

# Emotional intelligence - A review and evaluation study

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## ABSTRACT

This article reviews the literature on the subject of emotional intelligence (EQ) and attempts to pin-down and define this nebulous construct, using competency-based and personality factor scales. In an exploratory study, the reliability and construct and predictive validity of three scales were investigated. An EQ scale based on 16 relevant competencies showed highly promising reliability and validity. The results also showed the relevance of two other competency-based scales - intellectual intelligence (IQ) and managerial intelligence (MQ) - which both predicted organisational advancement. Taken together, however, the three scales had even higher validity. The overall results supported the view that EQ constructs can be measured more effectively by performance analysis than classic paper and pencil tests. In addition they provide support for the proposition that the combination of EQ and IQ is a more powerful predictor of success than either measure alone.

## FULL TEXT

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### Introduction

The current widespread interest in the topic of emotional intelligence has undoubtedly been fuelled by Daniel Goleman's book (Goleman, 1996) and its associated publicity. The popularity of the topic has led to a range of predominantly popular books and articles examining its applications and its development in the context both of individuals and of corporations. Corporate interest appears to be strongly related to the continuing search for a way of securing sustainable competitive advantage which can be developed through attention to "people issues" (Higgs, 1997; Senge, 1990; Ulrich and Lake, 1990; Sparrow et al., 1994; Kay, 1993). The concept of emotional intelligence is stated to be based on extensive scientific and research evidence (e.g. Goleman, 1996; Cooper, 1997; Cooper and Sawaf, 1997). However, little research has been conducted in an organisational context and existing research has been largely drawn from physiological research developments, educational-based research and developments in the therapy field (e.g. Goleman, 1996; Steiner, 1997; Damasio, 1994). The organisational applications of emotional intelligence tend to be based on derivative arguments and largely anecdotal case descriptions. This raises one of the core questions which the research reported in this paper sets out to examine: "Is there any evidence that the claims made for emotional intelligence can be substantiated in an organisational context?"

The consensus view appears to be that it is difficult to measure emotional intelligence and that no truly robust measure exists as yet (Goleman, 1996, 1997a; Steiner, 1997; Hein, 1997). This creates the second research question which this paper sets out to address: "Is it possible to use established robust measures of personality or competency to measure emotional intelligence, or some aspects of emotional intelligence?"

## The literature of emotional intelligence

### What is emotional intelligence?

The literature in this emerging field contains a range of terminology which can tend to be confusing and includes the terms emotional intelligence (e.g. Goleman, 1996; Salovey and Mayer, 1990), emotional literacy (e.g. Steiner, 1997), emotional quotient (e.g. Goleman, 1996, 1997b; Cooper, 1997), personal intelligences (e.g. Gardner, 1993), social intelligence (Thorndike, 1920) and interpersonal intelligence (e.g. Gardner and Hatch, 1989). Goleman (1997b) provides a useful definition of the construct of emotional intelligence, which is about:

- knowing what you are feeling and being able to handle those feelings without having them swamp you;
- being able to motivate yourself to get jobs done, be creative and perform at your peak; and
- sensing what others are feeling, and handling relationships effectively.

A more concise definition (Martinez, 1997, p. 72) refers to emotional intelligence as being: "...an array of non-cognitive skills, capabilities and competencies that influence a person's ability to cope with environmental demands and pressures."

While it is helpful to have a relatively concise definition of emotional intelligence to guide our thinking and understanding, exploration of the construct requires a more detailed analysis of its scope and meaning. Table I provides an overview of the component elements of emotional intelligence, developed from a relatively simple content analysis of the literature. Although Goleman is seen as the progenitor of the concept of emotional intelligence, it is evident and acknowledged (Goleman, 1996; Steiner, 1997) that the construct was first labelled as such by Salovey and Mayer (1990) and has its roots in earlier research into "social intelligences" (Thorndike, 1920).

### Background to the development of emotional intelligence

The roots of the development of the concept of emotional intelligence appear to lie in the apparent inability of traditional measures of "rational thinking" (e.g. IQ tests, SAT scores, grades, etc.) to predict who will succeed in life. According to Goleman (1996), research indicates that IQ at best contributes about 20 per cent of the factors that determine success in life. This view is in line with conclusions drawn by researchers who have a *prima facie* commitment to the primacy of IQ (e.g. Herrnstein and Murray, 1994). In an organisational setting, Bahn (1979) reported a study which was designed to assess the validity of IQ tests in predicting executive or management competency. He concluded that leaders tended to be more intelligent than the average group members, but not the most intelligent. His review of the studies in this field indicated a certain minimum base line IQ as being necessary for effective performance.

The search for characteristics other than IQ which adequately explain variations in success is by no means new. Thorndike (1920), in reviewing the predictive power of IQ, developed the concept of social intelligence as a means of explaining variations in outcome measures not accounted for by IQ. The interest in a broader view of the totality of intelligence was resurrected by researchers such as Gardner and Hatch (1989) who developed and explored the concept of multiple intelligences and found no significant relationships with IQ measures. This led to a conclusion that the "other" intelligences proposed by Gardner were a distinctly different construct from IQ.

In developing potential explanations of the "interpersonal intelligences", the major paradigm has been that of meta-cognition (i.e. awareness of one's mental processes) rather than exploration of the full range of emotional abilities (Goleman, 1996). In identifying a range of emotional abilities Goleman highlights a need to go beyond meta-cognition and explore the concept of "metamood" (which he defines as awareness of one's own emotions). He further expands on this to highlight the importance of self-awareness which he describes as being: "... aware of both our mood and our thoughts about that mood ... non-reactive, non-judgmental attention to inner states (Goleman, 1996, p. 43)."

In reviewing emotional intelligence it is evident that a major driver of interest has been the failure of IQ tests to account for sufficient variance in success criteria both in an educational and organisational context.

### The impact and benefits of emotional intelligence

The research which underpins the positioning of emotional intelligence is predominantly educational and physiological, although business has been the main area for the growth of interest in, and the associated claims for the efficacy of, emotional intelligence. However, the research which underpins this is extremely limited, with most of the claims being based on anecdotal case histories, derivative models and, in some cases, pure rhetoric.

Much of Goleman's (1996) influential book on emotional intelligence provides examples of research evidence from within the educational sphere. Hopfl and Linstead (1997), in an exploration of emotion and learning in organisations, highlight the importance of studies into how children learn, and demonstrate that children learn not only content, but also how to value their work, how to relate to peers and how to feel towards their teachers and fellows. This shows that successful learning and successful performance flow from both rational and emotional capability development. Indeed one of Goleman's central contentions is that people who have a good mix of IQ and emotional intelligence tend to be more successful in their chosen fields of endeavour than those who have outstanding IQ and under-developed emotional intelligence: "IQ and emotional intelligence are not opposing competencies, but rather separate ones. We all mix intellect and emotional acuity; people with a high IQ, but low emotional intelligence (or a low IQ and high emotional intelligence) are, despite the stereotypes, relatively rare (Goleman, 1996, p. 44)."

Other authors writing on the topic of emotional intelligence also point to the impact of IQ and emotional intelligence, in combination, on determining successful performance outcomes (e.g. Steiner, 1997; Salovey and Mayer, 1990; Farnham, 1996). The core propositions would therefore appear to be that:

- (1) a combination of IQ and emotional intelligence explains more variation in outcome criteria than IQ alone; and
- (2) a certain threshold IQ is necessary before the combination with emotional intelligence leads to differentiated success in outcomes.

Unfortunately, in much of the more popular literature on emotional intelligence the significance of these core propositions is obscured by the rhetoric (e.g. Hein, 1997; O'Brien, 1996). There is an emerging popular view propounded in this literature that emotional intelligence is more important per se than IQ.

Research which rigorously demonstrates the impact of emotional intelligence on success and performance in an organisational context remains relatively uncommon. Kelley and Caplan's (1993) significant study focused on research teams in the Bell Laboratories and provides support for the ability of emotional intelligence to differentiate between high and average performers. Although all team members had very high IQs, some team members were identified by others as "stars". Using the "star" ratings as a criterion, IQ did not differentiate between "stars" and

other team members. Academic talent was not found to be a good predictor of either "star" rating or productivity. However, the interpersonal strategies employed by team members were found to be differentiators. Similar results are reported from other, albeit less robust, studies (Martinez, 1997; Thompson et al., 1996).

The Bell studies were set in a team or group context. Other work with groups has found that the concept of "group intelligence" encompasses both IQ and what has been labelled "social intelligence" (Williams and Sternberg, 1988). The concept of effective groups or teams requiring more than a collective high IQ has been established for many years. Belbin's seminal work on managerial teams (Belbin et al., 1976) reported the poor performance of the high IQ teams (Apollo teams), and the Team Role model emerging from the studies was designed to encompass interpersonal intelligences within the team. More recently Higgs (1997) has demonstrated the importance of managerial team interaction processes in determining the effective performance of these teams. Thus, whilst not addressing emotional intelligence specifically, there may be seen to be implicit evidence to support the construct within a group or team setting.

It represents a significant leap to move from a relatively small number of research studies to a positioning of emotional intelligence as core to the development of an organisation's competitive advantage (Harrison, 1997). The constraining impact of the rational organisational paradigm on researching alternative approaches is well summarised by Hopfl and Linstead (1997, p. 5): "It is almost certainly commonplace to observe that organisational emphases on rationality have led to the relative neglect of emotional issues in organisational life". They track back this constricting view of an organisation to the models of Weber and observe that the more bureaucracy is "dehumanised", the more completely it succeeds in removing the irrational elements in an organisation.

In the context of managerial behaviour, and how this is learned within an organisation, there is an increasing articulation of the reality that emotions form a part of that learning and are not merely a by-product of the process (Hopfl and Linstead, 1997; Fineman, 1997). Indeed Fineman argues that managerial learning is emotional and that the traditional cognitive approach to management has ignored the presence and role of emotion. This may be a causal factor in the frequent dysfunctionalities of the managerial learning process. Other researchers and authors have also explored the role of emotional rather than rational behaviours in relation to managerial performance, and exhort managers and organisations to pay attention to the emotional components in relation to performance (Kolb et al., 1994).

In exploring emotional intelligence and its potential benefits for individuals and organisations, considerations of organisational context are severely under-represented. However, Downing (1997) points out that people frame emotions and learning within an organisational context. Furthermore, he establishes that the growth in interest in emotions is associated with increasing organisational contextual volatility and change, and points out that organisational change is frequently associated with emotional or interpretative conflict. Typical examples of the case for emotional intelligence based on change are provided by the observations relating to change management and teamwork (Goleman, 1996; Farnham, 1996; Zuboff, 1991). Endorsements of the value of emotional intelligence are typified by quotations from leading business figures. For example, Cooper (1997, p. 31) quotes Nick Zenuik, a former leader of an executive team at Ford Motor Company: "Emotional intelligence is the hidden competitive advantage. If you take care of the soft stuff the hard stuff takes care of itself". Other authors, from evidence gathered in other fields of study, assert that focusing on emotional intelligence can contribute to building competitive advantage (e.g. Cooper 1997; Goleman, 1996; 1997b; Cooper and Sawaf, 1997; Martinez, 1997; Harrison, 1997).

#### Emotional intelligence and competencies

In reviewing the nature and definition of emotional intelligence (see above), it is evident that the construct addresses

individual traits, values and behaviours. This would, to a large extent, align with the concept of a competency as defined by Boyatzis (1982): "...a job competency is an underlying characteristic of a person in that it may be a motive, trait, skill, aspect of one's self-image or social role, or a body of knowledge which he or she uses."

Indeed there are clear parallels between the drivers of interest in competencies and of emotional intelligence. Whilst Goleman sees competencies as an alternative to the personality-based paradigm, the now classic view of competencies (Boyatzis, 1982) sees the construct as being an inclusive one which sets personality traits in a broader context. Indeed there is, within the literature on emotional intelligence, frequent reference to the nature of the construct being linked to competencies (e.g. Goleman, 1996; Gardner, 1993; Steiner, 1997; Cooper and Sawaf, 1997).

The proposition underlying much of the focus of emotional intelligence, in relation to its organisational application, appears to be derived from a desire to explain differential achievement of success in an organisational setting which cannot be adequately accounted for by traditional measures such as IQ tests. Whilst this is an area of extensive debate and research, there have been a limited number of long-term studies of individual achievement within an organisation which serve to illuminate the issue. One such study by Dulewicz and Herbert (1996, 1999) tracked the career progress of General Managers over a seven-year period. The main aim was to identify those competencies and personality characteristics assessed seven years previously which are associated with current success and rate of advancement. This study demonstrated a clear linkage between competencies and elements of advancement within an organisational context. The relationship between individual attributes and differentiation between "average" and "outstanding" performance (in terms of personal achievement) is at the heart of the case for considering emotional intelligence (Goleman, 1996).

The view that emotional intelligence relates to a set of competencies is reinforced by prominent authors in the field. Goleman (1997b), in a paper to the Second International Competency Conference, explored the development of emotional intelligence in an organisational context, and made a direct reference to using an understanding of the concept to assisting in the improvement of workplace competency. In relation to the process of management learning in particular, Fineman (1997) develops the idea of a clear link between emotion and competencies.

A number of specific competency frameworks include high performing competencies directly aligned to elements of emotional intelligence. For example Cockerill (1989), in identifying high performing competencies, includes a number which touch on emotions (e.g. creating a positive climate). Dulewicz (1994), in exploring and describing the "supra-competencies", includes a grouping labelled interpersonal competencies, embracing managing staff, persuasiveness, assertiveness and decisiveness, sensitivity and oral communication. Overall the construct of emotional intelligence does appear to be captured, at least in part, within the thinking on managerial competencies. However, this relationship has not surfaced as yet as a specific proposition, nor been the subject of structured research.

### Developing emotional intelligence

If, as the research and assertions propose, emotional intelligence is a significant differentiator (given broadly equivalent levels of IQ) in terms of "life success" and ultimately corporate success, then the question arises as to whether emotional intelligence may be developed for an individual or is a basic personality trait. Within the literature there is a strong consensus that it is a developable trait or competency (e.g. Goleman, 1996; Steiner, 1997; Hopfl and Linstead, 1997; Cooper, 1997; Martinez, 1997). Indeed much of the popular literature is devoted to describing processes or programmes designed to help individuals develop their emotional intelligence (e.g. Martinez, 1997; Farnham, 1996; Harrison, 1997; Cooper, 1997). However, issues do arise in relation to the stage in an individual's

life at which interventions are most effective (Goleman, 1996). While, building from this research and extensive case study examples, the value of learning intervention during childhood is promoted, some doubts are raised as to the efficacy of learning interventions at later stages in life (e.g. Goleman, 1996). Within a managerial learning context, a view is emerging that, although the core emotional capabilities are developed within childhood, these are plastic and thus capable of being developed and changed (Fineman, 1997; Hopfl and Linstead, 1997).

### Measuring emotional intelligence

Given the core proposition that it is a combination of IQ and emotional intelligence which determines "life success" (Goleman, 1996), a question arises as to whether or not it is feasible to measure emotional intelligence. In addressing this issue the literature tends to polarise. There appears to be a dominant view that the somewhat complex and diverse nature of emotional intelligence militates against its effective measurement. Goleman (1996, p. 44) comments that: "Unlike the familiar tests for IQ, there is as yet no single pencil-and-paper test that yields an "emotional intelligence" score, and there may never be one."

Others tend to endorse this view (for example, Steiner, 1997). While the lack of a robust and researched method/test for assessing emotional intelligence is widely acknowledged (e.g. Goleman, 1996, 1997a; Hein, 1997), there is a continuing search for such a measure.

The complex nature of emotional intelligence and its assessment may, indeed, not be appropriate for measurement by means of a pencil-and-paper test. Goleman (1996) comments that: "Although there is ample research on each of its [emotional intelligence] components, some of them, such as empathy, are best tested by sampling a person's actual ability at the task ..."

In exploring the assessment of emotional intelligence, Martinez (1997) builds on Goleman's observations and suggests that feedback from bosses and subordinates may be a more appropriate means of assessment of the construct of emotional intelligence than pencil-and-paper tests.

### Conclusions from the literature review

It is possible to conclude from a review of the literature that, whilst emotional intelligence is a construct which offers significant potential to account for variances in "life success" (Goleman, 1996; Salovey and Mayer, 1990), there is a need for rigorous research to underpin the assertion in an organisational setting. Furthermore, "traditional" pencil-and-paper tests appear unlikely to provide an appropriate vehicle for operationalising the construct (Goleman, 1996; Steiner, 1997). A competence-based approach to exploring and operationalising the construct may be more appropriate (Goleman, 1996; Cooper, 1997; Fineman, 1997; Martinez, 1997). Viewing emotional intelligence in a competence context provides a basis for viewing it as a developable trait or ability (Cooper, 1997; Fineman, 1997; Goleman, 1997b; Hopfl and Linstead, 1997; Steiner, 1997).

In reflecting on the foregoing review of the literature and above conclusions it is feasible to see a relationship between the concept of emotional intelligence and both measures of competency and broader-based measures of personality. Well established and validated general measures of personality such as the 16-PF (Cattell et al., 1970) and the OPQ (Saville et al., 1993) would appear to have features which relate directly to the elements of the construct summarised in Table I. In addition, the analysis of the construct of emotional intelligence summarised in this Table, together with the indication of a competency relationship, indicates that there are distinct associations between competency models and elements of emotional intelligence. One such competency model is the Job Competencies Survey (Dulewicz, 1992, 1998) which was used to track individual advancement in a longitudinal

study (Dulewicz, 1994; Dulewicz and Herbert, 1996, 1999). In reviewing the 16PF and OPQ it is evident (on the basis of content analysis) that a sub-set of the factors of each map on to the elements of the definition of emotional intelligence derived from an analysis of Table I. Such relationships are also evident, on a content analysis basis, between a number of the JCS competencies and emotional intelligence. These relationships are summarised in Table II and the common personality factors for each instrument are listed in Table III. In compiling Table III it was necessary to apply a degree of judgement, particularly in allocating an "EQ pole" to the 16PF scales. The nature of the components of EQ were such that some inevitable contradictions were implied, at the detailed level, in terms of a number of 16PF scales (e.g. both tough-minded and tender-minded being indicated). In these cases, judgement was made in favour of the predominantly occurring trait.

## Research design and method

### Hypotheses

From the literature review, and the above conclusions, the following hypotheses were formulated:

H1: There will be a positive and significant relationship between a competency-based measure of emotional intelligence and an "emotional intelligence" sub-set of the 16PF and OPQ personality questionnaires.

H2: There will be a positive and significant relationship between, on the one hand, an emotional intelligence measure derived from: (a) the 16PF personality questionnaire; (b) the OPQ; and (c) the competencies and, on the other hand, an individual's "success" in an organisational context.

H3: The amount of variance in individual "success" in an organisational context explained by a competency-based measure of emotional intelligence will be greater than that explained by an equivalently based measure of "rational intelligence".

H4: A combination of emotional and rational intelligence will explain more variance in individual "success" in an organisational context than either a measure of emotional or rational intelligence alone.

### The sample

In an exploratory study to test these hypotheses, research was conducted on data gathered from the general managers follow-up study (Dulewicz and Herbert, 1996, 1999) referred to above. A total of 100 course members from six GMCs at Henley took part in that original study in 1988/1989. Their ages ranged from 29 to 54 years and their organisations were from across the entire spectrum of the standard industrial classification. These managers were contacted again in June 1995 and asked to provide current information on the indicators above, and answers to questions about their current organisational level and their career since attending GMC. A reminder was sent after four weeks and 72 managers finally responded. Because of the problem associated with exchange-rates, differential inflation rates and missing data, it was decided, reluctantly, to exclude overseas managers from the analysis, thus reducing the sample to 58 managers from the UK and Ireland. The mean figures for their current salary and other indicators in 1995 and in 1988/1989 appear in Dulewicz and Herbert (1996, 1999).

### Questionnaires

The personal data used in the study had been collected in 1988/1989 by three questionnaires:

(1) 16PF (Form A): this is a personality questionnaire which measures 16 primary aspects of adult personality (Cattell et al., 1970). An individual's raw score on each factor is compared with the UK General Population norms and a standardised "sten" score is derived.

(2) Occupational personality questionnaire (OPQ Concept 5): this is designed to measure 30 separate aspects of an individual's behaviour, interests and personality characteristics in a work context (Saville et al., 1993). Standardised (sten) scores for the 30 factors are derived from norms based on over 1,000 UK managers and professional staff. Short descriptions of the 30 factors are presented by Robertson and Kinder (1993).

(3) Job competencies survey: this form was designed by the first author, based on the Assessment Centre literature (e.g. Thornton and Byham, 1982), his own consultancy work in numerous organisations and his own research in this field (see Dulewicz and Fletcher, 1982; Fletcher and Dulewicz, 1984). The Personal Competencies Framework Manual (Dulewicz, 1998) provides definitions of the competencies and details of the research evidence which underpins the framework. Titles of the 40 competencies, each of which is defined in detailed behavioural terms, appear in Table IV. Almost all should be self-explanatory except for "Helicopter" which refers to the ability to rise up and see all aspects of the bigger picture. As a major part of a development needs analysis of managers on the GMC, each competency was rated independently both by the manager and by his/her boss, in terms of the manager's performance, on a five-point scale. The 40 "primary" competencies were assessed and a single score calculated for each one by aggregating the self and boss scores. Of correlations between raters, 70 per cent were statistically significant and reasons were put forward to explain those which were not (Dulewicz and Herbert, 1992). In addition, some evidence for the construct validity of these competencies, through correlations with OPQ scores, has been presented by Dulewicz (1992). A factor analysis of the primary competencies produced 12 independent, higher-order factors (see Dulewicz, 1994 for details of the factors and loadings). These factors, called supra-competencies, have been shown to correlate significantly with most of the anticipated OPQ factors (Dulewicz, 1992), and significantly influenced the development of a taxonomy used for a meta-analysis of the OPQ by Robertson and Kinder (1993).

#### Measure of "success"

A significant element of the argument for exploring emotional intelligence is its apparent relationship to "success" in life (e.g. Goleman, 1996; Steiner, 1997). In translating this into an organisational context there appear to be two strands emerging. One relates to the performance of individuals, as typified by the Bell Laboratories examples (Kelley and Caplan, 1993), while the other tends to be illustrated by hierarchical progression in relation to peers, who are equally gifted in intellectual terms (e.g. Goleman, 1996, 1997a; Martinez, 1997).

Indeed many examples provided in the literature specifically relate one of the measures of "success" to progress within an organisation in terms of level achieved. For example, Goleman (1996, p. 35) quotes from a study of 81 valedictorians from an Illinois high school: "Ten years after graduating from high school, only one in four were at the highest level of your people of comparable age in their chosen profession ... (italics added by authors)."

In a later paper Goleman (1997b, p. 36) provides examples of the value of emotional intelligence in differentiating success in organisational life: "High IQ makes you a good English professor; adding high EQ makes you chairman of the English Department ... High IQ makes you a brilliant fiscal analyst, adding high EQ makes you CEO."

These illustrations would seem to indicate that one measure of "success" could be taken as progression within the hierarchy in an organisation. In the seven-year follow-up study a direct measure of this progression was obtained (change in organisational level expressed as a percentage of the level held at the outset) and thus could be used in the current study. However, the seven-year follow-up study contained a range of advancement indicators (level, total

revenue budget, total remuneration including perks and number of staff reporting to the manager) as well as the development of an overall rate of advancement (ROA) measure which was a composite indicator (see Dulewicz and Herbert, 1996, 1999, for details of the measures and computations). While the main thrust of the current study was to examine the organisationally-based evidence relating directly to the propositions in the literature on emotional intelligence it was decided to explore the available data in order to examine potential measures of advancement beyond level advancement alone.

### The current study

In the current study the data from the Henley GMC follow-up study has been re-visited in order to examine the core hypotheses. The main measures employed, and their constructs, were:

- EQ competencies: the sub-set of the JCS questionnaire items which were identified as aligning with the content analysis of emotional intelligence (see Table III);
- IQ competencies: a sub-set of JCS questionnaire items which appear to be associated with rational and intellectual elements of managerial performance;
- MQ competencies: inspection of the JCS competencies remaining after identifying the EQ and IQ competencies indicated that they shared a common focus on managerial processes and could thus be treated as a third broad category.
- 16PF.EQ: analysing the content of Table I it was possible to identify a sub-set of the factors in the 16PF which appear to be related to emotional intelligence. Scores for these factors were used as a personality-based measure of emotional intelligence. The selected factors are shown in Table II.
- OPQ.EQ: employing the same basis as used for the 16PF a personality-based measure of emotional intelligence using the OPQ was developed. The selected items are shown in Table III.
- Level advancement: based on the arguments outlined above, the key measure of "success in organisational life" was that of advancement in level of individuals within the organisation. This measure was directly available from the seven-year follow-up study.

### Results

#### The EQ competencies

As mentioned in the Introduction, 16 of the 40 competencies were considered to be related to, or relevant to, various aspects of EQ. Their titles are presented in the left-hand column of Table IV.

A Principal Components (Factor) Analysis conducted on the performance ratings of the 100 GMs revealed that these constitute six independent factors or clusters:

A sensitivity vs. achievement (a bi-polar factor);

B resilience;

C influence and adaptability;

D decisiveness and assertiveness;

E energy vs. integrity (another bi-polar factor);

F leadership.

The competencies making up each factor (i.e. those with a factor loading  $>0.50$ ) and the Cronbach Alpha reliability coefficients for each are shown in Table IV. All have high reliability, with the possible exceptions of factors D and E (0.56 and 0.54 respectively), which are, nonetheless, reasonably high. The Alpha for the entire scale of 16 items is also shown at the top left, and this again shows high reliability for the entire scale.

As noted above, Goleman (1996, 1997b) admits that intellectual characteristics are also of relevance to an individual's work performance, and are likely to complement emotional intelligence. Consequently, we decided to identify those remaining competencies which primarily reflect intellectual behaviour, and to research these items. A total of 12 competencies appeared relevant, and this scale was named Intellectual Intelligence (IQ). Once again, a principal components analysis was conducted on the performance ratings of these competencies. This time, four independent uni-polar factors emerged:

G analysis and judgement;

H planning and organising;

J strategic perspective;

K creativity and risk-taking.

The items comprising each factor, and their factor loadings, together with the Alpha coefficients for each (in brackets), are presented in the centre column of Table V. The first two factors, G and H, have high reliability, whereas factors J and K, and the entire scale (0.56), have reasonably high reliability.

So far 28 of the 40 personal competencies had been identified as contributing to our EQ or IQ scales. What was the nature of the composition of the remaining 12? How might these contribute to management performance? A third Principal Components Analysis, on these 12 competencies, again identified four independent performance factors:

L supervision;

M oral communication;

N business sense vs. self-management (a bi-polar factor);

O initiative and independence.

The items comprising each factor, together with the factor loading of each competency, appear in the right hand column of Table V. As with the IQ factors, two of these (L and M) showed high internal reliability, whilst the other two factors (business sense vs. self-management; initiative and independence) and the overall scale (0.25) showed relatively low reliability. Study of the respective items did suggest greater heterogeneity than within the other more

reliable scales. Nevertheless, these factors did make some sense intuitively. Factor N contrasts the entrepreneurial manager, who concentrates on spotting and exploiting business opportunities, with the more desk-bound administrator who concentrates more on written material and on managing the paper work. Factor O identifies managers who are highly independent, and so more likely to show initiative, and who see things through to a satisfactory conclusion despite setbacks or obstacles. These 12 items, making up four distinct performance factors, appeared to make sense intuitively, and to be important determinants of managerial performance. Consequently the overall scale was titled managerial intelligence (MQ) and further research into these scales was deemed worthwhile.

#### EQ, IQ and MQ and level advancement

In order to test hypothesis H2c, that organisational success is related to performance ratings on the competencies and, in addition, to test whether the EQ, IQ and MQ scales and factors had any predictive validity, correlations between aggregate self-boss performance ratings and managers' rate of advancement with their organisation over the seven-year period (Level D) were computed. The results are reported in Table V. Taking first the aggregate scores of the competencies making up EQ, IQ and MQ scales, it can be seen that all three scores showed a statistically significant relationship, at the 5 per cent level. However, by adding the 16 EQ and 12 IQ competencies in a composite measure, the correlation obtained shows an even higher level of significance (1 per cent level). These results tend to support our initial hypothesis H2c.

Turning to the scores on each of the factors, derived by full factor equations, one can see from Table V that none of the MQ factors was significantly related to level advancement, and only one of the EQ factors - influence and adaptability. Perhaps the latter constitutes a particularly important subset of EQ which has a direct bearing on managerial performance. Similarly, two of the IQ factors appear to be particularly important determinants of performance of GMs - strategic perspective and creativity and risk-taking. Indeed, the latter correlation is highly significant (1 per cent level).

#### Multiple regression analysis on level advancement

Multiple regression analyses were conducted to determine the optimal level of item weighting (compared to equal weighting used for the aggregate scales, above) and to further explore the degree to which performance on EQ, IQ and MQ competency scales, taken separately and in combination, can predict long-term managerial advancement. Furthermore, these analyses enabled us to test our hypotheses (H3 and H4) that EQ will better predict organisational "success" than IQ; and that together they explain more variance than when taken alone. The results, presented in Table VI, show in ascending order MQ (0.40), IQ (0.52) and EQ (0.60), accounting for 16 per cent, 27 per cent and 36 per cent respectively of total variance on the dependent variable as measured by the statistic R<sup>2</sup>. However, adding the IQ to the EQ competencies increases the Multiple R to 0.72, accounting for over half the variance (52 per cent) on Level D. By adding the MQ competencies to IQ + EQ, the Multiple R is increased further to 0.84, so that the full set of 40 competencies accounts for almost three-quarters (71 per cent) of the total variance on Level D. Given the inevitable components of unreliability of both the dependent and independent variables, this must be close to the limit of variance that can be explained when analysing such data. These results tend to give support to Goleman's (1996) core proposition that "it is a combination of IQ and emotional intelligence which determines "life success"; and bear out our hypotheses that: H3: emotional intelligence can explain a greater proportion of variance of an individual's organisational success than can a measure of rational intelligence (IQ); and also H4: a combination of emotional and rational intelligence will explain more "success" variance than either measure alone.

#### Analyses from other "advancement" measures

While the main purpose of this study was to explore the relationship of one measure of "success" in an organisational context proposed in the emotional intelligence literature (i.e. level advancement), the opportunity was taken to explore the relationship of emotional intelligence to other available advancement measures. While clear relationships between the composite EQ competency measure and a number of factor measures were encountered with level advancement, no such relationships were encountered with the other measures of advancement. This may be interpreted as endorsement for one of the organisationally-based measures of success proposed in the literature. Indeed an examination of the inter-factor correlations amongst the overall seven-year ROA factors, together with a multiple regression analysis, does indicate that level advancement is distinct from other measures.

### Results from the two personality questionnaires

We turn now from prediction of advancement using the competencies data, to prediction based on the EQ subset variables from 16PF and OPQ (Table III). In order to test hypotheses H1, H2b and H2c, Pearson product-moment correlation coefficients between 16PF and OPQ questionnaires, the EQ competencies scale and level advancement were computed, and are presented in Table VII. There is a highly significant inter-correlation between 16PF and OPQ sub-scales, suggesting that both are to some extent measuring the same construct but, when turning to the respective correlations with a third potential measure of EQ derived from the performance on the competencies, we find that, whereas the correlation with 16PF is not significant, the correlation with the OPQ sub-scale is highly significant (at the 1 per cent level). Hypothesis H1 is therefore partly borne out. However, when the two personality sub-scales were correlated with level advancement, neither co-efficient was significant. The 16PF correlation was around zero, showing no relationship whatsoever, whereas, although the OPQ co-efficient was much stronger, it did not reach the 5 per cent level of significance. These results do not support hypotheses H2a and H2b. The main conclusions to be drawn from these results is that, although both personality subscales appear to be measuring a similar construct, OPQ appears to provide a stronger measure of EQ than does 16PF, but not well enough to be able to predict organisation success. One explanation for the latter finding is that the OPQ factors are more similar to competencies in respect of their work-related, behavioural definitions than are the 16PF factors.

### Discussion

In this paper we have attempted to pin-down the rather nebulous concept of emotional intelligence, using competency-based definitions, and to conduct research on the different measures we have constructed from the job competency survey, and from the 16PF and the OPQ personality questionnaires. The EQ competency scale we constructed, and the six component factors, all showed very respectable internal consistency reliability, and add to our knowledge of the nature and composition of emotional intelligence. Goleman (1996) highlights the importance of "life-success", and the results from this study provide support for the predictive validity of the EQ competencies scale, based on data from a follow-up of GMs over seven years. The total EQ scale, and one component factor, influence and adaptability, showed statistically significant relationships, and hence predicted advancement up the organisational ladder. Such long-term validity evidence is very rare and provides strong support for the validity of these scales.

This study also explored the potential value of constructs other than emotional intelligence, to test Goleman's propositions that EQ and IQ together are likely to complement each other and are important for explaining "success" when taken together. Following our review of the literature we identified 12 competencies which embraced predominantly intellectual behaviours of various types. This "IQ" scale showed reasonably high internal consistency reliability and also predicted long-term advancement. Furthermore, two of the component factors of the IQ scale proved to have high reliability, and the other two reasonably high reliability. However, it is interesting to note that the latter two - strategic perspective, and creativity and risk taking - are the two IQ components which predicted

advancement, the latter extremely well. It is possible that the other two components - analysis and judgement, and planning and organising - are what Boyatzis (1982) called "threshold competencies", which are a pre-requisite for all GMs, and therefore all of our managers performed well on these.

In examining the MQ scale, two of the factors - supervision and business sense vs. self-management - are clearly management factors, while the other two - oral communication, and initiative and independence - are relevant to managerial performance, but not exclusively so. It is interesting to note that, although performance on the composite scale was statistically significantly related to advancement, performance on each of the four sub-scales was not.

As noted above, Goleman (1996) maintains that "research indicates IQ at best contributes about 20 per cent of the factors that determine success in life". Our regression analysis in fact showed that 27 per cent of the variance in level advancement for GMs can be accounted for by the IQ competencies scale. However, an even higher proportion of the variance (36 per cent) can be accounted for by the EQ competencies scale. And when these two sets of competency items are added together, just over one-half (52 per cent) is explained. This still leaves almost one-half of the total variance unexplained, and is where the MQ competencies make a unique contribution. Goleman does not envisage this in his writings on organisational success. The MQ competencies add another 19 per cent of variance, taking the total up to 71 per cent and, as already noted, probably very close to the ceiling of variance that can be explained when using such data.

In contrast to the competencies results, the subsets of factors from the two personality questionnaires did not show such positive results. Although the two sets are highly inter-correlated, and so are probably measuring similar constructs, they do not predict organisational "success", at least for our sample of general managers. The OPQ subset was, however, correlated significantly with the EQ competencies and, in particular, with the EQ factors: influence and adaptability (0.26,  $p < 0.01$ ) and leadership (0.21,  $p < 0.05$ ). More research on OPQ EQ could be worthwhile, especially on different samples and in different contexts. Nevertheless, these results taken together do seem to confirm Goleman's view that the EQ construct would appear to lend itself more appropriately to measurement by "performance analysis or multi-source assessment" than to "classic paper-and-pencil tests" (Goleman, 1996).

Altogether 14 factors emerged from the EQ, IQ and MQ subscales, ten of which appear to be almost identical to ten of the 12 supra-competencies identified in the original research on the job competencies (Dulewicz, 1994). The exceptions are managing staff which breaks down into the EQ factor leadership, and MQ supervision; and energy and initiative which is covered by EQ energy vs. integrity and MQ initiative and independence. The similarity of the findings from these two (factor) analyses, on different data sets, reflects well on the robustness of the two factor structures, and provides some support for the different components of EQ, IQ and MQ factors identified in this study.

Almost all components of emotional intelligence appear to be well sampled by the EQ competencies (and 16PF EQ and OPQ EQ) as demonstrated by Table III, with one exception. This is self-awareness, covering knowing and being in touch with one's own feelings; and using one's feelings to make decisions with confidence. The competencies decisiveness and sensitivity might pick up some aspects of these constructs, but do not appear to measure them directly. This is not surprising since competencies are by definition behaviourally anchored, whereas these EQ constructs are concerned very much with internal states or "meta moods" as Goleman (1996) calls them, best measured by introspection. Unfortunately, OPQ and 16PF do not measure them directly either. If an appropriate measure had been available for this study, then our results may have shown even higher reliability and validity. Further work on developing a measure of self-awareness seems to be called for.

Throughout this study the focus has been on individuals and the relationship between EQ and a measure of their

success in an organisational context. However, increasingly managers spend their time working in groups and teams (Higgs, 1997). The proposition that "low EQ" can have a deleterious imprint on the performance of groups is made directly by Williams and Sternberg (1988) and is implicit in much of the work on groups and teams (e.g. Belbin et al., 1976; Higgs, 1997). In the light of the findings from this study further research, using the competency-based measure of EQ, may prove valuable. The ability of the 16PF and OPQ to provide a clear measure of EQ may, as discussed above, be related to the nature of the instruments. Employing alternative measures of personality (e.g. Myers-Briggs Type Indicator) would be an important next step in pursuing the research agenda outlined at the start of this paper.

In reflecting on the results from this study it is important to consider the nature of the sample. The data employed related to managers who had attended the Henley GMC programme. This represents a population which may be seen as highly selected and already "successful". Therefore there may be a degree of range restriction on the dependent and independent variables which suppresses the findings and is likely to under-report, rather than exaggerate, the relationships being examined. Clearly, further research with a more diverse population would add considerably to the understanding of the relationship between emotional intelligence and "success" in an organisational context. Indeed, a study which investigates a more diverse population may well uncover additional relationships with the other measures of advancement developed in the seven-year follow-up.

A final note is required on the terminology used for describing the scales. Although we have used the shorthand titles, EQ, IQ and MQ, in order to be consistent with Goleman's original work, we do not think they are particularly appropriate. Work on IQ has been conducted for almost 100 years, and as a result such scores constitute a highly precise measurement scale which cannot be claimed to be the case for our scales. We have produced evidence to show that our competencies scales can produce reasonably reliable and valid measures of emotional, intellectual and managerial performance, but we would not claim anything approximating to the precision of an actual IQ scale. We do not have any evidence that scores on our IQ scale bear any relationship to scores on actual IQ scale since data were not available to test this. Further research in this area would certainly seem worthwhile. In our future work in this field, we will use the terms emotional, intellectual and managerial competencies for our three scales. We will also most probably extend the title of one scale to emotional/interpersonal competencies, to more adequately reflect the nature of the constituent parts of this construct, as shown by our results.

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### Illustration

Caption: Table I.; Elements of emotional intelligence; Table I.; Table I.; Table II.; Elements of emotional intelligence and corresponding competencies, 16PF factors and OPQ factors; Table II.; Table II.; Table III.; EQ scales derived from 16PF and OPQ; Table IV.; The 40 personal competencies and 14 factors, with alpha reliability and factor loadings; Table V.; Correlations between composite and EQ, IQ and MQ factor measures and level advancement and Type A personality; Table VI.; Results of multiple regression analyses of EQ, IQ and MQ against level advancement (Level D); Table VII.; Pearson correlation co-efficients - EQ 16PF, EQ OPQ, EQ competencies and level advancement

## DETAILS

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