Emotional Intelligence and Academic Performance

Sonia Swanepoel
Lucille Britz

Abstract

Few areas of psychology have attracted as much controversy as that of intelligence. Some experts argue that intelligence is the most important aspect of individual differences, whereas others doubt its value as a concept (Deary 2014). Emotional intelligence (EI) was defined by Salovey and Mayer (1990) and seen as a subset of social intelligence and similar as that of intrapersonal intelligence. The concept involves the individual's ability to appraise his own and other's feelings and emotions, discriminate among these emotions and use the emotion information to accomplish tasks to reach goals. The specific aim of the study was to determine the relationship between general cognitive ability, emotional intelligence and academic performance. The instruments utilized were the Learning Potential Computerised Adaptive Test (LPCAT) and Emotional Intelligence Test Body-Mind (Jerabek 1996). The sample comprised of 32 third year students studying Human Resources Management. The results indicated a positive relation between academic performance and emotional intelligence. Inferential statistics proved that males and females do not differ significantly on the three dependant variables.

Keywords: Emotional intelligence; academic performance, general cognitive ability

> **Intelligence** is the capacity to understand the world, think rationally, and use resources effectively when faced with challenges (Robert S. Feldman 2011).

Introduction

Most people probably feel that they understand the meaning of intelligence; however, it is actually rather difficult to provide a good definition (Deary 2012) because of the complexity of the phenomena (De Boeck 2013; Hunt & Jaeggi 2013; Kirkegaard 2013; Sternberg 2014). Sternberg (1985) defines intelligence as: 'Mental activity directed toward purposive adaptation to, and selection and shaping of, real-world environments relevant to one's life'. Sternberg's definition is very much in line with the opinions of most experts (Costalima *et al.* 2014; Eysenck 1998; Johnson 2012; Mackintosh 2011; Sternberg & Kaufman 2014). Sternberg (2014) defines intelligence as the 'ability to adapt to, shape, and select environments'.

Biological approaches to human intelligence investigate the relationship between the brain and the nervous system as a basis for intelligence (Deary 2014). Cognitive approaches complement the biological approaches by viewing intelligence as an underlying ability to perform a certain task of given complexity (Helmbold, Troche & Rammsayer 2006).

The systems view on intelligence including the external world of the individual and theorists consider the interaction between biology, cognition and social systems as a basis for human intelligence. Multiple intelligences were formed out off another system approach, which incorporates various independent intelligences (Deary 2014; Hunt & Jaeggi 2013; van der Maas Kan & Borsboom 2014).

Hunt and Jaeggie (2013) conclude their discourse on intelligence as follows: 'Any discussion of the big issues in the study of intelligence has to face the fact that the study of intelligence, like the study of psychology itself, is simultaneously a biological and a social science'.

Theoretical Framework
Traditional Approaches to Human Intelligence

Traditional approaches to human intelligence include biological, cognitive and more recent system approaches to intelligence (Deary 2012). Eysenck (1979)

described intelligence thus as an ability, which may be seen in practice, and at times it is not visible in practice. He further notes that intelligence should be deducted from observed behaviour and to accomplish this, it is necessary to use certain scientific rules of experimental procedures.

Biological Approach to Human Intelligence

According to Sternberg (1994) the biological approach to human intelligence aims to find an internal locus of abilities for every individual. This approach is concerned with how the anatomy and physiology of the brain and the central nervous system account for intelligent thought (Berkman & Falk 2013; De Boeck 2013; Deary 2014; Fahrenberg 2013; Hunt & Jaeggi 2013; Sternberg 2014).

Cognitive Approaches to Human Intelligence

Cognitive approaches to human intelligence do not contradict biological approaches, but rather complement them (Deary 2012; Hunt & Jaeggi 2013). According to Sternberg (1994; 2014) a continual interaction between the two levels of processing is inevitable. Cognitive approaches are primarily concerned with the relation of intelligence to the internal world of the individual thus information processing (Hunt & Jaeggi 2013; Matthews *et al.* 2014; Sternberg 2014; Webb *et al.* 2013*).* Cognition can be defined as the act or process of knowing in the broadest sense; specifically, an intellectual process by which knowledge is gained from perception or ideas to be applied and the ability to think or analyse information (Abzari, Shahin & Abasaltian 2014; Costalima *et al.* 2014; De Boeck 2013; Gerli *et al.* 2014). Cognition is central to development of psychology as a scientific principle (Berkman & Falk 2013; De Boeck 2013). The establishment of Wilhelm Wundt's laboratory in 1879 to study human thought processes is often used as the beginning of modern psychology (Fahrenberg 2013).

The following figure describes the domain of cognitive science psychology; for the purpose of this study it is important to know the origin of human intelligence. Figure 1 indicates the relationship between cognitive psychology and human intelligence.
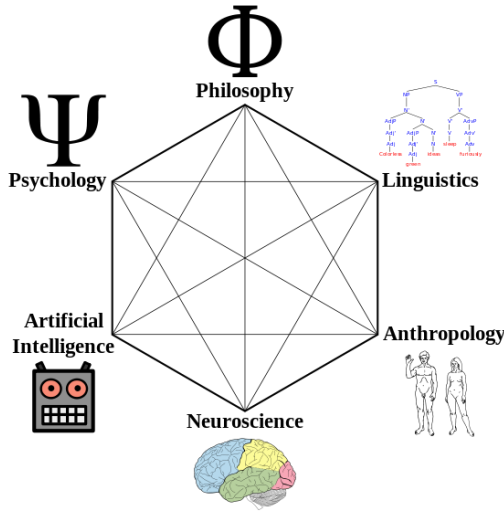
Figure 1: The Relationship between cognitive psychology and human intelligence (adapted from Miller 2003)

The Systems Approach to Human Intelligence

The systems approach to human intelligence developed with the aim of finding a more integrated and holistic view of intelligence. Researchers have realized the importance of the interaction between biology, cognition and social systems. Sternberg (1994) calls an approach that tries to look at the interaction of cognition and context as a system approach to intelligence. The systems approaches to intelligence attempts to integrate cognition, biology and context.

Sternberg (1994) points out, however, that whether abilities mentioned by Gardner (1983) can all be viewed as intelligences or whether they can be accepted as distinct, is a matter for debate.

Social Intelligence

Emotional intelligence forms a subset of social intelligence, specifically with regard to knowledge, appraisal and utilization of emotions in an intelligent manner (Abzari, Shahin & Abasaltian 2014; Goleman 1995; Cooper & Sawaf

1997). Marlowe (1986) claims that social intelligence consists of the following five domains: pro-social attitude interests, social and empathy skills, emotionality and social anxiety. According to Taylor (1990) each of the five factors was found to be independent of verbal and academic intelligence, although more representative samples and studies need to be performed before generalizations can be made with regard to his theory. Social intelligence is seen as a result of intellectual and social maturity, which evolves and develops throughout one's life, assist with adapting to other people and the ability to understand and manage others (Abzari, Shahin & Abasaltian 2014; Gerli *et al.* 2014*)*.

Thorndike (1920), defined social intelligence as 'the ability to understand and manage men and women, boys and girls, to act wisely in human relations', and includes inter- and intrapersonal intelligences in his theory of multiple intelligences. These two intelligences comprise social intelligence. The importance of appropriate social behaviour and effective individual functioning within a context and environment, social interactions, interpersonal relationships, future planning, coping with daily life and attaining goals, cannot be underestimated.

Interpersonal and Intrapersonal Intelligences

Gardner (1983) included interpersonal and intrapersonal intelligences in his overall definition of personal intelligences. Gardner's theory of multiple intelligences, and more specifically, personal intelligences, has brought psychologists one-step closer to the concept of emotional intelligence. As such, emotional intelligence cannot be understood without the proper knowledge of Gardner's theory. According to Gardner (1983) the views held by Freud could be seen as supporting the idea of personal intelligence. Gardner (1983) describes these aspects of human nature by distinguishing between intrapersonal and interpersonal intelligences. In terms of intrapersonal intelligence, the 'core capacity at work here is access to one's own feeling life' (Gardner 1983). He views intrapersonal intelligence as one that is primarily concerned with the range of the individual's affects or emotions.

When dealing with interpersonal intelligence, the focus is outwardly, in other words, turned to other individuals. Thorndike (1920) points out that 'Interpersonal intelligence is the ability to understand other people: what

motivates them, how they work, how to work cooperatively with them'. Successful salespeople, politicians, teachers, clinicians and religious leaders are all likely to be individuals with high degrees of interpersonal intelligence. According to Jones and Day (1997), the non-academic intelligences, for example practical, social, emotional, interpersonal and intrapersonal intelligences are thought to be different from the types of intelligence needed to excel in solving academic problems. These non-academic intelligences will all, however, be of value in terms of a predictive value in education as well as determining outcomes of education.

Emotional Intelligence

Freud (in Eysenck 1998) and Seaman and Kenrick (1994) shared a conviction that psychology should be built around the concept of the person, his personality, his growth and his fate. Although scholars from different schools of thought with regard to psychology, both theorists deemed the capacity for self-growth to be important and such self-growth seemed to be crucial in the ability of the individual to cope with his/her surroundings.

The emergence of the concept of emotional intelligence (EI) has linked two seemingly contradictory concepts together namely, that of emotions and intelligence (Schutte & Malouff 2012; Webb *et al.* 2013). The debate whether these two psychological concepts can be linked at all to form a new theoretical concept is far from over. For decades, a lot of emphasis has been placed on certain aspects of intelligence such as logical reasoning, mathematical skills, understanding analogies, verbal skills, etc. Researches were puzzled by the fact that, while IQ could predict to a significant degree the academic performance and to some degree, professional and personal success, there was something missing in the equation. Some of those with fabulous IQ scores were doing poorly in life; one could say that they were wasting their potential by thinking, behaving and communicating in a way that hindered their chances to succeed (Emotional Intelligence test 2000; Fernándes-Berrocal & Ruiz 2008; Groves, McEnrue & Shen 2008; Farh, Seo &Tesluk 2012; Schutte & Malouff 2012).

One of the major missing parts in the success equation is EI, a concept made popular by the ground-breaking book by Daniel Goleman (1995), which is based on years of research by numerous scientists such as Peter Salovey, John Mayer, Howard Gardener, Robert Sternberg and Jack Block, to name but

a few. For various reasons and thanks to a wide range of abilities, people with high EI tend to be more successful in life than those with lower EI even if their classical IQ is average (Schutte & Malouff 2012).

Discussions of EI proliferate across the World from the cover of Time to a best-selling book by Daniel Goleman, to an episode of the Oprah Winfrey show. However, EI is not some easily dismissed 'neopsycho-babble'. EI has its roots in the concept of 'social intelligence', first identified by E.L. Thorndike in 1920 (*TIME* Magazine 1995).

Some of the similarities of the non-academic intelligences include that individuals high in these abilities have extensive declarative and procedural knowledge that can be retrieved and applied in a flexible manner as the individual define and solve problems for which no one correct problem interpretation or solution may exist (Goleman, Boyatzis & McKee 2013). Salovey and Mayer (1990) define EI as: 'The subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking actions. Cooper and Sawaf (1997) define emotional intelligence as: 'Emotional intelligence is the ability to sense, understand and effectively apply the power and acumen of emotions as a source of human energy, information, connection and influence'.

Goleman (1998) offers the following descriptive definition: 'Emotional intelligence is observed when a person demonstrates the com-petencies that constitute self-awareness, self-management, social awareness, and social skills at appropriate times and always in sufficient frequency to be effective in the situation'. Goleman (1995) has expanded Salovey and Mayer's definition of emotional intelligence into five main domains: knowing one's own emotions, managing emotions, motivating oneself, recognizing emotions in others and handling relationships. Gardner (1983) and Koman and Wolff (2008) claims that to have knowledge of one's own emotions is only the starting point, the ability to monitor or guide one's own emotions after discriminating effectively among them is the next step to EI.

Empathy too can be seen as a survival skill. Goleman (1995) as well as Mayer *et al.* (1990) regard empathy as a central characteristic of emotional intelligent behaviour. Rogers (1951) have described empathy as the ability to comprehend another's feelings and to re-experience them oneself. Cooper and Sawaf (1997) agree with the concept of empathy as an important skill of emotional intelligent behaviour.

Social scientists are just beginning to uncover the relationship of emotional intelligence to other phenomena, e.g., leadership group performance individual performance, interpersonal/social exchange, managing change, and conducting performance evaluations (Ashforth & Humphrey 1995; Farh, Seo & Tesluk 2012; Gerli *et al.* 2014). According to Goleman (1995), 'Emotional intelligence, the skills that help harmonize, should become increasingly valued as a workplace asset in the years to come'. The emergence of the concept of emotional intelligence has linked a concept made popular by the ground-breaking book by Daniel Goleman (1995), which is based on years of research by numerous scientists such as Peter Salovey, John Mayer, Howard Gardener, Robert Sternberg and Jack Block, to name but a few.

Emotional Intelligence and Neuropsychology

While children are still young, G Foleman (1995) argues, there is a 'neurological window of opportunity' since the brain's prefrontal circuitry, which regulates how we act on what we feel, probably does not mature until mid-adolescence. According to Goleman (1995) the work done by LeDoux (1993) indicates a neural pathway between the amygdala and the neocortex in the brain. The amygdala acts as a storehouse of emotional memory in the brain (Deary 2014; Eysenck 1998). Its purpose therefore, would be to play an important part in the linking of emotion, memory and the brain.

Academic Performance

Generally tertiary academic achievement is defined as the ability of a student to obtain her degree or diploma within the prescribed period as indicated by the institution according to Fourie (1992) and confirmed by Stoker *et al.*, (1985) as cited in Swanepoel (2002). Students with the ability to cope with stress and negative states of mind will improve their academic performance, (Fernándes-Berrocal & Ruiz 2008; Pérez & Castejón 2007; Richardson, Abraham & Bond 2012; Swanepoel 2002).

If the method that a student uses in his/her studies could be based on a criterion scale, tertiary achievement could be tuned in more detail. This will result in canvassing the limitations of the pass versus fail dichotomy and a better usable norm will be established. Diverse study fields, differences in

evaluation measurements and promotion systems and especially different perceptions of tertiary achievement contribute to the difficulty to lay down a generally accepted norm according to which a student's tertiary achievement can be expressed in a qualitative manner. Different perceptions of what should be used as a point of reference when a norm for tertiary achievement is determined, inevitably result in different norm scales. Examination results obtained in different subjects are the traditional criterion according to which academic achievement is evaluated (Ferrando *et al.* 2010; Huws & Talcott 2009). Mavroveli and Sánchez-Ruiz, 2011). EI is closely related to personality and self-concept and it is therefore important to take note of these constructs in the analysis of academic success (Ferrando *et al.* 2010).

Method

Two tests were used namely the Learning Potential Computerized Adaptive Test (LPCAT) and the Emotional Intelligence Test. Quantitative descriptive literature review in conjunction with qualitative investigative approaches applied. Making use of literature searches in phase one of the research and reliable and valid measuring instruments will ensure internal reliability and validity and statistical procedures in phase two.

According to Jones and Day (1997), the non-academic intelligences, for example practical, social, emotional, interpersonal and intrapersonal intelligences are thought to be different from the types of intelligence needed to excel in solving academic problems. These non-academic intelligences will all, however, be of value in terms of a predictive value in education as well as determining outcomes of education. Some of the similarities of the non-academic intelligences include that individuals high in these abilities have extensive declarative and procedural knowledge that can be retrieved and applied in a flexible manner as the individual define and solve problems for which no one correct problem interpretation or solution may exist.

Process and Procedures

The LPCAT test was administered during normal lectures for Personnel Management in the computer laboratory where after the Emotional Intelligence test was done. Instructions were given and time was allowed for questions

before commencing with the tests. The students were encouraged to be honest and concentrate solely on completing the tests and remain seated until all participants have completed their tests. The purpose and aim of the test and process were explained to the participants and they were afforded the opportunity of questions.

LPCAT

The Learning Potential Computerized Adaptive Test (LPCAT) was used because it was developed in South Africa for multicultural South African context. Legislative requirements for psychological testing in South Africa (Employment Equity Act, 1998) were followed in the construction of the LPCAT. It is intended to serve as a screening instrument to assess learning potential in the nonverbal reasoning domain in such a way that inadvertent discrimination against previous disadvantage groups can be countered.

The adaptive process involves items being interactively selected from an item bank during testing to match the estimated level of performance of each individual participant. This ensures improved accuracy of measurement at various levels, while also improving individual motivation of participants.

Results

The number of respondents is unevenly distributed by age group. The majority of respondents are in general very young, the greatest number of respondents are in the age groups 21 and 22, only 3 respondents are 25 years of age and older. It is thus necessary, for further analysis, to do a recoding in regard to gender. It is evident that the two genders are of even number and due to these even numbers, recoding is not necessary.

Table 1: Descriptive statistics: emotional intelligence overall score

Mean	94,594	Maximum	114
Variance	129,539	Standard error of skewness	0,414
Skewness	-0,230	Standard deviation	11,382
Minimum	68,00	Standard error of kurtosis	0,809
Standard error	2,012	Range	46,00
Kurtosis	-0,394	Sum	3027

Table 1 indicates the mean as 94,594. The standard deviation is 11, 382, which is an indication that there is not much variance on the overall score. As regards the behavioural score of the emotional intelligence test the descriptive statistics are presented in Table 2.

Table 2: Descriptive statistics: emotional intelligence knowledge scores

Mean	81.37	Maximum	7,00
Variance	153,145	Standard error skewness	12,000
Skewness	-0,233	Standard deviation	51,03
Minimum	2,00	Standard error kurtosis	0,809
Standard error	9,020	Range	53,00
Kurtosis	-1,981	Sum	2602,84

The emotional intelligence test (measuring knowledge) was too easy (mean = 81.37). The range of the distribution is 53, which indicate a low discrimination power. The distribution is negatively skewed and platykurtic which of course can be expected with an N=32.

Table 3 Descriptive statistics: LPCAT - Pre-test

Mean	52,531	Maximum	63
Variance	33.10	Standard error skewness	0,414
Skewness	-0,034	Standard deviation	5,8
Minimum	41	Standard error kurtosis	0,81
Standard error	1,017	Range	22,00
Kurtosis	-0,82	Sum	1681
Standard error	1,017	Range	22,00
Kurtosis	-0,82	Sum	1681

The results of the descriptive statistics in regard to the LPCAT Pre-test are presented in Table 3. The mean score of 52,531 on the LPCAT Pre-test indicate that the test is easy; however, a range of 22.00 points to low discrimination powers. The standard deviation of 5,8 suggests not much variance in the LPCAT Pre-test.

Table 4: Descriptive statistics: LPCAT - Post-test

Mean	52,906	Maximum	62
Variance	27,314	Standard error skewness	0,414
Skewness	-0,46	Standard deviation	5,226
Minimum	43	Standard error kurtosis	0,809
Standard error	0,924	Range	19,00
Kurtosis	-1,079	Sum	1693

Descriptive statistics recorded for LPCAT Post-test are depicted in Table 4. It shows that the respondents found the post-test easier than the pre-test (Mean = 52,906). The low width of 19 points indicates a low discrimination power. The standard deviation is 5,226. Comparing the standard deviation of the pre and post-test it appears that there is more variance in the pre-test.

Table 5: Descriptive statistics: LPCAT T-score

Mean	52,625	Maximum	63,00
Variance	31,855	Standard error skewness	0,414
Skewness	-0,017	Standard deviation	5,644
Minimum	41,00	Standard error kurtosis	0,809
Standard error	0,998	Range	22,00
Kurtosis	-0,753	Sum	1684,00

Table 5 reflects the descriptive statistics with regard to LPCAT T-Scores. The mean (52,625) is large. This large value indicates that the test is too easy. The small coefficient of the standard error of the mean is quite large; therefore the results cannot be generalized to the population. Table 6 illustrates a mean score of 56,281 is high which indicates that the respondents' academic performance is good.

Table 6: Descriptive statistics: academic performance

Mean	56,281	Maximum	79,00
Variance	152,402	Standard error	78,00

Skewness	-0,247	Standard deviation	12,345
Minimum	24,000	Standard error kurtosis	0,809
Standard error	2,182	Range	55,00
Kurtosis	0,751	Sum	1801,00

Inferential statistics were drawn to determine if the biographical variables, age and gender, have any effect on the LPCAT, Emotional Intelligence and academic performance (dependant variables). Kendall and Spearman's correlation were performed to determine the significant relationships (if any) between the dependant variables. These statistics were all non-parametric due to the small sample (N=32). A parametric multiple regression analysis was also done, the results of which have to be interpreted quite carefully.

Table 7: Mann-Witney U-test: gender

Variable	Group	Mean	U-Value	W-Value	Significance
LPCAT	Male (16)	17,53	111,50	247,50	0,439
	Female (16)	15,47			
Academic	Male (16)	15,22	107,50	243,50	0,4450
	Female (16)	17,78			
EQ	Male (16)	16,53	126,00	263,50	0,985
	Female (16)	16,47			

Note: Males and the females do not differ significantly ($p > .05$) on the three dependant variables.

The Mann-Whitney U–Test which is a non-parametric statistic, was performed to determine if gender has any effect whatsoever on the three dependant variables. Table 7 shows that the males and the females do not differ significantly ($p > 0,05$) on the three dependant variables. Multiple Regression was conducted with academic performance as dependant variable, but the results have to be interpreted very carefully, see Table 8.

Table 8: Multiple regression: academic performance

Analysis of Variance

Multiple regression	0,34554	Sum of Squares	Mean Square

		0,11940	564,0887		141,02218
R Square		0,11940	564,0887		141,02218
Adjusted R Square		-0,01106	4160,3802		154,08818
Standard error		12,41322			
Regression		DF 4			
Residual		27	F = 0,91520		Sig F = 0,05

Variables in equation

Variable	B	SE Beta	Beta	T	Sig T
LPCAT	-0,5314	0,4099	-0,2412	-1,296	0,02058
Age	-1,179	1,7767	-0,1259	-0,664	0,5125
Gender	4,4216	4,4830	0,1819	0,986	0,333
EQ	-3,2546	5,5718	-0,010	-0,058	0,954
Constant	81,288	24,6516		3,297	0,003

The Kruskal-Wallis one-way analysis of variance was done to determine if age has any significant affect whatsoever on the three dependent variables and on the pre-test and post-test scores.

Conclusion

One of the limitations of this research is that the target population of 32 is too small to make generalizations although research by Ferrando *et al.* (2010) with a population of 290 confirms that emotional intelligence contributes to academic performance. This research can contribute significantly to the journey of fine-tuning the relation between emotional intelligence and academic performance.

Human potential gets wasted unnecessarily due to untapped abilities, lost opportunities, perceptions, race, gender and lack of knowledge of what human intelligence and potential really constitute. Effective educational and motivational interventions could address this problem. More research is needed to understand how our ability, capability and emotions affect our lives, especially in South Africa.

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Sonia Swanepoel
Faculty of Commerce & Administration
North West University, Mafikeng, South Africa
swanepoels@nwu.ac.za

Lucille Britz
CIB: E2E Project Delivery
Standard Bank Group
Midrand, Gauteng, South Africa
lucille.britz@standardbank.ac.za