

# The relationship between emotional intelligence and leadership styles in the South African petrochemical industry

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**Orientation:** Although research on emotional intelligence in the context of leadership has remained a recurrent area of interest in theory and practice during the past decade, ongoing debate continues regarding the contribution of emotional intelligence to the understanding of leadership.

**Research purpose:** The aim of this study was to determine the relationship between self-reported emotional intelligence and leadership styles in a South African context and to determine whether emotional intelligence can predict an effective leadership style.

**Motivation for the study:** Research is needed in order to determine a more detailed relationship between emotional intelligence and leadership in the dynamic and globalising South African petrochemical context.

**Research design, approach and method:** The study was conducted in terms of a positivist paradigm, using quantitative research instruments. Leaders ( $N = 161$ ) were selected from a business unit in a South African petrochemical organisation. Self-reports from the emotional quotient inventory and the Multifactor Leadership Questionnaire (MLQ Form 5X, Version 2009) were analysed. Correlation analyses indicated statistically-significant relationships between emotional intelligence and transformational and *laissez-faire* leadership.

**Main findings:** Findings indicated positive correlations between self-reported emotional intelligence (specifically adaptability) and transformational leadership. Negative correlations were obtained between emotional intelligence (specifically intrapersonal skills) and *laissez-faire* leadership. The research also showed differences between specific demographic variables.

**Practical/managerial implications:** This study provides valuable significance for organisations' endeavours in improving, training and identifying alternative selection and assessment procedures for evaluating leaders' strengths.

**Contribution/value-add:** This research contributes to the South African research on emotional intelligence and leadership styles and thereby adds context-specific value to the topic within a specific cultural and organisational context.

## Introduction

Research on emotional intelligence (EI) in the context of leadership has remained a recurrent area of interest for more than 10 years (Cacioppe, 1998; Cavazotte, Moreno & Hickmann, 2012). This is reflected, for example, in studies of leaders' emotional expression in the workplace (Bono & Ilies, 2006; Hur, Van den Berg & Wilderom, 2011) as well as in the way leadership styles impact on the emotional states of employees, enhancing organisational commitment, proactive behaviour and job performance (Riggio & Reichard, 2008).

Nevertheless, ongoing debate continues regarding the contribution of EI to our understanding of leadership (Antonakis, Ashkanasy & Dasborough, 2009; Landy, 2005; Locke, 2005). In this study, leadership is described in terms of the transformational, transactional and *laissez-faire* leadership styles (Bass & Avolio, 1994). Transformational leaders, in contrast to transactional and *laissez-faire* leaders, are seen as agents of social and organisational change and regarded as effective (Bass, 1985; Cavazotte *et al.*, 2012). They are described as being models for conduct and as being able to inspire a new and stimulating vision in their followers. In doing so, they elevate morale, inspire followers and motivate them toward greater achievements or conquests (Bass, 1985). Furthermore, meta-analytic reviews have validated positive connections between transformational leadership of superiors and performance of subordinates (Harms & Credé, 2010; Lowe, Kroeck & Sivasubramanian, 1996). Subsequently, various studies have found a relationship

between transformational leadership and the efficacy of organisations (Avolio, 1999; Chuang, Judge & Liaw, 2012).

Associated studies examining EI within a project management context have found it to be a significant area of individual difference associated with effective leadership and, more specifically, transformational leadership (Clarke, 2010). Others have noted the disappointing results of intelligence and personality models in the prediction of exceptional leadership and have argued that EI may represent an elusive 'X' factor for predicting transformational leadership (Brown & Moshavi, 2005).

Consequently, research is needed so as to determine whether this relationship exists within the South African context, in particular in the petrochemical industry. Limited research exists regarding EI and leadership styles, particularly transformational leadership, within the South African context (Dibley, 2009). The current paper seeks to investigate whether there is a relationship between self-perceived EI and leadership styles and to determine if EI can predict an effective leadership style within the South African petrochemical industry.

The spin-offs of globalisation make the South African petrochemical industry an intriguing milieu within which to examine the relationship between EI and leadership styles (Robbins, Judge, Odendaal & Roodt, 2009). As with other South African industries, the petrochemical industry has been forced to introduce new business strategies, new management systems, changes in technology and government policy (Stander, 2007). Inevitably, change not only results in the implementation of new systems and processes within any organisation, but also affects the people within this organisational environment (Ndlovu & Parumasar, 2005). Evidently, leader behaviour is accentuated as being a fundamental determinant of overall organisational effectiveness (Hunter, 2009; Wasylyshyn, 2004). Therefore, business performance will be influenced by how well leaders manage their own and their subordinates' emotions (Goleman, Boyatzis & McKee, 2002; Hunter, 2009). In this regard, the measurement and development of EI as related to effective leadership can play a significant role (Boateng, 2007; Lam & O'Higgins, 2012) in aiding the petrochemical industry to drive high performance (Laff, 2008) despite the effects of globalisation.

By linking EI to transformational leadership, the argument is put forth that there is a positive relationship between these constructs. The primary aim of this study is to determine the relationships between self-perceived EI and leadership styles (represented by transformational, transactional and *laissez-faire* leadership styles), in other words to determine whether EI can predict an effective leadership style within a South African petrochemical organisation. The results can be used for adjusting training and mentoring programmes in the petrochemical and similar South African industrial contexts.

## Emotional intelligence

Despite numerous conceptual definitions of EI (Bar-On, 1997; Goleman, 1995, 1998; Mayer, Roberts & Barsade, 2008;

Salovey & Mayer, 1990), they all share some theoretical underpinnings, which include an awareness of one's own emotions; an awareness of emotions in others; an understanding of emotions; and the ability to manage one's own emotions and the emotions of others. Although there is a general agreement regarding EI as a non-academic intelligence with predictive value beyond general intelligence or 'g' (Gardner, 1983; Williams, 2011), there is a growing debate as to how EI should be operationalised. The two prominent models of emotional intelligence include an ability-based model (Ashkanasy & Daus, 2005; Mayer *et al.*, 2008) and a skill-based model (Petrides, 2010), which differ in their conceptual approach toward the application of EI.

The ability-based model defines EI according to intelligence theory, emphasising the cognitive elements of EI and using a performance-based assessment method known as the Mayer-Salovey-Caruso Intelligence Test (MSCEIT) (Ashkanasy & Daus, 2005; Mayer *et al.*, 2008) to distinguish various levels of EI. The skills-based model is trait based and encompasses a broader set of competencies (Petrides, 2010). In this framework, Bar-On (2006) defines EI as being a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them and cope with daily demands (Clarke, 2010). Suffice it to say, each model and its respective inventory has been studied empirically and accepted as a valid measure of EI (Coetzee & Schaap, 2005; Lam & O'Higgins, 2012; Ramesar, Koortzen & Oosthuizen, 2009).

For the purposes of the present study, the self-rating skills-based emotional quotient inventory (EQ-i) was identified as the instrument of choice (Bar-On, 2006), mainly because of the links between EQ-i and leadership (Barling, Slater & Kelloway, 2000; Schlechter & Strauss, 2008), as well as its application in organisational settings (Cooper, 1998; Schlechter & Strauss, 2008). According to Bar-On (2006), the development of EI will result in increased productivity, loyalty, innovation and performance of individuals, groups and organisations.

Attempting a more holistic approach to being emotionally and socially intelligent means that people need to manage emotions so that their emotions work for them and not against them and so that they are sufficiently optimistic, positive and self-motivated (Bar-On, 2006).

Bar-On's (2006) emotional intelligence model comprises five scales, which include intrapersonal skills, interpersonal skills, stress management, adaptability and general mood, with fifteen subscales:

1. Intrapersonal skills (i.e. self-regard, emotional awareness, assertiveness, independence and self-actualisation).
2. Interpersonal skills (i.e. empathy, social responsibility and interpersonal relationships).
3. Stress management (i.e. stress tolerance and impulse control).

4. Adaptability (i.e. reality testing, flexibility and problem solving).
5. General mood (i.e. optimism and happiness) (Bar-On, 2006).

According to McCallum and Piper (2000), the model proposed by Bar-On is perhaps the clearest and most comprehensive to date (Bar-On, 1997; 2004; 2006).

### Emotional intelligence and demographic variables

Researchers have often studied demographic differences in relation to EI (Stough, Saklofske & Parker, 2009). However, research on gender differences in EI has been limited. Studies conducted by Mayer, Salovey and Caruso (2000) in 2000 and Van Rooy, Dilchert, Viswesvaran and Ones in 2006 indicate that women score higher on measures of EI than men. Women have also been shown to have more complex emotion knowledge (Ciarrochi, Hynes & Crittenden, 2005), empathy (Bar-On, 2000) and social skills (Eagly & Johnson, 1990).

Previous research regarding EI and management levels found that not only are social and emotional skills essential for executive level leaders but, as individuals ascend the organisational hierarchy, emotional intelligence also becomes an increasingly relevant determinant of who will and will not be successful (Hooijberg, Hunt & Dodge, 1997; Zaccaro, 2001). In addition, other findings indicated that emotionally-intelligent senior managers perform better on the job and that there is a strong relationship between superior performance in leaders and emotional competence (Cavallo & Brienza, 2001; Cooper, 1997).

Roberts, Zeidner and Matthews (2001) conducted one of the few studies that evaluated ethnic group differences in EI and found conflicting results. In an American context, Van Rooy, Alonso and Viswesvaran (2005) found that Black people scored higher than White people on the total EI scale, equal to a Cohen's *d* of 0.32.

### Leadership styles

Burns (1978, p. 1) wrote that: '[o]ne of the most universal cravings of our time is a hunger for compelling and creative leadership'. This opinion is as relevant today as it was 30 years ago. Leadership continues to be one of the most passionately-debated topics, both in practice and in research (Cameron, Dutton & Quinn 2003; Northouse, 2012).

Three different leadership styles, specifically transformational, transactional and *laissez-faire*, have been shown to reflect the full range of leadership styles (Bass, 1985, 1990; Bass & Avolio, 1994). This is measured by the Multifactor Leadership Questionnaire (MLQ Form 5X, Version 2009) (Avolio, Bass & Jung, 1995). Research on these leadership styles has shown that the transformational leadership style is typically more effective than the transactional and *laissez-faire* leadership styles (Avolio *et al.*, 1995; Gardner, Lowe, Moss, Mahoney &

Cogliser, 2010). Consequently, transformational leadership has been the basis of various conceptual and empirical debates in literature over the past decade (Northouse, 2012). Transformational leadership is defined as being an approach to leadership wherein the leader identifies the needed change, creates a vision to guide the change by inspiring their followers and executes the change with the commitment of their followers (Bass & Riggio, 2006; Northouse, 2012). Furthermore, this approach challenges leaders to be creative with regard to problem solving and to develop the leadership capacity of their followers through coaching and mentoring and by providing both challenges and support (Bass & Bass, 2008; Northouse, 2012).

According to Bass (1985), four factors that are characteristic of transformational leadership are proposed, commonly referred to as the four 'I's':

1. Idealised influence (i.e. followers idealise and emulate the behaviours of their trusted leader).
2. Inspirational motivation (i.e. followers are motivated by the attainment of a common goal).
3. Intellectual stimulation (i.e. followers are encouraged to break away from old ways of thinking and are encouraged to question their values, beliefs and expectations).
4. Individualised consideration (i.e. followers' needs are addressed both individually and equitably) (Bass & Avolio, 1997).

Bass (1997, p. 133) state that: 'using a carrot or a stick, transactional leadership is usually characterised as instrumental in followers' goal attainment'. The transactional leadership process builds upon exchange: the leader offers rewards (or threatens punishments) for the performance of desired behaviours and the completion of certain tasks. This type of leadership may result in followers' compliance, but is unlikely to generate enthusiasm for and a commitment to task objectives (Zagoršek, Dimovski & Škerlavaj, 2009). There are three components to transactional leadership: contingent reward, whereby subordinates' performance is associated with contingent rewards or exchange relationship; active management-by-exception, whereby leaders monitor followers' performance and take corrective action if deviations occur to ensure that outcomes are achieved; and passive management-by-exception, whereby leaders fail to intervene until problems become serious (Bass, 1997).

A *laissez-faire* leadership style, on the other hand, can be described as non-leadership or the avoidance of leadership responsibilities. Leaders fail to follow up requests for assistance and resist expressing their views on important issues (Bass, 1997).

By comparison, transformational leadership is more emotion-based than transactional and *laissez-faire* leadership (Chuang *et al.*, 2012; Yamminaro & Dubinsky, 1994). Consequently, a number of authors have suggested that underpinning transformational leadership is the enhanced emotional attachment to the leader (Ashkanasy & Tse, 2000; Dulewicz & Higgs, 2003) that arises as a result of leaders using emotional intelligence.

In view of the positive organisational outcomes associated with transformational leadership, researchers are exploring factors that predict transformational leadership behaviours (Northouse, 2012; Rost, 1991). Such factors will contribute to the theoretical elaboration of transformational leadership theory and have the potential to improve leader training and selection (Clarke, 2006). Unmistakably, EI has shown considerable promise as a possible leadership antecedent (Bass & Avolio, 1994; Harms & Credé, 2010).

Today's effective leadership skills have partly been described on the understanding of emotions and EI (Cooper & Sawaf, 1997; Schlechter & Strauss, 2008). Therefore, inconclusive data remains as to what extent EI accounts for effective leadership (Harms & Credé, 2010).

### Leadership styles and demographic variables

Although past research on leadership style differences between men and women has been inconclusive (Carless, 1998; Eagly & Johnson, 1990), research on leadership and gender concluded that, amongst managers, women tended to be more democratic in their leadership styles compared with men (Eagly & Carli, 2003). They also reported that a meta-analysis of 45 studies examining gender differences in transformational leader behaviours found that, compared with male leaders, female leaders used and exhibited a more desirable transformational style.

Regarding leadership styles and management levels, executive leaders portray transformational leadership more than transactional leadership (Bass, Waldman, Avolio & Bebb, 1987; Katz & Kahn, 1978).

The few studies that do examine ethnic or racial differences are limited in their description of the differences in leadership style between leaders from the minority versus dominating groups (Eagly & Johnson, 1990). Booyesen (2001) examined racial differences in the behaviour of managers and found that White managers were more bottom-line driven in their cultural orientation whilst Black managers were more people focused. This suggests that Black managers may be more inclined toward a transformational leadership style. In contrast to Booyesen's results, Thomas and Bendixen (2000) found no cultural differences amongst the managers in their study.

### Emotional intelligence and leadership styles

All three leadership styles are displayed at various times and to various degrees (Avolio, 1999). According to Snodgrass and Schachar (2008), both transformational and transactional leadership styles have been found to correlate positively with organisational outcomes in studies of various types of organisation. Bass (1997) suggests that transformational leaders achieve higher levels of success in the workplace than transactional leaders. They produce better financial results (are bottom-line driven) and are rated as being more satisfying and effective than transactional leaders (Snodgrass

& Schachar, 2008). In sum, the empirical literature shows repeatedly that transformational leadership is associated positively with leader effectiveness (Bass & Avolio, 2004; Northouse, 2012).

Subsequently, Gardner and Stough (2002), Barbuto and Burbach (2006), Harms and Credé (2010) as well as Hur *et al.* (2011) showed that the EI of leaders accounted for the majority of the variance in transformational leadership. However, this has not yet been established for the South African petrochemical context and is therefore of importance in this study.

Although there has been much research illustrating the effectiveness of transformational leadership behaviour in organisations (Judge & Piccolo, 2004; Northouse, 2012), there has been a deficiency in research investigating the antecedents of these behaviours (Harms & Credé, 2010). Whilst there are fewer theoretical underpinnings to guide hypotheses regarding the relationship of transactional and *laissez-faire* styles of leadership with EI, it has been suggested that to provide the effective and equitable exchange characteristic of contingent reward behaviours, leaders should have the abilities and traits associated with elevated EI (Barling *et al.*, 2000). Because active management-by-exception behaviours reflect reactive and routine leadership behaviours that need no insight or empathy, it is not likely that there would be any relationship with EI (Barling *et al.*, 2000). However, it is expected that EI would show negative relationships with passive management-by-exception and *laissez-faire* leadership behaviours, because individuals with elevated EI are thought to be higher on initiative and self-efficacy (Goleman *et al.*, 2002).

Furthermore, women (Eagly & Carli, 2003; Van Rooy *et al.*, 2006), Black people (Booyesen, 2001; Van Rooy *et al.*, 2005) and senior managers (Katz & Kahn, 1978; Zaccaro, 2001) should show positive relationships with EI and transformational leadership.

The relationship between EI and leadership styles and determining whether EI can predict an effective leadership style needs more investigation, particularly within the South African petrochemical context. By studying the relationship between EI and effective leadership further, the study aims at contributing to the EI and leadership literature. This may provide valuable significance for organisations' endeavours with regard to improving, training and identifying alternative selection and assessment procedures for evaluating leaders' strengths and developmental areas and reviewing how executive decisions shape the behaviour of the organisation as a whole.

The theoretical framework presented in the previous section suggests that the constructs of EI and leadership styles are related conceptually. However, the relationship between EI and leadership styles needs to be investigated empirically. This study focused primarily on finding empirical linkages between EI and selected leadership styles.

The following specific research hypotheses were formulated:

Hypothesis 1: There is a significant positive relationship between individuals' emotional intelligence and transformational leadership style.

Hypothesis 2: There is a significant positive relationship between individuals' emotional intelligence and transactional leadership style.

Hypothesis 3: There is a significant negative relationship between individuals' emotional intelligence and *laissez-faire* leadership style.

Hypothesis 4: There is a significant difference between the EQ scores of respondents from different job levels and between race groups.

Hypothesis 5: There is a significant difference between the leadership scores of respondents from different management levels and between race groups.

## Research design

The research was designed within the frame of a positivist research paradigm.

### Research approach

A quantitative data survey design was used to answer the research objectives. The specific survey design can be classified as being both descriptive and exploratory with regard to the EI and leadership styles within a South African petrochemical organisation (Cohen, Manion & Morrison, 2007). The research used both self-reported primary data collected via survey research (EQ) and secondary self-reported data already collected by the organisation (MLQ). The MLQ data were considered to be valid and were stored by the South African petrochemical organisation in an accessible database.

### Research method

#### Research participants

This study utilised probability sampling, as well as a specific method called stratified random sampling, which forms part of probability sampling (Tredoux & Durrheim, 2006). The sampling design was used to collect the data for the EQ questionnaire. The sample frame, a complete list of all members of the population in which the researcher was interested, was defined as being a database of leaders who already had valid MLQ data on file and who were currently working in a large global organisation in the energy sector of the industry.

These sampling methods identified a subset of the population as well as giving each element of the population being studied a chance of being selected (Cohen *et al.*, 2007). The total population was 950. The target was  $N = 370$ , but only 162 individuals responded to the request to participate. Of these, 161 questionnaires could be used. One questionnaire was submitted in an incorrect format, which made it impossible to encode. The percentage of the sample that responded was thus 43%. Pallant, (2001) indicates that for this type of

research, the minimum number of respondents required would be 150. A total of 161 respondents were therefore deemed to constitute an acceptable response rate. The final sample of 161 respondents included senior, middle and supervisory-level leaders. The inclusion of these categories of leaders was based on the premise that effective leadership is not confined to the occupants of the highest or most prominent positions in terms of influencing others (Bass & Avolio, 1994) – such leaders can be found at all levels of the organisations' hierarchies (Avolio, 1999).

The demographic characteristics of the sample are summarised in Table 1.

According to Table 1, the majority of the participants were at the supervisory level (59%), White (62.1%), men (91.9%) and between the ages of 40 and 49 (56%). The majority of the participants had between 26 and 30 (61%) years of experience.

The sample distribution roughly reflects the expectations one has of leaders in this sector, that is, that they are White and predominantly male. Therefore, the sample results can be interpreted with a greater degree of confidence as being representative of the broader population of leaders in this organisation.

### Measuring instruments

The following questionnaires were used in the empirical study:

**Demographic questionnaire:** A demographic questionnaire was compiled and used in order to gather information

**TABLE 1:** Respondents' demographic details.

| Item                | Category          | <i>f</i> | %    |
|---------------------|-------------------|----------|------|
| Race                | African           | 49       | 30.4 |
|                     | Mixed-race        | 2        | 1.2  |
|                     | Indian            | 10       | 6.2  |
|                     | White             | 100      | 62.1 |
| Gender              | Male              | 148      | 91.9 |
|                     | Female            | 13       | 8.1  |
| Age                 | 20–29 years       | 7        | 4.3  |
|                     | 30–39 years       | 43       | 26.7 |
|                     | 40–49 years       | 56       | 34.8 |
|                     | 50–60 years       | 55       | 34.2 |
| Qualification       | Master's degree   | 5        | 3.1  |
|                     | Honours degree    | 14       | 8.7  |
|                     | Degree            | 27       | 16.8 |
|                     | Diploma           | 24       | 14.9 |
|                     | Certificate       | 36       | 22.3 |
|                     | Matric            | 43       | 26.7 |
|                     | Other             | 12       | 7.5  |
| Years of experience | 1–10 years        | 25       | 15.5 |
|                     | 11–20 years       | 25       | 15.5 |
|                     | 21–25 years       | 36       | 22.4 |
|                     | 26–30 years       | 61       | 37.9 |
|                     | 31–40 years       | 14       | 8.7  |
| Management level    | Senior management | 19       | 11.8 |
|                     | Middle management | 47       | 29.2 |
|                     | Supervisor        | 95       | 59   |

*f*, frequency.

relating to the race, gender, age, qualifications, years of experience and job levels (senior, middle and supervisory) of the participants.

**EQ-i:** To measure emotional intelligence, the EQ-i (Bar-on, 2006) was used. The EQ-i is a self-report inventory comprising 133 declarative statements phrased in the first person singular. Participants are required to indicate the degree to which each statement is true of the way they typically think, feel or act on a five-point response scale ranging from (1) 'very seldom or not true of me' to (5) 'very often true of me or true of me'. The items of the EQ-i are added up to yield scores on 15 lower-order subscales, five higher-order composite scales and an overall EI score. High scores indicate a high level of EI (Palmer, Gardner & Stough, 2003). Psychometric analyses of the EQ-i reported in the technical manual (Bar-On, 2006) indicate that it has good internal reliability and test-retest reliability. With a South African sample ( $N = 9892$ ) the Cronbach's alphas were high for all of the subscales, ranging from 0.69 (Social Responsibility) to 0.86 (Self-Regard). The alpha coefficients were also high for all of the composite scales, ranging from 0.82 (General Mood and Stress Management) to 0.92 (Intrapersonal) (Bar-On, 2006). The EQ-i was completed online and raw scores were accessed from the test developer.

**Multifactor Leadership Questionnaire:** Leadership styles were measured using the Multifactor Leadership Questionnaire (MLQ) (Form 5X, Version 2009) (Bass & Avolio, 1997). Although the multi-rater format was used in this study, only self-ratings of leaders were used. The MLQ Form used contains 45 questions using a five-point scale ranging from (0) not at all to (4) frequently, if not always. It is a 36-item measure of leadership style assessing transformational, transactional and *laissez-faire* leadership behaviours. The nine items that measure leadership outcomes were eliminated for the purpose of this study. According to the MLQ technical manual (Bass & Riggio, 2006), acceptable internal consistencies of approximately 0.80 were reported on all scales. For a sample of 1200 employees from several diverse organisations (commercial businesses, healthcare organisations, welfare institutions and local governments), Den Hartog, van Muijen and Koopman (2011) found that the internal consistency of transformational leadership ranged from 0.72 to 0.93; transactional leadership ranged from 0.58 to 0.78; and *laissez-faire* leadership was 0.49.

## Administration procedure

In order for research to be conducted in the South African petrochemical industry, initial permission had to be obtained from the senior psychologists supervising the ethical use of assessments, followed by authorisation from the human resources (HR) manager and the managing director of the business that was selected for the study. The HR manager sent out a communication to all HR officers and leaders informing them of the study and inviting them to participate. This ensured that the participants were provided with a standard briefing. The briefing included matters such as

voluntary participation, informed consent, confidentiality and the purpose and aim of the study, including the focus of the various questionnaires. This was followed by a complete explanation of each of the instruments. It was also made clear that volunteering and consenting to complete the online EQ-i automatically consented to the use of existing MLQ data. The participants then completed the online EQ-i questionnaire. The demographic information and EQ-i in raw data format were provided to the researcher by Jopie Van Rooyen and Partners as per contracted legal agreement. The MLQ data were accessed from the organisation's archives.

## Statistical analyses

Statistical analyses were carried out by means of the Statistical Package for Social Sciences (SPSS) computer program for Windows® version 18.0 (SPSS Inc., 2010). Descriptive statistics were obtained for all dependent and independent variables. Cronbach's alpha was used to determine the internal consistency of the measuring instruments. Pearson product-moment correlations were calculated to assess the direction and strength of the relationships between the variables and the significance level was set at 0.05. For the purposes of this study,  $r$  values larger than 0.30 were considered to have a medium to large practical effect (Cohen, 1992). Multiple regression analysis was used to determine whether EI predicts leadership styles (transformational, transactional, *laissez-faire*). Additionally, analysis of variance (ANOVA) tests were performed to determine whether individuals from different management levels differed in terms of their EI and leadership styles. A  $t$ -test was used to determine whether Black and White respondents differed in their scores.

## Results

### Descriptive statistics and Cronbach's alpha

Descriptive statistics were calculated for both the independent variable (EI) and the dependent variable (leadership styles). Table 2 presents the means, standard deviations, minimum and maximum scores and Cronbach's alpha reliability coefficients for the sample of leaders, using the EQ-i and adapted version (2009) of the MLQ (Form 5X).

According to Nunnally and Bernstein (2010), Cronbach's alpha coefficients of between 0.5 and 0.6 are acceptable for

**TABLE 2:** Descriptive statistics and Cronbach's alphas for emotional quotient inventory and Multifactor Leadership Questionnaire (Form 5X, Version 2009) ( $N = 161$ ).

| Scale                     | M    | SD   | Minimum | Maximum | Cronbach's alpha |
|---------------------------|------|------|---------|---------|------------------|
| <b>EQ-i scale</b>         |      |      |         |         |                  |
| Total EQ                  | 4.03 | 0.43 | 2.10    | 4.82    | 0.96             |
| Intrapersonal skills (IA) | 4.05 | 0.53 | 2.40    | 5.00    | 0.93             |
| Interpersonal skills (IE) | 4.01 | 0.50 | 1.60    | 4.90    | 0.89             |
| Stress management (ST)    | 3.90 | 0.52 | 1.90    | 4.80    | 0.83             |
| Adaptability (AD)         | 4.16 | 0.47 | 2.00    | 5.00    | 0.87             |
| General mood (GM)         | 4.01 | 0.46 | 2.00    | 4.90    | 0.82             |
| <b>MLQ scale</b>          |      |      |         |         |                  |
| Transformational (TL)     | 2.05 | 0.45 | 0.50    | 3.90    | 0.87             |
| Transactional (TA)        | 2.05 | 0.45 | 0.50    | 3.90    | 0.58             |
| <i>Laissez-faire</i> (LF) | 0.59 | 0.64 | 0.00    | 3.00    | 0.61             |

M, mean; SD, standard deviation; EQ-i, emotional quotient inventory; MLQ, Multifactor Leadership Questionnaire.

basic research purposes, whereas coefficients of 0.8 and higher are considered to be important or ideal. From Table 2, it can be seen that the instruments have maintained an acceptable level of internal consistency, with the coefficients ranging from moderate to high, thus demonstrating reliability (0.58 for transactional to 0.96 for total EQ). The Cronbach's alpha coefficients for each scale were as follows: Total EQ (0.96), intrapersonal skills (0.93), interpersonal skills (0.89), stress management (0.83), adaptability (0.87), general mood (0.82), transformational leadership (0.87), transactional leadership (0.58) and the *laissez-faire* scales (0.61). The transactional and *laissez-faire* scales show lower reliabilities and were investigated using an item analysis, yet could not be improved to yield a Cronbach's alpha over the 0.7 level; so it was decided to keep these two scales unchanged.

The means and standard deviations of the subscales are also presented in Table 2. The table shows that managers scored the highest on adaptability ( $M = 4.16$ ,  $SD = 0.47$ ) and the lowest on stress management ( $M = 3.90$ ,  $SD = 0.52$ ). The other EQ dimensions scored relatively consistently around the 4 out of 5 level. These were intrapersonal skills ( $M = 4.05$ ,  $SD = 0.53$ ), general mood ( $M = 4.01$ ,  $SD = 0.52$ ) and interpersonal skills ( $M = 4.01$ ,  $SD = 0.50$ ).

### Correlations between emotional quotient (EQ-i) and leadership styles

Correlations were computed between the components of EQ (EQ-i) and leadership styles (MLQ). The correlations are presented in Table 3. The table also presents the intercorrelations between the dimensions of the same scale (i.e. between the subscales of EQ and between the subscales of MLQ).

Table 3 indicates that the subscales of EQ correlate very highly with one another. For example adaptability correlates

strongly with Intrapersonal Skills (EQ ( $r = 0.84$ ;  $p < 0.001$ ; large practical effect size). Intrapersonal skills also show a particularly high correlation with GM ( $r = 0.81$ ;  $p < 0.001$ ; large practical effect size). Whilst these two examples were highlighted specifically, *all* of the correlations between the subscales of EQ are large ( $r > 0.5$ ).

Transformational and transactional leadership show small significant correlations with one another ( $r = -0.19$ ;  $p = 0.017$ ; small practical effect size) and although transformational leadership correlates negatively with *laissez-faire* leadership ( $r = -0.33$ ;  $p < 0.000$ ; large practical effect size), there are no significant correlations overall between transactional and *laissez-faire* leadership ( $r = 0.09$ ;  $p = 0.254$ ).

Table 3 indicates that all of the EQ dimensions correlate significantly with transformational leadership: stress management ( $r = 0.21$ ;  $p = 0.002$ ; small practical effect size); total EQ ( $r = 0.31$ ;  $p < 0.001$ ; medium practical effect size); adaptability ( $r = 0.30$ ;  $p < 0.000$ ; medium practical effect size); general mood ( $r = 0.33$ ;  $p < 0.001$ ; medium practical effect size); intrapersonal skills ( $r = 0.26$ ;  $p = 0.001$ ; small practical effect size); interpersonal skills ( $r = 0.27$ ;  $p = 0.001$ ; small practical effect size).

Positive correlations indicate that the higher a respondent scored on EQ, the higher they also scored on transformational leadership. Neither total EQ nor its dimensions showed any significant relationships with the transactional leadership style, with the exception of a small negative correlation between transactional leadership and stress management ( $r = -0.19$ ;  $p = 0.017$ ; small practical effect size).

*Laissez-faire* does show a significant relationship with all but one EQ dimension (interpersonal skills); however this time the correlations are negative, indicating that the lower the respondents score on the *laissez-faire* style, the higher

**TABLE 3:** Intercorrelations between emotional quotient and constructs with leadership styles.

| Variables | EQ       |         |         |         |         |         | Leadership Styles |        |          |
|-----------|----------|---------|---------|---------|---------|---------|-------------------|--------|----------|
|           | Total EQ | INTRA   | INTER   | ST      | AD      | GM      | TL                | TA     | LF       |
| Total EQ  | 1        | 0.92*** | 0.84*** | 0.86*** | 0.91*** | 0.89*** | 0.31***           | -0.07  | -0.27**  |
|           | -        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000   | 0.000             | 0.381  | 0.001    |
| INTRA     | -        | 1       | 0.68*** | 0.73*** | 0.84*** | 0.81*** | 0.26**            | -0.08  | -0.31*** |
|           | -        | -       | 0.000   | 0.000   | 0.000   | 0.000   | 0.001             | 0.328  | 0.000    |
| INTER     | -        | -       | 1.00    | 0.60*** | 0.67*** | 0.73*** | 0.27**            | 0.03   | -0.17*   |
|           | -        | -       | -       | 0.000   | 0.000   | 0.000   | 0.001             | 0.734  | 0.035    |
|           | -        | -       | -       | 1.00    | 0.76*** | 0.67*** | 0.21**            | -0.19* | -0.21**  |
| ST        | -        | -       | -       | -       | 0.000   | 0.000   | 0.008             | 0.017  | 0.007    |
| AD        | -        | -       | -       | -       | 1.00    | 0.75*** | 0.30***           | -0.04  | -0.29*** |
|           | -        | -       | -       | -       | -       | 0.000   | 0.000             | 0.584  | 0.000    |
| GM        | -        | -       | -       | -       | -       | 1.00    | 0.33***           | -0.01  | -0.20**  |
|           | -        | -       | -       | -       | -       | -       | 0.000             | 0.864  | 0.013    |
| TL        | -        | -       | -       | -       | -       | -       | 1.00              | 0.19** | -0.33*** |
|           | -        | -       | -       | -       | -       | -       | -                 | 0.017  | 0.000    |
| TA        | -        | -       | -       | -       | -       | -       | -                 | 1.00   | 0.09     |
|           | -        | -       | -       | -       | -       | -       | -                 | -      | 0.254    |
| LF        | -        | -       | -       | -       | -       | -       | -                 | -      | 1.00     |
|           | -        | -       | -       | -       | -       | -       | -                 | -      | -        |

EQ, emotional quotient; INTRA, intrapersonal; INTER, interpersonal; ST, stress management; AD, adaptability; GM, general mood; TL, Transformational; TA, transactional; LF, *laissez-faire*.  
\*,  $p < 0.05$  (two-tailed); \*\*,  $p < 0.01$ ; \*\*\*,  $p < 0.001$ .

they score on the EQ dimension, Interpersonal Skills. The following correlations were found between EQ and *laissez-faire*: Total EQ ( $r = -0.27$ ;  $p = 0.001$ ; small practical effect size); intrapersonal skills ( $r = -0.31$ ;  $p < 0.000$ ; medium practical effect size); Interpersonal Skills ( $r = -0.17$ ;  $p = 0.035$ ; small practical effect size), stress management ( $r = -0.21$ ;  $p = 0.007$ ; small practical effect size), adaptability ( $r = -0.29$ ;  $p < 0.000$ ; small practical effect size) and general mood ( $r = -0.20$ ;  $p = 0.013$ ; small practical effect size).

## Multiple regression analyses

As part of the general aim of finding and understanding empirical linkages between emotional intelligence and leadership styles (represented by transformational, transactional and *laissez-faire* leadership styles), standard multiple regressions were performed.

The high correlations between the EQ dimensions ( $r > 0.7$ ) indicate the existence of possible multicollinearity. On investigation, variance inflation factor (VIF) statistics showed values of over 4. Although the general rule is that VIF values of under 10 are acceptable, according to Field (2005), if no formal VIF value for determining the presence of multicollinearity exists, it is suggested that VIF values exceeding 10 should be regarded as indicators of multicollinearity. However, in weaker models, values of above 2.5 may be a cause for concern. The models in this study only explain a very small percentage of the dependent variable and it was thus decided to run only total EQ as the subdimensions were too closely correlated.

The aim was to understand what predictive value EQ could have on the leadership style of a manager. Therefore, two standard multiple regressions (using the enter method) were performed where transformational and *laissez-faire* leadership were the dependent variables and Total EQ was the independent variable in each regression. As there is no significant correlation between EQ and transactional leadership, no regression was run for this MLQ scale.

Table 4 summarises the results from the two regression analyses.

Table 4 indicates that the Total EQ explained small practical effect size percentages of variance ( $R^2 \leq 0.12$ ) in the dependent variable transformational leadership (Cohen, 1992). The  $F$  values for transformational leadership were significant

statistically ( $p \leq 0.001$ ), indicating that the regression is significant, yet the adjusted  $R^2$  value (0.089) indicates that only 8.9% of the variance in transformational leadership is explained by the regression model.

Similarly, the  $F$  value for the regression analysis with *laissez-faire* leadership as the dependent variable is also significant, yet the adjusted  $R^2$  value is 0.066, which also indicates a rather small effect size ( $R^2 \leq 0.12$ ). Therefore Total EQ only explains 6.6% of the variance in *laissez-faire* leadership.

## Tests for significant mean differences between demographic groups

Two demographic variables of importance were selected for further investigation: management level and race. Gender had to be omitted as the female group only represented 13 women. The gender variable is split: 92% men and 8% women. It was therefore decided not to investigate this any further as the difference between the groups was too vast.

The parametric ANOVA test was used to test the differences between the three management level groups. The results of the test are shown in Table 5.

The results indicate that the different management groups did not differ significantly in terms of EI, transformational or *laissez-faire* style of leadership. There does appear to be a linear relationship between management group and transactional leadership, as respondents in the junior group (first line managers/supervisors) scored significantly higher than respondents in the middle and senior managers ( $M$ ) categories (Junior  $M$  Rank = 94.66 ; Middle  $M$  Rank = 65.46; Senior  $M$  Rank = 51.13).

A comparison between race groups was only possible between Black ( $n = 49$ ) and White ( $n = 100$ ) respondents. The base sizes of the other two race groups (Mixed-race and Indian) were considered to be too small for consideration ( $n = 2$  and  $n = 10$  respectively). An independent  $t$ -test was used and the results are presented in Table 6.

There is a significant difference between Black and White leaders yet again with regard to adaptability ( $p = 0.005$ ), with Black respondents showing a significantly higher score than the White leaders ( $M = 4.17$  vs.  $M = 3.86$ ). In general,

**TABLE 4:** Summary of standard multiple regression analyses: Total emotional quotient (independent variables) and leadership styles (dependent variables) ( $N = 161$ ).

| Variables                          | Unstandardised Coefficient |       | Standardised coefficient (B) | $t$    | $p$   | $F$   | Adjusted $R^2$ | $R$               |
|------------------------------------|----------------------------|-------|------------------------------|--------|-------|-------|----------------|-------------------|
|                                    | B                          | SE B  |                              |        |       |       |                |                   |
| <b>Transformational leadership</b> | -                          | -     | -                            | -      | -     | 16.70 | 0.089          | 0.31 <sup>c</sup> |
| (Constant)                         | 1.84                       | 0.32  | -                            | 5.75   | 0.000 | -     | -              | -                 |
| Total EQ-i                         | 0.323                      | 0.08  | 0.31                         | 4.09   | 0.000 | -     | -              | -                 |
| <b>Laissez-faire leadership</b>    | -                          | -     | -                            | -      | -     | 12.32 | 0.066          | 0.27 <sup>c</sup> |
| (Constant)                         | 2.190                      | 0.460 | -                            | 4.764  | 0.000 | -     | -              | -                 |
| Total EQ-i                         | -0.398                     | 0.113 | -0.268                       | -3.511 | 0.001 | -     | -              | -                 |

EQ-i, emotional quotient; B, beta; SE B, standard error of beta;  $t$ ,  $t$ -test;  $p$ ,  $p$ -value;  $F$ ,  $F$ -test; Adjusted  $R^2$ ; proportion variance explained,  $R$ , multiple correlation.

<sup>a</sup>,  $R^2 \leq 0.12$  (small practical effect size)

<sup>b</sup>,  $R^2 \geq 0.13 \leq 0.25$  OR  $0.13 \leq R^2 \leq 0.25$  (medium practical effect size)

<sup>c</sup>,  $R^2 \geq 0.26$  (large practical effect size)



**TABLE 5:** Significant differences between management level groups: Analysis of variance (ANOVA).

| Scale                     | Junior Management Mean | Middle Management Mean | Senior Management Mean | F     | Asymp. Sig. |
|---------------------------|------------------------|------------------------|------------------------|-------|-------------|
| Total emotional quotient  | 4.00                   | 4.07                   | 4.06                   | 0.56  | 0.571       |
| Intrapersonal skills (IA) | 3.12                   | 3.12                   | 3.27                   | 0.07  | 0.936       |
| Interpersonal skills (IE) | 2.17                   | 1.90                   | 1.79                   | 1.42  | 0.246       |
| Stress management (ST)    | 3.86                   | 3.95                   | 3.96                   | 0.94  | 0.391       |
| Adaptability (AD)         | 4.00                   | 4.00                   | 4.04                   | 10.08 | 0.000***†   |
| General mood (GM)         | 4.10                   | 4.23                   | 4.23                   | 0.55  | 0.578       |
| Transformational (TL)     | 4.05                   | 4.08                   | 4.00                   | 0.16  | 0.852       |
| Transactional (TA)        | 3.97                   | 4.11                   | 4.09                   | 1.50  | 0.227       |
| <i>Laissez-faire</i> (LF) | 0.52                   | 0.66                   | 0.70                   | 1.08  | 0.341       |

F, F-test; Asymp. Sig., Asymptotic significance.  
 \*,  $p \leq 0.05$ ; \*\*,  $p \leq 0.01$ ; \*\*\*†,  $p \leq 0.001$

**TABLE 6:** Significant differences between race groups: *t*-test.

| Scale                     | Black (M) | White (M) | <i>t</i> | Asymp. Sig. |
|---------------------------|-----------|-----------|----------|-------------|
| Total emotional quotient  | 4.13      | 3.99      | 1.87     | 0.064       |
| Intrapersonal skills (IA) | 4.18      | 4.01      | 1.95     | 0.054       |
| Interpersonal skills (IE) | 4.08      | 4.00      | 0.94     | 0.348       |
| Stress management (ST)    | 4.03      | 3.86      | 1.92     | 0.057       |
| Adaptability (AD)         | 4.17      | 3.94      | 2.83     | 0.005***†   |
| General mood (GM)         | 4.19      | 4.13      | 0.64     | 0.522       |
| Transformational (TL)     | 3.22      | 3.08      | 1.84     | 0.068       |
| Transactional (TA)        | 2.08      | 2.04      | 0.55     | 0.585       |
| <i>Laissez-faire</i> (LF) | 0.47      | 0.65      | -1.52    | 0.130       |

M, mean; *t*, *t*-test; Asymp. Sig., Asymptotic significance.  
 \*,  $p \leq 0.05$ ; \*\*\*†,  $p \leq 0.01$

Black leaders scored higher on all EQ scales and Total EQ and intrapersonal skills are only just outside the set level of statistical significance (i.e. just over  $p < 0.05$ ).

## Discussion

This study examined the relationship between overall self-perceived EI, the components thereof as well as the components of the full range model of leadership: transformational, transactional and *laissez-faire* leadership styles (Bass & Avolio, 1997).

The results indicate that the EQ-i scales have acceptable and high levels of internal consistency, with all Cronbach's alpha values falling above 0.8. The MLQ (Form 5X, Version 2009) also has acceptable high levels of internal consistency for transformational leadership and acceptable moderate levels for transactional and *laissez-faire* leadership. Botha (2002) found the MLQ instrument to be a reliable measure of transformational leadership and a poor measure of transactional leadership. Although results were based on self-ratings only, previous findings were re-examined and reaffirmed in this study. Overall, both measures were reported as being reliable within the multicultural South African petrochemical organisation under study.

However, it should be noted that the means and the scales are high and that the standard deviations are low, that is to say, in general two-thirds of the ratings were in the range of 3.5 to 4.5 on a five-point scale. These high scores can be attributed largely to the use of data obtained through self-ratings. This fact might also explain the high correlations reported between the subscales of EQ.

In this light, significant positive relationships were demonstrated between EI and transformational leadership giving support to Hypothesis 1 (see Barbuto & Burbach, 2006). Although some of the correlations are small ( $r < 0.3$ ), there were a few medium-sized correlations (Total EQ, adaptability and general mood) (Petrides, Frederickson & Furnham, 2004). It can thus be concluded that there is a significant positive relationship between EI (intrapersonal skills, interpersonal skills, adaptability, stress management, general mood) and transformational leadership style. The correlations revealed that the ability to perceive and adapt emotions effectively has a strong relationship with transformational leadership style ( $r = 0.30$ ). This implies that in the petrochemical organisation, leaders with higher EI may, to a small extent, predict effective leadership (transformational leadership style) (Bass & Avolio, 2004; Gardner *et al.*, 2010), which supports Hypothesis 4. These findings were in support of, although admittedly nowhere as strong as, other research outcomes by Leban (2003) and Piel (2008), which demonstrated strong statistically-inferred predictive relationships between EI and transformational leadership. On the other hand, Leban's (2003) and Piel's (2008) research strategies used 360-degree review feedback on the leaders compared with the self-report in this research, which may reduce the contribution of this study.

In contrast, with the exception of one small correlation with stress management, no significant relationship was found between EI and transactional leadership (not supporting Hypothesis 2). Few theoretical underpinnings to guide hypotheses regarding the relationship of transactional styles of leadership with EI have been suggested in the literature. To provide the effective and equitable exchange characteristic of contingent reward behaviours, leaders should have abilities and traits associated with elevated EI (Barling *et al.*, 2000). This indicates that leaders who are more transactionally inclined within this petrochemical organisation may display less self-perceived EI.

As anticipated, a negative relationship was found between *laissez-faire* leadership and overall EI, intrapersonal skills, adaptability, stress management and general mood (in support of Hypothesis 3). The sizes of the correlations are medium to small with the largest correlation being between *laissez-faire* and intrapersonal skills (-0.31). There is thus some support for the fact that those leaders who were absent when

required and failed to follow up on requests for assistance (Bass, 1997) were more unlikely to effectively perceive and manage their emotions than those of others in the workplace. This may indicate that leaders within this petrochemical organisation who are able to identify with and express their feelings constructively and confidently, and who live and work independently and cope effectively with demanding situations, will be less likely to demonstrate absent leadership.

The regression analysis shed more light on the relationship between EQ and leadership styles. Total EQ was used as the independent variable and each of transformational and *laissez-faire* leaderships were in turn the dependent variables. EQ explains only 8.9% of the variance in transformational leadership and a small 6.6% in *laissez-faire* leadership. Whilst these are relatively small values which do not provide strength to the researcher's argument, the regression models were nonetheless still significant. Consequently, this lends little evidence for a significant relationship between the variables (Harms & Credé, 2010; Hur *et al.*, 2011).

Whilst the regression analysis does point to many other factors that also play a role in the prediction of leadership, it shows that EI is gaining a foothold as a predictor of effective leadership, broadly acclaimed as transformational leadership (Cooper & Sawaf, 1997; Hur *et al.*, 2011). These findings make intuitive sense although they do not clearly suggest that leaders in the petrochemical organisation under study are effective leaders who are self-aware and aware of their followers' sentiments.

Based on the results of the current study and in contrast with similar studies (Avolio *et al.*, 1995; Gardner *et al.*, 2010), it is not indisputably demonstrated that these leaders possess high levels of EI and leverage this EI in order to demonstrate strong transformational leadership behaviours.

Transformational leadership has been shown to be the preferred leadership style under environmental conditions of constant and rapid change (Tucker & Russell, 2004). For the petrochemical organisation in the study, it can be concluded with some statistical certainty that EI is a predictor of effective transformational leadership style. First of all, Stein and Book (2006) have claimed from the review of the work by Bar-On (2000) that a person's EI is trainable. Leadership research likewise supports the view that transformational leadership is trainable (Barling, Weber & Kelloway, 1996; Parry & Sinha, 2005). Focused selection and development of leaders' EI skills might be a recommended mechanism to engage in effective transformational behaviours in this petrochemical organisation.

## Limitations

This research is not without its limitations. Firstly, the sample comprised one business unit within a South Africa petrochemical organisation, which implies that the results cannot be generalised to the entire population. Secondly, as a result of the cross-sectional survey-based research design,

causal factors could not be isolated and attributed to the research findings. Thirdly, the sample size may have affected the results of this study. A larger sample may have provided more information regarding the relationships between EI and leadership styles and revealed more insight into demographic differences. Fourthly, in the collection of data the two instruments were not completed at the same time. The MLQ was assessed from an existing database, which may have resulted in weaker correlations. Fifthly, another limitation is the time and cost involved in the data collection from a large sample. Lastly, the use of self-ratings in both questionnaires is a huge limitation, as subjectivity can play a role in the results and therefore the findings of such a study.

## Recommendations for future research

Future studies should aim to include all the business units within the South African petrochemical organisation and to increase the sample size and demographic representation to ensure a more thorough study that can be more easily generalised. Special attention should be paid to ensure a more representative gender distribution. Longitudinal research should be used in future to identify and isolate causal factors, in order to ensure that environmental factors impacting on the data can be isolated and incorporated meaningfully. Data collection for both instruments should be conducted at the same time. Finally, it is suggested that the results of this study should be confirmed by follow-up studies in a variety of contexts in South Africa, because of the apparent absence of specific published works on EI and its purported effects on predicting an effective leadership style. Further research clearly needs to be conducted so as to expand the knowledge about the possible influences or effect EI may have on transformational leadership. For future studies it would be interesting to see differences in leaders' self-perceptions versus those of others and/or to include a multi-rater for the EI as well.

To this end, areas for future investigation might include the impact that the EI of leaders has on the EI of employees and the organisational culture. These areas of study could provide a more complete picture of the emotional dynamics that constitute effective leadership within the South African petrochemical industry. In addition, future research should combine qualitative, quantitative and triangulation methods in order to facilitate a better understanding of the different variables being studied.

## Recommendations for organisational practice

Selected recommendations can be made for the South African petrochemical organisation which might be transferred in part to similar contexts. The organisation should become more aware of the topics of leadership styles and EI, the interrelationship of these two concepts and their impact on the organisation and its employees.

Managers should be trained to explore the positive and negative aspects of the various leadership styles and their

contextual importance. At the same time, employees should be trained in EI to build an awareness of emotional aspects of leadership competences in order to respond to the growing complexity of (international) human resource management.

The organisation should use the research results to adjust and improve organisational training facilities as well as the process of selection and assessment procedures for evaluating leaders' strengths within the organisation. This could have a significant impact on constructing strategies for developing an organisational leadership culture that is based on EI. Training and mentoring programmes should be adjusted accordingly within the organisation.

Finally, the organisation could use the data to improve managers' strengths and to become aware of developmental areas, whilst at the same time reviewing how executive decisions shape the behaviour of the organisation as a whole. The vision of the organisation could be redefined accordingly.

## Conclusion

Very few differences were found between the EQ and leadership style scores of different demographic groups. In fact, it is only with regard to adaptability that any differences exist between gender and race groups. This is similar to results reported in Van Rooy *et al.* (2005) with only two subscales, but not total EI that evidenced a statistically-significant effect in favour of Black managers. In addition, it appears that progression through the ranks to senior management in the petrochemical organisation does not seem to hinge on what level of EI or leadership style one possesses.

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### Competing interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

### Authors' contributions

M.P. (University of South Africa) is a Master's student in the Department of Industrial and Organisational Psychology and this article is based on her dissertation of limited scope. R.V. (University of South Africa) was the supervisor of the dissertation and both C.H.M. (University of South Africa) and R.V. contributed with regard to getting the article published.

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