

**THE RELATIONSHIP BETWEEN COGNITIVE ABILITY, EMOTIONAL
INTELLIGENCE AND NEGATIVE CAREER THOUGHTS:
A STUDY OF CAREER-EXPLORING ADULTS**

by

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SUMMARY

Career exploration and decision making can be a stressful experience, and is often accompanied by dysfunctional thinking regarding the world of work and one's place in it. Individuals who are able to modify their negative career thoughts are more likely to navigate career exploration successfully. Factors which may influence a person's ability to cope with dysfunctional thoughts include cognitive ability (IQ) and the inadequately explored construct of emotional intelligence (EI). Establishing the validity of EI by demonstrating its relationship to important outcomes is necessary. This study sought to determine the extent to which IQ and EI were associated with negative career thoughts and negative career thoughts change as a result of career exploration.

This correlational study measured IQ using a standard measure and EI using an ability-based instrument. In addition, negative career thoughts were measured both before and after a career exploration program. One hundred ninety three unemployed adults between the ages of 25 and 60 participated in the study.

Significant correlation relationships were found between IQ and aspects of negative career thoughts post program. Only one branch of the EI model, managing emotions, was seen to correlate significantly with all aspects of negative career thoughts, both before and after career exploration. No correlations were found between either IQ or EI with negative career thoughts change.

Regression analysis indicated that IQ predicted overall negative career thoughts as well as decision-making confusion, but only after career exploration. Overall EI scores did not predict negative career thoughts. However, among the four branches of EI, managing emotions predicted negative career thoughts both before and after career exploration for all of global negative career thoughts, decision-making confusion, commitment anxiety, and external conflict. Neither IQ nor EI predicted negative career thoughts change. The results show that the ability to manage emotions is associated with reduced dysfunctional thinking both before and after career exploration, suggesting that EI managing may be a psychological resource that individuals use in coping with stress.

Key Terms:

Emotional intelligence, negative career thoughts, cognitive ability, adults, unemployment, MSCEIT, ability-based EI, career decision-making, career exploration, IQ.

CHAPTER 1 SCIENTIFIC OVERVIEW OF THE RESEARCH

1.1 BACKGROUND AND MOTIVATION FOR THE RESEARCH

Individuals approach career decision-making with varying degrees of trepidation which can be manifested by negative career thinking. Two roles of the career and vocational practitioner are to address this negative and dysfunctional thinking and to facilitate the decision-making process, thereby “helping individuals pursue meaningful and enriching work” (Kline, 1996, p.205). Typically this is done through an intervention program – either individual or group – whereby clients are assisted in exploring their own strengths and weaknesses in a variety of areas, as well as investigating the current labour market. However, some individuals benefit much more from such programs than others. Research which investigates the role of the factors that may contribute to successful career exploration and decision-making is necessary. One of these factors is an individual’s level of intelligence or cognitive ability. Another may be one’s emotional intelligence.

The construct of intelligence, or cognitive ability or “IQ”, is a familiar, important, and often controversial one in our society. It is generally associated with the ability to learn, to perform a task well, to think at a more abstract level, to solve more complex problems, and to adapt to the environment. Intellectual ability, as traditionally measured by IQ tests, has been investigated as a factor in predicting human behaviour in a variety of settings such as academic and work environments (Drasgow, 2003). Very little research has addressed whether cognitive ability contributes to negative thinking and negative thinking change in a career exploration setting. (Note: In this thesis cognitive ability, and IQ are used interchangeably).

Emotional intelligence (EI) is an emerging field of study that has garnered considerable interest and criticism in the last decade. Rather than being viewed as hampering effective decision-making, it can be argued that higher emotional functioning leads to increased adaptive behaviour responses (Muramatsu & Hanoch, 2005). Some proponents of EI have claimed, perhaps immodestly, that EI is much more important than other factors in predicting essential outcomes. At this point, the first wave of research has passed in which

conceptualizations of EI have tentatively been established, but much remains to be investigated regarding how it may relate to various criteria (Van Rooy, Viswesvaran, & Pluta, 2005). In particular, there needs to be proven utility for the construct in important life areas. Roberts, Zeidner, and Matthews (2001), for example, emphasize that "...an urgent task...is to show real-world adaptive advantages for high (EI) scorers...over and above those they obtain from their higher general intelligence and their personality characteristics" (p.196). In other words, EI needs to be shown to have adaptive value in everyday functioning.

One of these important life areas is the world of work – the space where most individuals spend much of their time, as well as physical and emotional energy. Some research has already been focused on the relationships between EI and functioning of individuals in organisations (Druskat, Sala, & Mount, 2006). Even prior to actual work settings, however, is the crucial area of career exploration and decision making. This has been shown to be not only a cognitively demanding task, but emotionally taxing as well (Sampson, Reardon, Peterson, & Lenz, 2004). Zeidner, Matthews, and Roberts (2006) observe that emotional intelligence research has not been adequately linked with indicators of stress symptoms such as negative emotions. Investigating the way in which individuals appraise and respond to the stress that precedes and accompanies career exploration, as indicated by negative thinking with respect to career, would begin to address this gap in the literature.

The present research is motivated by two main factors. First, emotional intelligence is a developing field of study in the literature, and much remains to be known about its salience in areas of life such as career decision making. Its foundation as a psychological construct is not secure, and it is vital that criterion validity be established to demonstrate its usefulness (Antonakis, 2004). It is not yet established whether EI contributes anything more by way of outcomes than does cognitive ability. Industrial/Organizational (I/O) psychology ascribes to the scientist-practitioner model in which practice in the field is guided by scientific enquiry (Muchinsky, 2006). If emotional intelligence has utility in the world of work, practitioners will benefit from current research in the area. Reese and Miller (2006) report, however, that despite the popularity of career courses, fewer research studies are appearing in the literature on this subject than previously and recommend that career intervention investigations need to increase.

Second, Dahl, Austin, Wagner, and Lukas (2008) found significant correlations ($p < .001$) between EI and negative career thinking, but this study did not measure whether EI was related to any negative thinking change. Initial investigations, however, suggest that EI may be predictive of a person's ability to benefit from a career planning program (Dahl, 2006). The pilot study conducted showed certain emotional intelligence factors to be more pertinent than others with respect to career thinking and perhaps more important than cognitive ability. If so, this has implications for career counselling practitioners. The pilot study, however, was limited in at least two ways – one, the sample size was small ($n=38$), and two, the emotional intelligence instrument used was a self-report test. A larger representative sample appropriate for the statistical analysis being used, as well as administration of an ability-based EI instrument would provide more robust results and would shed light on the interrelated and possibly interactive “complex problem space of both cognitive and affective variables...” (Saunders, Peterson, Sampson, & Reardon, 2000, p.294) in the career decision-making domain.

The current study is exploratory in that it brings together three major areas of research and theory: cognitive ability, emotional intelligence, and negative thinking as it applies to career and career exploration.

1.2 PROBLEM STATEMENT

There is insufficient knowledge of how both cognitive abilities (IQ) and emotional intelligence affects career decision-making with respect to negative career thinking. A review of the literature in the areas of IQ, EI and negative career thoughts reveals unknowns that, if addressed, could shed light on all three of these domains. First, there is a need to demonstrate the relationships that EI might have with other constructs. For example, there is a need for more studies investigating the relationship between different measures of cognitive ability and measures of EI (Van Rooy, Viswesvaran, & Pluta, 2005), and in particular, studies in which a performance or ability-based EI measure is used (Brown, et al., 2003; McEnrue & Groves, 2005). To establish the validity of the EI construct, research is necessary to determine whether EI actually does predict useful outcomes (Antonakis, 2004; Matthews, Zeidner, & Roberts, 2002; Mayer, Salovey, & Caruso, 2004). In other words, it is

important to determine whether EI as well as cognitive ability can be employed by individuals as psychological resources in effecting change in behaviour.

Second, within the field of Industrial/Organizational Psychology, career intervention research needs to investigate the mechanisms of change within individuals in the career decision-making process (Reese & Miller, 2006; Slaski & Cartwright, 2003). In particular, there is a need to investigate the role of “noncognitive predictors” and their relationships to various outcomes (Van Rooy, Viswesvaran, & Pluta, 2005, p. 446), and whether there are links between cognitive and emotional functioning in making decisions (Muramatsu & Hanoch, 2005), and specifically with respect to negative thinking about career exploration. One method for accomplishing this is to observe the change in negative career thoughts as a result of a career exploration program and determine the relative importance of factors associated with that change.

Many investigations regarding emotional intelligence and/or career decision-making are conducted using college student samples. Research using adult, non-student populations is required (Brown, George-Curran, & Smith, 2003).

With the above deficiencies in mind, the following questions emerge:

- How are intelligence (cognitive ability) and emotional intelligence conceptualized as psychological factors influencing human behaviour?
- How is career decision making with respect to negative career thoughts conceptualized in the literature?
- What is the hypothetical relationship between cognitive ability, emotional intelligence, and negative career thoughts?
- What are the psychometric relationships between cognitive ability, emotional intelligence, and negative career thoughts when measured before and after a career exploration program?
- What are the implications of this research for Industrial/Organisational Psychology and for future research?

1.3 AIMS OF THE RESEARCH

The general and specific aims of this research are presented below.

1.3.1 General aim

The general aim of this research is to investigate the relationship between cognitive ability, emotional intelligence and negative career thoughts in a sample of career-exploring adults.

1.3.2 Specific aims

The aims of the literature review are as follows:

- To conceptualize cognitive ability as a theoretical construct.
- To conceptualize emotional intelligence as a theoretical construct.
- To conceptualize negative career thoughts as a construct in career decision making.
- To integrate the literature regarding intelligence, emotional intelligence, and negative career thoughts in order to formulate hypotheses for empirical study.

The aims of the empirical study are as follows:

- To determine the psychometric relationships between cognitive ability, emotional intelligence, and negative career thoughts measured before and after career exploration in a sample of unemployed career-exploring adults.
- To formulate recommendations from the research findings with respect to Industrial/Organisational Psychology and for further research.

1.4 PARADIGM PERSPECTIVE

According to Babbie (2001), paradigms are the “fundamental models or frames of reference we use to organize our observations and reasoning” (p. 42). The field of psychology includes not only the study of behaviour and the underlying processes that influence it, but also applies this knowledge to practical problems (Weiten & McCann, 2010). Within this domain, this study will operate within, and be delimited by, the following theoretical frameworks:

1.4.1. The disciplinary relationship

According to Muchinsky (2006), Industrial/Organisational Psychology (I/O Psychology) is concerned with the scientific inquiry and practical application of psychological principles to behaviours in the world of work. From a Canadian perspective, I/O Psychology is "...a field of both scientific research and professional practice that aims to further the welfare of people by: understanding the behaviour of individuals and organisations in the work place, helping individuals pursue meaningful and enriching work, and assisting organizations in the effective management of their human resources" (Kline, 1996, p. 207). Subsumed under this broad umbrella is the branch of vocational and career counselling in which individuals are assisted in identifying their capabilities and behaviours so that appropriate career decisions can be made.

1.4.2. The dimensional paradigm

The dimensional paradigm holds that human traits vary along a continuum. Theories of individual differences provide ways by which behaviour can be explained in various contexts (Cartwright & Pappas, 2007). In the current study, it is assumed that the degree to which an individual deviates with respect to ability may hinder or help that individual in adapting (McHugh, 1992).

1.4.3. The cognitive paradigm

Broadly defined, cognitive psychology is the scientific study of the mind and how it processes information (Levitin, 2002). Such a definition encompasses a vast field of knowledge and research, so it may be more useful to conceptualize the area at three qualitatively different but interacting levels using a hierarchy described by Hunt (2005). The first level - the biological - deals with neuroscience and the physiological mechanisms and processes of the brain. The second level addresses information processing (i.e. how the individual recognizes, attends to, remembers, elaborates upon, and uses information from the environment). The highest level, which emerges from the interaction of an individual's information processing with the physical and social environment, is the representational

level or “how individuals represent the world to themselves and how these representations influence behaviour” (Hunt, 2005, p.4). This is the realm that involves more complex problem-solving behaviours including higher-level decision making.

The assumptions of the cognitive psychology paradigm include the following:

- Information entering the brain is processed, meaning there is a sequence of neural events, mostly hidden or internal that result in some outcome.
- Internal mental states such as anxiety, motivation, or desires exist.
- The external indicators of internal mental processes can be studied using scientific methods. Typically this involves determining relationships between predictor and manipulated outcome variables by the use of inferential statistical techniques.
- Introspection as a method of investigation is less valid than objective evaluation.

While early researchers in cognitive psychology relied heavily on observations of their own thought processes, there has been a shift away from this method with the realization that it is difficult to “...think about thinking without the thinking influencing the thinking that one is thinking about” (Balota & Marsh, 2004, p. 2). Nevertheless, individuals’ subjective experiences can still be useful in cognitive psychology research.

“Cognitive psychologists are interested in the processes by which patterns and objects are recognized, attended, remembered, imagined, and linguistically elaborated. These basic processes also feed into higher-order decision making and complex problem-solving behavior” (Balota & Marsh, 2004, p.1)

1.4.4. The positive psychology paradigm

Snyder and Lopez (2002) include the concept of emotional intelligence within the framework of positive psychology. This paradigm focuses on the factors which promote health and adaptability rather than illness and dysfunction. To the extent that emotional intelligence can be viewed as an ability to focus energy on emotionally-laden information for the purpose of problem solving and modifying behaviour so as to adapt to the environment, it can be viewed as a promising component within the positive psychology paradigm (Salovey, Mayer, & Caruso, 2002).

1.4.5. The functionalist paradigm

The functionalist paradigm is concerned with how individuals adapt their behaviour to the demands of their life circumstances. In the study of behaviour in psychology, it is fundamental that knowledge is accumulated through observation and empirical analysis (Weiten & McCann, 2010). The functionalist paradigm has as its major premise that relationships are rational and that behaviours are measurable by means of scientific analysis (Burrell and Morgan, 1979). As a result, behaviours may also be explained and predicted. Therefore, knowledge can be gained by testing and empirical research.

1.5 RESEARCH DESIGN

This is a correlational study. Correlational studies are useful when the goal of the research is to help build theory about a construct by understanding what it consists of, and to determine the degree and direction of its relationship with other constructs. In addition to determining associations between various factors, correlational studies also permit predictability of one variable from one or more other variables (Creswell, 2003; Van Dalen, 1979; Smith and Glass, 1987). While correlational designs investigate the relationships between variables, there can be no causal claim (i.e. that one variable was the cause of another).

In addition, this is a survey study. Survey research involves the administration of a standardized instrument such as a questionnaire regarding a particular construct to determine the magnitude of that construct in a certain population (Babbie, 2001; Smith & Glass, 1987).

In this study, changes within the same subjects were observed over time. Therefore this research can be considered a within-subjects design.

The research variables were as follows:

The criterion (or dependent) variable was negative career thinking and was analyzed at the total career thinking level as well as three subscales. Negative career thinking was measured both before and after a career exploration program, thereby permitting an analysis of negative career thinking change. There were two main predictor (or independent) variables:

cognitive ability (IQ), and emotional intelligence (EI) which was analyzed at the total EI level as well as four subdivisions or branches. Analysis included up to as many as five predictor variables.

Both IQ and EI were measured once while negative career thinking was measured pre-program and post-program (i.e. repeated measures). The variables were continuous – in other words, they were measured at the interval level. While this design could be utilized to evaluate the effectiveness of the career exploration program, the emphasis of this research focuses on the relationship between the constructs of cognitive abilities, emotional intelligence and negative career thinking. In other words, it questions whether those individuals with higher intelligence by way of cognitive ability and emotional intelligence are more capable of solving emotionally stressful problems than those with lower IQ and EI levels.

1.6 RESEARCH METHOD

PHASE 1: LITERATURE REVIEW

Step 1 Cognitive Ability

Literature regarding the concept of cognitive ability will be reviewed. The major theories will be presented.

Step 2 Emotional Intelligence

Literature regarding the concept of emotional intelligence will be reviewed. The end result will provide an understanding of the construct of emotional intelligence.

Step 3 Negative Career Thoughts

The literature regarding negative career thoughts, will be reviewed.

Step 4 Theoretical Integration

Existing literature regarding the theoretical integration of emotional intelligence, cognitive ability, and career thinking will be reviewed.

PHASE 2: EMPIRICAL STUDY

Step 1 Population and Sample

The population from which the sample was drawn were unemployed, career undecided and non-student adults living in the lower mainland area of British Columbia, Canada. The sample included participants who had completed a specific career exploration program. Individuals in the program ranged in age from approximately 18 years of age to 65. While all participants in the program were, with their consent, potential subjects in the research, only those between the ages of 25 and 65 were included in the analysis.

Using Cohen (1988, 1992) as a guide, it was determined that a minimum sample size of 97 is adequate to ensure statistical power at the 0,8 level when a multiple regression analysis with six predictor variables is employed, a medium effect size is expected, and the significance alpha is ,05. In reality, the actual sample size was double what was required for the above statistical power.

Step 2 Measuring Instruments

Three measuring instruments were used in this survey design. The Wonderlic Personnel Test (WPT) (Wonderlic, 2002) is a test of general cognitive ability. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey and Caruso, 2002) has been designed to assess an individual's emotional intelligence using a performance or ability-based method. The Career Thoughts Inventory (CTI) (Sampson, Peterson, Lenz, Reardon, and Saunders, 1996) measures an individual's degree of negative thinking related to career.

Step 3 Data Collection

Due to the nature of the career exploration program, data were collected over a number of months until the requisite number of participants was obtained. Data for approximately 15 subjects were collected each month. For each participant the following data were accumulated: biographical information including age, gender, and education level; pre-program career thoughts scores (total and three subscales); cognitive ability; emotional intelligence (total, two area, four branch, and eight subtest scores); post-program career thoughts scores (total and three subscales).

Step 4 Hypotheses

Research investigated the relationship of IQ and EI with negative career thoughts and the possible change in negative career thoughts as the result of career exploration. Upon initial review of the literature, empirical hypotheses were formulated regarding the relationships between IQ, EI, and negative thoughts as they pertain to career exploration and decision making. The relationship between IQ and negative career thoughts was posited, as well as the relationship between EI and negative career thoughts. Hypotheses were formulated regarding correlation relationships and prediction relationships. Unemployed, non-student adults were examined.

Step 5 Data Processing

The following statistical procedures were used in the analysis of the data:

- correlation matrices of all the variables involved were produced;
- multiple regression analyses were performed using negative career thinking pre-program, post-program and change scores (total and three subscales) as the dependent variables, with cognitive ability and emotional intelligence (total and 4 branch scores) as independent variables.

The statistical program SPSS 13.0 was used for the analyses.

Step 6 Results

Results of this study were reported and interpreted.

PHASE 3: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Step 1 Conclusion

Conclusions regarding the aims of the research were reported and discussed. These conclusions relate to the background and motivation of the research, Industrial/Organizational Psychology, and the problem statement of the research.

Step 2 Limitations of the research

Limitations of the research were reported and discussed.

Step 3 Recommendations

Recommendations regarding the research questions with respect to practice and future research studies was presented and discussed.

1.7 CHAPTER DIVISION

CHAPTER 2 THE CONSTRUCT OF INTELLIGENCE

CHPATER 3 EMOTIONAL INTELLIGENCE

CHAPTER 4 NEGATIVE CAREER THOUGHTS

CHAPTER 5 THEORETICAL INTEGRATION OF THE LITERATURE

CHAPTER 6 EMPIRICAL STUDY

CHAPTER 7 RESULTS

CHAPTER 8 CONCLUSIONS, LIMITATIONS, AND
RECOMMENDATIONS

1.8 CHAPTER SUMMARY

The current study was designed to investigate the importance of cognitive ability (IQ) and emotional intelligence as it relates to negative thinking regarding career. This chapter presented the scientific overview of the research proposed and carried out. The background and motivation were discussed along with the problem statement and aims, both general and specific. The various paradigms in psychology used to help organize the reasoning underlying the study were presented. The research design and methods were introduced. Steps for carrying out the study were listed.

CHAPTER 2 THE CONSTRUCT OF INTELLIGENCE

2.1 INTRODUCTION

The purpose of this chapter is to review the literature as it pertains to the construct of intelligence. The extant literature in this area is considerable, and the contents of this chapter will be restricted to an overview of those theories which may have a bearing on the questions being investigated. This is necessary for the current research in order that a foundation for the construct of emotional intelligence as a possible psychological resource can be established. The chapter will address so-called implicit theories of intelligence and then move to a discussion of the major explicit theories – those that rely on evidence obtained by analyzing human performance. The behavioural dimensions of intelligence most pertinent for this research will be presented. The chapter concludes with a summary.

The scientific study of intelligence – its definition, relationship to other constructs and real world outcomes, development over the lifespan, and, more recently, its various manifestations - has been ongoing for slightly over a century (Matthews, Zeidner, & Roberts, 2002; Muchinsky, 2006). A variety of theories have been proposed and investigated, and the lack of consensus among researchers regarding the fundamental qualities of intelligence speaks to its very complex nature. Davidson (1990), in describing the attributes of a good theory of intelligence, suggests that it should be “(a) descriptive and explanatory; (b) broadly applicable across individuals, both within and between cultures; (c) broadly applicable over time and across situations; (d) parsimonious; (e) internally consistent and internally coherent; (f) falsifiable; (g) predictive; (h) understandable and communicable; (i) of heuristic value, in that it generates new research and new ideas on intelligence; and (j) of an appropriate grain size, without parts that are too broad or too narrow” (pp.339-340). (See also Davidson & Downing, 2000; Hempel, 1966). This is a tall order for any theory, but should be the goal driving further research in the field.

In addition to explicit theories of intelligence which are generally based on psychometric data of people performing tasks thought to measure cognitive abilities, Sternberg (1990) also distinguishes implicit theories – those which are held beliefs by lay individuals about what intelligence is and how it is displayed. The next sections review the brief literature regarding

implicit theories followed by more in-depth examination of the major explicit theories of intelligence.

2.2 IMPLICIT THEORIES OF INTELLIGENCE

The concept of intelligence appears to be ubiquitous in that, in every socio-cultural setting studied so far, there are characteristics that are considered to distinguish one who is intelligent from one who is not (Ceci, Ramey & Ramey, 1990; Edgerton, 1981). While Fitzgerald and Mellor (1988) suggest that implicit theories are much simpler than more formal theories, and may not provide meaningful distinctions in intelligent behaviour, they are nevertheless important. Lay conceptions of intelligence tend to be broader than those proposed by psychologists, perhaps because they encompass more aspects of real-world situations rather than just academic ones (Sternberg, 2003). Implicit conceptions are often the starting points that give rise to testable hypotheses which, in turn, confirm or refute commonly held beliefs – beliefs which are by no means static and change over time (Shipstone & Burt, 1973). In addition, while there are commonalities across cultures, different cultures may emphasize some aspects over others so that what is deemed intelligent in one part of the world is not necessarily so in another part. This not only has implications for teaching, learning and assessment practices within a society, but also influences the presuppositions with which researchers approach the study of intelligence in different settings. There tends to be, for example, a typically “Western” conceptualization as opposed to a more “Eastern” perspective (Gill & Keats, 1980; Sternberg, 2000), but even within each area there are differences.

One common-sense method for determining the characteristics of intelligence is to ask a variety of lay individuals regarding their held beliefs about what intelligence is and its manifestations. This has been carried out in a number of investigations, a sampling of which is presented below.

In a series of three sets of studies over a number of years, Sternberg and his colleagues investigated conceptions of intelligence as expressed by American – i.e, U.S. – adults (Berg & Sternberg, 1985; Sternberg, 1985b; Sternberg, Conway, Ketron, & Bernstein, 1981). Three factors emerged. The first, practical problem solving, involved the ability to reason

logically, identify relationships between ideas, and perceive problems from various perspectives. The second factor was that of verbal ability involving competencies in speaking articulately and fluently. The third factor included social competencies such as accepting others for what they are, admitting to mistakes when necessary, and displaying curiosity about the world. It must be noted, however, that even within a Western context there are differences in conceptualization depending on which ethnic group is questioned (Okagaki & Sternberg, 1993).

In a non-Western context, Yang and Sternberg (1997) found perceptions that encompassed not only cognitive abilities similar to Western conceptions, but also interpersonal and intrapersonal abilities in a sample of Taiwanese adults. In a study examining Singaporean mothers' perceptions of their school-aged children's intelligence, Nevo and Khader (1995) found four factors to emerge across three ethnically diverse samples: academic performance, appropriate behaviour, socially active behaviour, and unintelligent behaviour. Of these, the appropriate behaviour factor was unique in that it had not previously been seen in other research. The authors suggest that this view of intelligence is characteristic of the codes of behaviour valued in a Singaporean culture.

A number of studies have been carried out in an African context. Ruzgis and Grigorenko (1994) have proposed that among many African subgroups the maintenance of interpersonal and intergroup stability and harmony are important indicators of intelligent behaviour. In a later study, Grigorenko et al. (2001) examined the conceptualization of intelligence by adults in a rural Kenyan village. Four aspects emerged which could be further grouped into two factors: social-emotional competence, and cognitive competence. The social-emotional competence factor appeared to emphasize interpersonal relationships, and the ability to understand what is appropriate or inappropriate in a given situation. The cognitive competence factor, on the other hand, appeared to be more in line with Westernized notions of "smartness", characterized by the thinking processes required to identify and solve a problem, and abilities in more specialized knowledge domains such as academics.

Studies such as those described above have demonstrated that the theories and assessment techniques developed by psychologists in one part of the world are not necessarily applicable to individuals in other parts of the world. In other words, intelligence is likely best examined

within a particular context (Sternberg, 2003). As a result, the conclusions drawn about what constitutes intelligence are open to question (Davidson & Downing, 2000), and the necessity to match real-world outcomes to intelligence research increases. Implicit theories, while difficult to test empirically, provide suggestions for expanding or consolidating current notions of intelligence (Sternberg, 2003).

2.3 EXPLICIT THEORIES OF INTELLIGENCE

In large part, the development of explicit theories of intelligence have been made possible by the advancement of technology and techniques that allow researchers to analyze large amounts of data quickly using more sophisticated statistical innovations, as well as to observe the actual functioning of the living brain. The majority of these studies have taken place in the locations where the techniques have been developed – in North America and Europe - and so it is not surprising that the resulting theories are somewhat skewed towards what would be considered more of a Westernized perspective. Underlying all of these theories is the understanding that they are limited, simply because there are most likely qualities of intelligence that so far remain unmeasurable. Three general groups of contemporary theories are presented. Each group addresses the scientific study of intelligence at a different level according to the distinctions proposed by Eysenck (Anderson, 2004; Eysenck, 1988; Hebb, 1949). At the lowest level, (which does not imply least complex), are theories regarding the biological substrate of intelligence. The next involves the interaction of biological mechanisms with the environment to produce intelligence in a cultural context. At the highest level are the theories based on cognitive ability test performance which vary to the extent that they reflect the other two levels below them. Chronologically, the study of intelligence has tended to flow from the highest level to the lowest. The following sections will therefore present the theories in the order of their evolution as conceptualization about intelligence has expanded. Note that throughout this thesis the terms cognitive ability and IQ will be used interchangeably.

2.3.1 Psychometric theories of intelligence

Psychometric approaches to studying intelligence are based on data obtained from tests of mental abilities (Sternberg, 2004). By analyzing the patterns of correlations between scores

on these tests, it is thought possible to determine the structure of intelligence and what parts, if any, comprise it (Davidson & Downing, 2000; Embretson & Schmidt McCollam, 2000). As a result, psychometric models of intelligence have given rise to a host of mental problem-solving instruments by way of conventional cognitive-ability or IQ tests, achievement measures, and aptitude tests (Wasserman & Tulsy, 2005). Statistical procedures for determining their psychometric properties, as well as standardized procedures for administration and scoring, have made possible meaningful comparisons of scores between mental abilities and also between groups of individuals.

Current psychometric models have foundations in the work of the British psychologist Charles Spearman, who suggested that there existed a general intelligence factor (which he labelled *g* and described as ‘mental energy’) required in performing any intellectually demanding task, and less important factors that were specific to the task being performed (Davidson & Downing, 2000; Spearman, 1927; Sternberg, 2004). Further research in other situations cast doubt on Spearman’s unitary theory as there were indications that multiple factors could be identified (Holzinger & Swineford, 1939; Kelly, 1935). In the United States, Thurstone argued that, rather than one general factor, there were seven primary abilities which pervade test performance (Thurstone, 1938). Guilford (1967) visualized a three-dimensional and somewhat unwieldy model of intelligence whereby each of sets of mental operations, stimulus content, and forms of responses interacted to produce up to 150 different abilities.

One method for explaining the data that fit neither Spearman’s concept of a single intelligence factor nor others who envisaged more specific factors (e.g. Thurstone) is to examine the correlations between the many mental abilities which could be considered indications of intelligence observed in testing situations. This allows for the identification of dimensions that are common to all tasks and are probably good measures of the intelligence construct (Lohman, 2004). Since the correlations between these abilities are not zero, the common variance is thought therefore to be due to some higher order factor (i.e. second order) common to all primary abilities. Of course, should the correlations between any two primary abilities be too high, they could not likely be considered separate entities. So, it is necessary that there exists only a mild or moderate degree of association, a so-called ‘positive manifold’ of correlations (Farrelly & Austin, 2007; Horn & Blankson, 2005;

Jensen, 1998) between mental ability factors, in order for a higher level factor to be identified. It follows that analysis of first-order factors may result in more than one second-order factors whose pattern of correlations may, in turn, be analyzed to reveal an even higher level (i.e. third level) factor (see Carroll, 2005).

The procedures outlined in the above paragraph have given rise to the contemporary psychometric models which have proven to be most useful in explaining the structure of intelligence. Employing factor analysis techniques, Cattell (1943, 1963) found evidence of structural organization among factors assessed by cognitive ability tasks. He initially proposed two first order abilities: fluid intelligence, often abbreviated as *Gf* in the literature, and crystallized intelligence, or *Gc*, both of which contribute to overall general intelligence. Because fluid and crystallized abilities are practical approaches for understanding mental abilities in the solving of everyday problems, and are variables investigated in numerous areas of research in intelligence, it is worthwhile discussing their characteristics in more detail.

Cattell (1963) viewed crystallized intelligence as “skilled judgment habits” (p. 2) resulting from earlier learning. It is more experientially determined and involves acquired stores of knowledge (Deary, 2001; Embretson & Schmidt McCollam, 2000). As such, it tends to be manifested more by knowledge-based tests such as vocabulary and mathematics where retrieval of information can occur without the pressure of time. After its initial development earlier in life as the result of education and experience, it has been found to remain relatively stable over the adult lifespan with a shallow slope of decline in old age (Deary, 2001).

Fluid intelligence, on the other hand, appears to depend more on an individual’s physiological makeup and is therefore likely more genetically influenced (Embretson & Schmidt McCollam, 2000). In his theory, Cattell regarded this aspect of intelligence as the “adaptation to new situations where crystallized skills are of no particular advantage” (Cattell, 1963, p.3). It involves on-the-spot thinking, inductive and deductive reasoning, and problem solving, often with ideas or materials previously unseen (Deary, 2001; Hunt, 2005). Fluid intelligence tends to be seen as the quintessential measure of intelligence, or the “current state of...brainpower” (Deary, 2001, p. 33) because it does not depend significantly on previously acquired knowledge. It more closely coincides with the mental energy concept

of intelligence envisioned by Spearman since it appears to require considerable mental manipulation of information, and thus considerable demand on working memory (Stankov, 2003). It is more vulnerable to deterioration, with an earlier peak in ability and longer, steeper slope of decline with age (Deary, 2001; Dixon, 2003; Horn & Blankson, 2005; Schaie, 1996).

While the importance of learned skills (i.e. crystallized intelligence) in fluid reasoning abilities might be considered minimal, they are nevertheless interdependent. Lohman (2004), for example, argues that the reasoning abilities associated with fluid intelligence cannot be independent from experience and culture: “There is...an important synergy between good knowledge and good reasoning” (p. 228). Crystallized abilities are, in fact, likely to depend to a considerable degree on fluid intelligence and can be viewed as the product of fluid abilities (Sternberg, 2004).

The Gf/Gc theory was expanded by Horn (Horn & Noll, 1997) to include an additional seven or eight first-order factors thought to contribute to overall intelligence but accounting for less of the variance than Gf and Gc. Carroll (1993, 2005) further extended the theory after conducting a massive factor analysis of over 460 datasets available in the literature from the last 60 to 70 years of research. His analysis found not two, but three strata with g at the apex (Stratum 3) beneath which he identified eight broad abilities (Stratum 2) each of which subsumed other narrower dimensions of ability (Brody, 2000; Carroll, 2005; McGrew, 2005). What has come to be known as the Cattell-Horn-Carroll theory of cognitive abilities has developed the reputation as perhaps the most comprehensive of the psychometric models (Sternberg, 2004). In addition to the hierarchical structure, Carroll was also able to establish a developmental trajectory for the abilities by examining samples of various ages and education levels (Horn & Blankson, 2005). Besides the fluid reasoning and crystallized intelligence (also known more lately as acculturation knowledge) factors already identified, Stratum 2 also includes short term apprehension and retrieval, long-term memory retrieval, visual processing, auditory processing, processing speed, and quantitative knowledge (Carroll, 1993; Horn & Blankson, 2005; McGrew, 2005). Operationally, the theory has given rise to a variety of assessment instruments such as the Woodcock-Johnson PsychoEducational Battery (Woodcock, McGrew, & Mather, 2001), the Kaufman Brief Intelligence Test –II (Kaufman & Kaufman, 1993), and the Differential Ability Scales –II

(Elliot, 1990). These tests are widely used in the assessment of individuals of all ages in a variety of settings.

The psychometric theories described above meet many of the criteria for a good theory of intelligence listed in the introduction to this chapter (Davidson, 1990). The latest models build on previous research, help to reconcile the diverse views of earlier theorists, and have considerable empirical support. Second, the theories are able to show how the various specific and broader mental abilities are interrelated in a hierarchical structure. Third, they provide the ability to describe mental abilities and their development in predicting behaviour on a range of problem types and across age spans. Lastly, the theories have helped to stimulate further investigations into the nature of intelligence and the development of useful assessment instruments.

In spite of its estimable psychometric qualities, the Gf/Gc theory "...is wrong, of course, even though it may be the best account we currently have of the organization and development of abilities thought to be indicative of human intelligence" (Horn & Blankson, 2005, p. 41). By this statement the authors mean that the theory, like any theory in science, does not answer many of the questions about intelligence, may in fact never do so, and is only in the process of development. Carroll (2005) himself stressed that the theory "...is only provisional" and that "present methods of measuring abilities may not adequately cover all the abilities that exist or that are important in practical life" (p. 73). While an overall general intelligence factor seems to be indicated by some factor analyses, g does not account for all the covariance in the matrix of abilities that have been tested (Brody, 2000), suggesting there are other narrower abilities that contribute to overall intelligence. Stankov (2003) argues that an overall general factor may account for less variance than is supposed and that individual factors in the first stratum each have their own levels of complexity apart from g. Others have found that fluid intelligence (Gf) is so closely related to g as to be almost indistinguishable (Carroll, 2003; Gustafsson, 1988). At this point, it appears that the issue of an overall reservoir of intelligence versus individual multiple factors has not yet been satisfactorily resolved (Wasserman & Tulsky, 2005).

One of the more specific factors salient to this research is that of emotional intelligence (EI). Psychometric analyses of emotional intelligence measures have found a small to moderate

correlation between *g* and EI, suggesting that EI may be a distinct intelligence (Farrelly & Austin, 2007; MacCann, Roberts, Matthews, & Zeidner, 2004; Zeidner, Shani-Zinovich, Matthews, & Roberts, 2005). This relationship has been found to exist with performance or ability-based EI measures, but not with self-report measures (Derksen, Cramer, & Katzko, 2002). In a study of non-student adults, Dahl, Austin, Wagner, and Lukas (2008), for example, found the correlation between a measure of cognitive ability and a self-report measure of emotional intelligence to be very small ($r = -0,017$).

The preceding pages have attempted to summarize the major psychometric theories regarding intelligence. While there are areas of controversy as to how the data should be analyzed, some conclusions can be drawn. There appears to be evidence of structural organization with respect to the abilities thought to comprise intelligence. A multitude of identified narrow abilities may be partitioned into various categories. Factor analyses of these categories have demonstrated that they are positively intercorrelated and that this "...positive manifold is a robust phenomenon" (Van der Maas, Dolan, Grasman, Wicherts, Huizenga, & Raijmakers, 2006, p. 842) suggesting an overall general factor of intelligence. Researchers in the area would agree that more specific abilities are likely to be identified as methods to measure them become available.

2.3.2 Complex systems theories of intelligence

Psychometric theories have shown that human intelligence is dependent on many specific abilities that interact in myriad ways. However, results leading to these conclusions have generally been obtained in a Western laboratory context but are assumed to apply to individuals in any part of the globe (Berry, 1990; Davidson & Downing, 2000). As was discussed in the implicit theory section of this chapter, intelligence means different things in different societies, and it is accepted that intelligence is much more complex and its definition broader than any set of factor analyses can show (Horn & Blankson, 2005; Neisser, 1976; Sternberg, Lautrey, & Lubart, 2003). What are called complex systems theories of intelligence seek to address this issue.

Generally speaking, complex systems theories expand the concept of intelligence by placing more emphasis on the variety of influences affecting intelligent behaviour, including the

person and his/her characteristics, the person's developmental status, the contexts in which intelligence is manifest, and the role of external factors (Callahan, 2000; Sternberg, 2004). Two major theories have become well known in the past several decades – Gardner's theory of multiple intelligences, based on knowledge domains, (Gardner, 1983), and Sternberg's triarchic theory, based on kinds of thinking (Sternberg, 1985a; Sternberg et al., 2003).

2.3.2.1 *Gardner's multiple intelligences theory*

Rather than view intelligence as a single entity or a common pool from which all intellectual pursuits draw resources, Gardner has proposed that there are actually multiple domains of intelligences, each of which is relatively distinct from the other, is manifest to different degrees in individuals, and is valued in most cultures (Chen & Gardner, 2005; Gardner, 1983, 1993). Gardner's theory has not been based on the results of paper and pencil tests. Instead, he has established his theory after years of research during which he investigated the cognitive processing not only of "normal" individuals, but also exceptional ones (e.g. very gifted, savant, and brain damaged) across many cultures (Gardner, 1983, 1999). Gardner argues that traditional models of intelligence are limited to measuring linguistic, logical, and some spatial abilities, and that other forms of intelligent behaviour have been ignored (Sternberg, 1996). His reconceptualization of intelligence draws upon the realms of biology, developmental psychology, traditional psychology (in terms of psychometrics) and logical analysis. To be considered an intelligence, Gardner suggests that an ability meet a number of criteria. First, the ability must be seen to be affected by damage to some part or parts of the brain that does not affect other abilities. Second, there should be evidence that the ability has served some evolutionary plausible and autonomous function. Third, the ability should be seen to have a developmental trajectory over the lifespan with recognizable expert end-states. Fourth, there should be individual differences such that the ability is observed at exceptional levels in prodigies and savants. Fifth, the ability should demonstrate relative independence from other abilities not only psychometrically, but also as a result of specific skill development in that area. So, for example, skill development in the area of linguistic intelligence would not produce a direct increase in skill in another ability. In addition, Gardner argues that each intelligence should have a core set of operations and that each can be encoded using some sort of symbol system (Chen & Gardner, 2005; Davidson & Downing, 2000; Gardner, 1983, 1987, 1999, 2003; Kihlstrom & Cantor, 2000). Gardner

argues that each of the intelligences in his theory (eight, or perhaps nine at last count) may or may not be realized in an individual depending on his or her cultural context (Ramos-Ford & Gardner, 1997).

The theory of multiple intelligences tends to span both the academic and practical domains (Wagner, 2000). In addition to the abilities mentioned above that can be measured by conventional assessment (e.g. linguistic, mathematical/logical, and spatial) Gardner has proposed two other “non-academic” intelligences which are of interest in the current study. Interpersonal intelligence is described as the ability not only to recognize, but also to understand the behaviours, motives, and feelings of others, to appreciate and accept them, and then to act on that understanding (Chen & Gardner, 2005; Davidson & Downing, 2000; Sternberg, 2000). Intrapersonal intelligence involves the capacity to understand oneself, that is, to be able to recognize and identify one’s emotions and their magnitude, know why one behaves in certain ways in particular circumstances, and know how to regulate one’s behaviour in order to meet one’s short and long-term needs and goals (Chen & Gardner, 2005; Gardner, 1993; Sternberg, 2000). While Gardner himself does not view these two domains as constituting an “emotional intelligence”, his conceptualizations of them, particularly intrapersonal intelligence, have helped to stimulate subsequent research in the area of emotional intelligence (Mayer, 2006).

2.3.2.2 *Sternberg’s triarchic theory of intelligence*

Very little literature regarding the topic of intelligence published within the last 20 years has not included some reference to psychologist Robert Sternberg. In addition to (and as a result of) his insights into implicit theories mentioned earlier, Sternberg has developed what has come to be known as the *triarchic* theory of intelligence (Sternberg, 1985a). Like Gardner, Sternberg’s theory focuses on the practical outcomes of intelligence in solving everyday problems. He argues that, because of the differences in academic versus practical problems, intelligent behaviour may be observed in one of these areas but not necessarily the other (Sternberg, 2000; Wagner, 2000; Wagner & Sternberg, 1986). With this in mind, “...because people’s conceptions of intelligence seem much more linked to real-world success than is the conventional conception of intelligence, it may be useful to think in terms of the concept of

successful intelligence, which deals not just with intelligence in its academic aspect, but intelligence as it pertains to all aspects of life” (Sternberg, 2003; p. 141).

Three broad kinds of abilities (hence triarchic) form the basis for the theory. The first are those abilities which are internal to the individual and are the components of information processing in intelligent behaviour. Of these, the most important are “metacomponents” (Sternberg, 2003, p. 143), which are higher-order skills used in problem solving and decision-making. These include, among others, the abilities of problem identification, defining the parameters of the problem, selection of appropriate strategies to solve the problem, and outcome evaluation. They involve metacognition – thinking about one’s own thinking – and are therefore purposeful and goal-directed. Sternberg argues that it is the individual differences in the use of these metacomponents that explains the presence of *g* in psychometric analyses (Davidson & Downing, 2000; Sternberg, 1985a). In addition to the higher-level skills just described are lower-order skills involved with performing the tasks specified by the metacomponents, and knowledge acquisition components that allow individuals to acquire the knowledge necessary for problem solving. Sternberg proposes that successful counselling and consultation involves assisting a client in cycling through the steps in problem solving as each problem solution becomes the basis for a subsequent one (Sternberg, 2003). As will be discussed in Chapter 4, career counselling is one area where such techniques have proved useful.

The second subset of abilities in the triarchic theory are those needed to apply the first set of abilities to the world external to the individual. Success in this area allows the person to adapt to the existing environment, or, if necessary, reconfigure the environment to suit one’s purposes. If neither of these options is possible, the more intelligent individual is able to change environments completely when the existing one is unsatisfactory (Davidson & Downing, 2000; Sternberg, 2003, 2004). The third kind of abilities in the triarchic theory are those that integrate the internal and external worlds of the individual through experiences. Generally, new experiences involve novelty, and the more intelligent person is able to automatize cognitive information processing skills leaving more mental resources available for coping with novel situations. Sternberg proposes that a person experiences success in everyday situations when he or she is able to balance analytical, creative, and practical abilities.

The two complex systems theories discussed above have gained popularity, especially in the context of education. However, they have not yet been able to relax the strong hold that psychometric tests have on the assessment of intelligence. “Readers who are devotees of popular contemporary theories of intelligence”...(Gardner or Sternberg)...“will be disappointed to realize that these theories – despite their obvious pertinence to the clinical assessment of intelligence – have barely made a dent in the formulation of current or past IQ tests” (Kaufman, 2000, p. 453).

2.3.3 Biological (neuro-physiological) theories of intelligence

According to Jensen (1998), what we call intelligence is a biological phenomenon, and therefore the inclusion of neuro-physiological theories among the others so far mentioned is important. They provide possible explanations as to why individual differences in human intellectual functioning might occur by examining more directly the neurological processes involved in relation to the behaviours that result from these neurological events. In this sense neuro-physiological theories of intelligence are reductionistic (Anderson, 2004; Davidson & Downing, 2000), and while they do not (as yet) account for the complexity of mental abilities humans display in everyday living, they nevertheless provide a biological confirmation of individual differences for other theories, particularly psychometric, already proposed (Newman & Just, 2004).

Scientific attempts to link intelligence to biological factors have been ongoing since the construct as a psychological phenomenon was established in the late nineteenth century (see Vernon, Wickett, Bazana, & Stelmack, 2000). The lack of sophisticated measurement techniques limited studies to the external examination of the head (while the subjects were still alive) or the internal structure of the brain post mortem. Relationships between head dimensions such as perimeter, length, or capacity, as well as brain volume, and assessed mental ability, were established as being modestly positive, but not particularly helpful in explaining the nature of intelligence (Jensen & Sinha, 1993; Kamin & Omari, 1998; Newman & Just, 2004). Later, recordings of brain electrical activity obtained by electrodes attached to the scalp showed consistencies between electrical patterns (brain waves) and

intelligence tests that load highly onto g – correlations reported to range from 0,20 to 0,80 (Eysenck, 1993; Hendrickson, 1982; Jensen, 1998; Schafer, 1982).

Neuroimaging techniques that involve more “internal” observations of the brain during mental activities continue to be developed and refined, and it is not the intention of this study to provide a comprehensive list or explain them in detail. Some, like Computed Axial Tomography (CAT) and Magnetic Resonance Imaging (MRI) produce relatively precise images of brain structures and are useful in determining locations and sizes of specific areas to be investigated. Total brain volume, for example, as well as increased volume in particular grey matter locales, is associated with higher intelligence (Haier, Jung, Yeo, Head, & Alkire, 2004). Other advanced techniques, such as functional Magnetic Resonance Imaging (fMRI) and Positron Emission Tomography (PET), provide temporal data regarding blood flow or glucose metabolism in specific brain areas, and are therefore more useful in mapping how the brain utilizes its resources during specific mental activities (Park, 2009). Neuropsychologists are particularly interested in whether there is a relationship between observations of neurological “work” being accomplished, and psychometrically measured intelligence and where in the brain intelligence resides (Jung & Haier, 2007).

As regards brain structure, neuroimaging studies carried out over the last two decades support the concept of a general factor of intelligence (Colom, Jung, & Haier, 2006a, 2006b; Jensen, 1998; Johnson, Yung, Colom, & Haier, 2008) as well as the possibility of more specific factors (Johnson et al., 2008), a neurological confirmation of the model proposed by Carroll (1993). Many of these studies involve structural analysis of the brain, in particular measurement of grey and white matter density. Observations over many studies have shown a modest but robust correlation ($r = 0,33$) between brain volume and psychometrically measured intelligence (Jung & Haier, 2007). In addition, investigations of both normal and clinical individuals have pointed to distributed brain regions - the frontal, temporal, parietal, and occipital lobes - as being linked with a variety of cognitive tasks, although there is evidence that these regions may differ with gender and age (Colom et al., 2006b). Jung and Haier (2007), after a reanalysis of 37 neuroimaging studies carried out between 1988 and 2007, proposed that, on the basis of grey matter density, only certain parietal and frontal portions are implicated in intelligence. The frontal and parietal areas of the brain are associated especially with executive functioning as involves planning, problem solving,

working and episodic memory, response selection, monitoring of working memory, and strategy formulation (Colom et al., 2006b; Colom, Jung, & Haier, 2007; Duncan & Owen, 2000; Duncan et al., 2000; Naghavi & Nyberg, 2005; Newman & Just, 2004).

The mental energy conceptualization of intelligence endorsed by Spearman (1927), and beyond his capability to measure at that time, has been found to have basis in fact. In addition to the relationships of brain structure with intelligence, research also demonstrates functional individual differences as well. Studies have shown that speed of processing, as measured by reaction times, correlates positively with intelligence (Jensen, 1998; Jensen & Sinha, 1993; McGarry-Roberts, Stelmack, & Campbell, 1992). The biological principles underlying more lately developed scanning procedures is that...“Thinking is biological work that requires resources and is...constrained by their availability” (Newman & Just, 2004, p. 91). Cognitive tasks require energy (by way of glucose metabolism), and as the cognitive demand increases, so does the amount of energy needed (Just & Carpenter, 1992; Keller, Carpenter, & Just, 2001). However, individuals appear to vary in their neural efficiency when performing cognitive tasks, and paradoxically, researchers have found that intelligent persons expend less mental energy when solving various kinds of problems (Jung & Haier, 2007; Newman & Just, 2004). For example, in a study in which a new task was learned and practiced, the brightest volunteers were seen to become the most brain efficient (Haier, Siegel, MacLachlan, Soderling, Lottenberg, & Buchsbaum, 1992). Reichle, Carpenter, and Just (2000) assessed an individual’s linguistic and spatial abilities while measuring the degree of brain activation while the tasks were being performed. There was a negative correlation between resources used and level of intelligence. They concluded that more intelligent persons are more efficient in their use of resources. Jensen (1998) postulated that learning and practice of tasks promoted neural automatization of those activities leading to a conservation of mental resources. Just and Varma (2007) have proposed that variations in the amount of resources available, or limited resource capacity in cortical areas, accounts for individual differences in intelligence observed in a population. If tasks are attempted that require more resources than are available, performance will be negatively affected either through errors, slowed processing, or unsuccessful completion of the task. In addition, however, other studies have shown that areas of the brain which control attention utilize more energy during these kinds of tasks (Gray, Chabris, & Braver, 2003; Osaka et al., 2003).

So it appears that overall energy consumption rate between problem solving centres and attention control centres does correlate positively with cognitive ability.

Research indicates that more individual circuitry may be involved in more specific abilities. Johnson et al. (2008), in an exploratory study, investigated two dimensions, verbal-rotation and focus-diffusion of attention, which they propose are factors residual to the general intelligence factor. Their results, based on a small sample size, suggest that abilities not normally associated with IQ have neuroanatomical correlates in the brain that do not overlap substantially with general intelligence correlates. In a more recent study Colom et al. (2009) assessed young adults (age range 18 to 27) using a variety of general intelligence, fluid and crystallized intelligence, and spatial ability tests as well as conducting MRI scans to determine discrete brain region volumes. Results indicated that 1) fluid intelligence appeared to be synonymous with general intelligence as measured by the ability tests; 2) analysis of the variance unpredicted by general intelligence produced crystallized intelligence and spatial intelligence factors; 3) higher ability scores were positively associated with greater grey matter volume; and 4) despite the orthogonal nature of the crystallized and spatial factors, there was nevertheless some neural volumetric overlap between them and general intelligence locations. The researchers concluded that "...it is possible to empirically identify discrete brain areas wherein volumetric variations are related to the intelligence construct" (Colom et al., 2009, p.131). In addition, they support other research suggesting that intelligence is likely the result of "multiple interconnected cortical regions" (Shaw, 2007, p. 964) involving both common and unique brain areas. In another recent study, 241 individuals having a variety of focal brain lesions were administered the well known Wechsler Adult Intelligence Scale - 3rd edition (WAIS-III) (Wechsler, 1997), and neuroimaging procedures were conducted on each to determine whether there was a relationship between specific brain damaged areas and performance on the various scales of the WAIS-III (Glascher et al., 2009). Researchers found that verbal comprehension, working memory, and perceptual organization tasks were localized in different regions, but that processing speed did not seem to be. Their evidence showed domain-specific areas of intelligence, but did not support a general underlying substrate for intelligence.

One of the unique areas that have been investigated is the neural anatomy of emotions processing. For some time it has been understood that the neural pathways governing

emotional and social functioning appear to be independent of those that support cognitive functioning (Bechara, Damasio, & Bar-On, 2007; Bechara, Tranel, & Damasio, 2000; Damasio, 1995). Individuals with damage to several brain regions (e.g. the ventromedial cortex, amygdala, and insular/somatosensory cortices) are observed to have compromised abilities in experiencing, expressing, using and understanding emotions, as well as impaired decision-making skills in spite of possessing normal or better cognitive ability. For example, Bar-On, Tranel, Denburg, and Bechara, (2003) compared two groups of brain injured patients, one having damage to brain areas thought to be implicated in social, emotional and decision-making abilities, with a control group of patients having injuries to areas not thought to be involved with the aforementioned abilities. All participants were administered tests measuring emotional intelligence, judgment in decision making, social functioning, cognitive ability, perception, memory, executive functioning, and personality. Results showed no significant differences in cognitive ability, perception, memory, executive functioning or personality/psychopathology measures between experimental and control groups. However, significantly lower scores were noted for nine of fifteen emotional quotient subscales, decision-making abilities, and post-morbid changes in social functioning for the experimental group. The authors conclude that there is likely an overlap between the neural systems supporting emotional and social functioning with those involved with personal judgment in decision making, but not with systems involved with cognitive ability. It must be noted that the emotional intelligence test used was a self-report measure (the Bar-On EQi, see chapter 3 of this thesis). At this point it is not known whether such research has been carried out using a performance-based emotional intelligence test.

2.3.4 Summary of theoretical approaches to intelligence

Each of the main groups of theories reviewed in this chapter does not by itself provide a complete picture of what intelligence or its components is, but each makes important contributions to our current understanding. From the psychometric theories we can conclude that observed factors of intelligence have relationships that can be structured hierarchically with evidence of a higher-order factor called general intelligence and also a group of first order factors of more specific abilities. There is agreement that the list of specific abilities is likely not exhaustive and may come to include others. The complex systems theories broaden the scope of intelligence to propose that mental abilities are manifest within a

cultural or situation specific context above and beyond what factor analyses may show, and that there are other factors that contribute to success. Intelligent behaviour is best seen in everyday interactions with the environment and the subsequent adaptation to that environment. Neurobiological theories provide evidence that intelligent behaviour has a neurological basis in which specific mental abilities can be mapped on particular areas of the brain, and that individuals do appear to differ in their amounts of intellectual/mental resources with which to adapt to the environment.

2.4 BEHAVIOURAL DIMENSIONS OF INTELLIGENCE

Our theories of intelligence are, of course, incomplete, and consensus regarding a definition of intelligence has remained elusive despite more than a century of study (Jensen, 1998; Sternberg, 2003; Sternberg & Detterman, 1986). A symposium of distinguished psychologists convened in 1921 produced fourteen different definitions, most somewhat different from the others. Another gathering of experts in 1986 did not fare much better, and some psychologists fear that not much progress has been made (Anderson, 2004). As a field of study, intelligence spans many disciplines, from neuropsychology to anthropology to education, and so a unitary definition is not likely to be formulated any time soon. Nevertheless, at its core, intelligence should be able to explain and predict human behaviours that are considered of value (Lohman, 2004; Sternberg, 1985a).

Review of the literature regarding intelligence reveals two broad themes (Van Geert, 2003). One is that intelligence is an ability or "...melange of many abilities that are interrelated in many ways" (Horn & Blankson, 2005, p.61) and can be seen to vary across individuals. These include many processes normally associated with intelligence: information acquisition and storage, perception and discrimination, attention, learning, remembering, and reasoning to name a few (Jensen, 1998). Most of these are characteristics that could be attributed to all living organisms. In humans, however, this core of abilities must also be seen to contribute to the solving of complex problems - for example "...the writing of novels, the solving of complex mathematical problems, the designing of skyscrapers and microchips, and the myriad other forms of complex cognition valued by society" (Lohman, 2004, p. 225).

A second main theme is that of adaptability to the environment. Adaptability includes a number of subcomponents such as learning from experience, problem solving when faced with novel situations, and controlling one's internal and external environments by moulding them when necessary. It involves capitalizing on strengths while at the same time compensating for weaknesses (Sternberg, 2003, 2009). Once again, these are qualities observable at some level in all living things. In addition to meeting the challenges of new situations, adaptability must also include purposefulness, or goal-directed behaviour (Newman & Just, 2004; Sternberg & Salter, 1982). According to Sternberg (1997), "(I)ntelligence comprises the mental abilities necessary for adaptation to, as well as shaping and selection of, any environmental context. According to this definition, intelligence is not just reactive to the environment but also active in forming it" (p. 1030).

Of particular importance in this study are the associations of cognitive ability with job performance and behaviours and attitudes regarding career exploration. I/O psychologists are divided on the issue of the importance of general mental ability for personnel selection and other aspects of work (Viswesvaran & Ones, 2002). On the one hand are those who argue that cognitive abilities are not good enough predictors (Goldstein, Zedeck, & Goldstein, 2002; Sternberg & Hedlund, 2002). On the other are those who point to research supporting its utility in predicting outcomes. According to Anderson (2004) "...intelligence tests are very good predictors of real-world accomplishments" (p. 271). Within the world of work, general mental ability has been found to be associated with job performance and career success, explaining perhaps 15 to 25% of individual differences (Herrnstein & Murray, 1994; Hunter, 1986; Schmidt & Hunter, 1998), and far above other factors such as structured interview or reference letters in selecting appropriate personnel (Muchinsky, 2006). Gottfredson (1998) has claimed that "intelligence as measured by IQ tests is the single most effective predictor known of individual performance at school and on the job. It also predicts many other aspects of well-being..." (p. 24). Dilchert, Ones, Davis, and Rostow (2007), observed a substantial negative relationship between cognitive ability and counterproductive work behaviours such as work avoidance, abuse of resources, absenteeism, destruction of property, etc. In a large sample of police officers (> 1500), cognitive ability as measured by a standardized test (the Shipley Institute of Living Scale) significantly predicted both organizational and interpersonal counterproductive work behaviours. Ree and Earles (1991) found that psychometric g and not specific abilities (such as word knowledge, mathematics,

automotive, shop, or electronics knowledge for example) was the best predictor of success in job training in a massive group (>78 000) of air force enlistees. In a further study, Ree, Carretta, and Teachout (1995) determined that general ability influenced work performance to a greater extent than did prior job knowledge. Hunter and Schmidt (1996) reported studies indicating g to be the best predictor for job performance when hiring personnel. In the last decade, however, it has become more clear that job performance can be defined in various ways and that, while task performance (proficiency in specific tasks that are associated with the organization's primary objectives) is associated with intelligence, contextual performance (performance contributing to organizational effectiveness through the social and psychological context of the work environment) is more associated with personality (Chan, 2005).

2.5 CHAPTER SUMMARY

The purpose of this chapter was to present the literature as it pertains to the study of intelligence and cognitive abilities. Because the literature is vast, it has been necessary to summarize theories, choosing only those aspects that are pertinent to the research at hand.

Implicit theories of intelligence were discussed. The concept of intelligence and intelligent behaviour is observed in most, if not all, cultural settings. Lay descriptions of intelligent behaviour vary somewhat from culture to culture, but there are common perceptions, for example, the ability to reason and problem solve, and the ability to demonstrate social competence.

In addition, explicit theories were discussed. Psychometric theories that have arisen as a result of observing people's behaviours on tasks thought to require intelligence. Analyses of the data obtained from such tests have found a hierarchical structure with varying numbers of levels. At the topmost level there appears to be a common factor – g - which accounts for a goodly amount of the variance. Varying numbers of factors which correlate reasonably well with g have been investigated, suggesting that intelligence is, in fact, not a unitary construct.

Contextual theories extend the conceptualization of intelligent behaviour beyond the artificial atmosphere of the laboratory to its manifestation in everyday cultural contexts. Intelligence becomes an interaction of the individual with his/her environment and the level of adaptability to the environment is an indication of level of intelligence.

As brain imaging techniques become more advanced, it is possible to better observe the brain's structure and also its functioning as it processes information. Neurobiological research appears to demonstrate that there are structures associated with general intelligence and also with more specific abilities such as emotional functioning. In addition, individual differences in available neurological resources appear to impact cognitive abilities.

After over a century of study during which statistical techniques have been refined, there is still controversy regarding the nature of intelligence. The current consensus is that intelligence is demonstrated by an individual's ability to adapt to the environment, learn new things, problem-solve, and create things which are of use in the setting in which the person lives.

Attempts to measure the complexity of intelligence are limited and there is no one measure that adequately predicts outcomes in all areas of life. Nevertheless, psychologists have developed instruments which do appear to predict outcomes in certain areas. The next chapter reviews the literature regarding a relative newcomer in the arena of individual differences assessment – emotional intelligence.

CHAPTER 3 EMOTIONAL INTELLIGENCE

3.1 INTRODUCTION

The purpose of this chapter is to review the literature pertaining to the construct of emotional intelligence. The chapter will be structured so as to discuss the framework out of which the theory of emotional intelligence that guides this research has been formulated. The construct of emotion will be discussed as well as the current conceptualizations of emotional intelligence and its measurement. The relationship of emotional intelligence to other psychological constructs will be addressed. The chapter concludes with a summary.

Before proceeding further, it is necessary to discuss what is meant by *framework* as distinct from *theory*. Drawing on the writings of Lewin (1951), Salovey and Pizarro (2003) distinguish between two types of theoretical models: frameworks, and theories. A framework is a model that attempts to organize a body of research so that components can be classified and simplified, and relationships between the various parts can be recognized. Framework construction occurs from the bottom up so that disparate foundational studies can be built upon and patterns observed. Commonalities can be better recognized, as well as important differences. It is from this scaffold that theories may be developed.

In contrast, a theory is a top-down construction that explains why certain phenomena occur and is useful for predicting possible outcomes. In the social sciences, and particularly in the field of psychology, theories are much less easily arrived at than for the hard sciences such as chemistry or physics, for example (Deary, 2001). Human behaviour is usually difficult to classify clearly, define accurately, or measure objectively, and while psychology research provides plenty of data, analysis of these data tend to produce results with an exceptional amount of 'clutter' or unexplained variance (Deary, 2001; Sternberg et al., 2003). As a consequence, experimental psychologists are reticent to accept theories that attempt to explain too much. Nevertheless, theories are necessary as a stimulus for new research (Salovey & Pizarro, 2003), and a theory that limits its scope to avoid the extraneous clutter is a desirable thing.

Research regarding emotional intelligence is the consequence of two areas of study in psychology in the last few decades of the 20th century (Salovey, Brackett, & Mayer, 2004). One was the reconceptualization of intelligence as a broader array of mental abilities, which has been discussed in the last chapter. The second was research investigating emotion and how emotion and thought influence one another. With respect to the framework therefore, the literature regarding the concept of emotions and how emotions interact with thought will be reviewed. Out of this, several theories regarding the nature of emotional intelligence have arisen. These varying conceptualizations will be discussed as well as their methods of assessment. In addition, the relationship to life outcomes will be discussed for the model used in this research.

3.2 CONCEPTUALIZING EMOTION

To adequately conceptualize emotional intelligence requires a review of the concept of emotion. While renewed interest in this area is relatively recent (i.e. within the last 50 years) research has been considerable and controversial (Lazarus, 1991; Matthews, Zeidner, & Roberts, 2002). Agreement on the nature of this psychological phenomenon is still unresolved, due partly to the subjective quality of emotion states (Matthews, et al., 2002), and also to the varying levels of abstraction at which emotion can be analyzed (Frijda, 2000).

Emotions have always been a focus of human behaviour (Lazarus, 1991; Plutchik, 1962). Yet, despite Darwin's (1872/1965) assertion that emotions contribute to the survival and adaptation of animals, little attention was paid to this area of psychology during the first half of the 20th century. Two major paradigms dominated thinking in psychology at the time – behaviourism with its focus on motivation (conation) and goal-oriented action, and cognitivism, dealing with cold, rational thought (Forgas, 2000). Emotion research was relegated to the background. The doctrine favoured by most psychologists viewed emotions as undesirable interferences in productive and rational thought processes (Woodworth, 1940). For example, emotions were defined by various authors as “acute disturbances of the individual as a whole” (Young, 1943, p. 60), or as “disorganized response(s), largely visceral, resulting from the lack of an effective adjustment” (Shaffer, 1936, p. 505). It is not surprising that within such an atmosphere emotions research languished. The last half of the 20th century, however, has seen a resurgence in the study of emotions as psychologists and

philosophers recognize the importance of emotions in “every major human enterprise” (Plutchik, 1962, p.3). Leeper (1948) disputed the prevailing trend of his time and argued that “emotional processes of all sorts...are organizing in their influence and should be studied as an aspect of the motivation of the higher animals” (p.21). In the years following, the research focusing on the study of affect increased (Averill, 1980; Clark, 1980; Ekman, 1971, 1984; Isen, Shalke, Clark, & Karp, 1978; Izard, 1971, 1977; Lazarus, 1968, 1982; Ortony, Clore, & Collins, 1988; Plutchik, 1962, 1980; Simon, 1967; Zajonc, 1980).

Given their subjective nature, it is difficult to define exactly what emotions are, and, as yet, there is no consensus regarding the definition (Matthews et al., 2002). At the neurological or biological level, the neural structures and chemical processes of the brain that are involved in emotional behaviour are important. The perspective here is that emotions are biological processes involving specific neural systems that are activated by relevant stimuli and produce a variety of responses (Bechara, 2004; Damasio, 1999; Panksepp, 1998; Stemmler, 2004). As neurophysiology researchers such as Damasio (1995) have discovered, interfering with the neural pathways thought to operate the emotion system results in decreased decision-making abilities and more maladaptive behaviours. From this point of view, the subjective experiences associated with these responses are not particularly important. On the other hand, emotions may be an element of conscious experience having no particular mapping onto neural structures at all (Ben Ze’ev, 2000; Matthews et al., 2002). From this latter viewpoint, subjective experiences are significant and the distinction and intensity of these feelings are important. In the absence of hard scientific neural data, the evaluation of these subjective experiences by self-report measures, when subjected to psychometric procedures, have been found useful in determining an individual’s relative level of psychological and emotional functioning (Beck, 1971; Kring & Werner, 2004; Mehrabian & Bernath, 1991).

Regardless of the debate surrounding the importance of subjective experience, it is generally agreed that emotions exist as indicated by neurological activity (Damasio, 1999), are consciously perceived at some level, and occur as the result of changes, or perceived changes, in an individual’s environment. Of significance here is that the individual responses to these changes are valenced – in other words, the change elicits a response in proportion to the value that the individual places on the event. Ortony, Clore, and Collins (1988) state that

“...emotions issue from cognitive interpretations imposed on external reality, rather than directly from reality itself” (p.4). It is how the experiencer construes the situation that determines the type and intensity of the resulting emotion. The construction of most emotions involves initial appraisals, or the “What does (this) mean for me personally?” (Lazarus & Folkman, 1987, p. 145), which are followed by further evaluations that contribute information and meaning to the events (Beck & Emery, 1985). This appraisal of the initiating event, agent, or object takes on a value – positive, negative or perhaps neutral – depending on the way the situation is interpreted. For the purposes of this research, it is most useful to conceptualize emotions as “...valenced reactions to events, agents, or objects, with their particular nature being determined by the way in which the eliciting situation is construed” (Ortony et al., 1988, p. 13). This view is the most functional in conceptualizing emotional intelligence as a mental ability involving the processing of emotional information.

3.2.1 Interaction of emotion and cognition

Traditionally, emotions have been recognized as one of a triad of mental operations along with cognition and conation (motivation) (Izard, 1993; Matthews et al, 2002; Plutchik, 1984). Ortony, Revelle, and Zinbarg (2007) argue that the full experience of an emotion typically involves the interaction of a somatic, or feeling component in which bodily changes are evident (flushing, sweating, running), as well as cognitive and motivation components. It is the interactions between each element of the triad that are beneficial in understanding behaviour (Mayer, Salovey, & Caruso, 2000; Wechsler, 1950).

Later researchers and theorists have increasingly agreed that emotions are motivational and influence cognition and subsequent action (Izard, 1993). Supporters of a cognitive theory of emotion maintain that cognitive activity mediates emotions (Frijda, 1986; Lazarus, 1991).

While some emotions likely do not involve cognition and are relatively neutral in their interactions (Forgas, 2001; Mayer, Salovey, & Caruso, 2004), others are linked to cognition in constructive ways. Lazarus (1991) distinguishes between appraisal of emotions that is unconscious, automatic, or beyond awareness, as opposed to appraisals which are conscious and deliberate. Some emotions appear primal, perhaps genetically encoded, and are found even in very young children who have not had sufficient life experiences to warrant such

reactions, suggesting that cognition does not play a role in these emotional behaviours (Izard, 1993; Izard, Hembree & Huebner, 1987). The regulation of the deliberate appraisals, however, also referred to as effortful control (Eisenberg, Spinrad, & Smith, 2004; Rothbart & Bates, 1998), involves areas of the brain responsible for executive functioning such as the prefrontal cortex and anterior cingulate gyrus, and processes associated with planning, control of thoughts and feelings, and detection and correction of errors (Posner & DiGirolamo, 2000; Posner & Rothbart, 1998).

Muramatsu and Hanoch (2005) argue that emotions are powerful causal processes that impact cognitive and physiological activities, thereby regulating behaviour. In this context, emotions are able to facilitate or impede problem solving and adaptation to environmental conditions. Emotions have been shown to focus an organism's attention on the most critical stimuli in the environment while ignoring others that are not salient at the moment (Faucher & Topolet, 2002) with the aim being to search for the most satisfactory solution to the current problem. In conjunction with attention focus, emotions also influence the ability to learn from experiences of self and others, and play a part in the acquisition and retrieval of memories associated with this learning. Lazarus and Folkman (1987) maintain that emotions are a very necessary part of the stress process. They may assist in identifying the source of the responses to stress which can then clear the way for coping with the stressor itself (Lyons & Schneider, 2005).

The somatic marker hypothesis (Bechara, Damasio & Damasio, 2000) proposes that human reasoning and decision making involves a variety of levels of neural functioning, some of which are conscious and cognitive, and others which are unconscious. Cognitive functioning of any kind involves emotions. As mentioned in Chapter 2, it has been determined that the neurological pathways involved with emotional processing are different from those governing other types of cognition. Damage only to emotional processing systems of an individual's brain does not necessarily change that individual's score on conventional IQ tests (Bar-On et al., 2003; Bechara, Tranel & Damasio, 2000) but does result in severe impairments in social interactions and decision making. Damasio (1995) has hypothesized that primary somatic (feeling) states are induced in the amygdale of the brain when some change occurs in a person's environment. These initial somatic states are automatic and unavoidable and may be of a variety of forms such as pleasurable, aversive, or neutral (Bar-

On et al., 2003). Once these primary somatic states are triggered either by recall or thought regarding them, they are brought to working memory and influence the values placed on various options, in turn influencing the decision (Bechara, Damasio, & Bar-On, 2007). In short, instead of decision making being strictly a cost-benefit in cognitive activity, emotions appear to equip cognitive and physiological systems in guiding behaviour that enhances adaptation in the real world.

The integration of cognition and emotion is at the base of at least one of the theoretical approaches to emotional intelligence discussed in this chapter (Mayer, Salovey, & Caruso, 2004; Salovey, Mayer, & Caruso, 2002). Integration implies that the two functions are separable, but influence one another, perhaps more so in certain situations than others. Gray (2004) argues that “if the subprocesses of emotion...and of cognitive control...can influence each other selectively, rather than only in a diffuse, global, or nonspecific manner, emotion and cognitive control are integrated” (p.46). He encourages research that investigates the interactions of cognition and emotion. One method for accomplishing this would be to calculate the interaction effects statistically between cognitive ability and emotional intelligence and then use the interaction variable as a predictor of outcomes. Thus far, very few such studies have been located in the literature. One by Côté and Miners (2006), using the ability-based assessment used in the current research, found that there was at least partial support for the interaction of cognitive ability and emotional intelligence in predicting job performance. Other criterion variables need to be explored.

3.2.2 Emotional skills and abilities

In the following section, the literature regarding the varying research strands with respect to emotions will be discussed.

The study of individuals who are notably lacking in emotional abilities has provided considerable information about the relationship of emotional functioning to other factors. Alexithymia is a condition characterized by a person’s deficiency in identifying or distinguishing between various emotions, as well as expressing emotions verbally or experiencing emotions consciously – all aspects of emotional awareness (Apfel & Sifneos, 1979; Lane, Ahern, Schwartz & Kaszniak, 1997; Lane & Schwartz, 1987; Taylor, Bagby, &

Parker, 1997). Alexithymia has been associated with decreased ability to associate physical sensations with emotions (Friedlander, Lumley, Farchione, & Doyal, 1997; Kooiman, 1998); judgmental biases (Berenbaum & Prince, 1994); impaired awareness and understanding of emotional information (Lane, Sechrest, Reidel, Weldon, Kaszniak, & Schwartz, 1996); interpersonal difficulties (Berenbaum & Irvin, 1996); and a variety of physical ailments such as hypertension (Kauhanen, Kaplan, Cohen, Salonen, & Salonen, 1994), and decreased immune response (Dewaraja et al., 1997). It is generally viewed as contributing to physical and psychological disorders as a result of poor emotional regulation (Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005).

Research has demonstrated that emotional expressions function as signals in social interactions that elicit responses in others (Izard, 1990), and perception of these cues appears to be an important component in evaluating situations (Abe & Izard, 1999). In addition, uncertainty in reading the emotional signals of others may lead to confusion in expressing one's own emotions. It appears that those who are reticent about expressing their emotions, or regret having expressed them, are less likely to receive the necessary feedback to interpret others' emotions accurately, resulting in increased psychological distress, misinterpretation of others' actions, and more difficulty with interpersonal relationships (King, 1998; King & Emmons, 1990).

Mayer, DiPaolo, and Salovey (1990) found that emotional perception consensus among individuals regarding accuracy and range of emotion felt, extended not only to facial expression but also to colour and design. Their analysis suggested that identification of emotions from these types of stimuli represented an underlying factor of emotional intelligence, and they proposed that use of such tasks be used to measure aspects of emotional intelligence (Mayer, Caruso, & Salovey, 1999). Differences have also been noted in the ability of individuals to understand the feelings expressed in the writings of others (Mayer & Geher, 1996).

Isen et al. (1978), in a study where positive affect was induced, concluded that affect – at least positive affect – has a cognitive dimension whereby positive mood enhances positive memories, influences the interpretation of incoming stimuli, and plays a role in the regulation of behaviour. Later studies (Isen, Daubman, & Nowicki, 1987) continued this

strand of research and found that creativity and problem solving were enhanced by positive affect but not by (induced) negative mood. Gohm (2003), in a series of three studies investigating how affect influences human judgment, determined that some individuals who experienced considerable intensity of emotions about a situation, were nevertheless unclear about what they were feeling which had subsequent effects on judgment and decision-making. Furthermore, these “overwhelmed” individuals (Gohm, 2003, p.596) appeared to follow a different judgment path than their less overwhelmed peers because they were unwilling or unable to benefit from emotional information.

Fredrickson (1998) argued that positive emotions build physical, intellectual, and social resources and serve an important adaptive function. These adaptive functions may include better abilities to recognize and capitalize on opportunities, cope with restrictions, and recover from setbacks (Cohn & Fredrickson, 2009; Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). Moreover, these researchers have found that individuals displaying these adaptive traits may experience negative emotions at a level comparable to others, but are better able to deal with these temporary negative thoughts.

Emotions assist in focusing attention on what is important (Easterbrook, 1959; Faucher & Topolet, 2002; Mandler, 1984), and the emotional state in which one approaches the situation appears to influence cognition and possible outcomes (Forgas, 1995; Mayer, 1986; Mayer & Hanson, 1995). A number of studies have shown that different information processing styles are produced by different emotions. Isen et al. (1987) found that inducing positive emotions in subjects resulted in improved creativity, perhaps by allowing individuals to categorize information more effectively. Palfai and Salovey (1993) found that positive mood enhanced inductive problem solving time, while more negative affect was conducive to deductive reasoning time on tasks performed by a sample of college students.

Other studies have investigated the factors related to adaptive social interaction. One major construct is that of empathy, the ability not only to perceive and identify another person’s feelings, but also to experience personally those emotions at some level (Buck, 1984). Higher empathy is thought to be associated with more well developed social networks (Salovey, Bedell, Detweiler, & Mayer, 1999), lower stress, greater satisfaction with life and increased altruistic behaviour (Batson, 1987).

3.3 CONCEPTUALIZING EMOTIONAL INTELLIGENCE (EI)

Conceptualizations of EI in the literature differ and critics of emotional intelligence usually comment on the lack of consensual definition in their reviews (Ciarrochi, Chan, & Caputi, 2000; Gohm, Corser, & Dalsky, 2005; Landy, 2005; Locke, 2005; Matthews, et al., 2002; Zeidner, Roberts, & Matthews, 2008). The fact that EI has such an immediate intuitive appeal has propelled it into public consciousness comparatively quickly, and this, perhaps, has been detrimental to the development of a sound, cohesive EI theory. Concerns have been expressed that the scramble to market a product for public consumption has taken place prematurely (Matthews, Zeidner, & Roberts, 2002; Mayer, 1999; Sternberg, 2002). These criticisms, however, are directed more at approaches that have exaggerated the importance of EI (e.g. Goleman, 1995), or conceptions that are over-inclusive of other constructs. EI is likely a larger construct than any one particular model currently describes and can therefore be studied from a variety of perspectives (Austin & Saklofske, 2005; Zeidner, et al., 2008). However, the use of the term *intelligence* assumes that emotional intelligence as a construct should fit in with the nomological network, or system of terms and their meanings about intelligence, that most scientists would recognize and understand (Cronbach & Meehl, 1955). To be considered an intelligence, there is a general consensus that at least three criteria must be met (Mayer et al., 2000). First, the intelligence must demonstrate mental ability rather than non-intellectual characteristics or personality descriptions. This assumes the ability to engage in abstract thought, to learn, and to solve problems so as to adapt to the environment (Sternberg et al., 2003). Second, the intelligence must be able to be psychometrically associated with a similar constellation of abilities, but not overly so. Dimensions of intelligence such as Verbal Comprehension or Perceptual Organization, for example, can be distinguished by measures that appear to indicate the processing of and reasoning with information of a particular type (Carroll, 1993; Horn & Cattell, 1966). The ability to engage in this type of problem solving can be quantified and psychometrically analyzed. Similarly, a dimension of emotional intelligence should be distinguishable by the ability to perform emotionally related problem solving. A third criterion is that there should be a developmental trajectory for the intelligence in question; that is, it should develop from childhood to adulthood as the result of experience.

The following sections focus on two major issues with regard to emotional intelligence now found in the literature: 1) how EI is theoretically conceptualized; and 2) how it is most appropriately measured (Farrelly & Austin, 2007). Strengths and weaknesses of the two main approaches to EI will be discussed as well as the two principle methods of measurement. Following this, literature regarding the relationship of EI to various life outcomes will be presented for the theoretical approach used in this study.

3.3.1 Approaches to conceptualizing EI

The extant literature generally distinguishes between two approaches to EI: a group that are much broader in their definitions and include a variety of traits, and one that is much narrower in its focus. The former group has been labeled *mixed models* by those who advocate the latter, and it is argued that they do not adequately fit the characteristics of an intelligence as described earlier. However, while a mixed model approach is not the conceptualization subscribed to in this research, it is nevertheless worthwhile examining the work of several main proponents since their work is widely known in the field and often used as the underlying philosophy in research and training programs occurring in the workplace (Bar-On, Handley, & Fund, 2006; Boyatzis, 2006; Goleman, 2000; Goleman, Boyatzis, & McKee, 2002; Lynn, 2008; Newman, 2008; Sala, 2006).

3.3.1.1 Mixed-model approaches: Goleman, Bar-On, and trait models

Goleman's model of EI appeared after that of Mayer and Salovey's but rocketed into public consciousness with the publication of his book *Emotional intelligence: Why it can matter more than IQ* (Goleman, 1995). This notion resonated well with people since it offered a perceived alternative for deficiencies in cognitive abilities. One may not be the sharpest knife in the academic drawer, but if you were "good with people" you had a very good chance of being successful regardless of IQ. In fact, Goleman (1998) originally asserted that EI accounts for as much as 90% of the difference between average and extraordinary performance at work. While this has since been found to be wildly optimistic and unsubstantiated (Zeidner, Roberts, & Matthews, 2008), it pushed EI as a topic more to the forefront of research than it otherwise might have been.

Goleman (1995) based his theory on physiologic responses that are initiated in the amygdale, the part of the brain's limbic system that is involved mostly with fear and aggression. These are two emotions that are typical responses to threats or stressors in the environment. Goleman argues that one's ability to learn to control these responses to stress is what forms the basis for emotional intelligence. The emotional competencies in the model are considered hierarchical in that lower abilities form the foundation for higher ones.

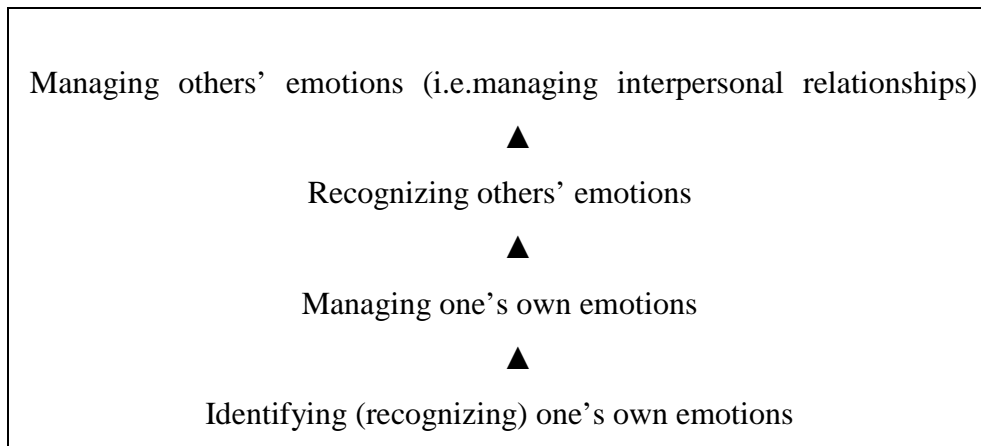


Figure 3.1 Goleman's Hierarchy of Emotional Competencies

These four emotional competencies can be conveniently partitioned in two dimensions – one, competencies as regards the self vs. others; and two, competencies related to emotional awareness vs. emotional regulation. The 2X2 framework shown in Figure 3.2 summarizes Goleman's present refinement of his model.

Within each quadrant Goleman has identified up to twenty-five abilities, not all of which would apply in every context. Some of these are listed above. As can be seen, some of the abilities can be viewed either as products or outcomes of EI (e.g. self-confidence), or traits of personality (e.g. conscientiousness), in addition to those processes that could be thought of as thinking or intelligence abilities (e.g. perceiving emotional information or managing self or others' emotions). Goleman has described emotional intelligence as general "character" (Gowing, 2001, pp. 89-90), which, while admirable, does not necessarily map onto a construct of emotional intelligence. For this reason, Goleman's model is described as mixed in that it combines personality and behavioural traits with EI (Maltby, Day, & Macaskill, 2007). This conglomeration of what might be considered emotional intelligence

and traits normally found in the personality domain has been a major source of criticism (Van Rooy, Viswesvaran, & Pluta, 2005; Zeidner, Roberts, & Matthews, 2008).

	Self: Personal competencies	Others: Social competencies
Emotional Awareness/ Recognition	<ul style="list-style-type: none"> • emotional awareness • self-confidence • accurate self-assessment 	<ul style="list-style-type: none"> • accuracy of perception of emotions in others • empathy • anticipation/predicting needs of others
Emotional Regulation/ management	<ul style="list-style-type: none"> • self control • conscientiousness • adaptability • initiative • achievement drive 	<ul style="list-style-type: none"> • influence/persuasion • communication • leadership • change initiation • relationship building • teamwork/collaboration

Figure 3.2 The Goleman Model of Emotional Intelligence

From Cherniss & Goleman (2001, p. 28).

Bar-On attributes his theory of emotional intelligence to the influences of Charles Darwin with his emphasis on survival and adaptation, Thorndike and Wechsler’s observations on social and non-cognitive factors in human behaviour, as well as research from the area of psychopathology – in particular research on alexithymia and “psychological mindedness” (Bar-On, 2005). Alexithymia, the diminished ability of a person to recognize and express one’s own emotions, has a research history that predates research on EI (Matthews et al., 2002). Alexithymia has been shown to be moderately to strongly inversely associated with EI as conceptualized by Bar-On (Parker, Taylor, & Bagby, 2001).

Bar-On refers to his theory as an *emotional-social* intelligence model (Bar-On, 1997b, 2005) to emphasize the adaptive effectiveness of emotional and socially intelligent behaviour (Maltby et al., 2007). He has identified the following five main areas of skills, each having a subset of skills:

- intrapersonal skills which subsumes emotional self-awareness, assertiveness, self-regard, self-actualization, and independence;
- interpersonal skills including interpersonal relationships, social responsibility, and empathy;
- adaptability which includes problem solving, flexibility, and reality testing;
- stress management, including stress tolerance, and impulse control;
- general mood which subsumes happiness, and optimism.

The above scales are reminiscent of personality scales. For example, the California Personality Inventory (CPI) includes scales for empathy, independence, and flexibility. While some studies (Bar-On, 2005) indicate no more than 15% shared variance between the EQi and personality traits, others (O'Connor & Little, 2003) have found considerably higher correlations.

The issues of concern with the Bar-On theory are as follows:

- The theoretical background is vague (Matthews et al., 2002; McEnrue & Groves, 2006). On the one hand, the model seems to exclude cognitive abilities and yet does include components that appear to be very cognitive in nature such as problem solving (Zeidner, Matthews, & Roberts, 2004).
- There are unacceptably high correlations between individual subscales (Matthews et al., 2002);
- There is conflicting evidence regarding the factor analysis (Matthews et al., 2002);
- There are high relationships with measures of personality (Dawda & Hart, 2000; Newsome, Day, & Catano, 2000), at times correlations in excess of r s of 0,6 to 0,7 (Grubb & McDaniel, 2007);
- As a self-report instrument, even with built in validation techniques, the credibility of subject responses is suspect;
- The correlation between the EQi and cognitive ability measures is lower than what should be expected (Bar-On, 1997b; Newsome et al., 2000). Dahl (2006, raw

unpublished data) found an almost 0 correlation ($r = -0,004$) between the EQi total score and the WPT in a sample of 290 non-student adults. In fact, it has been suggested that the mixed model instruments measure “everything other than cognitive ability” (Van Rooy, Viswesvaran, & Pluta, 2005, p. 450).

The term *trait EI*, proposed by Petrides and Furnham (2000) can be included in the mixed model group (Caruso, Mayer, & Salovey, 2002) since the factors evaluated consist of emotional abilities as well as traits that are considered personality components or emotional intelligence “products” (Caruso et al., 2002). The overlap with personality measures has been a major criticism of this method of measurement (Conte, 2005; Farrelly & Austin, 2007; Mayer, Salovey, & Caruso, 2004; McEnrue & Groves, 2006; Roberts, Zeidner, & Matthews, 2001). Because they view emotional intelligence as a lower order personality trait, Petrides and Furnham (2006) take exception to the mixed model label, arguing that trait EI is in fact “a constellation of emotion-related self-perceptions and dispositions” (p.554), and that the criticism is irrelevant.

3.3.1.2 *Ability model*

In their initial work, Salovey and Mayer set out to meet three goals (Salovey & Mayer, 1990; Salovey & Pizarro, 2003). The first goal was to develop a model explaining the ways in which cognition and emotion interact. Second, they sought to develop a framework in which the burgeoning body of empirical research regarding emotion at the physiological, social, and cognitive levels could be brought together. Third, they were interested in determining whether there were individual differences in emotional competencies.

In contrast to the mixed models, the Mayer-Salovey EI model is narrower in its focus in that it treats emotional intelligence as a mental ability rather than as a preferred way of behaving (Feldman Barrett & Gross, 2001; MacCann & Roberts, 2008; Mayer & Salovey, 1997; Mayer et al., 2000). The disadvantage of this is the possibility of excluding personality or other factors which may in fact contribute to emotional intelligence. On the other hand, since the emotional abilities in the model are thought to be more distinct from other constructs, any relationships found are less likely to be attributed to these other constructs. As a result, the Mayer-Salovey approach becomes more useful in scientific research, and has been

judged by some (e.g. Conte, 2005; McEnrue & Groves, 2006; Ortony, Revelle, & Zinbarg, 2007) to be the best model to be used in empirical research and likely the preferred focus of future EI studies (Zeidner et al., 2004).

Cognition alone is not sufficient for understanding human behaviour (Damasio, 1995; Phelps, 2006; Viswesvaran & Ones, 2002). Strümpfer, for example, cautions that “we should constantly consider the systematic interrelatedness and interpenetration of feeling/emotion, motivation and cognition – which is where undue emphasis on cognition falls short” (Strümpfer, 2003, p. 72). On the other hand, while emotions can contribute to adaptive behaviour, they do not necessarily do so (Feldman Barrett & Gross, 2001). However, Gray (2004) argues that emotions and cognitions selectively influence one another in ways that are adaptive for the individual. His work with functional brain imaging (Gray, Braver, & Raichle, 2002) has led him and his colleagues to conclude that “at some point of processing, functional specialization is lost and emotion and cognition conjointly and equally contribute to the control of thought and behaviour” (Gray, 2004, p. 48). It is at the intersection of emotions and cognition that one finds the ability-based model of EI (Mayer, Salovey, & Caruso, 2008). As with other generally accepted factors of mental ability, the ability-based model of EI proposes a parallel component of capacity – that of processing emotionally laden information.

Within the paradigm of intelligence as an array of mental abilities, and based on the various strands of research mentioned earlier, Mayer and Salovey initially proposed a four-branch model of EI including the abilities to: 1) perceive emotions (branch 1), facilitate (use) emotions (branch 2), understand emotions (branch 3), and manage emotions (branch 4) (Mayer & Salovey, 1997; Mayer, Caruso, & Salovey, 1999). These abilities are interrelated and viewed hierarchically in that the first ability, perceiving, provides a platform for facilitating emotions, which in turn forms the foundations for understanding emotions, and understanding then contributes to emotional management. While the four factors can be considered independently, they also interact to produce a global ability of emotional intelligence. (Jordan, Ashkanasy, & Hartel, 2002; Mayer & Salovey, 1997). In addition, the progression from branch one through four is seen as increasing the degree to which the abilities and skills are incorporated into other psychological subsystems (e.g. the overall personality of the individual) (Mayer et al., 2004). In other words, perceiving emotions is a

more discrete or modularized ability while managing emotions involves much more integration with the information processing around planning, motivation and goal achievement.

3.3.1.3 *Behavioural dimensions*

Considering the confusion regarding what is actually being measured by the different EI models, the behavioural dimensions discussed below will be restricted to the ability-based model followed in this study. As will be discussed in Chapter 6, there is some discussion regarding the number of factors that have been detected in various studies. However, the four branches as originally theorized by Mayer and Salovey are here described in more detail (Cartwright & Pappas, 2007; Jordan et al., 2002; Lopes, Grewal, Kadis, Gall, & Salovey, 2006; Mayer & Salovey, 1997; Mayer et al., 2004).

- perceiving emotions - includes the abilities to:
 - sense the emotional atmosphere of a situation;
 - identify overt and subtle emotional cues in self and others from facial expressions, body language, and voice tone;
 - identify emotional cues in non-personal contexts such as art or music;
 - appraise the emotional environment so as to distinguish relevant from unimportant, accurate from inaccurate, and honest from dishonest expressions of emotions;
 - express emotion in effective communication using facial expression, body posture and voice tone;
 - identify the emotion(s) in one's physical and psychological states.

Emotional perception as described above may be important in directing attention to those cues in the environment which help distinguish between threats and benefits (Lyons & Schneider, 2005). In a work setting, incorrect or limited perceptions of emotional situations may contribute to negative thinking.

- facilitating (using) emotions – includes the abilities to:
 - focus attention on salient aspects of the situation;

- focus attention on those emotions that are most salient in the thought processes required in that situation;
- generate emotions as needed to enhance reasoning and communication;
- use different intensities of emotion as necessary for optimal decision making.
- consider a problem from multiple perspectives.

The ability to assess a problem from different sides is important in beginning to resolve that problem. Assuming an optimistic perspective can help to disrupt negative thinking cycles (Jordan et al., 2002), foster creativity (Isen et al., 1987), and assist in processing information more efficiently (Lyons & Schneider, 2005).

- understanding emotions – including the abilities to:
 - recognize the triggers and antecedents of various emotions;
 - predict the responses that are likely to occur within one's self and within others;
 - predict the intensity the responses are likely to reach;
 - understand the temporal sequences of emotions and predict how they might progress from one to another;
 - understand complex blends of emotions, especially when emotional states are seemingly contradictory.

The increased likelihood of predicting one's own and others' emotional responses to situations in life provides an individual with increased ability in coping with that situation, allowing one to place behaviours in the proper perspective.

- managing emotions – includes the ability to:
 - control the emotional situation by problem-solving within ones' self and with others;
 - monitor one's emotions and reflect on them;
 - manage emotions in context;
 - deliberately avoid counterproductive emotions;
 - reframe appraisals in order to enhance well being and achieve goals;

- engage or disengage from an emotion depending on its value to do so in the situation.

The emotion management dimension, dependent on the antecedent factors, is the ability most likely to result in adaptation to the environment by manipulating the situation to the individual's benefit. It is likely to enhance the capacity of a person to adjust negative emotions because of his heightened insight into all the forces impacting a particular event (Dunn, Brackett, Ashton-James, Schneiderman, & Salovey, 2007). The ability to alter one's responses to stress situations should ameliorate the stress process (Lyons & Schneider, 2005).

3.3.2 Approaches to assessing EI

Zeidner et al., (2004) argue that "(a) vocational (or career relevant) EI measure will ideally be one with demonstrated theoretical and empirical relevance to a particular occupational context" (p. 389), but so far, research that investigates the role of EI in these contexts is limited. At this point in the evolution of EI measurement techniques, only two – self-report and objective – are presently used, and coincide with mixed model and ability models respectively (MacCann & Roberts, 2008; Van Rooy & Viswesvaran, 2007). It appears likely that whatever is being measured by the mixed-model approach is different than that assessed by the objective or mental ability approach (Zeidner et al., 2004).

3.3.2.1 Self-report measurement techniques

Undoubtedly for reasons of construction and administration ease, by far the majority of EI measures employ self-report formats in which respondents are asked to judge their abilities on a Likert-type scale on a series of statements. The theoretical bases of these instruments vary: some subscribe to the Mayer-Salovey model of EI, others do not. A sampling of the different types are discussed here briefly.

Several instruments use some or all of the four factors of the Mayer and Salovey model in a self-report format. Schutte and colleagues (1998) have developed a scale that purports to measure the appraisal, utilization, and regulation factors. The scale is short (33 items), and

demonstrates internally consistency and high test-retest reliability. Another instrument has been devised by Tett, Wang, Thomas, Griebler, and Martinez (1997 as reported in Salovey, Woolery, & Mayer, 2003). It is a 146-item test which includes several constructs (e.g. delay of gratification, emotional appropriateness) in addition to those described by Mayer and Salovey. The Wong and Law EI Scale (Wong & Law, 2002) is a 16-item test of four factors, three of which are based roughly on Mayer and Salovey's model.

Some self-report assessments are based on other models. These include such instruments as the Levels of Emotional Awareness Scale (Lane, Quinlan, & Schwartz, 1990); the Bar-On Emotional Quotient Inventory (Bar-On, 1997a) and other associated versions such as the Bar-On Emotional Quotient Inventory: youth version (Bar-On & Parker, 2000); the Emotional Competency Inventory (Boyatzis, Goleman, & HayGroup, 2001); the Swinburne University Emotional Intelligence Test (Palmer & Stough, 2001); and the Trait Emotional Intelligence Questionnaire (Petrides & Furnham, 2004). This list is by no means comprehensive as other tools, usually unvalidated and lacking empirical evidence regarding their psychometric properties, spring up on-line and in the popular press (McEnrue & Groves, 2006).

The self-report measures, whether based on the Mayer-Salovey model or not, have been found to be limited by low reliabilities, low criterion-related validity, social desirability factors (Geher, Warner, & Brown, 2001; Salovey et al., 2003; Zeidner et al., 2004), and low correlations with cognitive ability (Derksen, Kramer, & Katzko, 2002) suggesting that EI as measured by self-report is not part of the constellation of intelligences. There is evidence that self-report measures of EI can be manipulated by test takers to produce artificial scores. For example, Grubb and McDaniel (2007) found that fully 94% of respondents on the Emotional Quotient Inventory Short Form (EQ-i:S) (Bar-On, 2002) appeared to be quite capable of improving their scores by at least 0,5 SDs throwing the validity and reliability of the instrument into question.

3.3.2.2 *Performance (objective) measurement techniques*

Measuring mental abilities typically involves asking test takers questions in a particular domain, and evaluating their responses according to accepted criteria (Carroll, 1993; Mayer

et al., 2008). The development of the only instrument (so far) that attempts to measure EI objectively has followed a path similar to that of other intelligences: a construct is introduced and preliminary factors are proposed based on the existing literature, an initial measure is developed and its psychometric properties examined, and refinement of the instrument proceeds (Cronbach & Meehl, 1955; Daus & Ashkanasy, 2005; Jordan, Ashkanasy, & Hartel, 2003). In the case of emotional intelligence, the initial measure, the Multifactor Emotional Intelligence Scale (MEIS) consisting of twelve subtests (three for each factor proposed by Mayer and Salovey), was scrutinized for psychometric robustness and found acceptable in some areas and wanting in others (Mayer et al., 1999). Subsequent refinements, the Mayer-Salovey-Caruso Emotional Intelligence Test, V1 (MSCEIT V1), and the latest version, the MSCEIT V2 released in 2002, have addressed many of the deficiencies seen in the MEIS. For example, the MEIS was overly long, and had issues regarding scoring. As with any test, reliability coefficients and discriminant and convergent validities are always open to improvement. The MSCEIT V2 has demonstrated overall internal consistency reliability of 0,90 to 0,96 (Mayer et al., 2004), and branch score (corresponding to the four factors assessed) reliabilities of between 0,76 (facilitating branch) to 0,98 (perceiving and understanding branches).

With respect to scoring, the determination of agreed-upon correct answers has been a concern for researchers (Landy, 2005; Matthews et al., 2002) to a much greater extent than for other strands of intelligence since there is no definitive algorithm for arriving at the 'right' answer (Zeidner et al., 2008). For the MSCEIT, this issue has been addressed by assuming either that a) experts in the field of emotions and emotional intelligence are correct, or b) that the generally held view of the majority of people is the right answer. Both of these options might be problematic, but at the current time represent the state of the art in emotional intelligence assessment. The MSCEIT allows calculation of scores using both comparisons.

3.4 RELATIONSHIP OF ABILITY EI WITH OTHER CONSTRUCTS

The utility of any construct increases with its ability to predict useful outcomes (Bastian, Burns, & Nettelbeck, 2005), and the construct of EI is presently in its infancy in this process. This research is particularly important in I/O Psychology in that it leads to a better

understanding of how individuals might react to a variety of stressful workplace situations and how possibly vulnerable individuals in those situations might be identified and assisted. The following section is a review of the current studies that have been carried out investigating the Mayer-Salovey ability model and for convenience sake have been separated into the domains of everyday behaviours, education, coping with stress, and the workplace.

3.4.1 EI and everyday behaviour

Social competence is generally a necessary quality in our society and some of the research in EI has investigated whether it contributes to enhanced social relationships. Lopes, Salovey, and Strauss (2003) investigated whether EI showed incremental validity in the quality of interpersonal relationships above and beyond personality factors (Five Factor Model) and verbal intelligence in a sample of 103 university students (mean age = 19,2). They found that the Managing Emotions branch of the mode could account for significant variance in perceived positive relations with others including parents. Negative interaction with a friend scores were predicted by the Understanding, Facilitating, and Managing branches of EI. In all cases the correlations of EI and its branches with the indicators of social interaction were modest – not in excess of 0,36. Two other studies found managing emotions to be associated with positive interaction with friends and also with opposite gender social interactions (Lopes, Brackett, Nezlek, Schutz, Sellin, & Salovey, 2004). Lopes, Salovey, Côté, and Beers (2005) determined that higher emotional management (EM) scores on the MSCEIT were significantly correlated with peer friendships after controlling for personality factors. Yip and Martin (2006) also found EM to be positively related to the ability to initiate relationships and manage conflict. In a series of three studies, Brackett, Rivers, Shiffman, Lerner, and Salovey (2006) found, for reasons yet unclear, that perceived social competence was associated with higher EI for men but not for women. They conclude that gender differences should be examined in future empirical research.

Everyday behaviours which have the potential for personal harm appear to be associated with EI. For example several studies have shown that illegal drug use, excessive alcohol consumption and deviant social behaviours correlate with lower EI for men (Brackett & Mayer, 2003; Trinidad & Johnson, 2002).

EI may also be effective in areas of personal mental health and psychological well-being. Amitay and Mongrain (2007) found that individuals with a history of depression who had higher EI scores perceived their partners as more supportive and accepting than those with low EI. The authors argue that higher EI is associated with greater self-sufficiency and the capacity to choose partners with more positive characteristics. When comparing samples of individuals with and without General Social Phobia (GSP), Jacobs and others (2008) found a positive correlation between Experiential, but not Strategic, EI and social anxiety severity.

There is some speculation that the same neural mechanisms that are involved in processing the nuances of human speech may also be salient to emotional intelligence (Farrelly & Austin, 2007). Similarly, it has been argued that language and music share neural properties (Peretz & Coltheart, 2003). Some studies have determined no significant differences between the emotional intelligence of individuals with musical training and those without musical training (Resnicow, Salovey, & Repp, 2004). However, when students were asked to identify the intended emotion in a musical performance, those who scored higher on the MSCEIT, and in particular the Perceiving Emotions branch, were significantly better at identifying the emotion expressed in the music regardless whether they had musical training or not. Trimmer and Cuddy (2008), in a similar study of university students, also found that the Experiential EI area (Perceiving and Facilitating emotions branches) was a better predictor for identifying emotions in speech and music than was musical training.

People's decision making often involves predicting how one might feel if a particular course of action was chosen. However, errors in this process of affective forecasting may lead to poor decisions (Dunn & Laham, 2006). Dunn et al. (2007) proposed that EI, and in particular Strategic EI, might predict affective forecasting abilities. Their study of the association of forecasting ability with EI in a population of university students showed that Emotional Management was a significant predictor of forecasting accuracy in three different emotionally-laden situations. This research has important implications in that those with higher EI who are able to anticipate accurately their emotional responses to situations are likely at an advantage when dealing with decisions regarding self and others.

3.4.2 EI and education

While the idea of fostering emotional intelligence in the education system has met with enthusiastic support, there is very little empirical evidence on which to base many education policies and the programs being developed (Lopes & Salovey, 2004; Mayer & Cobb, 2000; Qualter, Gardner, & Whiteley, 2007). A search of the literature produced one dissertation, and only two peer-reviewed journal articles dealing with EI and school abilities, both cognitive and social.

In a graduate student study (Holt, 2007) the relationship between academic achievement and EI was investigated in a sample of college students. The data found a positive correlation of the Managing Emotions branch of the MSCEIT and academic achievement as measured by GPA. The author suggested that EI is a contributing factor in enhancing student success. In another study of Spanish high school students, Mestre, Guil, Lopes, Salovey, and Gil-Olarte (2006) determined that understanding and managing emotions was significantly associated with academic adaptation (as assessed by teachers) among boys, and with peer relationships among girls.

In a study of Israeli adolescents, Zeidner, Shani-Zinovich, Matthews, and Roberts (2005) determined that gifted adolescents scored higher on the MSCEIT global EI than their non-gifted counterparts, but that this difference became non-significant when Vocabulary scores were factored out. They argue that verbal abilities, as assumed by higher vocabulary scores, contribute to emotional capabilities, especially for the Strategic area (i.e. understanding (EU) and managing (EM) emotions branches). In addition, when asked to rate their EI on a self-report measure based on the MSCEIT branches, the gifted adolescents scored themselves lower than did the non-gifted, perhaps because their increased intelligence in other areas leads to increased insight into their own personal emotional limitations.

3.4.3 EI as a personal resource in stress and coping

It is generally believed that emotions play a crucial role in the dynamics surrounding stress (Lazarus & Folkman, 1987; Slaski & Cartwright, 2003). According to Lazarus and Folkman (1987), the interaction of the individual with the environment is essential to understanding

emotion since an emotion loses its meaning when analyzed from only one of these perspectives. Stress has been conceptualized as the disruption of goal attainment, and, as such, represents a dysfunctional relationship between the individual and his/her environment (Hamilton, Karoly, & Kitzman, 2004). Individuals may experience stress not only from the environmental demand, but also from the negative cognitions and moods initiated by the demand (Zeidner, Matthews, & Roberts, 2006). Factors which may mediate the drive to reduce this emotional experience have been researched (see Slaski & Cartwright, 2003, p. 233), and there is now an increasing interest in the possibility of emotional intelligence as a coping resource.

Emotional intelligence has been conceptualized as a personal resource available to an individual for coping with the various stresses of everyday life. Prior to the publication of research regarding emotional intelligence in its current form, Nowotny (1981) referred to “emotional capital” (as quoted in Liu, Prati, Perrewé, & Ferris, 2008, p. 2413). Epstein (1998) suggests that emotional intelligence is an antecedent resource that better equips an individual to handle stressful situations through a variety of associations. However, the nature of these associations is still unclear.

Lyons and Schneider (2005) measured the relationship between EI and the stress and performance of undergraduate college students on two kinds of tasks – giving a speech, and performing a mental arithmetic task. None of the four MSCEIT dimensions were found to be related to an individual’s appraisal of how threatening the task was expected to be, or how able the person would be to cope with it. Emotional understanding predicted better mathematics task performance for both males and females above and beyond general cognitive ability. Higher emotional management however, actually hampered males’ speech delivery – perhaps because the speech was about sexual harassment and an emotionally intelligent male might be more discretionary in his comments, thus inhibiting speech delivery. While the study did find some indication that ability-based EI showed incremental validity beyond mental ability, it was limited in that the tasks were presented in a laboratory situation to college students and were not necessarily those that would map onto actual everyday life or workplace situations.

In a recent study, Matthews and his colleagues (2006) investigated whether EI could predict responses to task-induced stress and to coping strategies. Personality factors, as conceptualized by the Five Factor Model (FFM) were also included as predictors. Results were mixed in that, although EI was associated with lowered levels of worry and avoidance coping style during the performance of a stressful task, EI did not predict a lessened stress response to the tasks used in the study. At least four restrictions may render the results difficult to generalize: one, the stress induced was, in reality, an artificial stress with no real-life consequences; second, the sample was young (mean age = 19,7), and not representative of the general population age; all participants were university psychology students who had knowledge of social science research practices; and last, the stress responses of this young sample are not likely to reflect the stress responses of the average adult individual.

3.4.4 EI and the workplace

The role of EI in the workplace has received the majority of attention in research. There are few studies however, that actually examine EI on site. Rather, work-relevant concepts such as stress are often investigated in student populations and the results discussed as possibly affecting the workplace (for example Lyons & Schneider, 2005; Matthews et al., 2006). In addition, most studies have utilized self-report instruments as the measure of EI (for examples see Boyatzis, 2006; Brown, Bryant, & Reilly, 2006; Downey, Papageorgiou, & Stough, 2006; Dries & Pepermans, 2007; Kafetsios & Zampetakis, 2008; Morehouse, 2007; Salovey, Stroud, Wollery & Epel, 2002; Slaski & Cartwright, 2002). The studies discussed below are restricted to those that have utilized performance-based EI assessment.

In a study of 44 employees from one insurance company division, Lopes et al. (2006) investigated whether EI was related to workplace outcomes with respect to job performance, interpersonal skills, and affect and attitudes at work. EI remained significantly associated with job performance indicators such as percent merit increase and company rank when other predictors such as age and extraversion were controlled. In addition, EI remained correlated with interpersonal facilitation skills such as sociability and contribution to a positive work environment when other factors were controlled. Lastly, EI was associated with attitudes at work such as higher stress tolerance. These results are promising, but

interpretation is limited by the small sample size and lack of generalizability to other professional groups.

In a study investigating the relationship between leadership effectiveness as rated by subordinates and emotional intelligence of managers in a manufacturing company, Kerr, Garvin, Heaton, and Boyle (2006) found that the Perceiving and Facilitating branches of the MSCEIT predicted supervisor's performance but the Managing Emotions branch did not.

While there does seem to be some evidence that EI may mitigate the stress of job insecurity and influence work behaviours, to this point, there does not appear to be any research that investigates whether EI might be a significant resource in coping with the negative thinking that often accompanies the career exploration process.

3.5 CHAPTER SUMMARY

The purpose of this chapter was to present the foundations and current state of the relatively new construct of emotional intelligence.

An understanding of how emotions are conceptualized is necessary before the intelligence that pertains to emotional information processing can be appreciated. For the purposes of this research, it is most logical to view emotions as valenced reactions to changes in the environment. The appraisals of these initiating events and, more importantly, their interactions with other psychological systems, have an adaptive function. Research regarding the various strands of research on emotions that form the framework for emotional intelligence theory was discussed.

The conceptualization of EI was discussed. EI has been conceptualized in several ways, but is most aptly viewed as the mental ability to process emotionally-laden information resulting in problem solving that promotes adaptation to the environment. Alternate conceptualizations, which conceive of EI as a set of competencies and are much more related to personality traits, were also presented.

Two different approaches to assessing EI were presented. EI as an intelligence is better assessed using techniques in which test takers solve emotionally-focused problems in an ability or performance format.

EI as a construct is useful if it can predict everyday life outcomes in areas of relationships, education, coping with stress, and work. Research investigating EI as an ability in these various domains was presented.

CHAPTER 4 NEGATIVE CAREER THOUGHTS

4.1 INTRODUCTION

The purpose of this chapter is to review the literature regarding negative thoughts, and in particular the literature regarding negative thoughts pertaining to career. The chapter will begin with a general overview of dysfunctional thinking and then move to research concerning negative career thoughts from a cognitive behavioural perspective. Conceptualization, dimensions, and behavioural manifestations will be discussed. The research with respect to negative career thinking as it relates to vulnerable populations, response to interventions, relationships with other constructs, and changes across the life span will be presented. The chapter will conclude with a chapter summary.

4.2 DYSFUNCTIONAL THINKING

Dysfunctional thinking has been viewed as underlying many of society's ills, and techniques designed to intentionally promote negative thoughts reduction have been effective. One such technique, cognitive behavioural therapy, holds that dysfunctional thoughts and the resulting maladaptive behaviours involve the interplay of cognition and emotion (Lam & Gale, 2004). During therapy, the counsellor/client team examines the logic of the dysfunctional thinking and attempts to modify the thoughts by developing alternate views of dealing with the experienced concern (Lam & Gale, 2004).

Beck (1995) distinguishes three hierarchically structured levels of dysfunctional thinking which vary in their degree of stability and therefore resistance to change. Core beliefs are rooted deeply in the cognitive organization of an individual and are therefore the most stable. They tend to be more non-specific, generalized, and global, and result in more intense emotional responses when activated by environmental events. By contrast, automatic negative thoughts are much less stable and arise often in response to specific situations rather than an evaluation of core personal attributes – for example, “I won't be able to pass this test” (automatic thought) as opposed to “I'm a failure” (core belief). In between these two levels, one finds underlying assumptions – dysfunctional thoughts that correspond to a set of

rules governing individual behaviour – for example, “If I do not pass this test I cannot be a competent person”.

Dysfunctional thoughts are implicated in reduced levels of well-being. Ciarrochi (2004) investigated dysfunctional beliefs with indices of both positive and negative psychological functioning, and found that dysfunctional beliefs accounted for fourteen percent of the variance in negative indicators such as anxiety, guilt, depression, stress, hostility, hopelessness, and suicidal thinking. These beliefs were of several types: beliefs that self-worth is dependent on success, that self-worth is dependent on approval from others, and beliefs that unrealistically high expectations were demanded.

The extant literature contains a variety of studies examining the effects of negative thinking and resulting negative affectivity. Although most of these studies are approached from a personality theoretical perspective such as the Five Factor model, they are nevertheless useful in demonstrating associations and the behavioural outcomes of negative thoughts. Negative thinking appears to be associated with poor emotional regulation. Kokkonen and Pulkkinen (2001), in a longitudinal study of adults, concluded that those with more negative thoughts were less likely (or able) to repair them, and had a higher tendency to experience emotional ambivalence. Boland and Cappelliez (1997) found negative affect to be negatively associated with proactive behaviours in a group of elderly women, and Bolger and Zuckerman (1995) found negative reactivity significantly correlated with poor coping behaviours in a group of university students. Gunthert, Cohen, and Armeli (1999) associated negative affectivity with more maladaptive coping behaviours and a greater tendency to focus on negative aspects of self and others that potentially influences social interactions. In addition, those with heightened negative affect may perceive aversive situations with an exaggerated orientation, further exacerbating poor interpersonal relationships.

4.3 CONCEPTUALIZATION OF NEGATIVE CAREER THINKING

Career thoughts have been defined as “outcomes of one’s thinking about assumptions, attitudes, behaviors, beliefs, feelings, plans, and strategies related to career problem solving and decision making” (Strauser, Lustig, & Ciftci, 2008, p. 24). When these thoughts are negatively biased, they become unhelpful cognitions - perceptions that are idiosyncratic in

nature and hinder effective career problem solving and decision making (Lam & Cheng, 2001; Osborn, Howard, & Leier, 2007; Sampson, Peterson, Lenz, Reardon, & Saunders, 1996). In that they are distorted, they are similar to Ellis's (1994) irrational beliefs characterized by absolute and overgeneralized terms – for example, “I *must* surpass my brother's or sister's achievements”; “I will *never* find an occupation I like”; “Significant others in my life *always* disapprove of my career choices”. These distorted beliefs may remain unnoticed (Kinnier & Krumboltz, 1986), and their genuineness is often not questioned by the individual (Lam & Cheng, 2001).

Sacco and Beck (1995) have equated cognitions with beliefs, fantasies, and images, and in the context of career thinking others have done likewise. For example, well before Sacco and Beck, Thompson (1976) discussed university students' misconceptions and faulty beliefs regarding vocational choices. Nevo (1987) refers to irrational expectations of clients in career counselling, and Dorn and Welch (1985) characterized many high school students as subscribing to career myths. Borders and Archadel (1987) examined the impact of self beliefs that underlie one's expectations of efficacy in career choice.

4.3.1 The Cognitive Information Processing model

The literature regarding dysfunctional and negative thinking is extensive; the positive psychology literature by juxtaposition addresses many aspects of negative thinking and how it can be ameliorated. In this chapter, the focus narrows to that of negative career thinking – that is, the dysfunctional thoughts that pertain to the process of choosing a career and the more specific factors associated with that activity. In this specific area, literature is more meagre and usually includes reference to a theoretical approach proposed by Peterson and others (Peterson, Sampson, & Reardon, 1991; Peterson, Sampson, Reardon, & Lenz, 1996). Because of the pertinence of this approach to this research, it is now briefly discussed.

Cognitive behavioural therapies have been developed to facilitate change in a person's dysfunctional thoughts and have provided one of the most effective frameworks in addressing behavioural concerns (Latham & Heslin, 2003). This therapeutic technique has also been adapted in the area of career decision making and problem solving, and one such approach is known as the Cognitive Information Processing (CIP) model (Peterson et al.,

1996; Sampson, Reardon, Peterson, & Lenz, 2004). The CIP model makes at least two important assumptions of note here: 1) that although it is called a cognitive approach, “cognition and emotion (are) inseparable in career choice” (Sampson et al., 2004, p.3), and therefore emotions play an important role in thinking; and, 2) that what we know (knowledge) and how we do what we need to do with what we know (thinking) are both necessary components of making choices (Sampson et al., 2004). The three levels of information processing comprising the CIP model are shown in Figure 4.1 below:

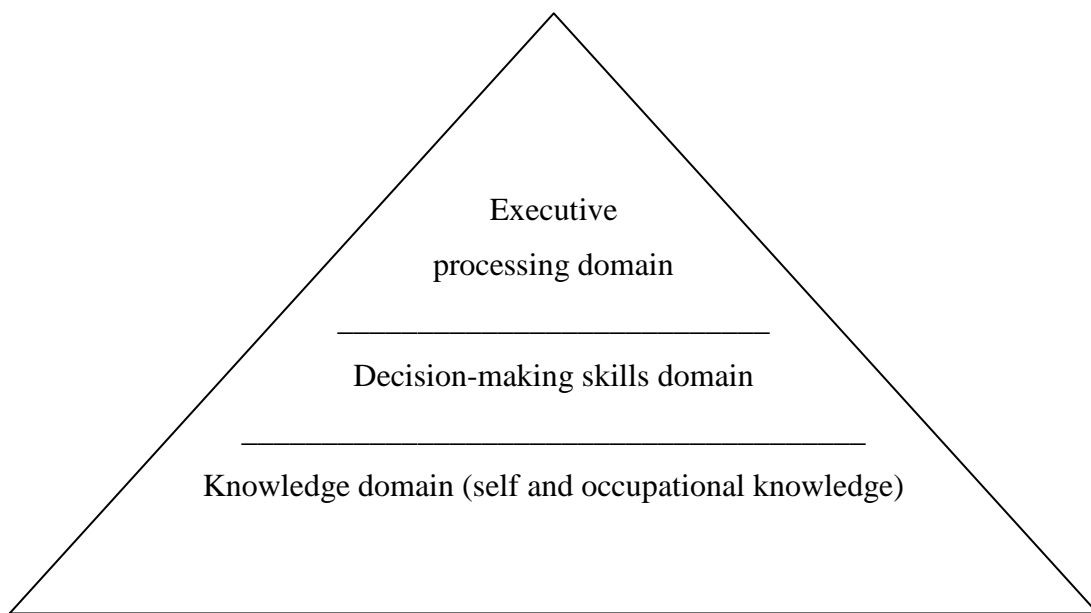


Figure 4.1 Cognitive Information Processing model
(from Sampson, Peterson, Lenz, Reardon, & Saunders, 1996, p.7)

The knowledge domain provides the foundation for those above and includes information about the individual (e.g. one’s values, interests, temperament, vocational preferences, abilities, and so on) and occupational knowledge (e.g. education, training, and employment options within the world of work). The decision-making skills domain refers to general decision-making knowledge and procedures that individuals typically utilize when making choices. At the top of the pyramid, the executive processing domain is likely the most important and complex in that it can be described as the governor or director of all the interacting components that comprise the career decision-making process (Reardon, Lenz, Sampson, & Peterson, 2000). Executive functioning necessarily involves metacognition – the ability to think about one’s own thinking in areas such as focusing attention, discerning

pertinent from irrelevant information, planning for future behaviour, and monitoring and regulating all of the above. All three levels in the CIP pyramid are interactive and interrelated from the top down. In other words, the metacognitions at the executive processing level impact those domains lower down.

4.3.2 Dimensions of negative career thoughts

Negative career thoughts may occur at any level in the CIP pyramid – for example, “I don’t know what occupation I would like” (self-knowledge); “There are so many jobs out there I know nothing about” (occupational knowledge); “I can’t seem to choose what career I want” (decision-making skills); or “I don’t know what is important to look for in a career” (executive processing). However, in keeping with the conceptualization of emotional intelligence as a mental ability involving the processing of emotional information (see Chapter 3), for the purposes of this research negative career thoughts are best viewed within the domain of executive processing. Within CIP theory, three related and overlapping metacognitive activities include self-talk, self-awareness, and monitoring and control (Sampson et al., 2004).

Self-talk are the silent (or not so silent) verbalizations that people have with themselves, similar to observations from the perspective of a spectator. These conversations are an important part of the decision-making process in that they can allow an individual to initiate and focus attention on a particular course of action. Positive self-talk can lead to constructive outcomes but dysfunctional self-talk to more negative ones. Self-awareness involves a consciousness of one’s self as a problem-solving individual and the possible factors affecting that process. Control implies purposeful regulation of thought so that the next appropriate step may be begun, whereas monitoring involves observing where one is in the process and judging when it is best to move on or access more information (Reardon et al., 2000). All of these metacognitive skills may have a positive or negative bias and may originate at any of the hierarchical levels proposed by Beck (1995).

The core dimensions of negative career thinking have been determined through principal component analysis to include a global factor as well as three subcomponents for normative groups in a career decision-making milieu (Sampson et al., 1996). These three general types

of dysfunctional career thoughts include Decision-Making Confusion, Commitment Anxiety, and External Conflict. Decision-Making Confusion (DMC) refers to the extent to which an individual's disabling emotions or knowledge of how to make a decision impedes the ability to initiate and sustain the career decision process. Commitment Anxiety (CA) considers the impact of anxiety on commitment to a career decision, and External Conflict (EC) refers to the extent to which an individual is able to utilize and balance information from self and important others and can take responsibility in career decision making (Dahl, Austin, Wagner, & Lukas, 2008; Lustig & Strauser, 2008; Sampson et al., 1996).

Negative career thoughts inhabit one end of the career thought spectrum. In the world of thoughts in any domain, it is difficult to know where the realm of 'functional' thoughts ends and dysfunction begins, and where adaptive thoughts become maladaptive. Negative thoughts are believed to confound the thinking process, and a variety of internal and external behaviours have been observed to be associated with them. These behaviours may be manifest within the person, within the home, and at work.

Dysfunctional career thinking has been linked to diminished feelings of self-worth and subjective well-being (Judge & Locke, 1993), depression (Saunders, Peterson, Sampson, & Reardon, 2000), anxiety, reduced self-esteem (Morano, 2006; Newman, Fuqua, & Seaworth, 1989; Serling & Betz, 1990), and reported decrease in life satisfaction (Sampson et al., 1996). They appear to be moderately correlated with excessive rumination and maximization (Paivandy, Bullock, Reardon, & Kelly, 2008). Outwardly, the emotional reactions to these feelings may be manifest in disappointment, anger and hurt when self-imposed expectations are not met (Lam & Gale, 2004), and in a display of perfectionism (Osborn, 1998; Roll & Arthur, 2002). Verbal expressions may be negative and overgeneralized (Corbishley & Yost, 1989). Among students, negative career thoughts have been found to reduce retention in college (Tinto, 1993), act as a barrier to productive career planning (Reed, Lenz, Reardon, & Leierer, 2000; Saunders et al., 2000), be associated with poorer psychosocial adjustment in disabled students (Dipeolu, Reardon, Sampson, & Burkhead, 2002), and correlate significantly with higher test anxiety and achievement motivation (Sud & Kumar, 2006).

Since "the workplace is a forum for the expression of various behaviours" (Judge, Scott, & Ilies, 2006, p. 126), negative career thinking can be expected to be displayed in that

environment. Decreased job satisfaction, poor work performance, job avoidance, and job failure have been reported (Judge & Locke, 1993; Sampson et al., 2004). These behaviours also affect significant others outside the work setting (Sampson et al., 2004).

4.4 RESEARCH REGARDING NEGATIVE CAREER THOUGHTS

In this section various strands of research regarding negative career thoughts will be presented. Three general areas can be identified in the literature: 1) career thoughts in at-risk populations; 2) the effect of career courses on the negative career thoughts of individuals; and 3) the relationship of negative career thoughts to other constructs.

4.4.1 Negative career thoughts in vulnerable populations

Individuals who are at some disadvantage in society due to such factors as physical, cognitive, or mental disabilities, or low socioeconomic status, typically encounter more career development problems than their peers (Enright, 1996; Yanchak, Lease, & Strauser, 2005). The limitations these individuals experience increase the complexity of career exploration and may limit possibilities for employment, and there has been an attempt to address the problems faced by this population (Keim, Strauser, & Ketz, 2002). Several studies have examined the relationship between negative career thoughts and various groups of disabled persons, sometimes with mixed results. For example, Dipeolu et al., (2002) unexpectedly found that university students with learning disabilities admitted to less overall negative career thinking, as well as less decision-making confusion and commitment anxiety than their non-learning disabled peers. They did, however, demonstrate more negative thoughts with respect to external conflict. In addition, the researchers found that increased negative career thoughts were associated with poorer adjustment to the disability. Lustig and Strauser (2000), on the other hand, investigating a sample of non-university individuals from a community-based job placement service, found those with disabilities to have more decision-making confusion and commitment anxiety negative thoughts, as well as increased external conflict negative thinking. It must be noted that the samples for these two studies came from different populations.

In a further study comparing two groups of disabled individuals, those with cognitive disabilities and those with physical disabilities, Yanchak et al., (2005) found the cognitively disabled to exhibit more negative career thinking with respect to decision-making confusion and external conflict. The differences for commitment anxiety were smaller but still revealed a small to medium effect. In this study, the cognitive disabilities group included those with learning disabilities and traumatic brain injury, and while both disabilities concern mental processing of information, it is questionable whether these two should be grouped for analysis.

Trauma is typically defined as the exposure of an individual to an event in which the possibility of death or injury evokes feelings of terror and hopelessness in that individual (Allen, 1995). There is evidence that trauma may hinder the acquisition of certain types of information, as well as retrieval of information (DePrince & Freyd, 2004). Coursol, Lewis, and Garrity (2001) have suggested that personal trauma interferes with one's career development activities. In a study of 131 undergraduate university students, Strauser, Lustig, Cogdal, and Uruk (2006) investigated the relationship between level of trauma symptomology and negative career thoughts. Results showed that an increase in reported trauma symptoms corresponded with an increase in negative career thoughts. The authors speculate that trauma may prevent an individual from thinking and reasoning clearly about important life decisions, and conclude that the "overall picture for these persons is not (one) of mental, emotional, or physical health" (p. 355).

The negative career thoughts of three groups of low socioeconomic status women were investigated by Keim et al. (2002). One group consisted of women with disabilities receiving job placement services, another was composed of women attempting to obtain high school certification in preparation for employment, and the third group were women who were not working and had no plans to return to work. Results on the global and subscales of the CTI showed that, overall, women not planning on returning to employment had significantly fewer negative career thoughts than women in either of the other two groups. The women in the first two groups, all of whom were pursuing some kind of program designed to increase their employment options, showed similar patterns of negative career thinking. The authors suggest that women not engaged in career search activities might have more clearly perceived career goals, may be much better at making career decisions and were more

comfortable in committing to them, and may have been better able to balance the wishes and needs of others with their own. This conclusion is theoretically possible, but a more plausible alternative, more in keeping with the view of emotions discussed in Chapter 3, is that those women not pursuing employment would not be experiencing the stresses that an environmental change, such as the necessity to obtain and maintain employment, would trigger, and would therefore not attribute a negative valence to the situation.

4.4.2 Negative career thoughts change as a result of intervention

The use of career courses to assist individuals with career exploration has a long history (Folsom & Reardon, 2003; Folsom, Reardon, & Lee, 2005). By far, the majority of these have focused on students in colleges and universities, since it is argued that committing to a career path is perhaps the most important psychosocial task faced by post-secondary students (Osborn, Howard, & Leierer, 2007). In addition, research regarding other such programs that are available to non-student populations has been done (Austin, Dahl, & Wagner, 2003; Austin, Wagner, & Dahl, 2004). The courses vary considerably in their scope, design, and function (Reardon, Leierer, & Lee, 2007) and so comparative evaluation of their success is difficult. However, Folsom et al. (2005), in an overview of 50 studies of career course effectiveness carried out in higher education settings in the United States between 1976 and 2005, concluded that there is “overwhelming evidence” (p.22) of positive change in such factors as career decidedness, cognitive development, career decision-making ability, vocational identity, internal locus of control, and vocational maturity. Some of the studies employed research designs involving treatment and control groups and most used well-established instruments for measuring variables. Pre- and post-tests provided comparative data in most studies; longer term outcome effects extending into the workplace were rarely, if ever, investigated.

Of the 50 studies mentioned above, only two studies addressed negative career thoughts as the variable of interest. Kilk (1998), using the Career Thoughts Inventory (CTI) in a career course evaluation by 346 university students, found that students who had not decided on a field of study showed significantly higher overall dysfunctional career thinking than those who had. Students participating in the course demonstrated less decision-making confusion than the control group; commitment anxiety and external locus of control were not

significantly different. Several years later, Reed et al. (2000) used the CTI as a pre-post measure to gauge the impact of a career course, again among undergraduate students. In addition to determining whether overall as well as particular kinds of negative career thoughts changed from beginning to end of the course, the researchers were also interested whether gender and ethnicity were associated with career thoughts. Results showed that negative career thoughts decreased dramatically overall, and that most (positive) change was observed in those students initially having the highest negative thinking. Overall, significant reductions in the decision-making confusion, commitment anxiety, and, to a lesser extent, external conflict components of the CTI were also seen. These changes were not influenced by gender or minority-status factors. Perhaps surprisingly, students with the lowest initial negative thoughts showed a slight increase in the external conflict subscale.

A more recent study also examined the effect of a six-week, one credit course on the dysfunctional career thoughts of a racially diverse sample of university students (Osborn et al., 2007). As with the Reed et al., (2000) study, post-CTI scores were considerably reduced as a result of the intervention, both for the total score and subscale scores, and race was not a significant factor. Once again, however, those who initially rated themselves with the lowest dysfunctional thinking showed a slight increase in decision-making confusion and external conflict after completion of the course. The authors suggest that the career development course may have served to increase awareness of the complexities of career exploration for this group, resulting in slightly altered responses on the CTI post-test.

Morano (2006) investigated the effect of a decision-making course on a small (n=18) group of college students' level of anxiety regarding making a college major choice. The CTI was used as the anxiety-measuring instrument. In this study, a control group of 22 students were used for comparison. Results showed a significant reduction in anxiety for the treatment group but not for the control group.

Investigating a non-student sample participating in a four-week career exploration program, Austin, Dahl, and Wagner (2003) found a very significant drop ($p < .001$) in global as well as all three subscales of the CTI between beginning and end of program.

While the career intervention studies reviewed above have been found to be effective in reducing negative career thinking, they do not explore the specific factors of the intervention such as assessment, occupational research, or counselling, or the psychological individual differences that might be contributing to the effect.

4.4.3 Negative career thoughts related to other constructs

The focus of the research developed in this study is whether cognitive ability and emotional intelligence may influence change in negative career thinking. Since career thoughts are idiosyncratic, they are difficult to measure except by self-report formats. It is useful, therefore, to be able to measure this concept against other similar and peripheral constructs to observe their relationships - one reason why dispositional research is important in organizational behaviour (see House, Shane, & Herold, 1996). The following sections review the limited literature where this has been done with attachment style, sense of coherence, psychological well-being, and Bar-On's notion of psychological mindedness.

4.4.3.1 Negative career thoughts and attachment style

The theory of attachment style, initially developed by Bowlby (1969/1982) to explain infants' relationship patterns with their caregivers, has subsequently been extended to attachment, separation, and loss issues in personal relationships from birth to old age (Ainsworth, Blehar, Waters, & Wall, 1978; Bartholomew, 1990). Briefly, a person's attachment response can be one of three styles: secure, avoidant, or anxious/ambivalent. Secure persons find it relatively easy to form attachments with others, are able to give and receive care as needed, and are not concerned that they will be abandoned. Avoidant attachment style is characterised by discomfort with becoming too intimate, difficulty with trusting and depending on others, and a tendency to deactivate the anxiety felt in relationships by focusing on self-sufficiency instead (Van Eecke, 2007). Individuals with an anxious/ambivalent, or preoccupied, attachment style, on the other hand, wish others to be much more closely involved than that other might wish. They are anxious that others do not love them and will perhaps abandon them. Research has demonstrated a link between attachment styles and career exploration. For example, Ketterson and Blustein (1997) found that undergraduate college students with secure attachment style with parents demonstrated

significantly more career and self exploration. Wolfe and Betz (2004), also using a university student sample, found that a secure attachment style was associated with higher career decision-making self efficacy and lower fear of commitment. The reverse was found for avoidant and anxious attachment styles. More recently, Van Ecke (2007) investigated the relationship between negative career thoughts and attachment styles in a sample of adult immigrants. Using the CTI as the measure, she found that a secure attachment style was linked to low overall negative career thoughts whereas both avoidant and anxious attachment styles were associated with significantly higher global levels of negative career thoughts. An anxious style correlated positively but non-significantly with all three of the CTI subscales, whereas the avoidant style correlated significantly with Decision-Making Confusion and External Conflict but not with Commitment Anxiety. The author concludes that understanding the relationships between negative career thinking and attachment style in clients has useful application in the career counselling process.

4.4.3.2 *Negative career thoughts and Sense of Coherence*

The last several decades have seen a shift from studying what is ‘wrong’ or maladaptive about people and their behaviours (i.e. their pathology) to investigating what human behaviours are ‘right’, adaptive or salutogenic. Antonovsky (1987, 1991) proposed that individuals possess varying degrees of generalized health resources that allow them to manage, resist, and adjust to the numerous stressors of everyday life. He referred to this resource as *Sense of Coherence* (SOC) and defined it as “the extent to which one has pervasive, enduring and dynamic feelings of confidence that one’s internal and external environments are predictable and that there is a high probability that things will work out as well as can be reasonably expected” (Antonovsky, 1979, p. 123). In addition to a global SOC factor, Antonovsky (1998) identified three subcomponents: comprehensibility, manageability, and meaningfulness. Comprehensibility is the degree to which an individual perceives that one’s environment is predictable, operates under some code of rules, and is explainable. Manageability represents one’s belief that he or she can cope with the demands of life, and meaningfulness is the appraisal that life makes sense and that its demands are worthy of investment and commitment (Korotkov, 1998; Lustig & Strauser, 2002). Higher SOC has been shown to be associated with positive psychological characteristics such as self esteem, internal locus of control, and life satisfaction, and with increased personal

adjustment to a variety of life stresses (see Lustig & Strauser, 2008). Strümpfer (1995) argues that higher SOC could also be expected to contribute to the successful navigation of life transitions such as career decision making. Conversely, lower SOC appears related to those factors associated with ill health including anxiety, depression, and general dysfunctional thinking (Larsson & Kallenberg, 1999).

Career decision-making is considered one of life's stress-producing events (Lustig & Strauser, 2008; Szymanski, Hershensen, Enright, & Ettinger, 1996) and several studies have investigated whether SOC may have a moderating effect on negative career thoughts. Lustig and Strauser (2002), found evidence to support their hypothesis that individuals with a stronger SOC acknowledge fewer negative career thoughts and appear more able to make appropriate career decisions, feel less anxiety about committing to their decisions, and effectively balance their own with others' needs in the process. Their results show a medium relationship with overall CTI scores accounting for approximately 14% of the variance. Similar results were obtained when the authors repeated the study using a sample of adults with various disabilities involved in vocational rehabilitation at a university-based assessment centre. One limitation of both studies was the generalizability of conclusions to other populations, since, in the first investigation, most of the participants were female college students not yet looking for employment, and the second sample of disabled adults was also not representative of the general population. Repeating this study with a sample of career-exploring adults in a government-funded program, Austin, Dahl, and Wagner (2010) found a stronger (inverse) relationship between SOC and negative career thoughts than either of the Lustig and Strauser studies, with global CTI accounting for about 37% of the variance. Based on these few research investigations, it appears that lower SOC is significantly associated with more negative career thinking. None of the above studies measured whether higher SOC was correlated with an individual's ability to shift their career thoughts in a more positive direction.

4.4.3.3 *Negative career thoughts and Psychological Well-Being*

Psychological well-being (PWB) is a construct arising out of the study of the factors that contribute to normal human mental wellness and healthy psychological functioning (Ryff, 1995; Ryff & Singer, 2008). Evolving from the literatures in human development, clinical

psychology, and mental health, six core dimensions have been proposed as contributing to an individual's well-being: self-acceptance, personal growth, purpose in life, positive relationships with others, environmental mastery, and autonomy (see Ryff & Keyes, 1995). PWB could be defined as the "by-product of a life that is well-lived" (Ryff & Singer, 1998, p.5) and "encompass(es) a breadth of wellness that includes positive evaluations of oneself and one's past life (self-acceptance), a sense of continued growth and development as a person (personal growth), the belief that one's life is purposeful and meaningful (purpose in life), the possession of quality relations with others (positive relations with others), the capacity to manage effectively one's life and surrounding world (environmental mastery), and a sense of self-determination (autonomy)" (Ryff & Keyes, 1995, p. 720). Given the importance of career development in a person's life, and the possible accompanying stresses, Strauser, Lustig, and Ciftci (2008) investigated whether PWB was related to, among other things, career thinking. Using the six core dimensions as predictor variables, the researchers found significant contributions of PWB to the variance of overall CTI as well as the three subscales, ranging from a low of 24% of variance for External Conflict to a high of 40% for Commitment Anxiety. They argue that increased PWB has a powerful and positive impact on the career development process. Higher levels of PWB enhance the ability to think more cogently about career problems and about one's motivations to engage in career decision making. In addition, PWB may be associated with a greater capacity to manage external negative variables, and a greater awareness of how negative thinking affects problem solving and motivation.

While the two constructs have different theoretical roots, there appear to be parallels between the six dimensions of PWB and the dimensions of emotional intelligence as envisioned by Mayer and his colleagues (Mayer et al., 2004). According to Ryff (1995) individual variations in subjective well-being are closely tied to one's interpretation of life experiences - in other words, how one construes life situations and assigns value to them. At the most hierarchically complex level of functioning, emotionally intelligent individuals are able to manage themselves and others in the environment, thereby achieving the aspects of human wellness described by PWB.

Bar-On's notion of *psychological mindedness* may also parallel the construct of PWB. Recall that Bar-On refers to his theory of emotional intelligence as an "emotional-social"

model which emphasizes the adaptive effectiveness of emotional and socially intelligent behaviour (Maltby et al., 2007). In a study similar to that of Lustig & Strauser (2008) described above, Dahl, Austin, Wagner, and Lukas (2008) investigated the relationship between emotional intelligence as measured by the EQi (Bar-On, 1997) and negative career thinking using the CTI. Results showed a medium to large effect size ($r = -0,46$; $p < ,001$; $n = 392$). One of the EQi subscales – Adaptability – appeared to be responsible for much of the relationship.

The above section (4.7.3) has presented the literature linking negative career thinking to constructs which bear resemblance to the general notion of emotional intelligence. Regardless of the statistical properties of each of the instruments used, it should be noted that all of these constructs are measured by self-report, and the likelihood of higher correlations is increased. There appeared to be no studies in which the role of emotional intelligence, viewed as a mental ability and measured by a performance-based test, was investigated in relation to negative career thoughts and their change as a result of career exploration.

4.4.4 Change in negative career thoughts across the lifespan

There is a distinct paucity of research as regards possible changes in career thinking across the life span. While Sampson et al. (1996) developed CTI scales for three normative groups (i.e. high school students, college students, and adults), they did not further delineate any age subsets within the adult sample. With this in mind, Dahl, Austin, and Wagner (in press) investigated whether different age groups of career exploring adults demonstrated differing degrees of negative career thinking. Eight hundred fifty adults (58% women) were grouped into one of three life stages proposed by Super (1990) – Exploration stage including adults from ages 15 to 24, Establishment stage for ages 25 to 44, and the Maintenance stage including adults from age 45 to 64. Each stage is thought to be characterized by different developmental tasks related to career, and it was hypothesized that younger individuals in the Exploration phase would show more overall negative career thinking as well as more decision-making confusion, commitment anxiety, and external conflict than their older counterparts. Results indicated that there was an overall mild but significant decrease of negative career thinking with age. This effect was also observed for decision-making confusion and commitment anxiety, but not, somewhat surprisingly, with external conflict.

The research suggests that adults exploring new occupational options are not a homogenous group with respect to career thinking.

4.5 CHAPTER SUMMARY

The purpose of this chapter was to present research regarding negative thinking, and more specifically, negative thoughts as they concern career development. Negative thoughts can be processed at a number of different levels. A model which conceptualizes information processing in the area of career problem solving and decision making as a pyramid of interrelated domains with higher level mental abilities at its peak was briefly discussed. The conceptualization of career thoughts, their dimensions, and behavioural dynamics were presented.

Although the number of studies investigating negative career thinking is limited, several strands of research were identified and summarized in this chapter. Individuals in society who are at risk because of some disadvantage are likely to encounter more barriers to meaningful employment. The research investigating career thinking in several vulnerable populations was presented.

Interventions designed to assist individuals with career exploration appear to have considerable success in decreasing the intensity of negative career thinking, both in student and non-student adults. The factors responsible for these changes may reside in the various aspects of the program as well as within the individual, but these relationships are less well explored.

Negative career thinking is associated inversely with an individual's psychological health and well-being and ability to cope in the environment. Conversely, negative thoughts are positively associated with more maladaptive psychological functioning. Studies where negative career thoughts have been researched with several such constructs were presented. Lacking in the literature are any studies which investigate whether emotional intelligence conceptualized as a mental ability is related to change in negative career thinking.

There appears to be an overall decline in negative career thinking with age when a cross section of adults is examined. Studies investigating the developmental path of negative career thoughts have not, as far as can be determined, been carried out.

CHAPTER 5 INTEGRATION OF THE LITERATURE

5.1 INTRODUCTION

The purpose of this chapter is to integrate the literature regarding the three previously reviewed constructs of cognitive ability, emotional intelligence, and negative career thoughts so as to establish the hypotheses for the empirical study. The chapter begins by positioning this research within the field of Industrial/Organizational Psychology, and then discussing the context in which the research has been conducted. Literature which has explored each pair of variables is presented followed by conceptualization of all three variables together. A model of the relationships investigated in this study is presented along with the various hypotheses posed. A summary completes the chapter.

5.2 CONTEXTUALIZATION

In order to better integrate the literature reviewed in the previous chapters, it is helpful to discuss both the general and specific contexts that bring the constructs together in this research.

5.2.1 Context within Industrial/Organizational Psychology

Industrial/Organizational psychology in its broadest definition is the study of human behaviour and cognition as it relates to the world of work (Kline, 1996; Zedeck, 2004). As such it subsumes those activities that are involved with helping individuals explore and make decisions regarding meaningful employment. I/O Psychology methods and goals are at once scientific and applied in that theories that are explored can be effectively related to practice (Muchinsky, 2006).

There has been a paradigm shift within the field of I/O Psychology within the last several decades. Typically, research regarding career exploration has focused on cognitive ability as the dominant influence in predicting behaviour at work, in particular job satisfaction and work performance (Ashkanasy, 2004; Hunter & Schmidt, 1996; Kidd, 1998). Barsade and Gibson (2007) argue that I/O Psychology has undergone an “affective revolution” (p.36) in

which affective constructs such as emotional intelligence, in addition to the cognitive dimensions, are also seen as influential in career settings. They predict that investigating emotional intelligence will considerably expand our understanding of organizational life, but at this point, the links between emotional intelligence, its subcomponents, and other factors such as cognitive ability and negative and positive affect are still unclear. Ashkanasy and Daus (2005) argue that emotions, and specifically emotional intelligence is important to study in the context of organisational behaviour. Muramatsu and Hanoch (2005), elaborating on the work of Simon (1983) regarding human rationality, advance the theory that emotions "...play a significant role in guiding and regulating choice behaviour, by virtue of their capacity to modulate numerous cognitive and physiological activities" (p. 202). They argue that these emotional processes contribute to adaptive behaviours, and propose that research is necessary to better understand cognitive-emotional interactions in human judgement and decision-making.

5.2.2 Context of current research

I/O Psychology is "...well positioned to probe the impact of context on behaviour" (Johns, 1998, p. 151). In keeping with Sternberg's argument that intelligence is best understood within a particular context and real-life applications (Sternberg, 1985a, 2003), it is appropriate to discuss that context with respect to the current research. Three aspects of the context are particularly important and together form a set of relationships that have not yet been explored.

First, career exploration has typically been investigated with student populations, often because of their availability as participants in a high school or university setting (Brown, George-Curran, & Smith, 2003; Folsom, Reardon, & Lee, 2005; Reed, Lenz, Reardon, & Leierer, 2000). While career exploration with post-secondary students is important (Osborn et al., 2007), they represent a developmentally different cohort than non-student adults. Typically students are younger, are not likely to have been involved in the workforce to any great extent, and their thinking may not reflect that of older non-student adults. Therefore, generalizability of results using student populations may not lead to best practice when dealing with older adults. Studies in which this population is investigated are called for

(Austin, Dahl, & Wagner, 2003; Austin, Wagner, & Dahl, 2004; Brown et al., 2003; Weinstein, Healy, & Ender, 2002).

Second, career exploration programs have been shown to be highly effective in helping individuals change thinking in such areas as career decision-making, commitment anxiety, and locus of control among others (Austin et al., 2003; Austin, Dahl, & Wagner, 2010; Folsom et al., 2005; Kilk, 1998; Reardon, Leierer, & Lee, 2007; Reed, Lenz, Reardon, & Leierer, 2000). A career exploration program is therefore an appropriate milieu in which to observe whether changes in negative career thinking occur, especially if that program is theory-based and consistent in content, instruction, and counselling. While many factors stimulate change, it can be hypothesized that the changes in negative career thinking may be due to the extent to which each individual employs his or her personal resources in coping with the demands of the career exploration process.

Scientifically investigating emotions which arise in everyday settings is often difficult and may require that emotions be induced in order to be studied (see, for example, Matthews et al., 2006). Research which explores behaviour in hypothetical and unrealistic situations has been criticized as having questionable validity (Bruine de Bruin, Fischhoff, & Parker, 2007; Gigerenzer, Todd, & the ABC Group, 2000). A third aspect of context for the current study is that individuals be observed pursuing career exploration in a real-life situation as a result of job loss, chronic unemployment, desire for career change, and other reasons necessitating return to the workforce.

5.3 RESEARCH PAIRING VARIABLES

To date, no research has been found that explores cognitive ability, emotional intelligence, and negative career thinking as the variables of interest in one study. However, emotional intelligence and cognitive ability, together or separately, have been investigated in conjunction with other aspects of the world of work such as work performance, emotional labour, job insecurity, and career decision making. This research will now be presented in order to bring the various strands of the literature together.

Côté and Miners (2006) investigated the relationship between emotional intelligence, cognitive ability and performance in the workplace. They measured three facets of work performance as well as cognitive ability and emotional intelligence (using the MSCEIT as the EI measure) in a sample of staff employed at a university. Results indicated that there is not a linear relationship between each of cognitive ability and emotional intelligence with job performance, but that lower cognitive ability participants compensated for this deficiency by displaying higher levels of emotional intelligence in at least two of the job performance criteria. This is useful information as it suggests that cognitive ability and emotional intelligence are interactive and that neither by themselves can accurately predict all types of work performance. Further research replicating these findings with other outcome variables may show that the relationship between overall g and emotional intelligence is not a simplistic one in other areas as well.

Liu, Prati, Perrewé and Ferris (2008) conducted research investigating emotional intelligence and negative affect as personal resources influencing the “emotional labour” (p. 2415) that employees perform in coping with customer interactions, as well as outcomes such as job tension and job satisfaction. Both emotional intelligence and negative affect were used as proxy indicators of emotional resources on either end of a continuum rather than variables influencing each other. Self-report tests were employed in the measurement of both variables. Correlation results indicated a medium and significant relationship ($r = -0,37$; $p < ,05$) between emotional intelligence and negative affectivity. The authors suggest that emotional intelligence and negative affect may not, in fact, represent high and low levels of emotional resources. They also suggest that measures of emotional resources that are not self-report need to be used when researching coping behaviours, and that other kinds of personal resources such as abilities and skills be included as well.

Over the last several decades, changes in industrialized economies such as downsizing, outsourcing, and organisational restructuring have led to increased job instability and insecurity. Research regarding job insecurity outcomes has been found to be controversial. For some employees, the perceived threat of job termination or alteration results in greater work effort and more work involvement (Galup, Saunders, Nelson, & Cerveny, 1997; Jalagas & Bommer, 1999; Van Dyne & Ang, 1998). For others, increased stress and lowered work performance has been reported (O’Driscoll & Cooper, 2002). Jordan, Ashkanasy and Hartel

(2002) have presented a model in which EI acts as a moderator of behavioural reactions to job insecurity. They argue that higher EI, in particular emotional awareness and emotional management, better equips employees to cope with two outcomes of perceived job insecurity – lowered affective commitment to the organization, and increased tension related to the job. Lazarus and Folkman (1987) identify two coping behaviours: those that are problem-focused, which address the immediate source of the job insecurity, and those which are emotion-focused and address the emotional reactions to the stress. For both strategies, the coping behaviours employed may assume positive or negative forms, and some research (Catalano, Rook, & Dooley, 1986) suggests that, under stress, individuals are more likely to default to negative coping behaviours. Jordan et al. (2002) argue that high EI individuals are better able to break the cycle of negative thinking and negative coping behaviours that surround job insecurity. They suggest that further research is needed to investigate which factors of EI contribute most to coping with workplace insecurities, and where in the sequence of emotional reactions EI is likely to be most effective.

Brown, George-Curran, and Smith (2003) hypothesized that an individual's ability to guide his or her thinking and actions using EI would be efficacious in the career exploration and decision-making process. Four EI factors, Empathy, Utilization of feelings, Handling relationships, and Self-control were measured using the self-report Emotional Intelligence Inventory Revised (Tapia & Burry-Stock, 1998) and relationships explored with two career factors, Career decision-making self efficacy, and Vocational exploration and commitment. High Career decision-making self efficacy scores indicate greater client confidence in decision-making tasks, whereas high scores on Vocational exploration and commitment reflect a lower level of commitment to career choice. Career decision-making self-efficacy was positively and significantly related to all four EI factors (either a low or medium effect size). Vocational exploration and commitment was negatively and significantly associated with Utilization of feelings and Self-control EI factors (medium effect size) but not with Empathy or Handling relationships. Hierarchical regression analyses revealed that Utilization of feelings and Self-control EI factors were the most predictive of the career commitment and decision-making factors investigated. The authors conclude that the ability to understand, analyze, and employ emotional knowledge (Utilization of feelings) as well as the ability to regulate emotions (Self-control) can be used advantageously in completing career exploration related tasks. In addition, they advocate considering the role of emotional

functioning in career interventions. The use of a non-student sample as well as a performance-based EI instrument was suggested for further research.

5.4 CONCEPTUALIZATION OF RESEARCH VARIABLES

For this research, the main components are conceptualized in the following manner.

Career exploration is likely to be experienced by an individual as a life stressor (Sampson et al., 1996). That stress may have been initiated by a variety of changes in the environment - job loss, insecurity, dissatisfaction, restructuring, instability, among others – resulting in an impediment to achieving one’s personal goals (Dekker & Schaufeli, 1995; Hamilton, Karoly, & Kitzman, 2004; Slaski & Cartwright, 2003). These changes elicit emotional responses, the magnitude and quality of which depends on the interpretation and value placed on them by the individual. These emotional responses impact cognitive and physiological activities, and thereby promote or impede subsequent performance (Lam & Kirby, 2002).

Individuals are possessed of resources with which they cope with the challenges of everyday living. Intelligence is viewed as a psychological resource which is available to individuals in varying degrees (Carroll, 1993; Gottfredson, 1998; Gottfredson & Saklofske, 2009; Hunter & Schmidt, 1996; Jensen, 1998). Cognitive ability (g or IQ) accounts for a large part of the mental resources a person has at his/her disposal, but other more specific components are also available. One possible additional intelligence is that of emotional intelligence, a construct for which validation is still in progress. For this research, emotional intelligence is conceptualized as a more specific ability and a more focused psychological resource which allows one to process emotionally-laden information resulting in problem-solving that promotes adaptation to the environment.

Appropriate resources focused on the problem at hand are more likely to result in outcomes that are of benefit to the individual. Responding to external or internal changes in some context of the environment in such a way that quality of life, work, or relationships is improved can be said to be adaptive. In this research, increased problem resolution and subsequent adaptive behaviour with respect to career is conceptualized by change in thinking from a more negative state to more positive stance on the continuum.

To summarize, career decision making, especially when this activity is pressured by continued unemployment, increased financial burdens, tensions with significant others, or lack of information, can be perceived as a stressful event in an individual's life (Sampson et al., 1996). Coping with such stressors requires psychological resources that are not as available to some as to others (Kokkonen & Pulkkinen, 2001; Liu, Prati, Perrewe, & Ferris, 2008; Lustig & Strauser, 2002). Research that investigates whether individual-differences factors such as cognitive ability and emotional intelligence can predict successful outcomes in one's reaction to stressful worklife events may be useful to better understand the antecedents to work-related outcomes (Liu, et al., 2008; Pugh, 2002; Schaubroeck & Jones, 2000).

The current research amalgamates several elements not previously studied in one investigation. Negative career thoughts are investigated as an important life outcome since they are closely tied with successful career exploration. Two psychological factors that may influence, and therefore predict, negative career thoughts are cognitive ability and emotional intelligence. The primary purpose of this research is to determine the extent, if any, to which cognitive and emotional intelligence can predict negative career thoughts and negative career thoughts change. Within this purpose, it seeks to speak to the validity of emotional intelligence as a construct. To determine validity it is necessary to correlate the results of the test under investigation "...with performance on some criterion that is external to the test" (Jensen, 1998, p. 272). In this study, the external criterion is negative thinking and the change in negative thinking with respect to career. If emotional intelligence is, in fact, an ability defined as perceiving, using, understanding, and managing emotions so as to adapt to one's environment, then there should be a significant relationship between measured emotional intelligence and negative career thoughts and negative career thoughts change. In addition, if emotional intelligence is a discrete ability apart from general intelligence, then it will be able to predict negative career thoughts and their change when another factor, such as general cognitive ability is accounted for - that is, statistically partialled out.

5.5 DIMENSIONS AND BEHAVIOURAL DYNAMICS

Within the world of career exploration, two main areas are investigated: career thoughts and psychological resources that may influence those thoughts. The dimensions and behavioural dynamics of each are discussed.

Career exploration is a stressful endeavour, often characterized by unhelpful cognitions that hinder the successful career problem solving and decision making necessary for a person to move on (Lam & Cheng, 2001; Osborn, Howard, & Leier, 2007; Sampson et al., 1996). These negatively biased cognitions have been found to occur in at least three areas: confusion with regards to career decision making, anxiety in committing to a career choice, and conflict in balancing information and influences between self and significant others in the individual's life (Reardon, Lenz, Sampson, & Peterson, 2000; Sampson, Reardon, Peterson, & Lenz, 2004). It is anticipated that an individual's level of stress with regards to career exploration will be manifest by his or her disclosed negative thoughts in each of the three areas as well as an overall general level of negative career thinking. Specifically, participants experiencing decision-making confusion are expected to identify more closely with items that describe those thoughts – for example, “I'm so confused, I'll never be able to choose a field of study or occupation” (Item #27, CTI; Sampson et al., 1996). Similarly, those experiencing the anxiety associated with making an important choice are expected to rate themselves more highly on items such as “I worry a great deal about choosing the right field of study or occupation” (Item #35). And, individuals encountering tensions in their interactions with significant others with respect to their career choices (or lack thereof) would likely rate themselves higher on a statement such as “The views of important people in my life interfere with choosing a field of study or occupation” (Item #6). These negative thoughts may result in reduced coping behaviours, increased emotional ambivalence, and increased maladaptive behaviours (Bolger & Zuckerman, 1995; Gunthert, Cohen, & Armeli, 1999; Kokkonen & Pulkkinen, 2001).

For this research, psychological resources are measured on two dimensions: cognitive ability and emotional intelligence. Previous research shows higher general cognitive ability to be associated with increased ability to learn, reason, solve problems and adapt to the demands of specific environmental contexts, especially as tasks become more complex (Gottfredson

& Saklofske, 2009). A greater level of cognitive ability would be demonstrated by higher scores on a performance-based IQ test. However, there is also evidence that more specific abilities such as emotional intelligence may be a factor in dealing with emotionally-laden problems and situations such as would be expected in career exploration. Bar-On, Tranel, Denburg, and Bechara (2003) argue that it is a deficiency in emotional intelligence, despite adequate cognitive ability, that is related to poor decision making. Higher levels of emotional intelligence would be evidenced by greater abilities in perceiving the intricacies of emotional situations, using emotions to facilitate the solving of emotionally based problems, understanding the interconnections and pathways of various emotions, and, most importantly, managing emotions. Emotionally intelligent people may find it easier to identify dysfunctional appraisals of situations and, even more importantly, be able to correct them because they have greater coping resources available to them (Epstein, 1998; Zeidner, Matthews, & Roberts, 2006). While evaluations of ability based on self-report can be useful, a more valid and reliable measure may be obtained by performance-based tests in which the individual responds to problems in a manner more similar to IQ tests.

Adaptive outcomes result when maladaptive cognitions and behaviours change. These changes occur to the extent that the individual is able to apply the resources available to him or her to the difficulties that need to be addressed. According to Zeidner et al., (2006), “Coping refers to the process of managing various demands that are appraised as personally threatening, challenging, or otherwise demanding” (p.100). Adaptation in this research is indicated by a change in career thoughts from a higher state of negativity to a lower, more positive level. It is expected that there will be less difficulty with career decision making, a reduction in the anxiety associated with committing to a career, and less conflict in balancing the wants and needs of self with those of others.

5.6 RESTATEMENT OF THE EMPIRICAL RESEARCH QUESTIONS

This study is an investigation of the predictive validity of cognitive abilities, or IQ, and emotional intelligence as they related to negative career thoughts. It brings together two areas of research in psychology – Cognitive and Industrial/Organizational Psychology – in an attempt, first, to determine whether cognitive ability and emotional intelligence can be seen to predict real life outcomes such as negative career thinking, and second, to determine

whether emotional intelligence plays any part in the “affective revolution” supposedly occurring in I/O psychology (Barsade and Gibson, 2007). With this in mind, the empirical research questions are as follows:

- What are the psychometric relationships between cognitive ability, emotional intelligence, and negative career thoughts measured before and after a career exploration program? It is expected that both higher cognitive ability and higher emotional intelligence will be associated with fewer negative career thoughts both before and after a career exploration program, and that both cognitive and emotional intelligence will predict negative career thoughts before and after career exploration.
- What are the implications of this research for Industrial/Organisational Psychology and for future research?

5.7 CHAPTER SUMMARY

The purpose of this chapter was to integrate the three main areas being investigated in this research – cognitive ability, emotional intelligence, and negative career thoughts. It was first necessary to position the research within the context of Industrial/Organizational Psychology and this was briefly discussed. In addition, the specific context of this research and how it may be unique from other studies was discussed. Past research in which two or more of the variables have been investigated together was presented. Conceptualizations of the different components were discussed as were the dimensions and behavioural dynamics of each. The empirical research questions were restated. The methodology for the study now follows.

CHAPTER 6 THE EMPIRICAL STUDY

6.1 INTRODUCTION

The purpose of this chapter is to explain how the empirical study was conducted so as to explore the relationship between cognitive ability, emotional intelligence, and negative career thoughts in a group of career-undecided adults. Included in the chapter is a description of how the sample was selected, characteristics of the sample, and the instruments utilized in the study. In addition, data collection and data treatment procedures are discussed. The hypotheses for the study are presented. The chapter concludes with a summary.

6.2 POPULATION AND SAMPLE

According to Smith and Glass (1987), a sample is composed of units directly involved in the study and which is as representative as possible of the larger population. In this study, the unit under investigation is the individual, and this section describes how these individuals were selected and their characteristics.

6.2.1 Population

It was decided that the population from which the current sample was obtained needed to be restricted, not only to non-student adults, but adults within a certain age span. Much of the research regarding negative career thinking has focused on young adult student groups (Gordon, 1998; McWhirtner, Rasheed & Carothers, 2000; Weinstein, Healy & Ender, 2002). In addition, many of the studies conducted on the concept of emotional intelligence have also used college age or student samples (for example: Brackett & Mayer, 2003; Brackett, Mayer & Warner, 2003; Mayer, Salovey, Caruso & Sitarenios, 2003). Brown, et al. (2003) point out that the generalizability of studies using student populations is limited and needs to include non-student groups. Non-student adults are more likely to be challenged by a variety of stressors including unemployment, issues related to family such as separation, divorce, etc., and possible physical issues than would be faced by students (Amundson & Borgan, 1996; Osipow, 1999; Patton & Creed, 2001; Phillips & Blustein, 1994; Super, Savickas, & Super, 1996) and so negative career thinking and coping mechanisms are likely to be

different. As well, it has been recommended that research in emotional intelligence focus more on midlife adults whose differentiation of abilities is more likely to be maximized as compared with young adults or seniors (Schaie, 2001). There is, of course, no definitive age at which one can be said to be a midlife adult, and so it was decided that the career stages proposed by Donald Super (Super, 1990) be used as a guide. With respect to the “life/career rainbow” (Reardon, et al., 2000, p. 14), Super divides the working life of an individual into 5 age spans of which two are most germane to this study - the Establishment phase and the Maintenance phase, covering the ages of approximately 25 to 65. For this study, the criteria for inclusion, therefore, was that individuals needed to be adults between the ages of 25 and 65, and not attending post-secondary institutions or other training programs. In addition, participants were unemployed and Canadian residents with an adequate knowledge of the English language.

6.2.2 Sampling technique

Random sampling, while more preferable in empirical research for generalizability purposes, is not always possible when the study must rely on available subjects who must have completed a particular program. Non-probability, or more specifically, purposive sampling techniques (Babbie, 2001; Smith & Glass, 1987) were employed in this study since its purpose is to investigate emotional intelligence in adults in a career exploration program.

To ensure that conditions were as similar as possible between self-evaluations of negative career thinking, participants were recruited from only one career exploration program. This program is funded by a federal government of Canada ministry, Services Canada.

Cohen (1992) provides the numbers of participants required to achieve a medium effect size at a power level of 0,80 using an alpha coefficient level of 0,05 for various statistical tests. Using the above parameters, the number of data sets required for the following statistical tests would be:

- for multiple regression analysis having two independent variables - at least 67;
- for multiple regression analysis having five independent variables – at least 91;
- for Pearson product moment correlations – at least 85 data sets.

For this research, the number of complete data sets is 193 which is therefore sufficient to meet the power and effect size conditions, thus reducing the probability of Type II error.

6.2.3 Sample characteristics

Participants meeting inclusion criteria were, on average, 41 years old with an age range from 25 to 63. Education level, as determined from intake information, varied from eight years of schooling to eighteen (Master's degree) but averaged at end of high school (i.e. end of grade 12). This was corroborated by achievement testing showing average ability in reading, writing, and math to be at about the grade 12 level as well. Thirty-seven percent of participants were male and 63% female. None of the participants was employed at the time of intake.

6.2.4 Program description

Some individuals looking to enter the workforce are already sure of their occupational goals and are engaged in activities leading to employment. Others are not clear about their vocational choices. A career exploration program focuses on the latter group and assumes that clients are attending in order to clarify their career goals and aspirations. The career exploration and decision-making program from which the participants in this study were chosen was developed using the Cognitive Information Processing model (Peterson et al., 1996) described in Chapter 4. As described, the model is hierarchical in that self and occupational knowledge form the foundations for decision-making skills and for the executive processing domain at the top of the pyramid. Program content, therefore, focussed on assisting the individual to fill in gaps regarding self-knowledge in areas such as IQ, multiple intelligences including emotional intelligence, aptitudes, achievement (academic skills levels), personality, interests, values, etc. To accomplish this, specific content modules addressing these areas were taught to the client group by qualified career counsellors and learning specialists. In addition, individuals were encouraged and assisted in filling in gaps in occupational knowledge regarding the world of work – for example, types of occupations and how they might be related, training programs necessary to reach a vocational goal, funding availability, etc. Clients were counselled in decision-making skills. Using the knowledge gained, clients were then assisted in arriving at a career decision, a process,

which, by necessity, requires executive functioning by way of separating relevant from irrelevant information, problem solving, planning, monitoring, evaluating choices and regulating behaviour.

The above program components were designed to fit into a sixteen-day period of time although some clients achieved vocational clarity sooner than others and were able to complete in less time. Components were structured so as to be as similar for all clients as possible. Initial administration of the measure of negative career thoughts was given at the very beginning of the program before any other assessment or teaching had been done.

6.3 MEASURING INSTRUMENTS

Cognitive ability was measured by the Wonderlic Personnel Test (WPT). Emotional intelligence was measured by the Mayer-Salovey-Caruso Emotional Intelligence Test – version 2.0 (Mayer, Salovey, & Caruso, 2002). The Career Thoughts Inventory (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996) was used to measure negative career thinking. Each of these three measurement instruments is now discussed with respect to rationale, aim, development, dimensions, administration, validity, reliability, and justification for use in this study.

6.3.1 Wonderlic Personnel Test (WPT)

The WPT measures an individual's overall or global cognitive ability by means of an objective, performance-based test.

6.3.1.1 Rationale

It is expected that individual differences will be observed with respect to participants' cognitive abilities as measured by the WPT. Clients with more cognitive ability will solve more problems and obtain a higher score than those with lower cognitive ability.

6.3.1.2 *Aim*

The aim of the WPT is to provide a quantitative measure of a person's general cognitive ability or "g", especially as it pertains to the world of work.

6.3.1.3 *Development*

The WPT was initially developed as an abridgment of the Otis Self-Administering Test (Otis, 1928) and standardized using adults in business and industry (Wonderlic & Hovland, 1939). Since that time a variety of alternate forms have been developed and it is also available in several languages other than English.

6.3.1.4 *Dimensions*

The 50 items on the WPT tests encompass a variety of verbal and non-verbal reasoning and problem solving tasks such as arranging words into a proper sentence, comparing sequences of numbers, analyzing geometric figures, and performing math calculations in response to story problems. One score of cognitive ability is produced by the WPT. Cognitive ability is understood to mean the level at which an individual is expected to learn, problem solve, and understand instructions (Wonderlic, 2002). In addition, the WPT User's Manual indicates that higher scoring individuals are more likely to master more complex material, learn more quickly on the job, and make better decisions with less information (Bell, Matthews, Lassiter, & Leverett, 2002; Wonderlic, 2002). At least two studies have investigated the relationship between the WPT and measures of crystallized and fluid intelligences (Bell et al., 2002; Matthews & Lassiter, 2007). While crystallized intelligence tended to be the stronger relationship, both studies did not find significant divergent validity between crystallized and fluid intelligence and it was concluded that both fluid and crystallized intelligence components are included in the WPT score. Hawkins, Faraone, Pepple, Seidman and Tsuang, (1990) conclude that the WPT "taps intellectual functions widely and may reasonably be considered a test of global intelligence" (p. 200).

6.3.1.5 Administration

The WPT is a paper and pencil test which can be administered individually or in a group setting. Administration of the test consists of two parts: a timed and a subsequent untimed period. Test-takers are not initially made aware of the untimed part of the test to encourage maximum performance on the timed session. Each participant receives a closed test booklet with a series of instructions on the outside of the booklet and the items on the inside. Instructions are read aloud with each individual or group of test-takers to ensure understanding of test procedures. As per the instructions, participants are advised that they will have twelve minutes from when they are told to begin to complete as many questions as they can. Several examples are used to alert participants to the type of questions they may encounter. Questions on the WPT are presented using both open format and multiple choice-type responses. After exactly twelve minutes, test-takers are asked to stop working and instructions given so that the administrator can determine how many questions were completed in that amount of time. Participants are then allowed to continue completing as many of the items as they can and are given unlimited (within reason) time to do so.

The number of correct responses completed during the twelve minute administration represents an individual's raw score. This score, however, is adjusted by adding up to five additional points depending on the participant's age in order to account for the slower processing and reduced problem solving speed of older clients. For the majority of test-takers, this timed score is the best estimation of cognitive ability as measured by the WPT.

For some clients, the timed score is considered an underestimation of actual ability if more than eight additional items are answered correctly on the untimed portion of the test. In this case, the total number of correct responses less six points is used as the more appropriate score.

Several different forms of the WPT are commercially available. For this research, only two – Form A and Form B – are used and are approximately evenly divided numberwise. Since minor differences between Forms A and B are observed, the WPT User's Manual (2002) provides procedures for compensating for the more difficult version. The WPT is a "B" level

test and can therefore be administered and interpreted by persons with adequate knowledge of psychometrics and training in test administration.

6.3.1.6 Reliability and validity

According to the User's Manual (2002), three normative studies, the most recent in 1992, have been carried out resulting in cumulative samples in excess of 100 000 individuals (Dodrill, 1981, 1983; Dodrill & Warner, 1988). In addition, smaller studies have investigated more specific subgroups (e.g. Chan, 1997; Hawkins et al., 1990) as well as gender and racial differences (Buttigieg, 2006).

High reliabilities for the WPT are reported in the User's Manual. Test-retest reliability has been observed in the range of 0,82 to 0,94 (Dodrill, 1981, 1983). Internal consistency reliabilities (using comparisons of odd with even items) are in the order of 0,88 to 0,94 (McKelvie, 1989).

When compared with other well known measures of cognitive ability, the WPT demonstrates high construct validity. The User's Manual reports correlations with the Wechsler Adult Intelligence Scale – Revised (WAIS-R) ranging from a low of 0,75 to a high of 0,96. It should be noted that the lower correlation (0,75) was found in an atypical subgroup sample - psychiatric inpatients – and that all other studies report *r*'s in excess of 0,85. No studies have been found comparing the WPT to newer versions of the WAIS such as the WAIS-III or the just-released WAIS-IV. In addition to the WAIS-R, favourable correlations are found with the Otis-Lennon Mental Ability Test (*r*'s from 0,83 to 0,99), and with the General Learning Aptitude score (G) of the General Aptitude Test Battery (GATB) (*r* = 0,74). Content validity studies reported in the manual confirm the WPT to contain similar types of items as would be found in other general measures of cognitive ability.

6.3.1.7 Justification

The WPT was chosen for this research for a number of reasons. First and foremost is the consideration of psychometric properties, which in the case of the WPT are based on large standardization sample sizes. Not only does the WPT appear to be a good estimation of

global cognitive ability, but it also demonstrates high reliability with respect to test-retest and internal consistency. Second, the WPT is “widely used in career counselling and occupationally-related decision making” (Leverett, Matthews, Lassiter, & Bell, 2001, p.174) making it an appropriate measure to use in a study investigating career thoughts and the relationship with emotional intelligence.

An important consideration was the ease of administration in a group setting and convenience of scoring. Other measures of intelligence such as the Wechsler Adult Intelligence Scale – 3rd edition (Wechsler, 1997), or the Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999) may have provided a more comprehensive analysis of a client’s cognitive functioning but require individual administration for a much longer period of time. In addition, to reduce the possibility of clients copying answers during the test, it was important that at least two versions of the test be available. The WPT meets these criteria in that it can be given to groups of people within a short time and is easily scored.

6.3.2 Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)

The MSCEIT measures one’s degree of emotional intelligence using an objective or performance-based test.

6.3.2.1 Rationale

In keeping with the dimensional paradigm, it is expected that emotional intelligence is normally distributed across a population, and that individuals who possess more emotional intelligence will score higher on the MSCEIT than those who possess less of it.

6.3.2.2 Aim

The aim of the MSCEIT is to assess one’s ability to process emotionally-laden information and use emotions to solve problems (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Mayer, Salovey, Caruso, & Sitarenios, 2003).

6.3.2.3 *Development*

The MSCEIT v.2 is the most recent test based on the premise that emotional intelligence involves problem solving in the emotions domain and that this ability can best be measured by performance on four factors as described in further sections. The MSCEIT v. 2 was preceded by a research version 1.1 which, in turn, was based on the earliest such test - the MEIS or Multifactor Emotional Intelligence Scale (Mayer et al., 1999). The MEIS consisted of twelve subtests with a total of 402 items. Two different approaches to scoring were tried – consensus and expert. Consensus scoring is based on determining the correct response to an item by examining the typical responses of large numbers of test takers. Expert scoring, on the other hand, considers responses deemed correct as judged by experts in emotions and emotional functioning (Conte, 2005; Matthews et al., 2002; Mayer et al., 2003). Psychometric properties of the MEIS were reasonable considering that this was a first attempt, and demonstrated the possibility of operationalizing emotional tasks as abilities (Mayer et al., 2002).

The MSCEIT Research Version 1.1 (MSCEIT RV1.1) was a further refinement of the MEIS. While it still consisted of twelve subtests, the number of items was reduced to 292 making it easier to complete. Analysis of the results obtained from approximately 1 800 participants revealed the same four-factor solution as the MEIS as well as a two-factor solution in which Perceiving and Facilitating branches were combined to form an Experiential Emotional Intelligence (area) factor, and the Understanding and Managing branches combined to form a Strategic Emotional Intelligence (area) factor. Total, area, and branch score reliabilities were found to be in excess of 0,87 with the exception of Understanding Emotions at 0,79 (Mayer et al., 2002). Further changes at the task and item level resulted in the current version of the MSCEIT having eight subtests and 141 items.

6.3.2.4 *Dimensions*

The MSCEIT v.2 (from hereon referred to simply as the MSCEIT) consists of eight tasks or subtests: Faces, Pictures, Facilitation, Sensations, Changes, Blends, Emotional Management, and Emotional Relations with a total of 141 items. These eight tasks can be divided into four first-order factors which Mayer and Salovey call “branches”. Each of these branches is

described below. In addition, the four branches can be divided into two second-order factors which Mayer, Salovey and Caruso (2002) refer to as “areas”. Finally, all tasks can be combined to give an Overall EI score. Support for the four-branch factor structure has been found (Day & Carroll, 2004; Mayer et al., 2003), as well as for the two areas factor structure (Ciarrochi, Chan, & Caputi, 2000; Mayer et al., 2003).

The MSCEIT total score is an indication of the capacity or ability to reason with emotions and about emotions (Conte, 2005). Its focus is the facilitation of thought and adaptive behaviour using emotion (Caruso, Mayer, & Salovey, 2002a). In their model, Mayer, et al. (2003) define emotional intelligence by the abilities it encompasses. These include four branch scores which reflect the four factors in the model: 1) perceiving emotion, 2) using emotion, 3) understanding emotion, and 4) managing emotion. Each of these is now described.

Perceiving (or perceiving, appraising and expressing) emotions refers not only to being aware of emotional content in the environment, but also accurately identifying it, differentiating between genuine and counterfeit emotions, monitoring internal feelings, identifying bodily sensations in one’s own body, and expressing emotions accurately (Caruso, Mayer, & Salovey, 2002). It allows the acquisition of emotionally laden information upon which actions can be taken (Gohm, Corser, & Dalsky, 2005). This competency is basic to the information processing sequence and represents a lower order level of thinking (Salovey, Woolery, & Mayer, 2003).

The “using emotions to facilitate thinking” dimension assists an individual in focusing attention on salient emotional cues in the environment to enhance rational thinking (Gohm, Corser, & Dalsky, 2005; Salovey & Pizarro, 2003). It enables one to choose the emotional attitude or posture most conducive to problem solving in the situation, as well as allowing multiple perspectives of the problem.

The third branch, “understanding emotions” includes the ability to recognize the “triggers” or antecedent events of emotions, and to gauge the intensity the emotions are likely to reach. It also includes understanding the temporal sequences of emotions, the ways in which

emotions can transform from one to another, and the complex ways in which different emotions interact.

The fourth branch, “managing emotions” includes the ability to control the emotional situation within ones’ self and with others by solving emotionally laden problems. This also involves managing emotions in context, reframing appraisals of emotions, and deliberately choosing productive emotional responses and avoiding counterproductive ones. Ultimately, this ability promotes adaptation by the achievement of goals to enhance one’s life and well-being.

In this research the four first-order (branch) factors will be used as predictors.

6.3.2.5 *Administration*

The MSCEIT can be administered either by 1) a booklet and answer sheet format; or 2) via computer. The MSCEIT is considered a B level test and is to be administered and interpreted by those having adequate knowledge of psychometrics and testing practices. Since all participants completed the test using the computer administration format, only that one will be discussed further.

In all cases the computerized MSCEIT test is prepared and visible on the screen for the client. For this research, this means that the participant’s name, gender, and ethnicity are entered into the appropriate information boxes. In addition, the “General” (or consensus) scoring option is already chosen instead of the “Expert” option as source of comparison group. Verbal instructions are given to all participants regarding how to proceed with the test. The MSCEIT also provides on-screen instructions and an introduction in which test-takers are taught how to respond to test questions for each of the eight subtests.

For any test where participants are required to understand the meaning of text, readability is an issue. Analysis of the readability based on vocabulary difficulty and sentence length, carried out during development of the MSCEIT, show the reading complexity to be at approximately a North American eighth grade level suggesting that it “can confidently be administered to most adults” (Mayer, Salovey, & Caruso, 2002, p. 10).

One advantage of a computerized administration is the reduced possibility of unanswered items. While a client may move on to another question without completing the prior one, the MSCEIT program alerts test-takers to any of the 141 questions that are missed and does not allow the test to be scored without all the items being completed. Upon completion, the MSCEIT is scored by the computer software, and, if required, a hard copy of results produced. The general or consensus scoring option was chosen based on the recommendation of the test developers (Mayer et al., 2002, p. 33), and also by further research that found a very high correlation ($r = 0,98$) between expert and consensus scoring (Mayer et al., 2003). Where reported, other research studies usually employed the consensus scoring option (e.g. Farrelly & Austin, 2007; Lopes, Salovey, & Straus, 2003; Zeidner, et al., 2005). In one study (Côté & Miners, 2006) both expert and consensus options were used and test scores showed virtually no difference.

6.3.2.6 *Interpretation of scores*

Results obtained for the MSCEIT total, area, branch, and eight subtests are expressed as standard scores having a mean of 100 and standard deviation of fifteen. However, while standardized scores are produced for each of these levels, the authors of the MSCEIT caution that only total, area and branch level scores should be used for interpretation purposes and do not recommend interpreting the individual task scores (Mayer, et al., 2003). The MSCEIT User's Manual (2002) suggest the following guidelines for interpreting varying degrees of magnitude of the scores (p. 18):

<u>EIQ Range</u>	<u>Description</u>
69 or less	Consider development
70-89	Consider improvement
90-99	Low average score
100-109	High average score
110-119	Competent
120-129	Strength
130 or more	Significant strength

Interpretation should proceed from examination of the total or global score to examination of the area scores, followed by branch scores.

In addition to the scales discussed above, the MSCEIT produces two other supplemental scores which can prove useful for interpretation. The first is a Scatter Score, (standardized with mean of 100 and s.d. of 15) which indicates the degree of consistency or fluctuation among responses. Very consistent responding would be manifest by a low (i.e. less than 85) score, large fluctuation by a high (i.e. more than 115) score, while typical variability would fall between 85 and 115.

The second supplemental score is the Positive-Negative Bias score which is an indicator of the relative positivity or negativity of a test-taker's responses. Higher scores (standardized with a mean of 100 and s.d. of 15) suggest that an individual may view situations with more positive emotions while low scores suggest a tendency to view the environment with more negative emotions.

6.3.2.7 Reliability and validity

The standardization sample for the MSCEIT V2.0 is reported to be approximately 5000 in number, and results were obtained from a variety of locations around the world (see Mayer, et al., 2002, ch. 5). Internal consistency reliability was determined using split-half methods at the total, area, and branch levels while coefficient alpha reliabilities were calculated at the subtest levels due to homogeneity of items. Overall total reliability coefficients measured 0,93 with area reliabilities of 0,90 for Experimental EI and 0,88 for Strategic EI. Branch score reliabilities ranged from a low of 0,79 for Facilitating to a high of 0,91 for Perceiving. At the individual subtest level reliabilities were somewhat lower (e.g. as low as 0,64 for the Facilitation subtest up to 0,88 for Pictures) leading the authors to advise using only the total, area, and branch scores for interpretation purposes (Mayer, et al., 2002).

6.3.2.8 Justification

The MSCEIT was selected as the most appropriate measure of EI from a number of possible choices. The reasons for doing so follow.

First, it is apparent from the literature that individuals tend to be poor estimators of their own cognitive abilities (Chamorro-Premuzic & Furnham, 2006; Dahl, 2009; Paulhaus, Lysy, & Yik, 1998) and there is no reason to assume that estimation of one's emotional intelligence is any better. In addition to the possibility of being unwittingly unaware of incompetence (Kruger & Dunning, 1999), there is also evidence that self-evaluators may engage in response distortion to exaggerate their abilities (Grubb & McDaniel, 2007; Viswesvaran & Ones, 1999). Among the possible EI instruments, the MSCEIT is the only one that attempts to measure EI objectively using a battery of performance-based subtests rather than self-report (Conte, 2005; McEnrue & Groves, 2006; Mayer et al., 2003). As such, it more closely resembles standard practice in measuring mental abilities in which problems are presented to be solved and scores are based on the correct responses to these problems (Carroll, 1993; Mayer, Roberts, & Barsade, 2008).

Second, EI as measured by the MSCEIT appears to be most consistent with current definitions of intelligence in that it focuses on the mental processes that have been used in general definitions of intelligence: the ability to problem-solve, reason, think abstractly, comprehend complex ideas, learn from experience, and adapt effectively to the environment (Gottfredson, 1997, 1998; Neisser et al., 1996). These descriptions of intelligent behaviour, generally agreed upon by intelligence researchers (Gottfredson, 1997), map more closely onto the MSCEIT factors of perceiving emotions, using emotions to facilitate thought, understanding emotions, and managing emotions so as to adapt to the environment.

Third, the factors measured by the MSCEIT appear to demonstrate sufficient independence from personality traits (e.g. extroversion, agreeableness or neuroticism) from so-called EI "products" (e.g. assertiveness or cooperation), and from motivational elements (e.g. zeal or persistence) to have reasonable discriminant validity. Thus, any associations with other outcomes are not as likely to be muddled by factors attributable to other constructs. Studies with some self-report EI instruments, (the EQ-i Short form, for example (Bar-On, 2002) have found that much of the variance can be accounted for by personality constructs (Dawda & Hart, 2000; Grubb & McDaniel, 2007). On the other hand, the MSCEIT appears to demonstrate sufficient independence from personality traits and EI products to make it a reasonable instrument for research purposes (Ashkanasy & Daus, 2005; Daus & Ashkanasy,

2005; Van Rooy, Viswesvaran, & Pluta, 2005). Conte (2005) predicts that because of their questionable psychometric support, self-report measures will receive less attention in future research while ability based tests will become more cogent as measures of EI.

Summarizing their review of the four best known measures of EI, McEnrue and Groves (2006) recommend that, in the area of human resources development, “researchers interested in focusing on EI abilities to the exclusion of related personality dimensions use the MSCEIT for conducting validity studies, establishing meaningful baselines for development activities, and estimating the differential effects of HRD programming on EI abilities” (p. 37).

6.3.3 Career Thoughts Inventory (CTI)

The CTI (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996) provides a measure of a person’s thinking with respect to career, in particular, negative career thoughts.

6.3.3.1 Rationale

Dysfunctional thinking regarding career decision-making and problem solving cannot be measured directly (Sampson et al., 1996). However, it is expected that test items written to reflect dysfunctional thinking about career problem solving and decision-making will be endorsed at a higher level by participants experiencing those thoughts than by those who are not. Therefore, it is expected that participants who score high on the CTI will have more negative or dysfunctional career thoughts while those who score low will have less negative or dysfunctional thinking.

6.3.3.2 Aim

The aim of the CTI is to provide a quantitative measure of a person’s dysfunctional career thoughts where career thoughts are defined as “the outcomes of ones’ thinking about assumptions, attitudes, behaviors, beliefs, feelings, plans, and/or strategies related to career problem solving and decision making” (Lustig & Strauser, 2008, p. 142).

6.3.3.3 *Development*

Research has shown that dysfunctional career thinking interferes with career decision making (Corbishley & Yost, 1989; Hornak & Gillingham, 1980; Judge & Locke, 1993) and also that these dysfunctional thoughts can be restructured so as to mitigate their effects (Beck & Weishaar, 1989; Meichenbaum, 1977; Mitchell & Krumboltz, 1987; Newman, Fuqua, & Seaworth, 1989). The CTI was developed as a first step in identifying negative career thoughts which could then lead to interventions. An initial pool of 195 items was reduced to the present 48, and normative data were collected from three different populations – adults (mean age = 39), college students (mean age = 22), and high school students (mean age = 17.5).

6.3.3.4 *Dimensions*

In addition to a global indication of negative career thinking, the CTI identifies three kinds of dysfunctional career thoughts: decision making confusion, commitment anxiety, and external conflict.

Decision making confusion (DMC) is a reflection of an individual's ability to initiate or maintain the cognitive processes necessary to make career decisions (Sampson et al., 1996; Strauser, Lustig, & Ciftci, 2008). These decisions are facilitated by sufficient clarity regarding how decisions are made and by positive emotional states. In contrast, individuals with reduced ability in this area may be inhibited in their understanding of how to make a decision, or may have emotional barriers interfering with effective decision-making (Sampson et al., 2004; Stauser et al., 2008). These emotional barriers may take the form of anxiety, depression, or discouragement which may overwhelm the individual, so that sustaining the decision-making process seems impossible.

Commitment anxiety (CA) refers to one's ability to commit to a particular career choice and successfully manage the anxieties that may arise as a result of that decision (Sampson et al., 1996; Strauser et al., 2008). After selecting the most appropriate career path, individuals with lower levels of commitment anxiety are able to continue focusing on their choice while disengaging from other possible alternatives and coping with the tensions that are bound to

arise from choosing one path over another. Individuals with high levels of commitment anxiety may find letting go of alternative plans very stressful to the extent that the accompanying anxiety perpetuates the indecision cycle.

External conflict (EC) addresses negative thoughts regarding the ability to balance one's own perceptions and needs with those of others. Excessive focus on external factors, such as opinions of family, friends and colleagues, as well as life circumstances, contribute to a reluctance in making career decisions in individuals displaying high levels of external conflict. On the other hand, those with low external conflict are better able to distinguish which perceptions from others in their environment are more important for decision-making and are more likely to assume personal responsibility for their choices.

6.3.3.5 *Administration*

The CTI is a paper and pencil instrument which can be given individually or to groups. It is considered a B level test. Instructions written on the cover of the test are simple and direct. The CTI consists of 48 statements written to reflect negative career thoughts. Test-takers choose one of four responses for each item using a Likert-type scale: SD = Strongly Disagree; D = Disagree; A = Agree; and SA = Strongly Agree. Since the items are written from a negative perspective, Strongly Agree responses contribute most raw score points (3), while Strongly Disagree responses contribute 0 points. No time limit is imposed on clients; most complete the test in 10 to 15 minutes depending on reading speed and contemplation time for each item. Readability of the CTI was determined by the authors to be at about a grade six to seven level (Sampson et al., 1996).

The global CTI score is obtained by summing the values of all items. Of the 48 items, fourteen provide more specific information regarding decision-making confusion, ten are associated with commitment anxiety, and five with external conflict. Responses from all 48 items contribute to the total CTI score. Raw scores for the total CTI as well as DMC, CA, and EC can be converted into standard T-scores (mean = 50; sd = 10) for better comparison and statistical analysis.

6.3.3.6 *Reliability and validity*

As earlier indicated, the CTI was developed to assess negative career thinking in three age groups: high school students, college students, and adults. Normative data showed internal consistency reliabilities for these groups to range from 0,96 to 0,97 for CTI total (adults $\alpha = 0,97$); 0,91 to 0,94 for DMC (adults $\alpha = 0,94$); 0,85 to 0,91 for CA (adults $\alpha = 0,91$); and 0,74 to 0,81 for EC (adults $\alpha = 0,81$) (Sampson et al., 1996). A study of college students (Lustig & Strauser, 2002) also reported high internal consistency reliabilities ranging from 0,85 for EC to 0,98 for total CTI. A separate study by the same authors with a sample of disabled adults reported high internal consistency for total CTI, DMC, and CA, but medium values for EC ($\alpha = 0,69$) (Lustig & Strauser, 2008). Test-retest stability for the normative sample was found to be high for college students ($r = 0,86$); results for adults were not obtained.

In addition, psychometric data was collected from a group of clients ($n = 376$) who were receiving career services at two different locations. Because this latter group was not geographically representative, the authors do not consider the client group statistics in their normative data but suggest that career practitioners develop their own local CTI norms (Sampson et al., 1996). In keeping with this suggestion, internal consistency alphas were computed for the sample used in the current study for both pre and post administrations of the CTI. Results were as follows: pre-total CTI $\alpha = 0,91$; post-total CTI $\alpha = 0,95$; pre DMC = 0,88; post DMC = 0,84; pre CA = 0,69; post CA = 0,86; pre EC = 0,79; post EC = 0,79. With the exception of the pre-program commitment anxiety alpha which is somewhat lower, these compare favourably with values obtained in other studies and shows the CTI to be a good reliable instrument to use in this study.

With respect to validity, principle component analysis provides support for the three factors of decision making confusion, commitment anxiety, and external conflict (Sampson et al., 1996). Convergent validity was investigated by the authors comparing the CTI total and subscale scores with other tests measuring the same construct such as: My Vocational Situation (Holland, Daiger, & Power, 1980); the Career Decision Scale (Osipow, Carney, Winer, Yanico, & Koschier, 1976); the Career Decision Profile (Jones, 1989); and the NEO Personality Inventory (Costa & McCrae, 1992). According to Sampson et al., (1996), scores

on the CTI were inversely correlated with positive constructs and positively correlated with negative constructs on the above tests. Discriminant validity was observed when a client (i.e. persons seeking career services) and non-client group of college students were given the CTI. For that study, alpha coefficients ranged from 0,69 for EC to 0,88 for DMC.

6.3.3.7 *Justification*

Given that the nature of this research is to investigate whether emotional intelligence plays a significant role in helping to change negative cognitions regarding career, the CTI was deemed to be the best instrument to use. It is easily administered and scored and the reasonable cost makes it possible for it to be re-administered as a post-test.

6.4 DATA COLLECTION

It was important that intervening events between the initial administration of the CTI and the next remained consistent with each participant to minimize the possible effect of environmental factors on the outcome variable. Therefore, data were collected only from clients who completed a particular career exploration program in the Lower Mainland of British Columbia, Canada. This program was offered twelve times per year with each program lasting up to a maximum of sixteen days. Therefore, by necessity, given the nature of the program and the limitations on the numbers of participants at any one time, data collection occurred over a period of two years with an average of eight additional data sets added each month. Post-program CTI testing was performed as soon as the client completed the program. The average time between pre- and post-tests for the CTI was approximately twelve days.

Participants in the program were asked to sign a general consent form allowing program personnel to use test data for research purposes. In addition, the researcher asked participants to sign a specific consent form for this study. Subjects were informed in general terms as to the nature of the study and were assured of anonymity and confidentiality of information. The MSCEIT, pre-program CTI., and WPT tests were all administered as part of the career exploration program. Only the post-CTI was an additional test given upon completion of the program to those participating in the study.

All of the tests given in this study were scored by the researcher with the exception of the MSCEIT which was scored using computer software. All data sets were entered into a data base by the researcher and this data base was not available for perusal by others.

From the beginning of data collection to the end, data were gathered for 278 individuals. For a variety of reasons not all participants were able to complete all assessments and the eventual number of completed data sets was 193. An analysis (t-test for independent samples) was performed to determine whether there were any significant differences between those with and without complete data sets. No significant differences were found.

For the purposes of this study, scores only from participants with complete data sets were used for analyses.

6.5 HYPOTHESES

A hypothesis is a statement of an educated expectation made in advance of research (Babbie, 2001; Cone & Foster, 1997). It is possible that the data do not support expected relationships (null hypothesis), or, alternatively, that they do help to explain aspects of the relationship between variables. For this research, the following hypotheses regarding the relationship between IQ, EI, and negative career thinking were tested:

- H1: In career-exploring adults there is a statistically significant inverse relationship between level of cognitive ability (IQ) and negative career thoughts. This relationship is found for negative career thoughts measured before career exploration and after career exploration.
- H2: In career-exploring adults there is a significant positive relationship between cognitive ability (IQ) and negative career thoughts change.
- H3: In career-exploring adults cognitive ability will significantly predict negative career thoughts. This prediction will be found for negative career thoughts measured before career exploration and after career exploration.

- H4: In career-exploring adults cognitive ability will significantly predict negative career thoughts change.
- H5: In career-exploring adults there is a statistically significant inverse relationship between emotional intelligence and negative career thoughts. This relationship is found for negative career thoughts measured before career exploration and after career exploration.
- H6: In career-exploring adults there is a significant positive relationship between emotional intelligence and negative career thoughts change.
- H7: In career-exploring adults emotional intelligence will significantly predict negative career thoughts. This prediction will be found for negative career thoughts measured before career exploration and after career exploration.
- H8: In career-exploring adults emotional intelligence will significantly predict negative career thoughts change.
- H9: Emotional intelligence will predict negative career thoughts to a greater extent than cognitive ability (IQ). This prediction will be found for negative career thoughts measured before career exploration, after career exploration, and negative career thoughts change.

6.6 DATA PROCESSING

The intent of the current study is to investigate whether cognitive ability and emotional intelligence can explain variance in outcome measures. As such, it is a measure of the criterion validity of cognitive ability and emotional intelligence, and since there is an interval of time, albeit brief, between the administrations of the prediction measures (IQ and EI) and the criterion measures (negative career thoughts before and after career exploration), the study is one of predictive criterion validity. In addition, incremental validity is being investigated to determine whether there is unique variance of emotional intelligence above

and beyond that of cognitive intelligence. Both kinds of validity are best undertaken by utilizing regression-based statistical procedures (Antonakis, 2004). In this study, the decision was made to employ a stepwise method in which the predictor for which more research is available was entered first followed by the predictors for which less is known (Field, 2000). Therefore, cognitive ability was entered into the regression analysis first followed by emotional intelligence predictors. At each step correlations were calculated between predictor and the outcome while controlling for the effect of previous predictors.

Numerical data were generated by the three testing instruments; one score for the WPT; total, area, branch and subtest scores for the MSCEIT; and total and three subscale scores for both the pre- and post-CTI administrations. The types of scores generated were as follows:

- for the WPT – raw scores;
- for the MSCEIT – standard scores with mean of 100 and standard deviation of 15;
- for the CTI – standard T-scores with mean of 50 and standard deviation of 10.

Change in negative career thoughts scores were derived by subtracting post-CTI administration scores from pre-CTI administration scores. Negative career thoughts change was calculated and treated in separate analyses so that any possible statistical relationships between IQ and EI with the change could be observed. For the MSCEIT data, only total and branch scores were used for analysis where appropriate. These data were analyzed using the SPSS 13 for Windows statistical software package.

The data generated were interval level data and thus appropriate for parametric statistical analysis. Tests regarding assumptions necessary for the different statistical procedures used were conducted and are reported.

The researcher's primary focus was the relationship between cognitive ability, emotional intelligence, and negative career thoughts. Therefore, correlational statistics were of importance. In addition, factors which may predict negative career thoughts were investigated. As a result, regression analyses were also necessary. Data were processed as follows:

Step 1: Descriptive Statistics

Descriptive statistics are computed for the WPT, the MSCEIT, the pre-program CTI, post-program CTI, CTI change, as well as biographical data. Results are discussed.

Step 2: Reliability of Measuring Instruments

The reliability of the pre-program CTI and the post-program CTI were examined using internal consistency alphas as the measure of reliability. The results are discussed.

Step 3: Correlations Within Constructs

Pearson Product Moment Correlations were produced to examine the relationships within the constructs of emotional intelligence by calculating correlations between MSCEIT total and branch scores. Pearson Product Moment Correlations were also produced to examine relationships between subscales and total score for CTI pre-program, post-program, and CTI change.

Step 4: Correlations Between Constructs

Pearson Product Moment Correlations were produced to examine the relationships between cognitive ability and emotional intelligence. The MSCEIT total and branch scores were used. Higher scores indicate higher levels of emotional intelligence. The WPT raw score was used. Higher scores indicate higher cognitive ability. Results are discussed.

Pearson Product Moment Correlations were produced to examine the relationships between WPT (IQ) and CTI pre-, post- and change measures. Correlations, significance values and effect sizes are discussed. The CTI total and three subscales (DMC, CA, and EC) were used. Higher scores indicate more negative career thoughts for the pre- and post-CTI measures. For CTI change positive scores indicate a decrease in negative career thinking while negative scores indicate an increase in negative career thinking. Results are discussed.

Pearson Product Moment Correlations were produced to examine the relationships between negative career thoughts pre-program with emotional intelligence. Correlations, significance values, and effect sizes are discussed. The CTI total and three subscales (DMC, CA, and EC) were used. Higher scores indicate more negative career thoughts. The MSCEIT total and branch scores were used. Higher scores indicate higher levels of emotional intelligence. Results are discussed.

Pearson Product Moment Correlations were produced to examine the relationships between negative career thoughts post-program with emotional intelligence. Correlations, significance values, and effect sizes are discussed. The CTI total and three subscales (DMC, CA, and EC) were used. Higher scores indicate more negative career thoughts. The MSCEIT total and branch scores were used. Higher scores indicate higher levels of emotional intelligence. Results are discussed.

Pearson Product Moment Correlations were produced to examine the relationships between negative career thoughts change with emotional intelligence. Correlations, significance values, and effect sizes are discussed. The CTI total and three subscales (DMC, CA, and EC) were used. Positive scores indicate change from negative thoughts towards more positive thoughts; in other words, positive scores indicate a reduction in negative career thoughts. The MSCEIT total and branch scores were used. Higher scores indicate higher levels of emotional intelligence. Results are discussed.

Pearson Product Moment Correlations were produced to examine the relationships between the biographical variables of age and education level and other variables. Results are discussed.

Step 5: Predictive Value of the Constructs

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only) and the emotional intelligence construct (total score) in predicting negative career thoughts pre-program (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ and EI total score as the predictor variables for each of the following outcome variables:

- CTI total score pre-program
- CTI decision-making confusion pre-program
- CTI commitment anxiety pre-program
- CTI external conflict pre-program

Unique variances, significance values and effect sizes are discussed for each.

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only) and the emotional intelligence construct (total score) in predicting negative career thoughts post-program (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ and EI total score as the predictor variables for each of the following outcome variables:

- CTI total score post-program
- CTI decision-making confusion post-program
- CTI commitment anxiety post-program
- CTI external conflict post-program

Unique variances, significance values and effect sizes are discussed for each.

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only) and the emotional intelligence construct (total score) in predicting negative career thoughts change (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ and EI total score as the predictor variables for each of the following outcome variables:

- CTI total score change
- CTI decision-making confusion change
- CTI commitment anxiety change
- CTI external conflict change

Unique variances, significance values and effect sizes are discussed for each.

To further investigate the dimensions of EI which might predict negative career thoughts change, regression analysis was performed using the branch scores of the MSCEIT as predictors. Predictors for negative career thinking included IQ, EI Perceiving (EIP), EI Facilitating (EIF), EI Understanding (EIU), and EI Managing (EIM). Field (2000) advises 1) that the reasons why predictors are entered into a regression should, if possible, be based on previous research; and 2) that predictors be kept to a minimum. With regards to previous research, no investigations can be found that are similar enough to suggest which variables might be better predictors over others. Most have used correlation statistics only (e.g. Amitay & Mongrain, 2007; Brackett, Mayer, & Warner, 2004; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Ivcevic, Brackett, & Mayer, 2007; Yip & Martin, 2006). Of the studies found in which hierarchical analyses have been used with EI as predictor, none used all of the branch scores as predictors (e.g. Matthews, Emo, Funke, Zeidner, Roberts, Costa, & Schulze, 2006; Trimmer & Cuddy, 2008), and/or appeared to use the overall EI score (e.g. Bastian, Burns, & Nettlebeck, 2005; Matthews et al., 2006). Some authors advise that all facets of EI be used in further investigations to test whether individual EI factors are more predictive of criteria (e.g. Matthews et al., 2006). Amitay and Mongrain (2007) suggest that “additional research using the four branches might clarify which aspects of EI are most strongly related to adaptive...functioning” (p.340). In addition, Bastian et al., (2005) conclude that...“future studies of the predictive validity of EI should control for ...a wide coverage of cognitive abilities” (p.1144).

Therefore, a stepwise regression analysis was performed in which IQ, EIP, EIF, EIU, and EIM were entered in that order one after the other. Cohen (1992) suggests that, to maintain adequate power at a medium effect size, a minimum N of 91 be employed when five independent variables are entered into the regression. The sample size of 193 used in the current analysis is therefore likely sufficient.

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only), and emotional intelligence (four branches) in predicting negative career thoughts pre-program (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ, EIP, EIF, EIU and EIM as the predictor variables for each of the following outcome variables:

- CTI total score pre-program
- CTI decision-making confusion pre-program
- CTI commitment anxiety pre-program
- CTI external conflict pre-program

Unique variances, significance values and effect sizes are discussed for each.

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only), and emotional intelligence (four branches) in predicting negative career thoughts post-program (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ, EIP, EIF, EIU and EIM as the predictor variables for each of the following outcome variables:

- CTI total score post-program
- CTI decision-making confusion post-program
- CTI commitment anxiety post-program
- CTI external conflict post-program

Unique variances, significance values and effect sizes are discussed for each.

Forward stepwise multiple regression analyses were used to determine the value of cognitive ability (one level only), and emotional intelligence (four branches) in predicting negative career thoughts change (total and three subscales – DMC, CA, and EC). This resulted in four regression analyses as follows:

Forward stepwise multiple regressions were produced using IQ, EIP, EIF, EIU and EIM as the predictor variables for each of the following outcome variables:

- CTI total score change
- CTI decision-making confusion change
- CTI commitment anxiety change
- CTI external conflict change

Unique variances, significance values and effect sizes are discussed for each.

6.7 CHAPTER SUMMARY

The goal of this chapter is to describe the empirical study carried out to determine the relationship between cognitive ability, level of emotional intelligence, and negative career thoughts in a sample of career exploring adults, and whether cognitive ability and emotional intelligence predict negative career thinking and negative career thinking change. First, the population investigated in this research was discussed with respect to sampling technique and sample characteristics. Participants were unemployed adults between the ages of 25 and 63 who had completed a career exploration program. The career exploration program is briefly described.

Second, the instruments used to measure the three variables were discussed. These included the WPT (Wonderlic, 2002) used to measure cognitive ability, the MSCEIT (Mayer et al., 2002), and the CTI (Sampson et al., 1996) to measure levels of negative career thoughts. The rationale, aim, dimensions, administration, validity and reliability, as well as justification for use in this research were discussed for each instrument.

Last, the methods employed for data collection and the methods used for processing these data were discussed. Hypotheses were stated. The results of the research are discussed in Chapter 7.

CHAPTER 7 RESULTS

7.1 INTRODUCTION

The purpose of this chapter is to present the results of the empirical study. Descriptive (univariate) statistics with respect to each measurement instrument and biographical data will be shown. Reliability coefficients for those measures where such data have been collected will be shown. Bivariate relationships between the different variables will be presented. The predictive statistics used to test the research questions by way of multiple regression analyses will be presented. A summary of the chapter is included.

7.2 ASSUMPTIONS

In order for statistical results to be meaningful, the data used to arrive at those results must meet certain criteria. For the statistical procedures used in this research, in particular multiple regression, a number of assumptions are necessary to avoid the likelihood of misinterpreting data. The most salient of these assumptions include:

- that each variable, whether predictor or outcome, be quantitative and measurable at least at the interval level;
- that the variables have a normal distribution;
- that the relationships between the predictors and outcome variables should be linear;
- that there be no high degree of correlation (collinearity) between variables; and
- that the predictor variables should exhibit homogeneity of variance (homoscedasticity).

These assumptions were examined for each of the variables and are now discussed.

Each variable in this research was quantitative in nature and measured at the interval level. Emotional intelligence scores and negative career thoughts scores are all expressed as standard scores and represent interval level data. The WPT scores were presented as raw scores and can be considered interval data. Parametric statistical analyses are therefore possible.

The assumption of normality of distribution of scores for predictors was first assessed by visual inspection of the histograms of the variables. In addition, the skewness and kurtosis values of the distributions were calculated using the SPSS statistical program. Two outliers (i.e. very discrepant scores) were noted, which affected the skewness and kurtosis values considerably. As a result, the scores for two participants were removed from the data base leaving a total of 193 individuals. Thereafter, normality of distribution was found to be within acceptable bounds for all predictor variables. WPT, EI Perceiving, EI Understanding, and EI Managing scores were all found to have a negative skew (i.e. an overabundance of scores on the right of the distribution) but within acceptable limits. With the exception of EI Managing where the kurtosis value was positive (1,65), kurtosis values for the other predictor variables were negative indicating flatter distributions. Once again, all kurtosis values were within acceptable limits.

The various relationships between predictor and outcome variables were assessed for linearity. Linearity was not observed for EI Perceiving, EI Facilitating, or EI Understanding with outcome variables, but was observed for EI Managing. The effects of this are discussed in Chapter 8.

High collinearity increases the probability of a type II error (Field, 2000) and is therefore to be avoided. The assumption of low collinearity was assessed by observing correlations between predictors to ensure that the relationship between any two was not unusually high. As can be seen in section 7.5, no predictors correlated to an extent that would be considered problematic. In addition, SPSS allows for collinearity diagnostics by way of measuring the variance inflation factor (VIF). The magnitude of VIF considered a cause for concern is debatable, but some authors (Field, 2000; Lomax, 1992) suggest that values be less than 10. For the variables in this research the average VIF was approximately 1 with none being over 1,6. The assumption of no high collinearity was considered met.

Homogeneity of variance is the assumption that a prediction based on the regression equation is basically the same at all points of the regression line. Homogeneity of variance was assessed for the various relationships between predictor and outcome variables and was observed for IQ scores and for EI Management scores, but not for some distributions of the EI Perceiving, Facilitating, or Understanding scores.

For approximately 80 of the clients originally enrolled in the program, complete data sets were not available for analysis. T-tests for independent samples were conducted comparing those who completed the program versus those who did not, and no significant differences were found between the two groups for IQ, EI, age, education or pre-CTI scores.

7.3 DESCRIPTIVE STATISTICS

Descriptive statistics provide the first level of interpretation that summarizes and helps manage the large volume of data collected. These statistics will be presented for the cognitive ability measure, emotional intelligence measures, and career thoughts measures including pre-, post-, and change statistics. Descriptive statistics for the biographical data collected regarding participants will also be presented.

7.3.1 Wonderlic Personnel Test (WPT)

Table 7.1 shows the descriptive statistics for the WPT. Scores are presented as raw scores – i.e. the number of questions answered correctly by the participant.

Table 7.1

Descriptive Statistics for the WPT
(N = 193).

	<u>Min</u>	<u>Max</u>	<u>M</u>	<u>SD</u>
Raw score	2	41	25,7	6,7

Descriptive statistics for the WPT show a minimum score of 2 and a maximum of 41 with a mean of 25,7 (sd = 6,7). This is higher than the mean of 21,1 (sd = 7,1) reported in the WPT manual.

7.3.2 Mayer-Salovey-Caruso Emotional Intelligence Test V-2 (MSCEIT)

Descriptive statistics for the MSCEIT are shown in Table 7.2. All MSCEIT scores are given as standard scores where the mean is 100 and the standard deviation is 15.

Table 7.2

Descriptive Statistics for the MSCEIT

(N = 193)

	<u>N</u>	<u>Min</u>	<u>Max</u>	<u>M</u>	<u>SD</u>
MSCEIT total	193	58	122	92,5	10,8
Perceiving	193	64	132	97,7	12,6
Facilitating	193	62	132	97,7	12,3
Understanding	193	67	115	91,2	9,8
Managing	193	61	120	91,3	8,3

Analysis of the MSCEIT and its subscales were performed. The MSCEIT total score mean was 92,5 (sd = 10,8). Perceiving emotions mean was 97,7 (sd =12,6), while Facilitating emotions mean score was also 97,7 (sd = 12,3). The Understanding and Managing emotions means were numerically lower (91,2; sd = 9,8 and 91,3; sd = 8,3 respectively).

7.3.3 Career Thoughts Inventory (CTI)

Descriptive data are presented for the CTI in Tables 7.3, 7.4, and 7.5. Table 7.3 shows descriptives for the CTI administered pre-program and is therefore titled Pretest. Table 7.4 shows descriptive statistics for the CTI administered post-program and is called Posttest.

To avoid confusion, an explanation of what the scores in the following three tables represent is in order. The scores presented in Tables 7.3 and 7.4 represent level of negative career thoughts where higher scores indicate more negative thoughts. Table 7.5, on the other hand,

shows descriptives for the CTI change in scores from pretest to posttest (i.e. pretest minus posttest). This difference was calculated rather than the reverse (i.e. posttest – pretest) since it was expected that negative career thoughts would be lower after career exploration and so the difference would be a positive value. To interpret the CTI change scores in Table 7.5, positive mean values indicate a decrease in negative career thoughts. In other words, a positive change score indicates there were fewer negative career thoughts on the post-administration of the CTI. All scores shown are standard T-scores where the mean is 50 and standard deviation is 10.

Table 7.3

Descriptive Statistics for the CTI – Pretest

(N = 193).

	<u>Min</u>	<u>Max</u>	<u>M</u>	<u>SD</u>
CTI global	34	77	58,3	8,0
DMC	38	81	58,0	9,5
CA	33	77	61,1	7,7
EC	36	90	58,1	13,3

Descriptive statistics for the pre-program administration of the CTI were analyzed. The global scale ranged from T scores of 34 to 77 with a mean of 58,3 (sd = 8,0). Decision making confusion scores ranged from 38 to 81 with a mean of 58,0 (sd = 9,5). Commitment anxiety scores ranged from 33 to 77 with a mean of 61,1 (sd = 7,7), and external conflict scores ranged from 36 to 90 with a mean of 58,1 (sd = 13,3).

Table 7.4

Descriptive Statistics for the CTI – Posttest

(N = 193)

	<u>Min</u>	<u>Max</u>	<u>M</u>	<u>SD</u>
CTI global	34	68	48,9	8,2
DMC	38	70	48,7	7,8
CA	33	73	49,7	8,7
EC	36	93	52,7	12,3

Analysis of the descriptive statistics for the post-program administration of the CTI indicates a reduction in global negative career thinking as well as all three subscales. The ranges of scores differed little, if at all, from those of the pre-test. For CTI global the mean was 48,9 (sd = 8,2); for DMC the mean was 48,7 (sd = 7,8); for CA the mean was 49,7 (sd = 8,7); and for EC the mean was 52,7 (sd = 12,3). These post-test scores are much more consistent with those provided in the CTI manual for the adult normative, non-client group where the means for total CTI and the three subscales were 50 with a standard deviation of 10.

A comparison of the means of the pre- and post-CTI scores was conducted to determine whether the change was significant. T-tests for paired samples showed that all differences for CTI total, DMC, CA, and EC were significant at the $p < .001$ level. Effect sizes for r differences for CTI total, DMC, and CA were large ($d > 0,80$) while for EC the effect size was small to medium ($d = 0,44$). Results thus show that negative career thinking was significantly less (i.e. overall, participants tended to think more positively about career) after the program compared to pre-program.

Table 7.5

Descriptive Statistics for the CTI Change – Pretest minus Posttest
(N = 193)

	<u>Min</u>	<u>Max</u>	<u>MeanΔ</u>	<u>SD</u>
CTI global	-10	34	9,6	8,2
DMC	-16	35	9,3	9,0
CA	- 9	36	11,4	9,3
EC	-29	47	5,3	12,1

Descriptive statistics for the change in negative career thinking were analyzed. With respect to the global CTI scale a range of scores from -10 to +34 was obtained indicating that some participant(s)' negative thinking increased by up to 10 standard T-score points after the program. However, the mean of 9,6 points of change (sd = 8,2) indicates that global negative career thinking decreased by close to one standard deviation (using CTI norms as comparison). Similarly, decision-making confusion change ranged from -16 to +35 indicating that some participants' DMC increased over the course but the mean of 9,3 (sd = 9,0) indicates a general decrease. Commitment anxiety (range -9 to +36) had a mean change of 11,4 (sd = 9,3), while external conflict showed the largest range (-29 to +47) with a mean of 5,3 (sd = 12,1).

Comparison of these results with other research is difficult for at least two reasons. One, very few studies have investigated CTI change (e.g. Osborn, Howard, & Leierer, 2007; Reed, Lenz, Reardon, & Leierer, 2000), and, two, when this has been done the participants have been college/university students. In the Osborn et al. study changes of 4 (CTI total), 2 (DMC), 5 (CA), and 3 (EC) were found. In the Reed et al. study pre-post differences of 7 (CTI total), 6 (DMC), 6 (ca), and 3 (EC) were observed. No standard deviations for the change values were reported in either study. For all of the CTI total and its three subscales, changes in negative career thinking were greater in the current research.

7.3.4 Biographical variables

Descriptive statistics for the biographical data collected is presented and interpreted with respect to the present study. Education is measured as years of formal education including public school, post-secondary, and beyond.

Table 7.6

Descriptive Statistics for Biographical Variables

	<u>N</u>	<u>Min</u>	<u>Max</u>	<u>M</u>	<u>SD</u>
Age	193	25	60	41,7	9,8
Education	143	8,0	18,0	12,7	2,2

Table 7.6 shows the biographical data for the participants in this study. The research sample consisted of 123 females and 70 males. T- tests for independent samples found no significant differences between the sexes for age or education level. Since age was restricted to those adults 25 years or older, the minimum age was 25 and the maximum 60. Mean age was 41,7 years (sd = 9,8). As discussed in Chapter 6, Super (1990) has divided the working life of an individual into stages according to age. The Establishment stage includes those individuals of ages 25 through 44 while the Maintenance stage includes those between 45 and 65 years of age. In this study 115 participants (60%) fell into the Establishment (25 – 44 years old) category, and 78 participants into the Maintenance stage. Education level was provided by only 143 of the participants. Thirty seven of these (26%) had not completed high school (i.e. grade 12), 45 participants (31%) had completed grade 12, and 61 (43%) had completed some post-secondary training including 21 individuals with Bachelors degrees and four with Masters. The mean grade level achieved was 12,7 years of education (sd = 2,2).

7.4 RELIABILITY OF THE MEASURING INSTRUMENTS

Reliability coefficients of the WPT and the MSCEIT (internal consistency alphas) were not calculated in this research since individual item responses were not recorded for these measures. The researcher relied on reliability coefficient values given in the respective manuals.

Using a random sample of participants, reliability of the CTI was determined by internal consistency Chronbach's alpha (α) both pre-program and post-program. Table 7.7 shows the Chronbach's alpha for each of Total CTI items, Decision-Making Confusion, Commitment Anxiety, and External Conflict for pre- and post-program.

Table 7.7

Internal Consistency Alpha Reliabilities for CTI Pre- and Post-tests

	<u>CTI pre α</u>	<u>CTI post α</u>
Total CTI	0,93	0,95
DMC	0,90	0,85
CA	0,78	0,87
EC	0,81	0,79
N	124	81

Internal consistency reliability alpha coefficients were calculated for the pre- and post administrations of the CTI. When pre-program reliabilities were compared with those reported by Sampson, Peterson, Lenz, Reardon, and Saunders (1996) for the group seeking career counselling services, results were almost identical. (Note: figures before the slash (/) are for the current study sample; figures after the / are those reported in Sampson et al., (1996, p. 49) for their client sample): CTI total (0,93/ 0,93); DMC (0,90/ 0,90); CA (0,78/ 0,79); EC (0,81/ 0,74). As can be seen, the only appreciable difference occurred with EC with greater reliability levels in the current study sample.

Evidence of post-program CTI reliabilities has not been found in the literature. In this study alpha coefficients were high (total CTI α = 0,95; DMC α = 0,85; CA α = 0,87; EC α = 0,79) suggesting that internal consistency is well-maintained for this test post-program as well.

7.5 CORRELATIONS

Correlations within constructs were examined for EI, as well as pre-CTI, post-CTI, and CTI change. Correlations between constructs were examined for IQ and EI; IQ and CTI-pre, CIT-post, and CTI change; and for EI and CTI-pre, CTI-post, and CTI change. Correlations within constructs are presented first below followed by correlations between constructs.

7.5.1 Correlations within constructs

7.5.1.1 *Mayer-Salovey-Caruso Emotional Intelligence Test*

Intercorrelations between EI total and the four branch scores were analyzed so as to compare with those obtained during norming of the test. The intercorrelations obtained for the current data are presented in Table 7.8 below.

Table 7.8

Intercorrelations Between EI Total and Branch Scores

(N = 193)

	1. EI Total	2. EI Perc	3. EI Facil	4. EI Under	5. EI Man
1	--	0,77	0,73	0,66	0,60
2	--	--	0,39	0,30	0,26
3	--	--	--	0,35	0,42
4	--	--	--	--	0,29

Note: All correlations are significant at $p < ,001$.

As expected, all correlations between total EI and branch scores were positive and significant at the $p < .001$ level. In all cases, the current correlations obtained between branch scores were within the same general magnitude but lower than those reported in the manual (Mayer, Salovey, & Caruso, 2002, p.36). The normative sample included many university settings (Mayer et al., 2002, p.29) and the sample used in this study is likely not representative of that population. The manual does not report correlations between branch and total EI scores. Comparison of the results in Table 7.8 with other research utilizing the MSCEIT is difficult since correlations between branches have not been reported.

7.5.1.2 Career Thoughts Inventory

Table 7.9. Correlation Matrix: CTI Pre-program, Post-program, and Change

	1	2	3	4	5	6	7	8	9	10	11	12
CTI pre-program												
1. Total	--	0,90 [†]	0,82 [†]	0,64 [†]	0,48 [†]	0,42 [†]	0,44 [†]	0,36 [†]	0,50 [†]	0,58 [†]	0,28 [†]	0,34 [†]
2. DMC		--	0,68 [†]	0,44 [†]	0,47 [†]	0,47 [†]	0,43 [†]	0,29 [†]	0,41 [†]	0,65 [†]	0,17*	0,19**
3. CA			--	0,43 [†]	0,30 [†]	0,24 [†]	0,37 [†]	0,15*	0,50 [†]	0,50 [†]	0,49 [†]	0,33 [†]
4. EC				--	0,31 [†]	0,22**	0,22**	0,56 [†]	0,31 [†]	0,28 [†]	0,16*	0,52 [†]
CTI post-program												
5. Total					--	0,94 [†]	0,88 [†]	0,69 [†]	-0,52 [†]	-0,31 [†]	-0,57 [†]	-0,35 [†]
6. DMC						--	0,78 [†]	0,58 [†]	-0,52 [†]	-0,37 [†]	-0,52 [†]	-0,34 [†]
7. CA							--	0,48 [†]	-0,44 [†]	-0,22**	-0,62 [†]	-0,24 [†]
8. EC								--	-0,33 [†]	-0,19**	-0,32 [†]	-0,41 [†]
CTI change												
9. Total									--	0,88 [†]	0,83 [†]	0,67 [†]
10. DMC										--	0,62 [†]	0,49 [†]
11. CA											--	0,50 [†]
12. EC												--

Note: *p≤,05; **p≤,01; [†]p≤,001

Intercorrelations are included in these results since the relationships between pre- and post-program CTIs have only been reported in two studies that could be found, and in one of those the correlation table appeared to be constructed in error (Osborn, Howard, & Leierer, 2007; Reed, Lenz, Reardon, & Leierer, 2000). Despite the samples coming from different populations, correlations in the Reed et al. study using university students compared favourably to the present study with all correlations being in the mild to moderate range. Generally, the associations between pre- and post- program CTI scores were numerically lower in the present study.

7.5.2 Correlations with biographical variables

Correlations between the biographical variables of age and education and other variables were established. Results are shown in Table 7.10.

Table 7.10

Correlations of Biographical Variables and IQ, EI, and CTI

		<u>biographical variables</u>	
		<u>age</u>	<u>education</u>
IQ		0,15*	0,38 [†]
EI	total	-0,13	0,00
	Perceiving	-0,21**	-0,16
	Facilitating	-0,07	-0,06
	Understanding	-0,10	0,25**
	Managing	-0,07	0,06
CTI pre	total	-0,12	-0,07
	DMC	-0,12	-0,13
	CA	-0,25 [†]	-0,06
	EC	-0,05	0,08
CTI post	total	0,01	-0,10
	DMC	0,03	-0,13
	CA	-0,08	-0,05
	EC	0,03	-0,03
CTI Δ	total	-0,12	0,03
	DMC	-0,15*	-0,03
	CA	-0,14*	0,00
	EC	-0,10	0,12

Note: * $p \leq 0,05$; ** $p \leq 0,01$; [†] $p \leq 0,001$, 2-tailed.

Correlations between the biographical variables of age and education with the various measures were established. With respect to EI variables, Perceiving emotions was inversely and significantly correlated with age ($r = -0,21$; $p = 0,004$; small to medium effect size). The direction of the correlations of age and EI was somewhat surprising; all of the correlations were negative, indicating that EI decreased with age. This is contrary to one of the criteria for an intelligence outlined by Mayer, Salovey and Caruso (2000) which suggest that there should be an increase in intelligence as the result of life experience. With respect to EI and education level, a significant positive relationship was observed between Understanding emotions and grade level ($r = 0,25$; $p = 0,002$; small to medium effect size). This is to be expected given the relatively strong correlation between IQ and Understanding emotions (Table 7.11) and between IQ and grade level ($r = 0,38$; $p = 0,000$; medium to large effect size). It is likely that those with higher IQ would achieve a higher level of education and also have a greater understanding of emotions.

Correlations of age with pre-CTI scores were negative with only one, commitment anxiety, being significant ($r = -0,25$; $p = 0,001$; small to medium effect size). These relationships indicate that older age is generally associated with less negative career thinking, but in particular less commitment anxiety. Education level was negatively associated with negative career thoughts with the exception of external conflict; no relationships were significant.

No correlations of post-CTI with age or education level were significant. The trend for both pre- and post-CTI scores to be negatively associated with grade level is explainable; individuals with higher education are more likely to feel they have more options and experience negative career thoughts to a lesser degree.

With respect to career thinking change, all correlations were negative indicating that as age increased the amount of change in negative career thinking decreased. In other words, the older the person, the smaller the change in negative career thoughts. This suggests that negative career thoughts were more stable and more resistant to change as age increased. This was at a significant level for decision making confusion ($r = -0,15$; $p = 0,039$) and for commitment anxiety ($r = -0,14$; $p = 0,045$) – both small effect sizes.

7.5.3 Correlations between constructs

In the current study, the MSCEIT measured emotional intelligence at the total EI and four branch levels. Correlations of IQ with EI are shown in Tables 7.11 and 7.12. and IQ with CTI pre-, post- and change in Table 7.13. EI and CTI pre-, post-, and change correlations are shown in Tables 7.14 to 7.16. With respect to correlation effect sizes, Cohen (1992) suggests that 0,10 represents a small effect size, 0,30 a medium, and 0,50 or more a large effect size.

7.5.3.1. *IQ and EI*

Table 7.11

Correlations of IQ and EI

(N = 193)

	<u>IQ</u>
EI total	0,31**
EI Perceiving	0,19*
EI Facilitating	0,14
EI Understanding	0,48**
EI Managing	0,12

Note: * $p < ,01$, 2-tailed. ** $p < ,001$, 2-tailed.

As can be seen in Table 7.11, correlations between cognitive ability and emotional intelligence were positive and significant for EI Total, Perceiving, and Understanding, but not significant for Facilitating or Managing. The overall IQ/EI correlation ($r = 0,31$; $p < ,001$; medium effect size) is in keeping with those reported in the normative study (Mayer et al., 2002, p. 38) and subsequent studies (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Mayer, Salovey, Caruso, & Sitarenos, 2003). Among the four branches of the MSCEIT, Perceiving emotions showed a small to medium effect size ($r = 0,19$; $p < ,01$). Both Facilitating emotions and Managing emotions correlated the least ($r = 0,14$; $p = 0,064$ and $r = 0,12$; $p = 0,113$ respectively; small effect size). Understanding emotions was most

highly correlated with cognitive ability ($r = 0,48$; $p = 0,000$, large effect size). This is in keeping with Mayer and Salovey's assertion that Understanding emotions represents the most cognitive of the branches (Mayer, Salovey, & Caruso, 2004). The IQ/EI total correlation is of moderate size that could be expected to exist between overall g and other possible factors of intelligence, which lends credence to the test's claim of being an ability model (Zeidner, Roberts, & Matthews, 2008).

Jensen (2003) (cited in Mayer et al, 2004, p203) suggests that one attribute of intelligence is that abilities tend to correlate more at low levels of intelligence than high. For the data in this research, when participants were divided into low IQ (WPT score $< 0,5$ sd) and high IQ (WPT score $> 0,5$ sd) groups ($n = 59$ for low; 72 for high), this was proven to be the case for overall EI and all four branch scores although significant correlations were achieved for only overall EI, EI P, and EI U in the low IQ group and only for EI U in the high IQ group. Correlations for each of low and high IQ are shown in Table 7.12 below. R values and p values (in brackets) are as follows:

Table 7.12

Correlations of EI with Low and High IQ

	<u>Low IQ</u>	<u>High IQ</u>
EI Total	0,34 (,008)	0,08 (ns)
EI Perceiving	0,27 (,035)	0,08 (ns)
EI Facilitating	0,26 (,049)	-0,05 (ns)
EI Understanding	0,36 (,005)	0,25 (,038)
EI Managing	0,05 (ns)	-0,09 (ns)
N	59	72

7.5.3.2 *IQ and CTI pre-program, post-program and change*

In the current study, the WPT was used as a measure of IQ (or cognitive ability). Correlations between IQ and EI have already been presented in Table 7.11. Table 7.13 shows the correlations of IQ with pre-CTI, post-CTI scores, and CTI change.

Table 7.13

Correlations of IQ with CTI Pre-test, Post-test and Change.

	IQ		
	<u>pre CTI</u>	<u>post CTI</u>	<u>CTI change</u>
CTI total	-0,04	-0,15*	0,11
DMC	-0,09	-0,22**	0,10
CA	0,00	-0,03	0.03
EC	0,00	-0,11	0,09

Note: *p<,05; **p<,01, 2-tailed.

Analysis of the correlations between IQ and the CTI scores were performed. Higher intelligence was not associated with lower CTI scores pre-program, and not with commitment anxiety or external conflict post-program. However, IQ was seen to be significantly and inversely correlated with post program CTI total ($r = -0,15$; $p = 0,044$), and with decision-making confusion ($r = -0,22$; $p = 0,002$). These represent a small to medium effect size. Higher IQ scores, therefore, were associated with significantly less decision-making confusion after completion of the program and lower negative career thinking overall. No significant correlations between IQ and CTI change were observed.

7.5.3.3 *EI and CTI pre-program*

Table 7.14

Correlations of EI and CTI Pre-program
(N =193)

	<u>CTI Pre-test</u>			
	Total	DMC	CA	EC
EI total	-0,05	-0,04	-0,01	-0,09
EI Perceiving	0,04	0,04	0,11	-0,07
EI Facilitating	-0,02	0,02	-0,05	-0,05
EI Understanding	-0,03	-0,07	0,02	0,02
EI Managing	-0,19**	-0,13	-0,19*	-0,18*

Note: * $p \leq ,05$; ** $p \leq ,01$, 2-tailed.

Table 7.14 shows correlations between participants' negative career thoughts expressed prior to the program and MSCEIT scores. Data analysis found that negative career thoughts overall prior to the program were significantly and inversely correlated with the Managing emotions branch of the MSCEIT for total CTI ($r = -0,19$; $p = 0,008$), and with two of the three CTI subscales, Commitment Anxiety ($r = -0,19$; $p = 0,011$), and External Conflict ($r = -0,18$; $p = 0,013$). These represent a small effect size. There were no other significant correlations with the other branches of EI or the total EI. In practical terms, this indicates that a higher level of emotional management ability was associated with fewer negative career thoughts overall as well as less anxiety regarding committing to a career and less conflict with external others.

7.5.3.4 *EI and CTI post-program*

Table 7.15

Correlations of EI and CTI Post-program
(N = 193)

	<u>CTI Post-test</u>			
	Total	DMC	CA	EC
EI total	-0,11	-0,10	-0,09	-0,09
EI Perceiving	-0,01	0,00	0,01	-0,04
EI Facilitating	0,00	0,01	-0,05	-0,03
EI Understanding	-0,09	-0,12	-0,02	-0,01
EI Managing	-0,21**	-0,19**	-0,21**	-0,16*

Note: * $p \leq ,05$; ** $p \leq ,01$, 2-tailed.

Table 7.15 shows correlations of EI scores with negative career thoughts as expressed after the career exploration program. Similar to pre-program correlations, data analysis found that negative career thoughts after the program were significantly and inversely correlated with the Managing emotions branch of the MSCEIT for total CTI ($r = -0,21$; $p = 0,004$), and with all three CTI subscales, Commitment Anxiety ($r = -0,19$; $p = 0,009$), Commitment Anxiety ($r = -0,21$; $p = 0,004$), and External Conflict ($r = -0,16$; $p = 0,024$). These represent small to medium effect sizes. In behavioural terms this suggests that, after the completion of the program, a higher level of emotional management ability was associated with less negative career thinking overall as well as less decision-making confusion, commitment anxiety and less external conflict.

7.5.3.5 *EI and CTI change*

Table 7.16

Correlations of EI and CTI Change
(N = 193)

	<u>CTI Change</u>			
	Total	DMC	CA	EC
EI total	0,05	0,03	0,07	-0,01
EI Perceiving	0,05	0,04	0,07	-0,03
EI Facilitating	-0,03	0,00	-0,01	-0,02
EI Understanding	-0,06	0,03	0,04	0,03
EI Managing	0,02	0,01	0,02	-0,04

Note: all correlations non-significant.

Contrary to expectations, an examination of the correlations between emotional intelligence and change in CTI scores showed no significant relationships for any of the total EI or the four branch scores. It was postulated that correlations would be positive and significant. As can be seen in Table 7.16, correlations were close to 0 suggesting that change in negative career thinking is not associated with level of EI overall or any of the branches.

7.6 PREDICTIVE VALUE OF CONSTRUCTS

Hypothesis 3 states that cognitive ability (IQ) will significantly predict negative career thoughts and that this prediction will be found for negative career thoughts found both before and after career exploration, as well as negative career thoughts change. Hypothesis 6 states that emotional intelligence will be a significant predictor of negative career thoughts and that this prediction will be found for negative career thoughts both before and after career exploration, as well as negative career thoughts change. Multiple regression analysis allows the researcher to determine the degree to which a criterion can be predicted when levels of

various predictor variables are known (Cone & Foster, 1997; Field, 2000; Gravetter & Wallnau, 2009). This analysis takes into consideration that the predictor variables may correlate with one another and so provides information regarding the unique contribution of each variable in the prediction.

In each of the following sections, regression analyses were first performed with IQ and EI total scores as predictors and CTI scores (either pre-CTI, post-CTI, or CTI change; total as well as the three subscales) as criterion variables. Results are shown in Tables 7.17; 7.19; and 7.21.

Regression analyses were also performed with IQ, and the four branch EI scores as predictors. Table 7.8 shows that correlations exist between total and branch scores of the EI measure. Since the total EI score is a composite of the branch scores, overall emotional intelligence scores should not be entered into the regression equation along with its subcomponents (Lam & Kirby, 2002). Therefore, for these analyses only the four branch scores – Perceiving (EIP), Facilitating (EIF), Understanding (EIU), and Managing (EIM) – were entered into the regression analysis as EI predictors. The results are shown in Tables 7.18; 7.20; and 7.22.

7.6.1 Predicting CTI pre-test scores from IQ and EI

Regression analysis was first performed with IQ, and EI total scores as predictors and CTI pre-test total and three subscales as criterion variables. The results are shown in Table 7.17.

Table 7.17

Regression Analysis for Variables Predicting Negative Career Thoughts Pre-program (IQ, EI total)

	Criterion							
	Negative career thoughts pre-program							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
Predictors	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,002	-0,029	0,009	-0,091	0,001	-0,002	0,000	0,026
Step 2								
EI total	0,001	-0,037	0,000	-0,011	0,001	0,002	0,009	-0,101
Total ΔR^2	0,003		0,009		0,002		0,009	

Neither overall EI or IQ were seen to predict negative career thoughts pre-program for either total CTI or any of the three subscales.

Regression analysis was next performed with IQ, and the four EI branch scores as predictors and CTI pre-test total and three subscales as criterion variables. The results are shown in Table 7.18.

Table 7.18

Regression Analysis for Negative Career Thoughts Pre- program (IQ, EI branches)

Predictors	Criterion							
	Negative career thoughts pre-program							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,002	-0,043	0,009	-0,086	0,000	-0,035	0,000	-0,017
Step 2								
EIP	0,003	0,096	0,005	0,093	0,015	0,181	0,005	-0,048
Step 3								
EIF	0,001	0,047	0,000	0,083	0,010	-0,038	0,001	0,027
Step 4								
EIU	0,000	0,015	0,003	-0,035	0,001	0,069	0,002	0,088
Step 5								
EIM	0,044**	-0,236	0,024*	-0,174	0,043**	-0,234	0,034*	-0,208
Total ΔR^2	0,050		0,041		0,069		0,042	

Note: * $p \leq ,05$; ** $p \leq ,01$; † $p \leq ,001$.

Predictive values of IQ, and the four EI factors were regressed against the criterion of pre-CTI scores. Data show that IQ did not significantly predict negative career thoughts overall or for any of the subscales. Of the EI branches, managing emotions (EIM) was able to predict pre-program CTI total ($\Delta R^2 = 0,044$; $p = 0,004$; $f^2 = 0,05$), decision-making confusion ($\Delta R^2 = 0,024$; $p = 0,034$; $f^2 = 0,02$), commitment anxiety ($\Delta R^2 = 0,043$; $p = 0,004$; $f^2 = 0,05$), and external conflict ($\Delta R^2 = 0,034$; $p = 0,011$; $f^2 = 0,02$). According to Cohen (1992) the f^2 values represent small effect sizes.

7.6.2 Predicting CTI post-test scores from IQ and EI

Regression analysis was first performed with IQ, and EI total scores as predictors and CTI post-test total and three subscales as criterion variables. The results are shown in Table 7.19.

Table 7.19

Regression Analysis for Variables Predicting Negative Career Thoughts Post-program (IQ, EI total)

	Criterion							
	Negative career thoughts post-program							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
Predictors	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,021*	-0,125	0,050[†]	-0,211	0,001	-0,008	0,012	-0,090
Step 2								
EI total	0,004	-0,070	0,002	-0,043	0,006	-0,083	0,004	-0,062
Total ΔR^2	0,025		0,052		0,007		0,016	

Note: * $p \leq ,05$; [†] $p \leq ,001$.

Regression analysis shows that IQ predicted total CTI ($\Delta R^2 = 0,021$; $p = ,044$; $f^2 = 0,02$), and decision-making confusion ($\Delta R^2 = 0,050$; $p = ,002$; $f^2 = 0,06$). The f^2 values represent small effect sizes. Commitment anxiety and external conflict were not predicted by IQ. EI did not predict any of CTI total or the three subscales.

Table 7.20

Regression Analysis for Negative Career Thoughts Post-program (IQ, EI branches)

Predictors	Criterion							
	Negative career thoughts post-program							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,021*	-0,137	0,050[†]	-0,217	0,001	-0,039	0,012	-0,139
Step 2								
EIP	0,000	0,037	0,002	0,060	0,000	0,066	0,000	-0,003
Step 3								
EIF	0,000	0,110	0,000	0,109	0,003	0,014	0,000	0,035
Step 4								
EIU	0,001	-0,005	0,002	-0,016	0,000	0,039	0,003	0,102
Step 5								
EIM	0,048**	-0,246	0,039**	-0,220	0,043**	-0,234	0,030**	-0,196
Total ΔR^2	0,070		0,093		0,047		0,045	

Note: * $p \leq ,05$; ** $p \leq ,01$; [†] $p \leq ,001$.

Predictor variables of IQ, and the four EI factors were regressed against the criterion of post-CTI scores. Results show that IQ was a significant predictor for overall CTI ($\Delta R^2 = 0,021$; $p = 0,044$; $f^2 = 0,02$), and decision-making confusion ($\Delta R^2 = 0,050$; $p = 0,002$; $f^2 = 0,06$). The f^2 values represent small effect sizes.

In addition, data show that of the four EI branches, only managing emotions was able to predict post-program CTI total and all three subscale scores as follows: total CTI: $\Delta R^2 = 0,048$; $p = 0,002$; $f^2 = 0,05$ (small effect size); decision-making confusion: $\Delta R^2 = 0,039$; $p =$

0,006; $f^2 = 0,05$ (small effect size); commitment anxiety: $\Delta R^2 = 0,043$; $p = 0,004$; $f^2 = 0,04$ (small effect size); and external conflict: $\Delta R^2 = 0,030$; $p = 0,017$; $f^2 = 0,04$ (small effect size).

7.6.3 Predicting CTI change scores from IQ and EI

Regression analyses are presented for CTI change with IQ, and overall EI as predictors. The results are shown in Table 7.21.

Table 7.21

Regression Analysis for Variables Predicting Negative Career Thoughts Change (IQ, EI total)

	Criterion							
	Negative career thoughts change							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
Predictors	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,012	0,103	0,010	0,094	0,001	0,009	0,009	0,105
Step 2								
EI total	0,001	0,027	0,000	0,017	0,004	0,070	0,001	-0,037
Total ΔR^2	0,013		0,010		0,005		0,010	

The predictor variables of IQ, and EI total were regressed against the criterion variables of CTI total change, DMC change, CA change, and EC change. None of the variables were seen to predict any of the criterion variables with the pre-determined degree of significance. Effect sizes were negligible.

While there were no significant changes in R^2 for the predictors, an examination of the differences in ΔR^2 for IQ and overall EI indicate that IQ did account for more of the variance

than did total EI for each of total CTI (1,7% of variance for CTI total compared with 0% for EI total), DMC (1,5% and 0%), CA (0,3% and 0,2%), and EC (1,2% and 0,4%) changes.

Table 7.22

Regression Analysis for Variables Predicting Negative Career Thoughts Change (IQ, EI branches)

Predictors	Criterion							
	Negative career thoughts change							
	<u>Total</u>		<u>DMC</u>		<u>CA</u>		<u>EC</u>	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1								
IQ	0,012	0,100	0,010	0,104	0,001	0,007	0,009	0,103
Step 2								
EIP	0,001	0,057	0,001	0,047	0,006	0,091	0,002	-0,035
Step 3								
EIF	0,003	-0,066	0,000	-0,011	0,002	-0,050	0,000	-0,007
Step 4								
EIU	0,000	0,019	0,000	-0,024	0,001	0,027	0,000	0,003
Step 5								
EIM	<u>0,000</u>	<u>0,008</u>	<u>0,000</u>	<u>-0,001</u>	<u>0,000</u>	<u>0,004</u>	<u>0,001</u>	<u>-0,036</u>
Total ΔR^2	0,016		0,011		0,010		0,012	

The predictor variables of IQ and four EI factors were regressed against the criterion variables of CTI change for total, DMC, CA, and EC subscales. Results show no significant predictors.

To further explore these data and to verify the above conclusion, participants were divided into three groups - low, medium, and high - based on amount of overall negative career

thinking change. In all three groups the change in negative thoughts was towards a more positive attitude. An analysis of variance (ANOVA) was conducted to see whether any significant differences existed between the groups for any of IQ, total EI, and the four branch EI scores. No significant differences between groups were found. In practical terms this means that those with high negative career thinking changes did not differ appreciably in IQ or EI from those with medium or low changes.

7.7 CHAPTER SUMMARY

In this chapter the results of the research were presented. The research questions were stated. Assumptions with respect to multiple regression statistical procedures used in the study were presented and discussed. Descriptive statistics for the variables were shown and discussed, as well as the correlations for within variables and between variables.

Results for the ability of IQ and EI to predict negative career thinking change were presented, and show that neither cognitive nor emotional intelligence are good predictors of change. However, multiple regression analyses of predictors of negative career thinking before the program demonstrated significant results for Managing emotions. Similarly, Managing emotions appeared to predict negative career thinking post-program at a significant level. These results are further discussed in Chapter 8.

CHAPTER 8 CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

8.1 INTRODUCTION

The purpose of this chapter is to present and discuss the conclusions as they pertain to the aims of the research. In keeping with the aims as originally introduced, the chapter will be structured so as to present conclusions regarding the individual variables first, followed by bivariate associations and predictions. Limitations of the research are enumerated and discussed. Recommendations for Industrial and Organisational Psychology and recommendations for further research are suggested.

8.2 CONCLUSIONS

The purpose of this research was to explore factors which may influence the negative career thoughts experienced by non-student adults. Two factors were considered: cognitive ability and emotional intelligence. This study was designed to extend the research which questions whether important life outcomes can be predicted by emotional intelligence and, as with cognitive ability, should be considered a valid psychological construct in the study of individual differences. For this research, the important life outcome was the ability to positively modify one's negative thinking with respect to the decision-making confusion, commitment anxiety, and external conflict that often accompany career exploration. By establishing and analyzing the relationships between these various factors empirically, this research provides a point of integration of several areas of psychology.

In the following sections each of the research aims will be dealt with separately and the findings more specific to each construct will be discussed first before the discussion of findings involving integration of constructs.

8.2.1 Cognitive ability

One of the aims of the research was to conceptualize intelligence or cognitive ability as a theoretical construct and this has been addressed in the literature review in Chapter 2. This

was necessary in order to establish a foundation for the investigation of emotional intelligence as a possible component of intelligence that operates alongside but distinct from traditionally measured intelligence in predicting outcomes. The literature review reveals that intelligence is likely not a unitary construct. Psychometric analyses indicate a hierarchical structure with a common factor accounting for a considerable part of the variance, and second and third order factors that correlate with the common factor and less so with each other. Theories of multiple intelligences are being developed. The burgeoning field of neurophysiological psychology also provides research evidence supporting the notion of a general factor of intelligence and the possibility of more specific factors. While there is no universally agreed-upon definition of intelligence, there is a general consensus that level of intelligence is manifest by the ability to acquire, store and utilize information in solving complex problems, to learn from experience, and to adapt to the environment by modifying it to suits one's purposes or selecting other more advantageous environments (Jensen, 1998; Lohman, 2004; Newman & Just, 2004; Sternberg, 1997; 2003; van Geert, 2003).

Results on the measure of general cognitive ability (IQ) used in this research conformed to a normal distribution curve indicating that individual differences in cognitive ability exist within the sample of career-exploring adults. IQ values for the research sample were higher than have been reported elsewhere. Three reasons may account for this discrepancy. First, there is some evidence that intelligence scores for the Canadian population appear to be higher than that of the American population. For example, more recent versions of the Wechsler Adult Intelligence Scale - both the third and fourth editions - have required separate norm reference groups for the two populations (Wechsler, 1997; 2008). Since the WPT has been developed in the United States and norms established with American samples, it is possible that scores obtained using a Canadian sample would be higher. Second, the norms used for the WPT were established in 1992. Past research has established that intelligence scores in a population tend to rise by approximately three standard points per decade (using a mean of 100; sd of 15), requiring the revising of norm tables on occasion in order to maintain appropriate comparisons (Flynn, 1987, 1994, 2007; Neisser, 1998). Scores obtained almost two decades later, when compared with older norm tables, would be higher as a result of the Flynn effect. Third, the sample investigated in this research included individuals engaged in career exploration. It is possible that only those individuals thought to be able to benefit from such a program would be referred for career exploration and that

those more intellectually challenged would be involved in other programs. As a result, the mean WPT score for the current sample would be greater and standard deviation somewhat less, as was observed.

The WPT scores provide additional information regarding IQ levels in a Canadian, unemployed adult sample and suggests that the norms provided with the manual may mis-categorize individuals when IQ is used as a factor for deciding career.

It has been suggested that intelligence should show an increase over the lifespan (Mayer, Salovey, & Caruso, 2000). In this cross sectional sample, higher IQ was seen to be associated with increase in age lending support to that attribute. In addition, IQ was moderately and positively associated with education level. This is to be expected if increased intelligence involves the ability to learn at a more complex level and solve more abstract problems.

8.2.2 Emotional intelligence

A second aim of the research was to conceptualize emotional intelligence as a theoretical construct and this has been addressed in the literature review in Chapter 3. The motivation for this aim arises from the questions in the extant literature regarding the validity of this relatively new construct and the necessity for research investigating its nature, relation to other constructs, and its ability in predicting outcomes. The results in this study add to the literature in each of these areas.

Review of the literature revealed that the ability-based model of EI maintained the most support and was most appropriate for research purposes. This model proposes four branches, Perceiving, Facilitating, Understanding and Managing emotions. These components are thought to be hierarchical in that the less psychologically complex abilities such as Perceiving and Facilitating emotions lay the foundation for the more complex abilities of Understanding and Managing emotions. Managing emotions, at the peak of the hierarchy, is therefore the most complex ability and incorporates the skills below it.

The patterns of scores obtained for the total EI and EI branches – Perceiving, Facilitating, Understanding and Managing – generally conformed to a normal distribution curve indicating that individual differences in emotional intelligence exist within the sample of career-exploring adults as measured by the ability-based measure used in this research. Of the four branches, the Managing branch best met the assumptions needed for the statistical procedures used by way of linearity of relationships with outcome variables and homogeneity of variance. This suggests that the statistical analyses involving EI Managing are likely the most meaningful and least likely to misinterpret data.

Levels of EI were obtained for an adult non-student sample. This adds to the literature since very little information is available regarding EI scores that are not drawn from a college or university student population. In this study, while Perceiving and Facilitating branch scores approached the mean of 100 as calculated for the norming sample, overall EI, Understanding and Managing scores were significantly lower. When compared with other research in which scores have been reported in sufficient detail to permit analysis, the results in this research were lower than those reported elsewhere with the exception of one study (Murphy, 2006). For example, the total and branch scores in this research are lower than those reported in some studies (e.g. Amitay & Mongrain, 2007; Bastian, Burns, & Nettlebeck, 2005; Farelly & Austin, 2007; Yip & Martin, 2005), but, while still lower, more similar to others (e.g. Brackett, Mayer, & Warner, 2004; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Lopes, Salovey, Côté, & Beers, 2005). Whether this is related to the adult, non-student sample, or a function of unemployment is not known at this point. However, at least three reasons may account for the difference in scores obtained in the current research. First, without exception, the participants in the aforementioned studies were university students, most recruited from undergraduate or graduate psychology courses and therefore with knowledge (presumably) regarding psychological constructs. Secondly, their ages were considerably younger; all age means were less than 30 and most were less than 20. In the current study, individuals under 25 were excluded from the data and the average age was almost 42 years, so the sample is not representative of those reported above. Third, the current sample was limited to career-exploring adults who were unemployed. Perhaps this population demonstrates lower EI and that is what contributes to their unemployment. There are no other similar samples with which to compare.

For this sample, biographical correlations showed overall EI and the branch scores to be negatively but non-significantly associated with age with the exception of Perceiving emotions which was seen to decrease with age significantly ($p < .01$). This was unexpected and contradicts one of the criteria for intelligence as suggested by Mayer et al. (2004) that intelligence increases with age as a result of experience. While it may be that the abilities subsumed under Perceiving emotions (i.e. identifying the emotional states of self and others, appraising the emotional environment so as to distinguish relevant information from irrelevant, etc.) might diminish with age, common sense would suggest otherwise. It is more likely that individuals become more perceptive regarding emotional situations as they get older. Perhaps the Perceiving branch of the MSCEIT does not adequately measure this facet of emotional intelligence. At least one study (Roberts et al., 2006) concluded that the validity of the Perceiving emotions branch was questionable.

On the other hand, an alternate explanation exists for the decrease of emotional intelligence with increasing age found in this study. In the Cattell model of intelligence, crystallized intelligence is believed to increase over the lifespan until the beginning of old age in the 60 and 70 year age range and then gradually diminish. Fluid intelligence, on the other hand, reaches its peak relatively quickly in life – around 25 to 30 years of age before beginning to decline. Perhaps emotional intelligence, in particular Perceiving emotions, involves the faster and more novel problem solving that is characteristic of fluid intelligence and so would be higher among younger individuals. However, the few studies that have measured this have been conducted with samples younger than 30, and analysis of those data would likely show a different set of results than in the current study. Farrelly and Austin (2007), for example, found a positive relationship between the MSCEIT and crystallized intelligence but not with fluid intelligence. However, the average age of their sample was 22 years – well before the differentiation between crystallized and fluid intelligence is likely to be observed. These kinds of inconsistencies emphasize the need for more studies which investigate ability-based emotional intelligence in other populations in different contexts and across different age groups.

8.2.3 Negative career thoughts

A third aim of the research was to conceptualize negative career thoughts as a theoretical construct and this has been addressed in the literature review in Chapter 4. Career thoughts arise out of a combination of factors such as beliefs, assumptions, feelings, expectations, and knowledge regarding the world of work and one's place in it. Dysfunctional thoughts have been associated with negative outcomes. The dysfunctional thoughts specific to career exploration also have been found to have negative outcomes as evidenced by increased decision-making confusion, greater anxiety around committing to a career, and increased conflict with significant others. Addressing and reducing negative career thinking is a vital part of successfully navigating career exploration.

Negative career thoughts were measured by the CTI in a group of non-student adults prior to a career exploration program. These descriptive data show scores that are somewhat higher than those provided in the normative studies for adults in the CTI manual (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996), where for all of CTI total, decision-making confusion, commitment anxiety, and external conflict mean T-scores were 50 with a standard deviation of 10. This is to be expected given that the majority of adults in the normative sample were employed or not seeking employment (87%) in contrast to the 0% employed in the current sample. They also differed from the present sample in that most (78%) had completed some post-secondary education.

Sampson et al. (1996) also provide data for a client group not used in the normative study "in order to provide a point of reference on the differences between the normative respondents and actual clients..." (p. 45). These clients were seeking career services, were generally of college age, and most had completed some post-secondary education. The means and standard deviations for these clients receiving services ($n = 376$) are as follows: CTI total mean = 60, $sd = 7$ to 8 ; decision-making conflict mean = 60, $sd = 10$; commitment anxiety mean = 62, $sd = 7$ to 8 ; and external conflict mean = 58; $sd = 10$. (Note: Because scores in the manual are reported as raw scores, translation into standard T-scores is approximate.) Despite the differences in age and education, the data in this study coincide more closely with the sample receiving career services as reported in the CTI manual.

In other studies where the CTI has been used as a measure, the participants have generally been university students not in a career-exploration program. The descriptive data produced in this study add to the limited information available for a non-student adult population and emphasize the need for norms that are appropriate for this population.

Negative career thoughts were also measured at the conclusion of a career exploration program. As before, meaningful comparisons with other research are difficult since pre-post measures have been carried out with samples of university students not demographically similar to the current sample of adults. In addition, the data here show that the internal consistency reliability of the CTI maintains high values both in its initial administration and also upon conclusion of the career exploration program. This adds to the evidence that the CTI is a useful instrument in evaluating an individual's level of negative career thinking.

Negative career thoughts change was observed in this study. The effect sizes were large for total CTI as well as decision-making confusion and commitment anxiety scores, and medium for external conflict. Since no control group was included, causation is not an appropriate interpretation with a correlational research design, but speculation is allowed. It is possible that the process of career exploration in which clients systematically investigate themselves and the labour market, make decisions regarding options, and formulate a plan of action, helps to reduce negative career thinking. This finding adds to the literature regarding the possible effectiveness of career exploration programs and their justification for use in an adult unemployed population.

While there was a general trend for those with less education to have more negative career thoughts, level of education was not significantly associated with negative career thoughts measured pre- or post-program. This suggests that more education does not necessarily give individuals a significant edge in dealing with the stresses of career exploration. In addition, there were no significant correlations of education with negative career thoughts change. One would expect those who are already further down the education path to feel they have more choices. This was not seen to be the case in the current study.

Sampson et al. (1996) suggested that further research using the CTI needed to investigate the relationship between age and dysfunctional career thinking (p. 63). At this point a decade

and a half later, research about this relationship is still limited. This research provides one more data set regarding the change in negative career thinking across the lifespan. In the current study, age was significantly and inversely associated with level of expressed commitment anxiety before the program began (small to medium effect size). The older the individual, the less likely he or she is to experience anxiety around commitment to a plan of action. Commitment anxiety reflects the difficulty committing to a particular career choice among several or many alternatives, and the resulting tension regarding the outcome of decision-making (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996). At an intuitive level the results obtained in this study make sense – younger people with less work history will likely experience higher anxiety about which direction to take, especially if they do not have the requisite skills and knowledge about self and the labour market. Strauser, Lustig, and Ciftci (2008) found that commitment anxiety seemed, paradoxically, to be directly associated with one's level of motivation for personal growth, openness to new experiences, and maximizing potential. It may be that younger individuals with less life experience are more motivated and therefore more likely to admit to more commitment anxiety. Perhaps individuals with more life experience have more similar contexts with which to compare and are better able to put this particular emotion into perspective than a younger person.

Age was inversely but non-significantly correlated with all aspects of negative career thinking change, but significantly so for decision-making confusion and commitment anxiety, indicating that younger individuals acknowledged more of a positive shift than older participants. So even when the sample was restricted in age by removing the younger (and presumably more indefinite with respect to career choice) individuals, age was still a factor associated with negative career thoughts change. Part of this result may be attributed to regression to the mean. On the other hand, younger individuals who may not know themselves as well may benefit more from learning both about themselves and the choices within the world of work. Older individuals with more life experiences do not appear to experience the same decrease in negative career thoughts.

8.2.4 Integration of cognitive ability, emotional intelligence and negative career thoughts

A fourth aim of this research was to integrate the literature regarding the three principle constructs investigated: cognitive ability, emotional intelligence, and negative career thoughts. There is no literature to date that combines all three constructs in one study. Combinations investigating any two of them were addressed in Chapter 5. Integration of these constructs was motivated by the perspective that career exploration is both cognitively demanding and emotionally taxing (Sampson, Reardon, Peterson, & Lenz, 2004) and is often accompanied by dysfunctional thinking regarding the world of work. Understanding the relationships between cognitive abilities, emotional abilities and negative career thoughts, therefore, will add to the literature regarding the relative importance of cognitive ability and emotional intelligence in an outcome not yet explored. In addition, this understanding may provide both counsellor and client insight into dealing with the stresses associated with career exploration and career decision making.

The empirical study arose out of the integration of the three constructs aforementioned, and its aim was to determine the psychometric relationships between cognitive ability, emotional intelligence and negative career thoughts as measured before and after a career exploration program. The relationships investigated were both correlational and predictive. A discussion of the correlational associations is now presented, followed by the predictive associations.

8.2.4.1 Cognitive ability and emotional intelligence

Using Cohen's (1992) values as a guide, overall EI was seen to correlate moderately well with IQ ($r = 0,31$) but not overly so. This finding supports the view that EI is one of the intelligences subsumed under general cognitive ability and is positively associated with it. The moderate to high association of the Understanding branch with IQ ($r = 0,48$) supports Mayer, Salovey, and Caruro's observation that Understanding is the most cognitively oriented of the branches and therefore most likely to be highly correlated with IQ.

The correlations in this research compare reasonably well with other investigations of ability based IQ/EI relationships (Lam & Kirby, 2002; Pelletteri, 2002 (as reported in Mayer et al.,

2004); Roberts, Zeidner, & Matthews, 2001), although the participants used in the studies were university students, and the version of the MSCEIT was a previous edition to that used in this study. Three general IQ tests, the Air Force Qualifying Test, the Scale B of the 16 Personality Factor, and the Shipley Institute of Living IQ, have found total IQ/EI correlations ranging from 0,23 to 0,32 which compares well with the 0,31 obtained in the current study. For EI Perceiving, correlations ranged from -0,03 to 0,09 which are somewhat lower than the r value of 0,19 obtained in this study. For EI Facilitating, only one relationship was reported ($r = 0,22$ with the Air Force Qualifying Test) which compares reasonably well with the 0,13 obtained in the current study. EI Understanding exhibited the highest correlations in all three IQ tests, ranging from 0,38 to 0,40, and similar to the 0,48 obtained in this research. Finally, EI Managing correlations ranged from 0,04 to 0,16 which is close to the 0,12 obtained in this study. Therefore, IQ/EI relationships using other general cognitive ability tests were comparable to the magnitudes obtained in the current study. The results obtained here adds to the body of knowledge by addressing the expressed need in the literature for studies investigating the relationship between a measure of cognitive ability and an ability-based measure of EI (Brown et al., 2003; McEnrue & Groves, 2005; Van Rooy et al., 2005).

Jensen (cited in Mayer et al, 2004, p203) suggests that one attribute of intelligence is that abilities tend to correlate more at low levels of intelligence than high. This pattern of correlation of abilities that is stronger at lower levels of IQ than at higher levels has been observed in a sample of high school students (Zeidner, Shani-Zinovich, Matthews, & Roberts, 2004) and also appears to be supported in the current sample of adults, lending credence to the argument that EI – at least as measured by an ability test – may be an intelligence in its own right.

8.2.4.2 *Cognitive ability and negative career thoughts*

Cognitive ability was seen to be inversely correlated with negative career thinking scores, but only on the post-test administration and only for decision-making confusion and overall CTI. One possibility for the results found in this study is that individuals with higher cognitive abilities are able to benefit more from the self- and labour market knowledge acquired during a career exploration program, and are better able to make decisions

regarding how their particular circumstances might be altered to meet their needs. Cognitive ability did not show any significant relationships with negative career thinking change overall or with any of the subcomponents although all the correlations showed a positive trend.

Hypothesis 1 postulated that there is a statistically significant inverse relationship between level of cognitive ability (IQ) and negative career thoughts amongst career-exploring adults, and that this relationship is found for negative career thoughts measured before career exploration and after career exploration. The data partially support this hypothesis but only for overall CTI and decision-making confusion post-program.

Hypothesis 2 postulated that there is a significant positive relationship between level of cognitive ability (IQ) and negative career thoughts change amongst career-exploring adults. Results of this research do not support this hypothesis and so Hypothesis 2 is rejected and the null hypothesis retained.

8.2.4.3 *Emotional intelligence and negative career thoughts*

The results show that EI overall is not significantly associated with negative career thoughts pre-program, post-program or change. However, the EI Managing branch is inversely correlated with negative career thoughts before career exploration for total CTI, commitment anxiety, and external conflict, but not for decision-making confusion. Individuals with higher managing abilities appear to begin the career exploration experience with fewer negative thoughts. Post-program, all of CTI total, decision-making confusion, commitment anxiety, and external conflict were inversely correlated with EI Managing. These associations tend to support the view that individuals are possessed of resources upon which they draw to manage the stressors of daily life. In this sense it may be that EI is closely related to the manageability and meaningfulness aspects of Sense of Coherence (Antonovsky, 1993) in that EI provides one with a sense of being able to cope with career exploration demands, and that those demands are worthy of investment and commitment.

Hypothesis 5 postulates that there will be an inverse and significant relationship between emotional intelligence and negative career thoughts both before and after career exploration.

This hypothesis can be accepted but only for the EI managing branch of emotional intelligence.

Correlation analysis showed no significant relationships between emotional intelligence – either overall or any of the perceiving, facilitating, understanding, or managing branches – with negative career thinking change overall or any of decision-making confusion, commitment anxiety, or external conflict. Thus, in response to Hypothesis 6 which postulated that there is a significant positive relationship between emotional intelligence and negative career thoughts change amongst career-exploring adults, the data show this is not supported and therefore Hypothesis 6 is rejected.

8.2.4.4 *Predicting negative career thoughts*

This research was exploratory in nature in that the relationships between negative career thinking, cognitive ability, and emotional intelligence have not (to our knowledge) been investigated in one study before.

Regression analysis in which IQ and overall EI were used to predict an individual's negative career thoughts pre-program showed that neither of these variables did so for overall negative thoughts as well as decision-making confusion, commitment anxiety or external conflict. The changes in variance (ΔR^2) were negligible suggesting that the overall values of both IQ and EI were not useful in predicting negative career thinking prior to the program.

A somewhat different picture emerges when the regression analysis is observed for IQ and the four EI branches as predictors of pre-program negative career thoughts. While the effect size is small (f^2 values from 0,02 to 0,05), Managing emotions is significant in predicting the overall CTI as well as all three subscales. These results indicate that Managing emotions, alone among the four EI branches, is already inversely associated with and predictive of negative career thoughts before the beginning of the career exploration program. By considering the four branches separately in the analysis, it becomes apparent that the effects of a more specific ability such as emotional managing is masked in the overall EI score.

Regression analysis in which IQ and overall EI were used to predict an individual's negative career thoughts post-program showed that IQ was predictive of overall negative thoughts as well as decision-making confusion. IQ did not predict commitment anxiety or external conflict to any significant extent. IQ accounted for 5% of the variance for decision-making confusion indicating that this subscale is much more sensitive to cognitive ability than the others. Recall from chapter 2 that higher order skills such as problem solving and decision making are examples of metacomponents that explain the differences in g or cognitive ability in psychometric analyses (Sternberg, 2003). It appears from this research that when these metacomponents are activated during the career exploration process they become important in predicting less decision-making confusion. As with pre-program regression analysis, the overall EI score did not predict negative career thoughts post-program.

When the regression analysis was observed for IQ and the four EI branches as predictors of post-program negative career thoughts, IQ continued to be significant in predicting overall CTI as well as decision-making confusion. In addition, Managing emotions was seen once again to predict total CTI as well as all three subscales (small effect sizes: f^2 values of 0,04 and 0,05). The change in variance in negative career thoughts explained by Managing emotions when cognitive ability is statistically controlled ranges from 2,4% to 4,4% prior to career exploration and from 3,0% to 4,8% after. These modest amounts are of similar magnitude to those generally found in other studies (Zeidner et al., 2008).

Hypothesis 3 postulated that cognitive ability would significantly predict negative career thoughts and that this prediction would be found for negative career thoughts measured before career exploration and after career exploration. The results of the study partially support this hypothesis but only for overall negative career thoughts and decision-making confusion post-program.

Hypothesis 7 postulated that emotional intelligence would significantly predict negative career thoughts and that this prediction would be found for negative career thoughts measured before career exploration and after career exploration. The results of the study show that this hypothesis can be accepted but only for the emotional managing branch of emotional intelligence.

IQ and overall EI did not predict an individual's negative career thoughts change. Similarly, in the regression analyses in which IQ and four branches of emotional intelligence were used to predict an individual's change in negative career thinking none of these variables did so for overall negative thinking or any of the subscales. In practical terms, it can be said that intelligence resources, whether cognitive or emotional, do not appear to play a part in predicting the degree of one's negative career thinking change. Hypothesis 4 states that "In career exploring adults, cognitive ability will significantly predict negative career thoughts change". Hypothesis 8 states that "In career exploring adults, emotional intelligence will significantly predict negative career thoughts change". The data show that both Hypotheses 4 and 8 presented in the study are to be rejected and the null hypotheses retained. In addition, there is no conclusive evidence to suggest that emotional intelligence predicts negative career thinking change better than cognitive ability. The amount of variance explained by IQ was greater than the amount of variance explained by any of the four EI branches, although no amounts were significant. Based on these results, Hypothesis 9 with respect to negative career thoughts change must be rejected. Because EI managing abilities are in evidence both before and after career exploration, the differences between negative career thoughts pre- and post-program appear to be reduced to non-significance.

Generally, the ability to regulate one's emotions is viewed as an explanation for understanding how individuals respond to stressful situations in their environment (Cartwright & Pappas, 2007). Rude and McCarthy (2003) argue that increased emotional intelligence reduces the tendency for an individual to engage in maladaptive coping strategies such as rumination or thought suppression. Ramos, Fernandez-Berrocal, and Extremera (2007) suggest that higher emotional intelligence is associated with fewer intrusive thoughts and less intense emotional responses to a stressor which helps the individual cope better with the stressful situation. An increased ability to understand and manage emotions during a stressful event appears to be important to maintaining healthy functioning after the event. Several decades ago, Pearlin and Schooler (1978) described coping as the ability to control the meaning of potentially problematic experiences so that the harmful effects are more neutral and kept within manageable bounds (p.2). In the current study, it may be that increased emotional management abilities played a role in moderating participants' initial negative thoughts with respect to the stresses surrounding their career situation, which then allowed them to negotiate the career exploration process more

successfully as was evident in their thoughts post-program (Zeidner, Matthews, & Roberts, 2006). One could speculate that during career decision making, emotional intelligence by way of managing emotions sets the stage for fewer negative career thoughts allowing cognitive ability more influence in reducing decision-making confusion as a result of career exploration.

The results of this study do not necessarily repudiate the notion of emotional intelligence as a viable construct. Earlier in the thesis (Chapter 3) three general criteria by which an intelligence could be identified were discussed: one, that the intelligence should describe mental abilities rather than personality; two, that there should be a correlation with other mental abilities but not too much so; and three, that there be a developmental path over the lifespan (Mayer, Salovey, & Caruso, 2000). Within this nomological net, MacCann and Roberts (2008) suggest four statistical relationships by which to demonstrate the validity of a test for emotional intelligence: first, the correlation of EI with other intelligence tests; second, correlations and predictions of the EI test with outcomes that are indicative of emotional problem solving; third, a stronger correlation of the EI test with other measures of EI than to other measures of intelligence; and last, only mild correlations with other constructs such as personality. Of these four statistical relationships, evidence for the last two are beyond the scope of this study, but the first two have been measured in the current study. Analyses show that EI for overall EI as well as Perceiving, Facilitating, Understanding, and Managing, as measured by the MSCEIT, all correlate positively with general cognitive ability as measured by the WPT.

Zeidner et al. (2008) argue that EI studies need to demonstrate that EI measures can predict differences in performance on particular criteria in applied settings with general intelligence and other factors such as personality statistically controlled. While it did not predict the outcome of negative career thinking change, the most hierarchically complex aspect, managing emotions, did predict initial and subsequent lower levels of negative thoughts which is an important outcome in itself. If a behavioural manifestation of intelligence is the ability to adapt to the environment by manipulating that situation to an individual's benefit, then the results obtained here are suggestive of that.

The finding in this study that correlations between cognitive and emotional intelligence were higher at low intelligence levels than at higher corroborates Jensen's (2003) notion that this is an indication of an intelligence.

One result that does not support the construct of emotional intelligence as an intelligence is that it was not found to develop with age as has been suggested should be the case (Mayer, Salovey, & Caruso, 2000). In this sample, cognitive ability was seen to increase with age while emotional intelligence decreased. This appears paradoxical and differs from what has been found in other samples. However, as explained earlier, this may have to do with the particular samples investigated in previous research and the possibility that emotional intelligence is perhaps more a fluid than a crystallized intelligence.

Jordan, Ashkanasy, and Hartel (2002) suggested that individuals higher in EI are better able to break the cycle of dysfunctional thinking and negative coping behaviours that usually accompany job insecurity. They encouraged research that investigates which factor of EI might be more important, and where in the sequence of emotional reactions EI is likely to be most effective. The current research supports and adds to the Jordan et al. research by determining that it is higher levels of EI Managing that are associated with lower levels of negative career thoughts and may, in fact, influence the degree to which individuals experience dysfunctional thoughts. It also appears that this ability is present in the individual before any career exploration has taken place, and the continued regulation of negative career thoughts is also evident following career exploration. Since emotional managing was predictive of negative career thoughts both before and after career exploration, and cognitive ability only predictive after career exploration, it suggests the possibility that perhaps individuals access their emotional psychological resources first and cognitive resources later, at least in dealing with negative career thoughts.

It may be that higher EI individuals construe the eliciting emotional situation of career exploration with a more positively valenced reaction (Ortony, Clore, & Collins, 1988) allowing them to deliberately regulate the stress (Lazarus & Folkman, 1987; Lyons & Schneider, 2005; Muramatsu & Hanoch, 2005). Managing emotions as conceptualized by the Mayer-Salovey ability model, involves deliberately avoiding thoughts and emotions that may be counterproductive and adjusting negative emotions because of increased insight into

the factors impacting a particular event (Dunn, Brackett, Ashton-James, Schneiderman, & Salovey, 2007; Jordon, Ashkanasy, & Hartel, 2002). It appears that persons with higher EI Managing abilities approach career decision with fewer negative career thoughts and also navigate the process more successfully. In this sense, EI may be seen as evidence of intelligent behaviour specific to the emotions domain as the individual seeks to adjust to the changes in their life circumstances and attempts to change the environment to suit their purposes.

8.3 LIMITATIONS

The probability that a research study is without error is very low; generally a variety of factors, some having to do with the planning of the study, and some to do with problems that arose during the study itself, limit the interpretation of results (Cone & Foster, 1997). The limitations of the current research are now discussed.

8.3.1 Other variables

In a study such as this where one group is administered a pre- and post- test to determine change, it is possible that variables other than those hypothesized to be associated with the criterion variable may be responsible for any differences (Babbie, 2001; Cone & Foster, 1997). For example, salutogenic constructs such as Sense of Coherence (Antonovsky, 1998) and Locus of Control (Rotter, 1990) have been found to be associated with negative career thinking as measured by the CTI (Austin, 2005; Austin, Dahl, & Wagner, 2010). In addition, personality factors – openness to experience, neuroticism, extraversion, conscientiousness, and agreeableness – undoubtedly play a part in determining one’s outlook and ability or willingness to change negative thoughts.

8.3.2 Research sample

Inadequate sampling is a concern for correlational studies (Smith & Glass, 1987), and for this research several limitations imposed by the sample must be noted. First, subjects in the study were localized in one area of British Columbia and were participants in only one program. The advantage to this arrangement was consistency of teaching content, teaching

personnel, administration of tests, and counselling procedures, thus reducing the possibility that differences in programming were responsible for negative career thinking changes. On the other hand, caution should be observed if generalizing the results obtained in the current studies to other locations and other career exploration programs.

Second, because participants were referred to the program, they were not randomly selected. In fact, random assignment would have been inappropriate given the nature of the referral system and government funding arrangements. Random selection is seldom an option in real-life research, but does limit the robustness of results and generalisability of results to other populations (Babbie, 2001).

Third, participants in the study were selected because they were experiencing career-related difficulties. It is to be expected that their level of negative career thinking would be higher as a consequence. Any time that scores for a group may be more extreme, natural regression to the mean rather than an actual change must be considered a possible limitation (Smith & Glass, 1987).

Fourth, as reported in Chapter 7, approximately 80 people who began the program did not complete it. There were several reasons for this: some clients were not motivated to continue and dropped out of the program after hours or days, some missed certain days in the sequence and did not complete one or more of the assessments, several clients did not complete the post-CTI test, a very few did not sign consent forms allowing their data to be used in the research, and some individuals obtained employment during the program and so did not complete. Although there were no significant differences between pre-program CTI scores for those who completed the program and those who did not, it is not known what the post-CTI scores would have been for those that did not complete, and the attrition of these individuals may have affected results.

Fifth, the participants were limited to two of the life stages as conceptualized by Super (Super, 1990): those in the Establishment phase – ages 25 to 44, and those in the Maintenance stage – ages 45 to 65. The reason for doing so was to investigate a population for which there is a paucity of information – that is, those who are unemployed, non-student adults. This was a necessary parameter for the study, but once again, limited generalisability.

8.3.3 Data gathering

By necessity, data were gathered over a period of approximately two years. This was unavoidable since the career exploration program was of a set length and could only accommodate a certain number of participants at one time. One difficulty with this circumstance is the effect of historical events on the behaviour and attitudes of participants (Smith & Glass, 1987; Van Dalen, 1979). As an example, during the period of time during which data were collected, the city of Vancouver was awarded the Winter Olympic Games for the year 2010. This resulted in a considerable number of employment opportunities for the population in the surrounding areas. It is possible that attitudes regarding employment may have shifted in a more positive direction because of this. On the other hand, it is possible that with more jobs available, the clients referred to the program were more of the chronically unemployed type who might have difficulty obtaining employment regardless of opportunities. Clients in this situation might be expected to endorse more negative career thoughts.

8.3.4 Instrumentation

Research is constrained by the tools used to measure the constructs involved. While every effort was made to choose the optimal instruments available under the circumstances, limitations due to the tests are unavoidable. These are now discussed.

Instrumentation threats to validity can occur whenever there is some judgment or subjective aspect to the testing. Whenever self-report inventories are administered, the expectation that clients will respond honestly and accurately may not be met. In fact, some clients may not even be aware that their responses are distorted and this possibility always needs to be considered (Baer, Rinaldo, & Berry, 2003; Dahl, 2009; Kruger & Dunning, 1999, 2002). The CTI is a self-report measure and is therefore subject to the difficulties associated with self-evaluation (Baer et al., 2003; Paulhaus, Lysy, & Yik, 1998; Paulhaus, Harms, Bruce, & Lysy, 2003). Nevertheless, its internal consistency and test-retest reliabilities have been shown to be acceptable (Sampson, Peterson, Lenz, Reardon, & Saunders, 1996) and, in the absence of other methods for measuring negative career thoughts, the results can be considered as valid within limits.

Another limitation may be a possible practice effect for the post CTI administration. Because participants had seen the inventory before, they may have recalled their initial responses to certain items and based the new response on those rather than how they were actually feeling at the moment.

The reliability of the MSCEIT has been found to be adequate at the total, area, and branch levels for the populations on which it was normed. However, that may not be the case for the research sample where scores were seen to be somewhat lower than has been reported elsewhere. Due to the nature of the MSCEIT administration, the reliability of this instrument could not be calculated, but this would have provided useful statistical information. In addition, assessing emotional intelligence is still in its infancy and is difficult to do using artificial scenarios where responses may reflect more knowledge about emotional problems rather than solving problems when actual bodily feelings are involved (Ortony, Revelle, & Zinbarg, 2007).

The WPT has been described as an adequate measure of *g* (Hawkins, Faraone, Pepple, Seidman & Tsuang, 1990), and for this research was the most convenient and cost-effective measure to use under the circumstances. However, as with any intelligence test, it is limited and does not capture all of the aspects of cognitive ability. For this study, the norms used for the WPT were older than desirable and also based on a non-Canadian population. A newer test with up-to-date norms and test items would perhaps show different results. In addition, reliabilities for the WPT could not be calculated for this sample, but this would have provided useful information.

8.4 RECOMMENDATIONS

As a result of this research several recommendations for career practitioners and for further research are discussed.

8.4.1 Recommendations for practitioners

Fluctuations in the worldwide economy have generally resulted in changes in employment patterns, and never has this been so apparent than in the last several years. There has been a growing feeling of uncertainty and insecurity in the workplace leading to increased stress on individuals. Learning how to successfully navigate career changes will require that individuals have greater access to career counselling. Practitioners must, therefore, become knowledgeable regarding the factors that can facilitate career transitions and diminish stress. In the past, models of career decision making have viewed attitudes and thoughts regarding career strictly as outcomes. Career transitions are rarely devoid of emotions, and career decision making is unlikely to be strictly a rational cognitive process. There is an increasing need to consider attitudes and thoughts as part of the sequence of problem solving in career exploration, and an obligation to assist clients in developing what Kidd (1998) calls “career resilience” (p.283). This involves a more holistic approach to career counselling and requires that the role of emotions and their influence on behaviours must be given more consideration.

Investigating the degree of dysfunctional thinking with respect to career appears to be a useful component when dealing with career-exploring clients. Particularly when pre- and post- administrations can be completed, the career counsellor has at least one gauge by which progress in reducing counterproductive attitudes can be measured. In addition, the results of an EI assessment can be useful, in spite of the costs that are usually associated with purchasing, administering, and reporting. Including an assessment of an individual’s EI among the other measures typically administered during career exploration would have a number of advantages. First, EI results can be used as an indicator of one’s ability to manage negative thinking. This gives the career practitioner a foundation for the kinds of questions asked during counselling, and can be used as a screen to suggest what kind and depth of further testing may need to be done. In addition, such results can add one more piece of information that supports or contradicts one’s choice of career. Some careers have much higher demands regarding emotional problem solving and emotional management. For example, a person with very low emotional intelligence scores wishing to become a teacher of children or work in public relations might be counselled to consider other options where chances of success are greater.

Latham and Heslin (2003) argue that there often seems to be a lack of communication between the different areas of psychology whereby one discipline is ignorant of the theories, methodologies and empirical research” that each uses to “predict, explain, and influence behaviour” (p. 218). I/O psychologists can benefit from understanding the theories and current research in intelligence in general and emotional intelligence specifically, which have typically been studied within the realm of cognitive psychology. In addition, it is possible that emotional intelligence, or at least aspects of it, can be modified by training. I/O practitioners would benefit from engaging in programs that train them to assist clients in becoming more aware of, and increasing their own emotional intelligence. If vocational counsellors are able both to assess emotional intelligence and provide intervention in managing emotions, they may be able to reduce the perceived uncertainty in their clients and make the career decision-making experience less formidable.

8.4.2 Recommendations for further research

This study was exploratory, and the report of findings has been limited by the questions posed. In addition, however, further statistical analyses of results have revealed other avenues of research that would add to the literature. In this study, mention has been made about the interaction of emotions and cognition in controlling thoughts and behaviour (Bar-On, Tranel, Denburg, & Bechara, 2003; Côté & Miners, 2006; Damasio, 1995; Gray, 2004; Lam & Kirby, 2002; Muramatsu & Hanoch, 2005; Shaw, 2007). In fact, the theoretical model proposed by Mayer and his associates, and used in this research, views emotional intelligence as positioned at the intersection of emotions and cognition (Mayer, Salovey & Caruso, 2008). Muramatsu and Hanoch (2005) argue that emotions are crucial for focusing on pertinent cues in the environment which then initiate the cognitive processes necessary to respond adaptively. In the current study, when a preliminary analysis was performed using interaction between IQ and aspects of EI as predictors for negative career thinking change as well as pre- and post- program negative career thinking, the interaction variable predicted criterion variables where neither EI alone nor IQ alone did, in some cases up to as much as seven percent of the variance. This has implications for a variety of areas of research: the study of intelligence as a psychological construct in general, for emotional intelligence as a

specific construct, and also for our evaluation of intelligence(s) as resources in adapting to particular academic, work, and life situations.

Research regarding emotional intelligence as a possible resource to deal with life outcomes is still in its infancy. One of the barriers to this research concerns accurate and valid measurement of what is currently a poorly defined construct (Brody, 2004; Landy, 2005; Matthews, Zeidner, & Roberts, 2002; Zeidner, Roberts, & Matthews, 2008). The manifestation of emotional intelligence in an ability-based test cannot be said to be necessarily related to the emotional intelligence manifest in managing one's negative career thinking. As discussed in chapter 3, emotions arise in response to events in the environment that trigger appraisals of those events and involve somatic, cognitive, and motivational components. A major deficiency of the ability-based measure used in this research is that it is unlikely to initiate the somatic experience in the artificial setting of the test that would occur in a real-life situation. In other words, while the problems presented in the MSCEIT might resemble situations in which a client might find him/herself, it is not actually happening, and so the emotional intelligence displayed involves mostly the cognitive response to the problem without any appreciable somatic or motivational influence. Knowing how one *should* respond to an emotionally charged problem is often quite different than how one actually *does* respond. In this respect, Ortony, Revelle, and Zinbarg (2007) argue that what the MSCEIT measures is more in line with crystallized emotional intelligence. They suggest that future measures of EI need to include a fluid component whereby individuals can be observed to respond to on-the-spot situations, ideas, and materials that are novel and require mental manipulation of emotional information and quick adaptation in more real-life scenarios (Deary, 2001; Hunt, 2005; Stankov, 2003). This would be a challenging task and would likely need to involve the use of a variety of currently developing technologies to accomplish. In the interim, the assessment of EI should include not only performance that is based on hypothetical problems posed in the MSCEIT, but also on information from multiple sources such as other person, interview, and self-report. Combining and analyzing data from a variety of sources and comparing them with individual test results could reveal relationships otherwise not available.

On a related topic, the measure of cognitive g used in this study produced a global IQ score. If emotional intelligence does have a fluid component it might be associated with fluid

intelligence as conceptualized by Cattell. A study in which both fluid and crystallized aspects of intelligence are measured could shed light on this possibility.

Of interest for the sample assessed in this study is that EI Understanding and EI Managing scores are considerably lower than either of Perceiving or Facilitating. In the hierarchical Mayer-Salovey ability model of EI, understanding and managing emotions represent higher levels of processing with managing requiring the foundation provided by the lower three branches. To determine whether these values are typical of unemployed adults, it would be useful to administer the MSCEIT to other samples engaging in career exploration, as well as unemployed adults who are not in career exploration. Analyzing mean differences would help determine whether the current sample was unique.

The implementation of a true or quasi-experimental design would address concerns such as regression to the mean as well as shed light on possible causes of negative career change. To do this would require the inclusion of a control group who did not participate in the career exploration program but completed the necessary assessments.

The developmental trajectory of emotional intelligence over the lifespan needs to be investigated further (Mayer et al., 2004). At this point there is conflicting information regarding the development of emotional intelligence with age. cursory analyses of age groupings in the current study revealed different levels of EI and IQ at different ages. It is recommended that further research investigate the developmental trajectory of IQ, EI, and their interaction over time and their relationship with important life outcomes.

Attachment theory (Bowlby, 1982) proposes that one attachment style (i.e. the avoidant style) is associated with more suppression of negative affect in order to cope with stress in the environment (Feeney & Ryan, 1994). Attachment style has also been investigated with respect to one's work and family relationships (Sumer & Knight, 2001). So far, no research can be located that investigates emotional intelligence and its relationship with attachment style. A study such as the current one in which other factors were used as predictor variables would be useful in determining their contributions to change in negative career thinking above and beyond those studied here.

8.5 SUMMARY OF VALUE OF THE STUDY

The problem statement in Chapter 1 identified a number of areas in which our knowledge is insufficient. The current study has attempted to address these. Regarding the role of EI and IQ in career decision making with respect to negative career thoughts, data have been produced that speaks to the correlations between EI as measured by an ability-based measure, IQ, and negative career thoughts. In addition, data show that IQ predicted a reduction in negative career thinking, but only after career exploration, whereas EI Managing predicted lower negative career thinking both before and after career exploration. For the field of Industrial/Organisational Psychology, this suggests that the career decision-making process may be facilitated by both assessing for and training in strategies that enhance emotional management functioning. The finding that EI Managing predicts an outcome that is of importance in the career counselling domain (i.e. negative career thinking) adds this to the list of outcomes found in other areas that together help to fortify the theory that EI is a valid construct. Finally, the study contributed information regarding an adult, non-student population, a segment of society for which research information is lacking.

8.6 CHAPTER SUMMARY

In this chapter the conclusions with respect to the aims of this research were presented. The aims regarding the literature reviews of each of the three constructs of cognitive ability, emotional intelligence, and negative career thoughts were addressed and conclusions were discussed. The aim regarding the integration of the literature was addressed. Conclusions regarding the empirical study were presented. Limitations of the study were enumerated and discussed. Recommendations for practitioners in the field of industrial/organizational psychology, as well as recommendations for future research were suggested.

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