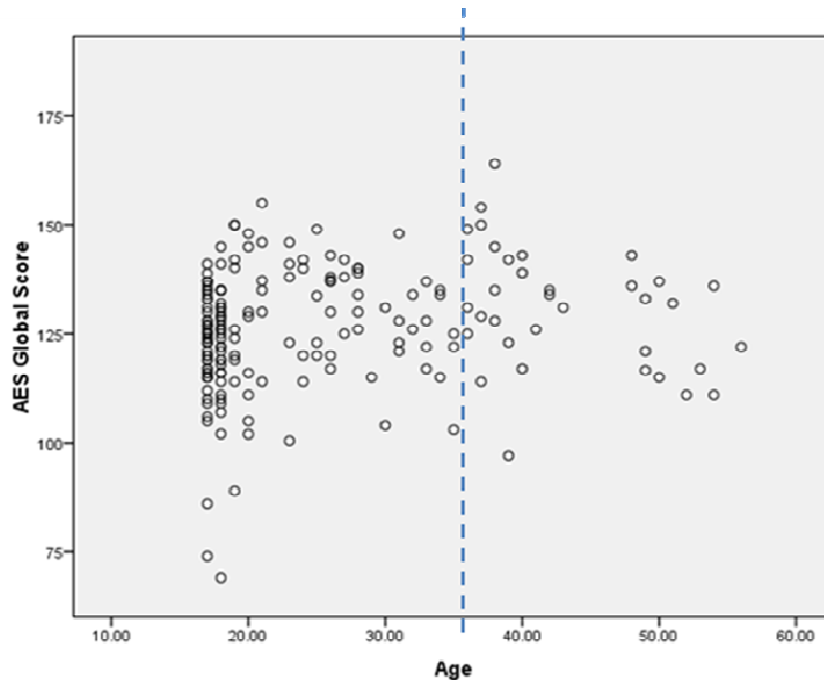


Figure 4-1 The Relationship between Emotional Intelligence and Age

5 Chapter Five – Results

5.1 Descriptive Characteristics of the Sample

A total of 352 responses were obtained and of these 185 students were deemed suitable for use within the study. The final sample obtained was considered to be similar to the population in terms of age, gender and mode of study. The obtained sample consisted of 75% female and 25% male and this is similar to the population of undergraduate students enrolled at CQU in 2009 (65% female and 35% males). The mean age for the obtained sample was 25.5.1 (SD=10.28) and ranged from 17 to 56 years. This compares well with the mean age of 28.81 (SD=10.13) in the student population for first year students.

Of the total number of respondents 52.5% were enrolled on-campus and 47.5 % were enrolled in a flexible delivery mode. The population consisted of 43% on-campus and 57% flexible students. The slightly higher response rate from on-campus students may be attributed to the strategy of visiting large on-campus classes to increase response rate.

The mean TER score was 79.14 and this compares favourably with the mean TER in Queensland of 78.5 for 2009 (QTAC 2009). The mean GPA for the obtained sample was 5.13. This is a little higher than a mean GPA of 4.53 for all Queensland domestic university students (QTAC 2009).

5.2 Descriptive Characteristics and Scale Reliability

The descriptive statistics and alpha reliability for the AES, CSES and MC-SDS is shown in table 5.1. With the exception of the AES, TER and GPA, the scale distributions do not show excessive skewness or kurtosis. The general rule of thumb, is that distribution should be within $-.1$ and 1 . The AES, TER and GPA showed a slightly elevated skewness and kurtosis and Shapiro Wilk statistic confirmed a departure from normality. However, the obtained mean scores were within the expected range and therefore considered normal. Moreover, given the moderate to large sample size the risk of underestimation of variance was considered minimal and therefore, the data was not centered (Tabacnick & Fidell, 2001).

The reliability for the scales ranged from satisfactory for the MC-SDS (0.71) to good for the AES ($.87$) and the CSES ($.81$). The MC-SDS is lower than the $.84$ reported by Judge et al (2003), but exceeds Nunnally's (1978) criterion of $\geq .70$ and is within the range ($.64-.88$) generally reported among student samples (Andrews & Meyer, 2003; Fraboni & Cooper, 1989; Reynolds, 1982).

Test re-test reliability for the AES was $.79$ ($p < .01$) over a ten week period and this is consistent with $.78$ obtained over a two week period by Schutte et al (1998). The test re-test reliability of the CSES was $.76$ ($p < .01$) and is below the $.81$ reported by Judge et al (2003) over a four week period. Overall, the test-retest of these measures is acceptable.

<i>Item</i>	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>		<i>Skewness</i>	<i>Kurtosis</i>	<i>Shapiro-Wilk</i>	<i>Cronbach</i>
				<i>Min</i>	<i>Max</i>				
Emotional Intelligence	185	126.41	13.95	69	164	-.72	1.99	.00	.87
Personality	185	41.45	6.76	20	56	-.22	-.30	.11	.81
Social Desirability	176	17.38	4.66	4	30	-.06	-.28	.36	.71
Tertiary Entrance Rank	185	79.14	10.24	62	99	.03	-1.15	.00	
Grade Point Average	185	5.12	1.36	1	7	-1.12	1.11	.00	

Table 5-1: Descriptive Statistics for Emotional Intelligence, Personality, Social Desirability, Tertiary Entrance Rank and Grade Point Average

5.3 Correlation Statistics

Pearson's correlations were computed to provide an indication of the strength and direction of the relationships between the main study variables (table 5.2). A particular issue in the use of regression is that the variables should not be too highly correlated. When variables are highly correlated this may result in multi-collinearity (Field, 2009).

Emotional intelligence was positively correlated with personality as measured by CSES ($r=.57$ $p<.01$), social desirability ($r=.31$ $p<.01$) and GPA ($r=.19$ $p<.01$) but not with TER. Personality was positively correlated with social desirability ($r=.30$ $p<.01$) but not with TER ($r=.07$). The correlation found between personality and GPA was $r=.19$ ($p<.01$). TER showed no significant correlation with social desirability ($r=.08$). As expected TER was found to be strongly correlated with GPA ($r=.52$ $p<.01$). Overall the correlations ranged between .05 and .57.

In terms of the relationship between the demographic variables, the study revealed a small statistically significant correlation between EI and age ($r=.15$). TER and GPA both showed positive associations with age (.28 and .20 respectively). No statistically significant correlations were reported between personality, social desirability and the demographic variables. These correlations are not sufficiently large to be concerned about multicollinearity in the data (Field, 2009; Tabachnick & Fidell, 2001). However, the multicollinearity in the hierarchical regression will be checked.

The mean EI for males was 124.81 (SD=1.9) and 126.93 (SD=1.2) for females. The effect sizes (partial η^2) for males and females were small (.004) and not

significant, suggesting that the samples could be combined. These values were not significantly different. Levene's test for equality of variance ($F=1.79$ $p>.05$) the assumption of homogeneity of variances was not violated.

	Variable	n	1	2	3	4	5	6
1	Age	185						
2.	Gender	185	.56					
3.	Emotional Intelligence	185	.15*	.07				
4.	Personality	185	.01	-.14	.57**			
5	Social Desirability	176	.07	.04	.31**	.30**		
6.	Tertiary Entrance Rank	185	.28**	.04	.05	.07	.08	
7.	Grade Point Average	185	.20*	.01	.19**	.19**	.10	.52**

Table 5-2: Pearson Correlation Matrix between Age, Gender, Emotional Intelligence, Personality, Social Desirability, TER and GPA

**significant at the 0.05 level (2 tailed); **significant at the 0.01 level (2 tailed)*

5.4 Regression Analysis

Table 5.3 reports the results of a hierarchical multiple regression concerning hypothesis one. At step one the control variables gender and social desirability were entered and accounted for 2% of the variance. At step two, TER was entered into the model. The overall model became significant $F(3,137) 22.05, p < .01$ and explained an additional 31% (Total $R^2 = .33, p < .01$). The inclusion of personality at step three was not significant and did not provide any additional variance. The inclusion of emotional intelligence at step four explained an additional 2% of the variance. The final model was found to be significant $F(5,135) 14.62 p < .01$ and explained a total of 33% of the variance in GPA. Therefore, these results support hypothesis one. In the young age group, EI provided incremental variance in account for GPA beyond that explained by TER and personality.

Predictors	Step 1 β	Step 2 β	Step 3 β	Step 4 β
Gender	.00	.04	.06	.04
Social	.13	.11	.07	.05
Tertiary		.56**	.55**	.57**
Personality			.09	.01
Emotional				.17*
Change R^2	.02	.31**	.01	.02*
R^2	.02	.33	.34	.36
F (df)	1.24(2,139)	22.05**(3,137)	16.87**(4,136)	14.63*(5,135)

**significant at the 0.05 level (2 tailed); **significant at the 0.01 level (2 tailed)*

Table 5-3: Hierarchical regression analyses of Grade Point Average for Tertiary Entrance Rank, Personality and Emotional Intelligence (n=140)

The model was examined to check for multicollinearity between the predictors. The VIF tolerance values were above .10 and below 10. These statistics indicated that multicollinearity is not a concern in the data. In addition, the Durbin-Watson statistic (2.34) suggests the model is free of autocorrelation (Field, 2009).

Hierarchical regression was also employed to test the second hypothesis. At step one, the control variables failed to explain any of the variance in GPA. The inclusion of TER at step two resulted in the model explaining 10% of the variance, however, the model remained not significant. At step three, the inclusion of personality

accounted for an additional 1% (Total $R^2 = .11$, $p < .05$) but the addition of the EI was not significant (Total $R^2 = .01$). Therefore, the results support hypothesis two. In the older age group, EI did not provide incremental variance in account for GPA beyond that explained by TER and personality.

Predictors	Step 1 β	Step 2 β	Step 3 β	Step 4 β
Gender	-.02	-.14	-.14	-.10
Social Desirability	-.04	-.09	-.13	-.12
Tertiary Entrance		.34	.37*	.42*
Personality			.34*	.47
Emotional				-.176
Change R^2	.00	.10	.12*	.01
R^2	.00	.10	.22	.23
F (df)	.03(2,35)	1.21(3,33)	2.14(4,32)	1.75 (5,31)

**significant at the 0.05 level (2 tailed) **significant at the 0.01 level (2 tailed)*

Table 5-4: Hierarchical regression analyses of GPA for TER, Personality and EI (N=36)

The model was examined to check for multicollinearity. The VIF tolerance values were above .10 and below 10. These statistics indicated that multicollinearity is not a concern in the data. Furthermore, the model reported a Durbin-Watson score of 2.30 suggesting the model is free of autocorrelation (Field, 2009).

5.5 Conclusion

This chapter reported the descriptive and measurement components for this study. Hierarchical regression analysis was conducted to test the incremental variance of EI in two samples; young and older age group. The study using a younger sample demonstrated that EI provided incremental variance in accounting for GPA beyond that explained by TER and personality. The findings will be discussed in the following chapter.

6 Chapter Six – Discussion and Conclusion

6.1 Introduction

Emotional intelligence is a relatively new construct and as is the case with new fields of study, there are competing approaches that seek to explain the construct and its usefulness. There are two main approaches to understanding EI (Speilberger 2004), but even within these approaches there are conflicting results. The aim of this study was not concerned with whether EI is best conceptualised as an ability or by a combination of other attributes. Instead, it had two main goals aimed at addressing some limitations in the literature. The first goal was to examine a common criticism of the mixed model approach and the second, to better understand the relationship between age and EI.

A central argument of the mixed model approach is that EI is comprised of a mixture of cognitive and non-cognitive abilities that may include aspects of personality (Matthews, Zeidner & Roberts 2001). Indeed, the notion that mixed models may include personality is a common criticism made by the ability theorists (Mayer, Salovey & Caruso 2000). The second issue is that both the ability and mixed models of EI are non-specific regarding the role of age. Thus, it has been unclear if age is related to EI in a linear, curvilinear or some other manner.

The main contribution of this study is that it has provided some answers to these two gaps in the literature. First, the study addressed a methodological weakness within mixed model studies (Landy 2005) by including both a measure of EI and

personality to determine the relative strengths of these variables in explaining GPA. Second, it divided the sample into two age groups to obtain a finer grained analysis of age and EI. The purpose of this chapter is to discuss the results of the study within the context of literature. The significance of the findings will be discussed, including the strengths and limitations of the study. Finally, some recommendations for future studies will be offered.

6.2 *Research Findings*

The main aim of this research was to examine the relationship between a mixed model of EI and academic success. However, in response to criticism that mixed EI is essentially a measure of personality (Conte 2005; Landy 2005; Locke 2005) this study employed both measures into the model. Furthermore, the relationship between age and EI is not clear and therefore, this study tested two age dependent hypothesis concerning the link between EI and academic success. The findings of this study support the proposed hypotheses regarding the influence of EI on academic success. EI was shown to be a unique predictor of academic success in young university students, while EI did not explain any additional variance in older students. Thus, these results support the notion that age moderates EI. The study, however, did not establish a relationship between gender, social desirability and EI. In contrast to some studies (Van Rooy, Alonso & Viswesvaran 2005; Brackett et al. 2006) the results of this study found that neither gender or social desirability, significantly influenced EI regardless of age.

The following section will begin with a discussion of the findings obtained in this study. Firstly, the role of age on EI will be discussed. This will be followed by a discussion on the relationship between EI and academic success, with a particular focus on the incremental validity of EI. Evidence supporting a differentiation between EI and personality as measured through the CSES will also be presented.

6.2.1 Emotional Intelligence and Age

The role of age on EI is loosely addressed in the literature. The disparate findings seem to be a function of treating age and EI in a linear relationship. As argued in Chapter two there is empirical evidence that the influence of EI may begin to plateau in midlife (Derksen, Kramer & Katzko 2002; Kafetsios 2004). The results obtained in this study further strengthen this position and illustrate the moderating effect of age on EI. A number of researchers propose that emotional intelligence will increase with age (Baron-1997; Mayer, Salovey & Caruso). Indeed, the development of EI through adulthood is a fundamental premise of the ability model of EI. Therefore, both theoretically and empirically it was expected that age would be correlated with EI.

Using the total sample, a small positive correlation was found between age and EI (.15). However, given the literature based argument that EI may not be a linear relationship the data was examined using two age bands. Inspection of the data revealed a positive and stronger correlation (.20) in the younger age group ($M = 21.00$ years, $SD = 5.04$). These findings are consistent with Mayer, Caurso and Salovey (2000) and Parker et al (2005) who reported significant positive correlations between age and EI in their studies of young adults. In contrast, the relationship between age in

the older cohort ($M = 42.55$ years, $SD = 6.61$) showed a negative correlation (-0.24) with EI.

Moreover, the studies of Derken, Kramer & Katzko and Kafetisos (2004) reported that EI increases with age into mid-adulthood and then plateaus. Similarly, in this study, the findings found in the older sample corroborate the results of other studies consisting of older adult samples (Goldenberg, Matheson & Mantler 2006). More specifically, Goldenberg, Matheson and Mantler (2006) found no age related differences in their study of university students.

However, these findings are contrary to some research which reports a linear relationship between age and EI (Mayer, Causo & Salovey 2000; Cartensen et al 2000). One possible explanation may be that only certain emotional capabilities increase in later years. For example, while Cartensen et al (2000) argued that the emotions continue to increase through to very late adulthood, the study only considered emotional regulation. Thus, finding suggests that only certain aspects of emotions increase with age, while others may decrease. Moreover, although the study of Mayer, Causo and Salovey (2000) reported that older adults tend to score much higher, the study only measured certain aspects of EI.

6.2.2 Emotional Intelligence and Academic Success

In both ability and mixed model studies there is clear empirical evidence showing a positive association between EI and academic success (Schutte et al 1998; O'Connor & Little 2003; Barchard 2003; Parker et al 2004a; Parker et al 2004b; Parker et al

2005; Song et al 2010). Consistent with this expectation a small significant correlation (.19) was found between EI and GPA within this study.

A number of studies have examined the relationship between EI and academic success, but relatively few have investigated the incremental validity of EI. Therefore, to address this gap in the literature, the incremental validity of EI was considered in terms of whether EI predicted GPA, after controlling for intelligence and personality.

Furthermore, given the influence of age on EI (see section 2.4.2) the study tested two hypotheses. The first hypothesis proposed that EI predicts academic success beyond that explained by intelligence and personality in accounting for GPA in the young age group. The results of this study supported this hypothesis, showing that EI accounts for 2% of the variance in GPA for first year university students. This finding is consistent with a number of studies. After controlling for intelligence and personality, Fabio and Palazzeschi (2010) reported the EQ-i accounted for 6% of the variance in their study of high school students ($M=17.49$ years; $SD=.66$). Similarly, Song et al (2009) reported that after controlling for intelligence and personality, mixed model EI predicted 3% of the variance in their study of young adults ($M=21$, $SD 1.00$).

The second hypothesis proposed that EI would not provide incremental variance beyond that explained by TER and personality in accounting for GPA in the older age group. The results of this study confirmed this hypothesis and corroborate the findings of Barchard (2003) who similarly reported that EI is not a unique predictor of

academic success. In comparing this study with Barchard's (2003), the sample was relatively similar in terms of mean age, and therefore lends further support to the argument that age influences EI.

6.2.3 Emotional Intelligence and Personality

The literature indicated there is some concern over the overlap between EI and personality (Roberts, Zeidner & Mathews 2001; Maccan et al 2003; Landy 2005). Indeed, the results obtained in this study indicated a significant moderate correlation between personality and trait EI (.57).

The present study corroborates the findings of Schutte et al (1998) and Brackett and Mayer (2003) who similarly report moderate correlations between the AES and personality. Although it is recognised that the correlations in this study may be moderately high, they are not so high as to make the construct redundant. This notion appears to be supported by Brackett and Mayer (2003) who reported that although mixed models of EI are correlated with personality, EI appears to be one dimension of personality that is not part of the Big Five (p.9).

The findings obtained within this study, could be interpreted as evidence that trait EI and personality represent two distinct constructs. Petrides and colleagues (2007) proposed that while mixed model EI fits within the hierarchy of personality, it is more than pure personality. As noted earlier, the results obtained from the regression analysis in this study found that after controlling for personality, emotional intelligence predicts academic success in the younger age group. Thus, the increase in variance explained, suggests that EI is assessing something different to personality.

These findings are consistent with Song et al (2010) and Fabio and Palazzeschi (2010) who similarly found that after controlling for personality, trait EI accounted for additional variance in explaining GPA.

6.2.4 Intelligence and Academic Success

There is strong evidence supporting the capacity of intelligence to predict academic success (Harris 1940; Sternberg 1997). However, the notion that non-cognitive factors may also predict success has also garnered significant support (Gardner 1983; Neisser et al 1996).

Surprisingly, the results of the study demonstrate that the benefits of intelligence on academic success was stronger among younger adults. In the younger sample, the results obtained in the study indicated that intelligence predicted 31% of the variance in academic success. Thus, supporting the strong empirical evidence linking intelligence to academic success (Harris 1940). The results of this study are consistent with the expectations that intelligence predicts approximately 25% of the variance in academic success (Gardner 1983; Hunter & Hunter 1984). However, the second model indicated that intelligence, was not a statistically significant predictor of academic success ($R^2 = .10$).

Although the study did not employ a pure intelligence measure, the use of the TER as a proxy measure of intelligence is commonly adopted in research studies (Barchard 2003; Bastian, Burns 2005). Furthermore, Bastian, Burns and Nettlebeck (2005) reported a moderate to strong correlation between TER and intelligence among young university students. One possible explanation for the age related differences in the

power of intelligence to explain GPA is that TER may not be homogeneous between the two age groups in this study.

All university students have a TER, however this value is estimated using different criteria depending on whether the student is a Queensland state based school leaver or a mature aged student (see chapter 3). For school leavers the TER is made up of objective indicators; that is, a direct translation of results on a standardised test and past performance. In contrast for mature students the TER is calculated using a number of subjective measures. For example, mature age students TER is calculated via Queensland Tertiary Admissions Centre (QTACT) schedules. These schedules are based on an assessment of the individual's employment experience, personal competencies and past qualifications. Thus, the TER for non-school leavers is not based on the same criteria as school leavers, so accurate direct comparisons cannot be made.

A second reason for TER failing to explain much of the variance in GPA may simply be the small sample size in the older age group. Future studies should try to replicate this finding using a larger and representative sample.

6.2.5 Personality and Academic Success

A number of researchers have established a positive association between personality and academic success. For example, Nofle and Robins (2007) reported that personality, measured by the Big Five contributed an additional 4% in explaining academic success.

In contrast to this expectation, the inclusion of personality within the model did not explain any further variance for the younger age group. A possible explanation for the inconsistent findings may lie in the sample. Although the mean age ($M=19.00$ years, $SD\ 1.51$) of the participants in Nofle and Robins study (2007) was relatively similar to this study, the sample consisted of students enrolled in a psychology major. Thus, it could be reasonably argued that homogeneity of the sample may have influenced the result.

For the older participants in this study, the data showed that personality is more important in explaining GPA by added an additional 12% of the variance. This finding is consistent with a number of researchers who report personality is a unique predictor of academic success (Chamorro-Premuzic & Furham 2008). These findings suggest that personality is only a predictor of academic success for older students. One possible explanation for this may be that older persons are more committed and motivated to learn and therefore, draw heavily from non-cognitive factors (Nofle & Robins 2007). For example, within the Big Five, conscientiousness is considered the most dominant predictor of academic success (Nofle & Robins 2007; Chamorro-Premuzic & Furnham 2008; Poropat 2009). Although the CSES is uni-dimensional it does show moderate correlations with conscientiousness.

6.3 Strengths and Weaknesses of the Present Study

There are a number of strengths in this study, but at the same time there are also some limitations to the study. Thus both the strengths and weaknesses of the study need to be considered in evaluating the results.

The first strength of this study is that it addressed the common criticism of mixed model approaches to EI, that EI is merely personality (Landy 2005). This study included both personality and EI into the model in order to examine the predictive ability of each variable. The finding from the first hypothesis that EI was able to explain additional variance beyond that explained by personality suggests that EI is a separate construct than personality.

A second strength of the study is that it has shed some light on the association between age and EI by not assuming the variables have a linear relationship. Based on the scatter-plot of the sample, the data suggested EI and age are linked until about 35 years of age. By creating two age groups, the results better illustrate the role that age plays in understanding EI.

This study also made use of a longitudinal design in contrast to the more common cross sectional design. These latter designs are unable to argue a causal relationship between the independent and dependant variables (Rindfleisch et al 2008). It is the case that in this instance the time period between data collection at time 1 and time 2 amounted to several weeks only. Thus, the amount of developmental ‘maturity’ during this period is rather limited. However, the collection at these time points of both subjective and objective data assists to limit the likelihood of common method variance being a problem in the results (Podsakoff et al 2003). Common method variance results in the inflation of reported correlations and may occur when two or more variables are collected from the same respondents, using a self report format at a single point in time (Podsakoff et al 2003).

A fourth strength in this study is that the results were controlling for the possibility of bias by using a measure of social desirability (Fisher 2000). Self report measures are typically open to the possibility of response bias given respondents may choose to answer in accordance with social expectations. Finally, all the scales used in the study reported good measurement properties. In addition, the measure of EI (AES) employed in this study was also found to have good test-retest reliability over a ten week period. This finding obtained with a larger sample and over a longer period supports the coefficient reported by Schutte et al (1998).

The design of the study employed a number of methodological features to address the potential issues associated with cross sectional studies using self report data. However, the possibility still exists that the data are biased in some way. It is recommended that future studies collect both performance (objective) and self report measures of EI.

A second limitation is the sample size. While the overall sample was respectable, the samples subjected to regression modelling were smaller. As a rule of thumb Tabacknick and Fidell (2001) suggest that the ratio of cases to variables be about 10:1. While the younger age group met this criterion, this ratio was not met in the older age group. The results for the second hypothesis, which argued that EI would not predict academic success in the older sample, may be subject to type one error, given that the insufficient ratio to variables may have resulted in the null hypotheses being incorrectly rejected. Nevertheless, future studies using much larger samples should aim to replicate these results.

A third limitation is that the data were obtained with students drawn from one regional university during their first term of study only. Therefore, it is not known whether EI can predict GPA over a longer time period or whether the predictive value of EI can be found in other student groups. Future studies should employ heterogeneous samples in order to test the results from this study.

Finally, the test selected to operationalize personality was the Core Self Evaluation Scale (Judge et al 2003). The CSES is a broad personality measure (Judge et al 2003) recommended as a control in Self Report EI studies (Kluemper 2008). It would be beneficial for future studies to also include an additional measure of personality, such as the Big Five Inventory (John, et al 1991). The BFI measures five dimensions of personality; extraversion, agreeableness, conscientiousness, neuroticism and openness and therefore would better able to test the divergent and incremental validity in relationship to EI.

6.4 Recommendations

In addition to the recommendations already listed in the previous section, future studies should seek to replicate these results using ability measures of EI or other mixed model measures of EI. This would allow a better assessment of the relationship between EI measures and academic success.

Similarly, in this study the CSES provided an assessment of personality. This measure was selected because it is brief and correlates well with other measures of personality (Bono & Judge 2003). However, future research may also benefit from the inclusion of the Big Five personality measure (Landy 2005). The inclusion of the

Big Five variables may provide a clearer understanding of the role played by each dimension with EI.

6.5 Conclusions

There is little debate that intelligence is a good predictor of GPA. However, the aim of this study was to examine the contribution of EI in explaining GPA. In particular, the study addressed a conceptual issue in the literature by testing the criticism that mixed models of EI are essentially measuring personality (Landy 2005; Locke 2005). Whether EI and personality are the same construct was tested by including both measures in a regression model to determine the efficacy of both variables to explain GPA after cognitive intelligence. More specifically, the study examined the incremental validity of a trait EI to academic success. In particular, the study tested two hypotheses that proposed the relationship may be moderated by age. Well designed studies (Derksen, Kramer & Katzko 2001; Kafetsios 2004) and the present data suggested EI and age are related until the mid life period.

The results suggested that in a young adult sample (<35 years) EI was found to provide incremental validity over and beyond intelligence and personality in predicting academic success. Moreover, when the model was repeated using an older sample, EI failed to provide incremental validity in predicting academic success. Therefore, the results suggest that for adults up to the age of 35 EI plays a significant role in predicting academic success but not for adults aged over 35 years old.

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Appendix A – Ethical Clearance

Appendix B

Letter of Invitation

I am writing to invite you to participate in a survey as part of my Masters degree. The research aims to investigate the relationship of emotional intelligence and academic success within higher education in Australia.

I appreciate you undertaking the survey and as a token of appreciation for your time all completed surveys are eligible to **win a \$75.00** book voucher drawn by the Executive Dean. The attached information sheet will provide you with further details concerning this study. Ethical clearance has been granted for this study (H09/01-002). The survey will need to be taken twice: at the start and end of Term 1. The survey can be undertaken online at a time most convenient to yourself via the link shown below, or you may choose to complete a hardcopy survey of the survey. Phase 1 of the survey needs to be completed by 16th March 2009. A separate email will be sent to you closer to the end of Term 2 for Phase 2. The expected time to complete each survey is 20 minutes.

http://www.surveymonkey.com/s.aspx?sm=hkofAxLsUWfO1P025vhO0g_3d_3d

Should you have any questions not covered in the information sheet please do not hesitate to contact either myself or my supervisor, Associate Professor Lee Di Milia (07 49232745).

Regards
Samantha

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Information Sheet

The impact of Emotional Intelligence on Academic Success

Project Overview:

The purpose of this study is to examine the relationship between emotional intelligence and academic success. The questionnaire (available both online and in hard copy) will need to be completed at two time periods within Term 1 2009.

Participation Procedure:

Involvement in this project is voluntary and will not affect your academic standing if you choose not to participate. The survey will collect information on your personal characteristics and your response to a measure of emotional intelligence. If you agree to participate you are also providing consent for the researcher to collect your Tertiary Entrance Ranking (TER) Score and Grade Point Average (GPA) from the University. It will take approximately 20 minutes each time to complete the survey.

Benefits and Risks

There is much debate as to whether EI is related to academic success. The benefit of participating in this study is that it will assist in answering this question.

Copies of the final report will be made available to all participants at their request.

Participation in the survey will not expose you to any possible personal, legal or psychological risk. However, if completing the survey causes you any anxiety please

end your participation and contact CQUniversity Student Counselling Services on 07 4930 9456.

Confidentiality/Anonymity

The results of this survey will be treated with the utmost confidentiality and participant privacy will be protected at all times. Data will be identifiable to the research team for the purposes of analysis, however no identifying information will be used in the report. All data provided by participants will be securely stored for five (5) years in accordance to CQUniversity policy.

Outcomes/Publication Results

The research is expected to be completed by March 2010. If you would like to receive a statement of results at the conclusion of the project please contact me via the details shown below. Full copies of the final report will be held at CQ University Library at the completion of the project. The results may also be submitted to conferences and journals.

Consent

All participants will be asked to indicate they give consent to participate in the research project before commencement of the survey. Participation is entirely voluntary and much appreciated.

Right to Withdraw

Participants have the right to withdraw at any stage of the research project should they wish without any penalty. There will be no penalty for not participating in the project.

Questions/Further Information

Should you have any further queries or concerns please do not hesitate to contact myself or my supervisors.

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Concerns/Complaints *Please contact CQUniversity's Office of Research (Tel: 07 4923 2607; E-mail: research-enquiries@cqu.edu.au; Mailing address: Building 32, CQUniversity, Rockhampton, Qld 4702) should there be any concerns about the nature and/or conduct of this research project.*

Participants Consent

By undertaking the survey I consent to participate in this research project and agree that:

- An information sheet has been provided to me that I have read and understood.
- The survey will need to be completed at two time periods and approximate survey time is 20 minutes for each survey.
- The researcher may access internal CQ University records in order to obtain my Tertiary Entrance Ranking Score (TER) and Grade Point Average (GPA) for Terms 1 and 2 of 2009.
- Any questions I have had about the project have been answered to my satisfaction.
- I understand that my participation is of a voluntary nature and I have the right to withdraw from the project at any time without penalty by not completing the online survey.
- I understand that the overall findings of the survey may be included in a final report and articles written for journals and conferences. However, no personal details of my involvement will be disclosed.
- I understand that all information will remain confidential throughout the entirety of this project and participant privacy will be protected at all times. Information collected will be destroyed after a period of (5) five years from the completion of this project.

Survey Questionnaire

Section A:

Student Number: _____

Gender: ☐ Male
☐ Female

Age: _____

Mode of Study ☐ On-Campus
☐ Flex

Section B

Directions: Each of the following items asks you about your emotions or reactions associated with emotions. After deciding whether a statement is generally true for you, use the 5-point scale to respond to the statement. Please circle the “1” if you strongly disagree that this is like you, the “2” if you somewhat disagree that this is like you, “3” if you neither agree nor disagree that this is like you, the “4” if you somewhat agree that this is like you, and the “5” if you strongly agree that this is like you.

There are no right or wrong answers. Please give the response that best describes you.

1 = strongly disagree

2 = somewhat disagree

3 = neither agree nor disagree

4 = somewhat agree

5 = strongly agree

1	I know when to speak about my personal problems to others.	1	2	3	4	5
2	When I am faced with obstacles, I remember times I faced similar obstacles and overcame them.	1	2	3	4	5
3	I expect that I will do well on most things I try.	1	2	3	4	5
4	Other people find it easy to confide in me.	1	2	3	4	5
5	I find it hard to understand the non-verbal messages of other people.	1	2	3	4	5
6	Some of the major events of my life have led me to re-evaluate what is important and not	1	2	3	4	5

	important.					
7	When my mood changes, I see new possibilities.	1	2	3	4	5
8	Emotions are one of the things that make my life worth living.	1	2	3	4	5
9	I am aware of my emotions as I experience them.	1	2	3	4	5
10	I expect good things to happen.	1	2	3	4	5
11	I like to share my emotions with others.	1	2	3	4	5
12	When I experience a positive emotion, I know how to make it last.	1	2	3	4	5
13	I arrange events others enjoy.	1	2	3	4	5
14	I seek out activities that make me happy.	1	2	3	4	5
15	I am aware of the non-verbal messages I send to others.	1	2	3	4	5
16	I present myself in a way that makes a good impression on others.	1	2	3	4	5
17	When I am in a positive mood, solving problems is easy for me.	1	2	3	4	5
18	By looking at their facial expressions, I recognize the emotions people are experiencing.	1	2	3	4	5
19	I know why my emotions change.	1	2	3	4	5
20	When I am in a positive mood, I am able to come up with new ideas.	1	2	3	4	5
21	I have control over my emotions.	1	2	3	4	5
22	I easily recognize my emotions as I experience them.	1	2	3	4	5
23	I motivate myself by imagining a good outcome	1	2	3	4	5

	to tasks I take on.					
24	I compliment others when they have done something well.	1	2	3	4	5
25	I am aware of the non-verbal messages other people send.	1	2	3	4	5
26	When another person tells me about an important event in his or her life, I almost feel as though I experienced this event myself.	1	2	3	4	5
27	When I feel a change in emotions, I tend to come up with new ideas.	1	2	3	4	5
28	When I am faced with a challenge, I give up because I believe I will fail.	1	2	3	4	5
29	I know what other people are feeling just by looking at them.	1	2	3	4	5
30	I help other people feel better when they are down.	1	2	3	4	5
31	I use good moods to help myself keep trying in the face of obstacles.	1	2	3	4	5
32	I can tell how people are feeling by listening to the tone of their voice.	1	2	3	4	5
33	It is difficult for me to understand why people feel the way they do.	1	2	3	4	5

Section C

Instructions: Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item by placing the appropriate number on the line preceding that item.

1 = strongly disagree

2 = somewhat disagree

3 = neither agree nor disagree

4 = somewhat agree

5 = strongly agree

1	I am confident I get the success I deserve in life.						
2	Sometimes I feel depressed.						
3	When I try, I generally succeed.						
4	Sometimes when I fail I feel worthless.						
5	I complete tasks successfully.						
6	Sometimes I do not feel in control of my own work.						
7	Overall, I am satisfied with myself.						
8	I am filled with doubts about my competence.						
9	I determine what will happen in my life.						
10	I do not feel in control of my success in my career.						
11	I am capable of coping with most of my problems.						
12	There are times when things look pretty bleak and hopeless to me.						

Section D

Listed below are a number of statements concerning personal attitudes and traits.

Read each item and decide whether the statement is true or false as it pertains to you personally.

	Question	True or False
1	Before voting I thoroughly investigate the qualifications of all the candidates.	
2	I never hesitate to go out of my way to help someone in trouble.	
3	It is sometimes hard for me to go on with my work if I am not encouraged.	
4	I have never intensely disliked anyone.	
5	On occasion I have had doubts about my ability to succeed in life.	
6	I sometimes feel resentful when I don't get my way.	
7	I am careful about my manner of dress.	
8	My table manners at home are as good as when I eat out in a restaurant.	
9	If I could get into a movie without paying and be sure I was not see I would probably do it	
10	On a few occasions, I have given up doing something because I thought too little of my ability.	
11	I like to gossip at times.	
12	There have been times when I felt like rebelling against people in	

	authority even though I knew they were right.	
13	No matter who I am talking to I am always a good listener.	
14	I can remember playing sick to get out of something.	
15	There have been occasions when I took advantage of someone.	
16	I'm always willing to admit it when I make a mistake	
17	I always try to practice what I preach.	
18	I don't find it particular difficult to get along with loud mouthed obnoxious people.	
19	I sometimes try to get even rather than forgive and forget.	
20	When I don't know something I don't at all mind admitting it	
21	I am always courteous, even to people who are disagreeable.	
22	At times I have really insisted on having things my own way.	
23	There have been occasions when I felt like smashing things.	
24	I would never think of letting someone else be punished for my wrong-doings.	
25	I never resent being asked to return a favour.	
26	I have never been irked when people expressed ideas very different from my own	
27	I never make a long trip without checking the safety of my car.	
28	There have been times when I was quite jealous of the good fortune of others.	
29	I have almost never felt the urge to tell someone off.	

30	I am sometimes irritated by people who ask favours of me.	
31	I have never felt that I was punished without cause.	
32	I sometimes think when people have a misfortune that they only got what they deserved.	
33	I have never deliberately said something that hurt someone's feelings.	