JOURNAL OF MANAGEMENT STUDIES

Journal of Management Studies 47:7 November 2010
doi: 10.1111/j.1467-6486.2010.00933.x

A Critical Examination of the Relationship between Emotional Intelligence and Transformational Leadership

Dirk Lindebaum and Susan Cartwright

Manchester Business School; Lancaster University

ABSTRACT The buoyant research interest in the constructs emotional intelligence (EI) and transformational leadership (TFL) is a testament to the crucial role of emotional skills at work. EI is often described as an antecedent of TFL, and several empirical studies report a positive relationship between these variables. On closer inspection, however, there may be methodological factors, such as common method variance, that potentially undermine the validity of findings. Using a multi-rater assessment (N = 227), this study sought to overcome the problem of method variance, whilst at the same time evaluate its potential presence by comparing same-source and non-same-source data. Findings suggest that, when using a strong methodological design, no relationship between EI and TFL is found. Thus, these findings renew the demand for scientific rigour in the design of studies to enhance their validity. The theoretical ramifications of this study are such that management scholars need to re-conceptualize the relationship between EI and TFL.

INTRODUCTION

In an era when organizations increasingly rely upon knowledge workers (Osterman et al., 2001), the importance of emotional skills in the workplace has gained enormous visibility in recent years (e.g. Ashkanasy et al., 2000; Druskat and Druskat, 2006). This is partly because, in a knowledge–work economy, teams become the production unit rather than the individual (Drucker, 1994). Their success depends, *inter alia*, on the quality of interpersonal relationships (Caruso and Salovey, 2004; Jordan et al., 2002; Kelan, 2008). Thus, many writers point out that the function of organizations is increasingly reliant upon emotional skills, such as sensitivity towards others, empathy, and emotional regulation (Gabriel and Griffiths, 2002; Goleman, 1998). Some go as far as to suggest that two-thirds of the competencies associated with superior performance at work are social and emotional in nature (Cherniss, 2000).

Address for reprints: Dirk Lindebaum, Manchester Business School, Booth Street West, Manchester M15 6PB, UK (dirk.lindebaum@mbs.ac.uk).

Following this, two constructs have especially captured the imagination of management scholars and psychologists: emotional intelligence (EI) and transformational leadership (TFL). Whilst several accounts underlie their heightened importance (see Cartwright and Pappas, 2008), quickly changing and turbulent organizational environments contributed a fair share to the advocacy of both constructs in management and psychology (e.g. Bass, 1985; Druskat and Druskat, 2006). Both EI and TFL are emotion-laden constructs (George, 2000) and the former has been suggested to be an antecedent of the latter (Brown and Moshavi, 2005). In consequence, the relationship between these constructs has been zealously studied in recent years, both theoretically (Ashkanasy and Daus, 2005; Austin et al., 2008; Küpers and Weibler, 2006) and empirically (Butler and Chinowsky, 2006; Duckett and Macfarlane, 2003; Leban and Zulauf, 2004). In their entirety, these studies appear to suggest that the relationship between EI and TFL is largely corroborated.

However, serious reservations have been raised in terms of accepting results from studies examining the relationship between EI and leadership. Antonakis (2003), in particular, criticizes the failure of many studies to avoid common method variance (CMV). Similar concerns are echoed elsewhere (Kroeck et al., 2004). The present study acknowledges these concerns and extends them to the theory of EI and TFL, a nexus that has also been questioned in a recent and pithy exchange between proponents and critics of EI (Antonakis et al., 2009). The above criticism should be understood in light of claims that EI explains 34 per cent of the variance in a measure of TFL (Butler and Chinowsky, 2006), which is an above-average percentage in social science research (Pallant, 2005). To date, the management literature has not adequately addressed the methodological challenge of overcoming CMV, whilst at the same time permitting an evaluation of its potential presence in the aforementioned relationship.

This article seeks to remedy this deficiency. First, it provides a rationale for utilizing a particular conceptualization of EI. Second, it synthesizes the theoretical concepts of EI and TFL and offers an overview of empirical studies that have investigated the interface between the two. It then proceeds to explain briefly the methodological concerns related to CMV and the implications for research designs. The resultant design of this study explores the relationship between EI and TFL, taking account of CMV. Finally, the article discusses its findings in relation to previous studies, its limitations, and recommendations for future research.

EMOTIONAL INTELLIGENCE

EI has been variously defined in the current literature. For instance, Mayer and Salovey (1997) define EI as the 'ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth' (p. 10). However, other writers have adopted a broader perspective on EI, thereby extending the cognitive ability model of Mayer and Salovey (1997). These conceptualizations incorporate additional factors such as zeal, persistence, or assertiveness (e.g. Bar-On, 1997; Goleman, 1995), and thus include personality traits in addition to mental abilities. The above extension has crucial

implications for how EI is operationalized. That is, even if EI inventories tap into the same sampling domains (e.g. emotion perception), the resultant operationalization of ability-based and self-report measures is fundamentally different (Davey, 2005). This view is strongly informed by the work of Petrides and Furnham (2001), who proposed the taxonomy of trait and ability EI. According to Petrides et al. (2007, p. 273), trait EI can be defined as 'emotion-related dispositions and self-perceptions'. Trait EI relies upon self-report measures (e.g. the Emotional Quotient Inventory, EQ-i) and assesses typical or preferred modes of behaviour, whereas the latter uses ability measures (e.g. the Mayer–Salovey–Caruso Emotional Intelligence Test, MSCEIT), with right or wrong answers, and refers to maximum performance in processing emotional information (Mayer and Salovey, 1997).

Both trait and ability EI approaches have received a fair share of critical evaluation. These concern, *inter alia*, the conceptual overlap of trait EI with traditional personality factors (O'Connor and Little, 2003) and the objective determination of correct responses to test items in the case of ability measures (Brody, 2004). However, representatives of both the trait and ability EI approach maintain that considerable progress of their respective conceptualization has been achieved in recent years (Mayer et al., 2004; Petrides et al., 2007).

This study adopts the trait EI conceptualization as a framework of analysis for two main reasons. First, some self-report measures within the trait EI tradition have demonstrated excellent psychometric properties in terms of construct validity as well as predictive and incremental validity over and above personality and other so-called trait EI measures (e.g. Freudenthaler et al., 2008; Law et al., 2004; Wong and Law, 2002). Furthermore, the time required to complete some self-report measures is considerably shorter than the ability measure of EI, which is a crucial factor in negotiating access to organizations. Second, self-report measures are susceptible to the effects of social desirability (Schutte et al., 1998). In response to this, several scholars have called for the use of multi-rater assessments to overcome this methodological weakness of trait EI measures (Roberts et al., 2001). Such sentiment is also echoed by Matthews et al. (2004), who emphatically argue that validation studies of this kind 'are urgently needed' (p. 184), though as yet not widely undertaken. The design of this study takes this view into account.

Synthesizing EI and TFL

The interface between the concepts of EI and TFL has been subject of intense scientific scrutiny in recent years (Antonakis et al., 2009; Brown and Moshavi, 2005; Küpers and Weibler, 2006). In this section, this is explored first with regard to the conceptual proximity between EI and TFL, followed by a detailed discussion of empirical studies that examined their relationship.

Whilst TFL has been variously defined, Burns (1978) characterizes the transformational leader as someone who 'looks for potential motives in followers, seeks to satisfy higher needs, and engages the full person of the follower' (p. 4). He goes on to suggest that the result 'is a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents' (p. 4). Bass and Avolio

(1994) have refined earlier research on TFL (e.g. Bass, 1985) and deconstructed the concept into four components (i.e. the 'four I's'). These are denoted as: (1) idealized influence, (2) inspirational motivation, (3) intellectual stimulation, and (4) individualized consideration. Briefly, transformational leaders who exercise idealized influence provide a vision and sense of mission, instil pride, and are admired and respected by their followers, who often seek to emulate them (Avolio et al., 1991). Transformational leaders use inspirational motivation to communicate high expectations, often drawing on symbolic messages to provide meaning to their followers' work (Bass, 1990). Intellectual stimulation concerns the leader's efforts to help followers be creative and innovate by questioning assumptions and prompting them to approach old situations in novel ways (Avolio et al., 1991). Finally, transformational leaders tend to exercise individualized consideration towards their followers by paying close attention to each individual's needs for progression and achievement (Bass, 1990). A rich stock of studies suggests that TFL can be a very effective form of leadership (Jansen et al., 2008; Rowold and Heinitz, 2007).

Caruso and Salovey (2004) argue that it is rather difficult to inspire individuals, to challenge their prevalent assumptions, and to enable them, without being emotionally intelligent. For instance, it may be difficult for a leader to exercise individualized consideration, intellectual inspiration, inspirational motivation, and idealized influence without the ability to accurately appraise and express emotions in the self and others in the first place (see Küpers and Weibler, 2006). This is fundamentally important because failure to do so would create a dissonance between the leader and follower, thereby preventing the very transformational process from taking effect. Likewise, the use of emotions to facilitate thinking may be conducive to instil confidence or hope in followers who feel overwhelmed by the task at hand, thus being closely linked to inspirational motivation. Understanding the causes of emotions and how they change over time aids the leader in arousing enthusiasm and optimism for a proposed activity or change, as well as shifting the mood by inducing a more cautious atmosphere if decisions carry high risks (George, 2000; Yukl, 2006). Such activities are captured, for instance, in the intellectual stimulation and inspirational motivation dimension of TFL theory (Küpers and Weibler, 2006). Lastly, the management of emotions in the self and others is reflected, *inter alia*, in the individualized consideration component of TFL. Stated another way, some leaders may be able to rebuild the confidence of a downtrodden and crestfallen follower, using words and suggestions they know the followers will be receptive to (George, 2000; Yukl, 2006).

Given the transformational nature of the four I's, some argue that leaders of this type enable their followers to become leaders themselves (Hunt, 1991; Kuhnert, 1994). Because transformational leaders develop an emotion-laden relationship with their followers (Bass and Avolio, 1994), and EI has been described as vital for functioning interpersonal relationships (Caruso and Salovey, 2004), the growing interest of leadership scholars in the relationship between EI and TFL would seem to be self-explanatory.

In recent years, numerous studies have examined empirically the link between EI and TFL. The literature review permits the classification of these studies into three prominent streams. Stream 1 includes those studies that collected data concerning trait EI and TFL from the same source using self-report measures. Stream 2 features studies that admin-

istered trait EI and TFL questionnaires to different raters. Finally, studies pertaining to Stream 3 used an ability-based measure of EI and collected data relative to TFL from a different source.

Examples of Stream 1 studies. Gardner and Stough (2002) have examined the relationship between trait EI and TFL in a sample of 110 high-level managers. Trait EI is measured by means of the Swinburne University Emotional Intelligence (SUEIT), whereas TFL has been assessed via the Multifactor Leadership Questionnaire (MLQ). Data derived from both questionnaires are self-reported. Findings produced in this study indicate a strong and significant correlation between trait EI and TFL, both at the total score ($r = 0.68$, $p < 0.01$) and subscale level ($r = 0.27$ to 0.64, $p < 0.01$). In the process of conducting stepwise regression analysis, the dimension 'understanding of emotions external' emerged as the strongest predictor of TFL ($\beta = 0.55$, $p < 0.01$). Note, however, that stepwise regression is often seen as a flawed procedure (Thompson, 1995). Mandell and Pherwani (2003) also document a relationship between trait EI and TFL in a small sample ($n = 32$) of retail managers. In this study, the researchers administered the self-report measures MLQ (5x-revised) and the EQ-i (Bar-On, 1997). Hierarchical regression analysis demonstrates that trait EI is a significant predictor of TFL ($R^2 = 0.25$, $p < 0.05$), suggesting that it explains 25 per cent of the variance in the TFL scores. A similar, albeit stronger, R^2 value was obtained in a study by Butler and Chinowsky (2006). Using the same instruments as Mandell and Pherwani (2003) in a sample of 130 construction executives, they have found that 34 per cent ($R^2 = 0.34$, $p < 0.001$) of the TFL score is accounted for by the total trait EI score.

Examples of Stream 2 studies. Barling et al. (2000) have evaluated TFL behaviours in a sample of 49 managers, each assessed by at least three subordinates. Managers completed the EQ-i, whereas the subordinates had ranked the managers on the MLQ (5x-short). Their findings suggest that high overall trait EI scores are associated with three out of the four TFL factors (i.e. idealized influence, inspirational motivation, and individualized consideration). The fourth factor, intellectual stimulation, was not found to have a significant relationship with trait EI. Note, however, that the findings of this study are not based upon correlational analyses, but on mean differences (i.e. ANCOVA). In contrast, Brown et al. (2006) have found that trait EI, as measured by the EQ-i, does not correlate significantly with any of the MLQ subscales or total scale. These findings were replicated in another study (Brown and Reilly, 2008).

Very few studies have explicitly cautioned against the pitfall of CMV with respect to trait EI and TFL. The study of Barbuto and Burbach (2006) makes a meaningful contribution to the field by using same-source and non-same-source ratings. That is, managers completed a trait EI and TFL scale, whilst colleagues (4–6 per individual) provided another TFL rating relative to the managers. The results of their study suggest that overall trait EI correlates both with the self-ratings of TFL (all MLQ subscales: $r = 0.21$ to 0.42, $p < 0.01$) and the TFL assessment of colleagues (only two MLQ subscales: $r = 0.12$ and 0.13, $p < 0.05$). It is worth stressing that the correlations decrease in strength and significance once non-same-source ratings are considered.

Examples of Stream 3 studies. Leban and Zulauf (2004) have incorporated an ability measure of EI (MSCEIT, Mayer et al., 2002) in their research design, collecting data concerning EI and TFL from different sources. Here, 24 project managers completed the MSCEIT, whereas an unspecified number of team members and stakeholders assessed the TFL style of those project managers using the MLQ. Leban and Zulauf reported significant and moderately strong correlations between total EI and the inspirational motivation dimension of TFL ($r = 0.36$, $p < 0.05$) as well as correlations of similar significance and strength between the strategic EI component and idealized influence and individual consideration.

In aggregate, however, the array of studies that rely upon same-source ratings in assessing the relationship between trait EI and TFL is considerable (e.g. Butler and Chinowsky, 2006; Downey et al., 2006; Duckett and Macfarlane, 2003; Gardner and Stough, 2002; Mandell and Pherwani, 2003; Palmer et al., 2001). This poses problems in the interpretation of findings, as they can be prone to CMV. It is notable that the number of studies pointing to the potential influence of CMV in the relationship between trait EI and TFL is extremely limited (see Barbuto and Burbach, 2006).

COMMON METHOD VARIANCE

CMV occurs when the measurement technique introduces systematic variance into the measure (Doty and Glick, 1998). There is now a broad consensus among scholars that it poses a potential problem to the validity of empirical findings (Kline et al., 2000; Podsakoff et al., 2003), though some scholars discern a more serious threat in terms of measurement and construct validity (Mitchell, 1985). Possible causes of CMV concern the collection of the predictor and criterion variables from the same source at the same time using the same measurement technique (see Podsakoff et al., 2003, for a review).

In technical terms, method factors can interact with trait factors in a multiplicative way (Campbell and O'Connell, 1982). In other words, the higher the basic relationship between traits, the higher the method effects. Under this formulation, multiplicative effects are a functional interaction between the 'true' level of trait correlation and the magnitude of method bias. Crucially, the focal point of this study (i.e. the relationship between trait EI and TFL) may be particularly prone to the effects of CMV, as both trait EI and TFL are intrinsically imbued with emotion (e.g. George, 2000). The emergence of the aforementioned multiplicative effect is further exacerbated when only same-source ratings are used.

To prevent CMV, this study followed the guidelines offered by Podsakoff et al. (2003). Whilst these authors propose both procedural and statistical remedies to limit the effects of CMV, they are explicit in their recommendation that the procedural remedy of collecting predictor and criterion variables from different sources is the most effective one. However, as a means of teasing out the presence of CMV in the relationship between trait EI and TFL, same-source ratings are collected as well for the sake of comparison. As a result, our study takes the form of a multi-rater assessment, including project managers, their line managers, and team members. The precise nature of the design and the underling rationale are discussed later in this article.

RESEARCH AIM AND HYPOTHESES

The overriding aim of this study is to investigate the relationship between trait EI and TFL, whilst taking into account the potential influence of CMV. Such investigation is of decisive importance given that EI is often seen as a predictor of TFL (e.g. Barbuto and Burbach, 2006; Brown and Moshavi, 2005), which then translates into superior leader performance. To recap, the basic logic behind the link between EI and TFL is that EI enables individuals to perceive and understand social contexts, as well as their own and others' emotional states (Brown and Moshavi, 2005). In consequence, inspiring and empowering others, which are key components of TFL theory, may prove difficult without being emotionally intelligent (Caruso and Salovey, 2004).

Assuming that the connection between EI and TFL has been rigorously examined and reliable results are produced, management scholars would be able to: (1) continue advancing theory around these constructs; and (2) use these studies to inform recruitment or development policies. If, however, these results are methodologically questionable, then future theory building is likely to rest upon a shaky foundation and considerable resources may be squandered on policies that are based upon invalid results and add little to the organizational bottom line.

To disentangle the relationship between trait EI and TFL, four hypotheses are articulated and examined in this study. To recap, the most effective way of preventing CMV is to collect the predictor and criterion variables from different sources (Podsakoff et al., 2003). In addition, in situations where correlations are randomly positive and negative and nearing a practical significance of zero, it has been argued that there is a true correlation of zero. In such a case, Lindell and Whitney (2001) argue that there is error variance, but neither method variance nor a true score (i.e. no genuine correlation between two variables). Seen from this perspective, one can argue that large and significant correlations between same-source ratings, coupled with non-significant correlations among ratings from different sources, suggest that CMV exerts a significant influence on the relationship between trait EI and TFL. In order to take account of the rating source (i.e. same-source vs. non-same-source), and to be able to examine the contradiction in the empirical studies reported earlier, it is essential to specify the hypotheses as rival hypotheses; that is, as being mutually exclusive. Therefore:

Hypothesis 1: Trait EI self-ratings of managers significantly and positively correlate with the TFL ratings provided by the line manager and team members.

Hypothesis 2: Same-source ratings of trait EI and TFL provided by the line manager and team members correlate significantly and positively.

Hypothesis 3: Managers' self-ratings of trait EI (subscales) significantly predict total TFL scores provided by the line manager and team members.

Hypothesis 4: Same-source ratings of trait EI (subscales) significantly predict total TFL scores.

Underlying Hypothesis 1 is the view that there is true correlation between trait EI and TFL. A significant correlation would support this hypothesis. In contrast, Hypothesis 2 posits that there is a significant and positive relationship between trait EI and TFL in cases where ratings stem from the same source due to a common method shared. As Hypotheses 1 and 2 are set out as rival hypotheses, they cannot both be supported in the present analysis. The same principle applies to Hypotheses 3 and 4. Pearson's product-moment correlations (*r*) are used to test Hypotheses 1 and 2, whereas Hypotheses 3 and 4 are subjected to multiple regression analysis. Randomization tests were also conducted to enhance the internal validity of findings (Todman and Dugard, 2001).

METHOD

Sample and Procedure

This study constitutes a quantitative portion of a larger ongoing mixed-method study into EI, TFL, and their implications for performance in the UK construction industry. The focus of this study rests upon project managers. Irrespective of specialization, the project manager 'oversees the day to day control of the process conducted on-site including liaison with the architect/civil engineer regarding instructions, payments, progress meetings, and commercial dealings with sub-contractors' (Harris and McCaffer, 2001, p. 313). This implies an immense centrality of the project manager's function, especially with a view to ensuring the success of a project (Calvert et al., 1995). To this effect, the project manager has to relate to a variety of different parties involved in the construction process, such as clients, architects, and operatives on site (Harris and McCaffer, 2001). It is in the reconciling of these different social and educational backgrounds that the concept of EI gains prominence, for EI has been described as vital for interpersonal relationships (Caruso and Salovey, 2004). A further reason for investigating the role of project managers stems from a curious contradiction in the extant literature. They embrace a key role in the delivery of a construction project (Dainty et al., 2004). Owing to these factors, trait EI and TFL are hypothesized to be important individual difference variables that help distinguish effective from less effective project managers. This is important because engineering-oriented employees are increasingly seeking individuals with good interpersonal skills in addition to technical expertise (Walesh, 2000). Yet, it must concurrently be pointed out that many project managers are conspicuous through undue egotism, arrogance, and aggressive management style (Harris and McCaffer, 2001; Smithers and Walker, 2000). A recent report (ODPM, 2004) reiterated that the industry's weakness in managing working relationships and the workforce is still prevalent, despite earlier reports having identified this problem already (Egan, 1998; Latham, 1994). The corollary is thus that construction in general, and project managers specifically, constitute an exciting and interesting opportunity to investigate the relationship between trait EI and TFL in an organizational setting. In total, 14 UK construction organizations participated in this study.

As stated earlier, the multi-rater assessment (Foster and Law, 2006) includes three different hierarchical levels. Lawler (1967) discussed the merit of including a multi-rater approach to assessing managerial behaviour at great length. In short, the line managers

are traditionally included as they know best how the manager's job behaviour contributes to the overall targets of the organization. Team member ratings are relevant since they are able to observe more of their managers' behaviour than peers or line managers. Studies in the area of multi-rater assessments have used pairs of raters from the same class (Atkins and Wood, 2002; Semmer et al., 1996). The use of pairs of raters helps attenuate the problem of different raters having different perspectives on behaviour (Lieberman, 1956). In the case of leadership assessments, some posit that the perspective of team members must be adopted (Meindl, 1995). The formation of a pair of raters at this level is thus advisable. Lastly, self-ratings are pertinent insofar as the individuals' self-perceptions are meaningful determinants of their future behaviour (Lawler, 1967).

Thus, the multi-rater assessment comprised a number of clusters, each of which containing four individuals. That is, a project manager (i.e. the focal individual), a line manager, and two team members (A and B). It was stipulated with participating companies that the project should at least have run for three months, so that the raters are reasonably able to evaluate the project managers. The project managers assessed their own EI, whereas team members A and B, as well as the line managers, assessed the EI of project managers, along with their leadership styles. Overall, 404 questionnaires were distributed (i.e. 101 clusters) and 227 were returned. More specifically, 55 project managers, 62 line managers, 59 team members A, and 51 team members B returned their questionnaires via postal mail to the author.[1] Thus, data were collected at the team member, project manager, and line manager level. As we were interested in generating as many correlational combinations as possible to examine the potential influence of CMV irrespective of level analysis, we did not aggregate the data, particularly not the team member ratings. Antonakis et al. (2004) furthermore note that, if a leader's behaviour is not homogeneously viewed by followers, then the behaviour of the leader operates at the individual level of analysis. They argue that 'any inferences that are made should be based on the individual and use individual-level data, because individual responses are independent' (p. 63). Due to the lack of correlation between team members A and B regarding EI (see Table II), further support for not aggregating the team member ratings was obtained. Crucially still, Hunt (1991) notes that leadership assessments by follower may be no more than a reflection of their cognitive structures, an issue also raised in the context of CMV (see Podsakoff et al., 2003). It should be noted that it was of concern to generate as many as possible rating combinations to more rigorously examine the effects of CMV, and not, as undertaken by Atwater and Yammarino (1992), to examine the agreement between self and other ratings.

The response rate amounted to 56.2 per cent and is well within the range of published studies in the field of organizational research (Mitchell, 1985). The mean age of the project manager sample was 44 years (median = 43; SD = 8.91), with age ranging from 26 to 66 years (n = 55). Years working in construction varied between 1 and 35 years, the mean being 12.3 years (median = 8.50; SD = 9.49). All project managers were men. In line with the need to control for fixed effects in regression analyses (e.g. Judge et al., 1985), data on the financial volume of the projects were collected as a proxy measure for firm size (mean = £26.17 million; median = £21.25 million; SD = £21.47 million).

Research Instruments

EI measure. This study administered the Wong and Law Emotional Intelligence Test (WLEIS, Wong and Law, 2002), which is a self-report measure of EI (i.e. a trait EI measure). The four emotional abilities explored and respective example items are highlighted in Table I. Note that these are only four of the many trait EI sampling domains currently used in the literature (see Austin et al., 2008, for a review). The WLEIS contains 16 items *in toto*. The response rate is a 7-point Likert-type scale (1 = totally disagree to 7 = totally agree). In this study, the coefficient alphas (Cronbach's) for the four dimensions across all ratings ranged between 0.66 and 0.94, albeit only two out of 16 values were below the recommend $\alpha \geq 0.7$ (Pallant, 2005).

TFL measure. A short research version of the Transformational Leadership Questionnaire (TLQ-Public, Alimo-Metcalfe and Alban-Metcalfe, 2001) was used. The TLQ version for the private sector (the (Engaging) TLQ-Private) has only been published recently (Alban-Metcalfe and Alimo-Metcalfe, 2007), and was not available at the time this study was conducted. The adoption of this measure lies in the fact that there has been mounting concern about the relevance and generalizability of transformational leadership dimensions that emerged from North American studies using the MLQ in relation to UK organizations (e.g. Alimo-Metcalfe and Alban-Metcalfe, 2001; Smith et al., 1989). In weighing up the benefits of either measure, cultural specificity was given priority over and above contextual concerns. That is, whilst the TLQ measure has been developed primarily for the public sector, it is likely to be a more appropriate measure for a UK sample than the US-centred MLQ. The six dimensions explored in the TLQ and one respective example item are highlighted in Table I. Taken together, these dimensions include 32 items. The scale is rated on 6-point Likert-type scale, where 1 represents 'strongly disagree' and 6 'strongly agree'. In addition, the scaling permits individuals to choose from the options 'Don't know' and 'Not relevant'.

Table I. Dimensions and example items of research instruments

WLEIS (16 items)	
Dimension	Example item
Self-emotion appraisal (SEA)	I really understand what I feel.
Others' emotion appraisal (OEA)	I have good understanding of the emotions of people around me.
Use of emotion (UOE)	I would always encourage myself to try my best.
Regulation of emotion (ROE)	I can always calm down quickly when I am very angry.
TLQ (32 items)	
Showing genuine concern (SGC)	[The leader] is sensitive to my needs/aspirations.
Networking and achieving (NaA)	[The leader] is able to communicate effectively to the public/community the vision of the organization/department.
Enabling (E)	[The leader] empowers me by trusting me to take decisions/initiatives on important matters.
Being honest and consistent (BHC)	[The leader] is consistent in what he/she says and in what he/she does.
Being accessible (BA)	[The leader] is accessible to staff at different levels.
Being decisive (BD)	[The leader] is decisive when required to be so.

In this study, most scales satisfied the requirements for estimated internal consistency of $\alpha \geq 0.7$ (Pallant, 2005). Previous studies (Alimo-Metcalfe and Alban-Metcalfe, 2005) also report α's ≥ 0.7 (i.e. 0.83–0.96 (n = 2013)). Inter-item correlations in that study ranged from 0.34 to 0.73 (see Table II for corresponding values of this study). However, the exceptions in this study are the team member B's values of *being accessible* (BA) and *being decisive* (BD), as well as the line managers' ratings for *being accessible* (BA). Despite the low α-values, these scales were retained for two reasons. First, the low alphas did not repeat themselves in other ratings. Second, the slightly lower reliability of these dimensions need not automatically give rise to concern. Guilford (1954) notes that 'for some purposes, even a test of low reliability adds enough to prediction to justify its use, particularly when used in a battery along with other tests' (p. 389). Owing to the inclusion of two tests, in addition to collecting data from multiple sources, these scales were retained for analysis.

Analysis

Pearson's product–moment correlations (r) were applied to test Hypotheses 1 and 2, whereas Hypotheses 3 and 4 were subjected to multiple regression analysis. Where appropriate, one-way ANOVAs were conducted to explore the differences amongst the ratings and to conduct randomization tests. Table II contains the descriptive statistics for both scores across all ratings in addition to the correlations between all research variables in this study (i.e. the total and subscales of both trait EI and TFL measures). The nature of the multi-rater assessment is such that, for some cases, not all members of a particular cluster returned their questionnaires. That is, the line managers and team members A returned the questionnaire, but not the project managers and team members B. Thus, the sample size can vary slightly for each correlation, as reflected in the n-ranges provided.

Inspection of Table II reveals a distinct pattern between same-source ratings of trait EI and TFL. That is, line managers' ratings of trait EI and TFL correlate significantly to a moderate and strong degree ($r = 0.21$ to 0.29, $p < 0.05$; $r = 0.31$ to 0.63, $p < 0.01$). The pattern repeats itself when considering ratings of team members A and B, respectively ($r = 0.30$, $p < 0.05$; $r = 0.43$ to 0.79, $p < 0.01$ and $r = 0.26$ to 0.35, $p < 0.05$; $r = 0.33$ to 0.61, $p < 0.01$). The large number of negative correlations between the line manager and team member ratings indicate that they are rather incongruent. In other words, a different response tendency manifests itself that distinguishes line manager and team member ratings.

Inconsistent with Hypothesis 1, correlations between the project managers' trait EI self-ratings and other TFL ratings do not reach the level of statistical and practical significance typically desired. The few significant correlations are too weak an indication, as at the 95% confidence level, 1 in 20 correlations can reach statistical significance at random (Field, 2005). However, correlations are consistent with Hypothesis 2, which predicted significant correlations between same-source ratings of trait EI and TFL. It is worth noting that non-same-source correlations often border on a practical significance of zero, and are randomly positive and negative.

Table II. Means, standard deviations, and correlations among EI and TFL ratings

	Mean	*S.D.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*
1. TMA Total EI	95.17	10.81	–																			
2. SEA	5.68	0.99	*0.86***	–																		
3. OEA	5.72	0.97	*0.88***	*0.65***	–																	
4. UOE	6.15	0.75	*0.80***	*0.60***	*0.63***	–																
5. ROE	6.10	0.94	*0.82***	*0.58***	*0.63***	*0.53***	–															
6. TMB Total EI	97.96	8.69	0.21	0.24*	0.08	0.17	0.21	–														
7. SEA	5.95	0.75	0.15	0.22	0.02	0.14	0.11	*0.92***	–													
8. OEA	5.88	0.89	0.17	0.15	0.04	0.19	0.22	*0.86***	*0.77***	–												
9. UOE	6.33	0.55	0.26*	0.22	0.24*	0.18	0.21	*0.77***	*0.64***	*0.53***	–											
10. ROE	6.13	0.80	0.15	0.21	0.03	0.05	0.19	*0.78***	*0.59***	*0.49***	*0.52***	–										
11. LM Total EI	94.05	10.33	0.08	0.07	0.03	0.18	0.01	0.12	0.20	–0.05	0.18	0.10	–									
12. SEA	5.73	0.93	–0.04	–0.01	–0.09	0.13	–0.13	0.03	0.15	–0.10	0.10	–0.03	*0.88***	–								
13. OEA	5.39	0.87	–0.14	–0.10	–0.12	–0.06	–0.19	–0.02	0.07	–0.17	0.00	0.04	*0.83***	*0.64***	–							
14. UOE	6.15	0.75	0.40**	0.39**	0.30*	0.39**	0.27*	0.25*	0.26*	0.08	0.44**	0.11	*0.61***	*0.46***	*0.34***	–						
15. ROE	5.88	1.22	0.12	0.05	0.08	0.18	0.13	0.16	0.20	0.02	0.14	0.18	*0.89***	*0.71***	*0.66***	*0.37***	–					
16. PM Total EI	99.34	6.97	0.01	–0.06	0.101	0.04	–0.07	0.10	0.11	0.10	0.03	0.08	–0.01	–0.06	0.04	–0.09	0.05	–				
17. SEA	6.16	0.59	–0.03	–0.04	0.01	0.07	–0.14	0.15	0.17	0.17	0.03	0.15	–0.06	–0.09	–0.02	–0.17	0.03	*0.86***	–			
18. OEA	6.00	0.75	0.04	0.00	0.16	–0.01	–0.03	–0.03	–0.05	0.05	0.01	–0.09	–0.22	–0.26*	–0.12	–0.15	–0.19	*0.79***	*0.61***	–		
19. UOE	6.40	0.59	–0.15	–0.20	–0.02	0.00	–0.25*	0.08	0.12	0.14	0.05	–0.07	–0.04	0.03	–0.02	–0.03	–0.09	*0.75***	*0.56***	*0.45***	–	
20. ROE	6.10	0.68	0.12	0.03	0.16	0.06	0.15	0.13	0.13	0.03	0.00	0.26*	0.30*	0.16	0.28*	0.07	0.39**	*0.77***	*0.58***	*0.41***	*0.44***	–
21. TMA Total TFL	168.54	13.71	**0.79****	**0.63****	**0.77****	**0.63****	**0.62****	0.09	–0.01	0.13	0.26*	–0.04	0.04	–0.00	–0.11	0.28*	0.03	–0.03	–0.09	0.03	–0.01	–0.03
22. SGC	5.45	0.71	**0.59****	**0.43****	**0.71****	**0.53****	**0.30***	–0.02	–0.11	–0.03	0.19	–0.06	0.00	–0.02	–0.11	0.26*	–0.05	0.01	–0.04	0.03	0.07	–0.03
23. NaA	5.15	0.58	**0.73****	**0.58****	**0.71****	**0.66****	**0.53****	–0.07	–0.09	0.01	0.08	–0.20	–0.00	–0.00	–0.09	0.16	–0.03	–0.03	–0.12	0.02	0.03	–0.06
24. E	5.14	0.56	**0.62****	**0.52****	**0.63****	**0.42****	**0.48****	0.01	0.02	–0.06	0.03	0.07	0.04	–0.01	0.00	0.21	–0.00	–0.06	–0.13	0.02	–0.09	–0.01
25. BHC	5.28	0.71	**0.68****	**0.59****	**0.58****	**0.53****	**0.58****	0.28*	0.21	0.31*	0.30*	0.14	0.09	–0.04	–0.03	0.28*	0.13	0.22	0.21	0.24*	0.01	0.24*
26. BA	5.37	0.57	**0.71****	**0.53****	**0.72****	**0.57****	**0.55****	0.01	–0.09	0.06	0.20	–0.04	0.01	–0.09	–0.07	0.23*	0.03	0.07	–0.03	0.20	–0.00	0.04
27. BD	5.25	0.67	**0.70****	**0.53****	**0.65****	**0.67****	**0.52****	0.03	–0.03	0.16	0.17	–0.14	–0.06	–0.10	–0.20	0.16	–0.01	0.01	0.01	0.10	0.03	–0.10
28. TMB Total TFL	169.20	10.18	0.01	0.03	0.02	0.11	–0.11	**0.50****	**0.42****	**0.45****	**0.40****	**0.35***	–0.28*	–0.19	–0.40**	–0.01	–0.23	0.16	0.27*	0.12	0.19	–0.01
29. SGC	4.96	0.64	0.13	0.12	0.03	0.21	0.10	**0.61****	**0.52****	**0.61****	**0.46****	**0.44****	–0.15	–0.07	–0.31*	0.08	–0.16	0.03	0.11	0.02	0.02	–0.04
30. NaA	5.13	0.54	0.18	0.21	0.13	0.20	0.04	**0.33***	**0.29***	**0.26***	**0.26***	**0.27***	–0.27*	–0.19	–0.48**	0.03	–0.20	0.13	0.28*	0.01	0.20	–0.03
31. E	5.21	0.50	–0.14	–0.10	–0.11	–0.05	–0.20	**0.52****	**0.49****	**0.45****	**0.35****	**0.42****	–0.07	0.03	–0.14	–0.06	–0.08	0.11	0.23	–0.03	0.19	–0.00
32. BHC	5.27	0.68	–0.07	–0.10	–0.12	0.13	–0.07	**0.33****	**0.29***	**0.29***	**0.12***	**0.37****	0.17	0.09	0.16	–0.014	0.25*	0.13	0.21	0.00	–0.02	0.25*
33. BA	5.45	0.37	0.00	0.04	–0.02	0.18	–0.16	**0.60****	**0.53****	**0.58****	**0.41****	**0.33****	–0.09	–0.09	–0.15	–0.02	–0.05	0.30*	0.45**	0.22	0.23	0.09
34. BD	5.39	0.37	–0.17	–0.16	–0.07	–0.13	–0.22	**0.22**$^{+}$	**0.17**	**0.22**	**0.31***	**0.07**	–0.23	–0.07	–0.39**	–0.01	–0.26*	0.18	0.23	0.25*	0.19	–0.07
35. LM Total TFL	160.26	14.09	–0.00	0.20	–0.10	0.03	–0.15	–0.07	0.07	–0.13	–0.05	–0.11	**0.61****	**0.51****	**0.54****	**0.49****	**0.46****	–0.04	–0.03	–0.10	–0.04	0.06
36. SGC	5.05	0.71	–0.13	0.12	–0.21	–0.07	–0.30*	–0.09	0.08	–0.12	–0.16	–0.13	**0.43****	**0.34****	**0.48****	**0.27***	**0.31****	0.07	0.10	0.02	0.06	0.06
37. NaA	4.85	0.63	0.06	0.16	0.02	0.01	–0.01	–0.22	–0.11	–0.31*	–0.03	–0.27*	**0.43****	**0.40****	**0.36****	**0.46****	**0.24***	–0.21	–0.28*	–0.25*	–0.07	–0.09
38. E	4.83	0.66	–0.03	0.09	–0.12	0.00	–0.09	–0.07	0.04	–0.10	–0.11	–0.09	**0.49****	**0.38****	**0.49****	**0.29***	**0.40****	0.03	0.02	0.04	–0.05	0.08
39. BHC	5.08	0.67	0.11	0.17	0.07	0.12	0.00	0.01	0.01	–0.03	–0.02	–0.01	**0.59****	**0.46****	**0.50****	**0.21***	**0.63****	–0.06	0.04	–0.16	–0.19	0.11
40. BA	5.18	0.53	0.08	0.21	–0.07	0.15	–0.00	0.08	0.13	0.04	–0.00	0.06	**0.58****	**0.50****	**0.49****	**0.44****	**0.47****	–0.03	–0.02	–0.14	–0.06	0.12
41. BD	5.21	0.62	0.04	0.23*	–0.06	0.01	–0.10	0.16	0.22	0.06	0.19	0.07	**0.43****	**0.38****	**0.25***	**0.63****	**0.26***	0.08	0.08	0.00	0.08	0.09

Notes: EI = emotional intelligence, TFL = transformational leadership, TM = team members, LM = line manager, PM = project manager, SEA = self-emotion appraisal, OEA = others' emotion appraisal, UOE = use of emotions, ROE = regulation of emotions, SGC = showing genuine concern, NaA = network and achieving, E = enabling, BHC = being honest and consistent, BA = being accessible, BD = being decisive.

Bold numbers = same-source ratings; numbers in italics = inter-scale correlations.

n for same-source ratings at total scale: TMA = 52, TMB = 45, LM = 58, but never ≤42 elsewhere.

$^{+}$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$ (one-tailed).

Table II. Continued

	21	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*	*32*	*33*	*34*	*35*	*36*	*37*	*38*	*39*	*40*
1. TMA Total EI																				
2. SEA																				
3. OEA																				
4. UOE																				
5. ROE																				
6. TMB Total EI																				
7. SEA																				
8. OEA																				
9. UOE																				
10. ROE																				
11. LM Total EI																				
12. SEA																				
13. OEA																				
14. UOE																				
15. ROE																				
16. PM Total EI																				
17. SEA																				
18. OEA																				
19. UOE																				
20. ROE																				
21. TMA Total TFL	–																			
22. SGC	*0.85***	–																		
23. NaA	*0.84***	*0.63***	–																	
24. E	*0.79***	*0.69***	*0.62***	–																
25. BHC	*0.70***	*0.43***	*0.55***	*0.45***	–															
26. BA	*0.90***	*0.71***	*0.75***	*0.67***	*0.71***	–														
27. BD	*0.90***	*0.75***	*0.79***	*0.55***	*0.61***	*0.79***	–													
28. TMB Total TFL	−0.11	0.02	−0.06	−0.21	−0.05	−0.19	0.04	–												
29. SGC	−0.06	−0.06	0.01	−0.15	0.01	−0.05	0.06	*0.80***	–											
30. NaA	−0.01	0.10	0.06	−0.15	0.13	−0.04	0.12	*0.81***	*0.52***	–										
31. E	−0.19	−0.14	−0.17	−0.16	−0.12	−0.24*	−0.10	*0.80***	*0.60***	*0.51***	–									
32. BHC	−0.28*	−0.21	−0.23	−0.28*	−0.01	−0.26*	−0.16	*0.59***	*0.35***	*0.35***	*0.44***	–								
33. BA	−0.05	0.08	−0.05	−0.15	0.17	0.00	0.08	*0.77***	*0.56***	*0.59***	*0.53***	*0.60***	–							
34. BD	−0.15	−0.03	−0.15	−0.18	−0.05	−0.18	−0.08	*0.59***	*0.35***	*0.41***	*0.54***	*0.11*	*0.39***	–						
35. LM Total TFL	−0.02	0.00	−0.03	0.06	0.01	−0.07	−0.04	−0.05	−0.28*	−0.10	−0.08	0.21	0.09	−0.18	–					
36. SGC	−0.21	−0.14	−0.07	−0.02	−0.10	−0.20	−0.18	−0.08	−0.21	−0.12	−0.05	0.08	0.10	−0.14	*0.88***	–				
37. NaA	0.16	0.14	0.17	0.15	−0.01	0.12	0.07	−0.08	−0.33*	−0.00	−0.19	−0.01	−0.10	−0.05	*0.80***	*0.52***	–			
38. E	−0.06	−0.01	−0.15	0.04	−0.04	−0.00	−0.04	−0.17	−0.30*	−0.21	−0.09	0.10	−0.00	−0.20	*0.84***	*0.75***	*0.57***	–		
39. BHC	0.12	0.06	0.06	0.10	0.13	0.05	0.06	−0.07	−0.19	−0.18	−0.05	0.28*	0.06	−0.21	*0.68***	*0.49***	*0.38***	*0.52***	–	
40. BA	0.04	0.02	0.02	0.04	0.12	−0.02	0.02	0.02	−0.09	−0.11	0.00	0.41**	0.23	−0.08	*0.85***	*0.64***	*0.55***	*0.63***	*0.74***	–
41. BD	0.01	0.01	−0.13	−0.04	0.13	−0.11	−0.00	0.19	0.07	0.14	0.10	0.27*	0.24	0.19	*0.74***	*0.52***	*0.61***	*0.45***	*0.35***	*0.60***

The distinctiveness of the same-source response pattern across all ratings raises the question whether the ratings are significantly distinct from each other. To put this to the test, two one-way ANOVAs were conducted. The first aimed to explore the difference between all aggregate trait EI scores of this study; that is, the self-reported EI score of the project manager and the scores of the line managers and both team members relative to the project manager. There was a statistically significant difference at the $p < 0.05$ level between the self-reported project manager EI and their line managers' rating of trait EI relative to him ($F(3, 223) = 3.89$, $p = 0.01$). Effect size was computed using eta squared (0.05), which is small to medium in impact (Cohen, 1988). Post-hoc comparisons drawing on Tukey's HSD test indicated that the mean score for the project managers (mean = 99.35, SD = 6.97) was significantly different from the ratings of the line managers (mean = 94.04, SD = 10.33). With regard to the ratings of team members A (mean = 95.17, SD = 10.81) and team members B (mean = 97.96, SD = 8.69), they were not significantly different either amongst each other, or in relation to both project manager' and line managers' rating.

The second one-way ANOVA was conducted to explore the difference between TLQ ratings of the line manager and both team members. There was a statistically significant difference amongst the TLQ score of the line managers and both team members ($F(2, 152) = 8.02$, $p = 0.00$). The effect sizes, calculated using eta squared, was 0.09. As noted by Cohen (1988), this is a medium to large effect. Post-hoc comparisons using Tukey's HSD test indicated that the mean score for the line managers ratings (mean = 160.26, SD = 14.01) was significantly different from both team member A (mean = 168.54, SD = 13.71) and team member B (M = 169.20, SD = 10.18) ratings. In turn, there was no significant difference between the TLQ score of team member A and B.

To test Hypotheses 3 and 4, multiple regression analysis was performed, using the WLEIS subscale scores as predictor and the TLQ total scores as outcome variables. The data were systematically analysed by using EI self-ratings of project managers as predictors for other TFL ratings (i.e. both team members and line manager) and same-source ratings (e.g. team member A ratings of trait EI and TFL).

Again, a distinct pattern in relation to same-source ratings is discernable. Findings presented in Table III are largely inconsistent with Hypothesis 3 and consistent with Hypothesis 4, in that predominately only same-source data produced significant *F*-ratios. Whenever same-source ratings were inserted in the regression analysis, significant *F*-ratios appeared ($F = 21.94$, $p < 0.001$; $F = 3.21$, $p < 0.05$; $F = 9.35$, $p < 0.001$). One exception concerns the team member A ratings on the WLEIS subscales and the line manager ratings on the TLQ ($F = 2.72$, $p < 0.05$). Note, however, that this *F*-ratio is just reaching statistical significance ($p = 0.04$), and that this is the only borderline case in Table III. Other *F*-ratios, such as the team member ratings on the WLEIS and TLQ, are more remote from the $p > 0.05$ threshold than the previous case (i.e. $p = 0.02$). Likewise, the variance explained by the WLEIS subscales in relation to the TLQ is moderate to strong for same-source ratings. Values for R^2 are 0.65, 0.24, and 0.41, respectively, suggesting that a considerable 65 per cent of team member A, 24 per cent of team member B, and 41 per cent of the line manager TLQ ratings are explained by WLEIS subscale scores.

Table III. Multiple regression of TFL on EI

Predictors		*Outcome variables*		
EI		*TFL TMA*	*TFL TMB*	*TFL LM*
TMA				
β	SEA	0.12	0.05	0.53**
	OEA	0.48**	0.04	–0.29
	UOE	0.17	0.20	0.05
	ROE	0.16	–0.28	–0.31
	R	0.81	0.24	0.43
	R^2	0.65	0.06	0.19
	F	21.94**	0.62	2.72*
TMB				
β	SEA	–0.45	0.03	0.61*
	OEA	0.32	0.28	–0.46
	UOE	0.47*	0.17	–0.09
	ROE	–0.17	0.10	–0.20
	R	0.42	0.49	0.37
	R^2	0.17	0.24	0.14
	F	2.08	3.21*	1.62
LM				
β	SEA	–0.11	0.05	0.15
	OEA	–0.26	–0.46*	0.33*
	UOE	0.37*	0.12	0.30
	ROE	0.14	–0.01	0.03
	R	0.37	0.42	0.64
	R^2	0.14	0.17	0.41
	F	1.73	1.94	9.35**
PM				
β	SEA	–0.20	0.41	–0.02
	OEA	0.14	–0.06	–0.14
	UOE	0.03	0.12	–0.03
	ROE	0.01	–0.28	0.14
	R	0.15	0.36	0.16
	R^2	0.02	0.13	0.03
	F	0.24	1.46	0.31

Notes: * $p < 0.05$ ** $p < 0.01$.
n = 45–58.
TM = team members (A&B), LM = line manager, PM = project manager; SEA = self-emotion appraisal, OEA = others' emotion appraisal, UOE = use of emotions, ROE = regulation of emotions; TFL = transformational leadership; EI = emotional intelligence.

Two subsidiary analyses were conducted to: (1) control for fixed effects, and (2) examine the data using randomization. Controlling for fixed effects can be highly desirable as it ensures that estimates are more consistent (Judge et al., 1985). Because data were collected from 14 organizations, the financial volume of the projects was used as a proxy indicator for organizational size. A similar pattern emerged in relation to

same-source data. That is, in most cases only same-source data produced significant *F*-ratios. In the case of the line manger and team member A ratings (i.e. same-source ratings), significant *F*-ratios appeared ($F = 12.03$, $p < 0.001$; $F = 6.05$, $p < 0.001$). One exception concerns the team member B ratings of EI and TFL, which did not produce a significant *F*-ratio ($p = 0.12$).

In the second subsidiary analysis, randomization was used to further examine the relationship between trait EI and TFL across all data produced by the same source. As Todman and Dugard (2001) point out, randomization has been an often overlooked mode of analysis, and its 'importance . . . in human experimentation lies in its contribution to internal validity' (p. 4). In other words, it is a mechanism to control for competing explanations of results, the central feature being a random rearranging of raw data to eliminate systematic variation in the data (Field, 2005). To do this, it was assumed that the sources (team member A, team member B, line manager, coded as A, B, and LM, respectively) of the predictor variables (i.e. WLEIS subscales) are a random selection of a group of predictors. Within each of these, there are also the sub-groups self-emotion appraisal (coded s), other-emotion appraisal (coded o), use of emotion (coded u), and regulation of emotion (coded r). These codes are encapsulated in the acronym s-o-u-r. It was assumed that these constitute a random selection of many possible sub-groups. Outcome variables were then constructed to examine the data based upon the difference between the total TLQ score of team member A (coded TLQA) and the corresponding value in one of the subgroups (i.e. s-o-u-r) as produced by team member A, team member B, and the line manager for the data that underlies Table III. This analysis was repeated using the total TLQ score of team member B and line manager as well (coded TLQB and TLQLM). This produced 36 sample groups as featured in Table IV. The differences between the subgroups and the outcome variables were then calculated, applying a case-wise analysis to retain as much information in the data as possible. That is, for instance, the self-emotion appraisal value for team member A (As) was subtracted from the outcome variable (TLQA) case by case for all combinations. Thereafter, the mean scores for the two columns were computed and subtracted from each other (e.g. TLQA – As).

Using one-way ANOVA, the variation within and between groups was examined to ascertain whether it is statistically significant. This is appropriate as the data values are assumed to be random samples from one or more larger sets of values. The measured difference is a set of random data values from the same population, and scattered across all 36 samples. Group 1 includes all TLQ ratings minus the s-o-u-r values produced by team member A. Group 2 features all TLQ ratings minus the s-o-u-r values produced by team member B, whilst group 3 contains all TLQ ratings minus the s-o-u-r values produced by the line manager. The null hypothesis is that there is no difference in the variability within groups and between groups. Specifically, if subsequent to the randomization no effect would be detected, it can be concluded that, in the present dataset, the significant relationship between trait EI and TFL is even more likely to be an artefact of CMV. The alternative hypothesis, at the extreme, is all that the measured differences will be zero as there is a perfect match between each predictor and outcome variable, and there is no variation present.

The one-way ANOVA results indicate that there was no statistically significant difference among Groups 1 to 3 ($F(2, 33) = 0.31$, $p = 0.73$). That is, the effect that has been

Table IV. Mean differences between total TLQ scores and WLEIS subscales used for randomization tests (based on one-way ANOVA)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Group 1	TLQA-As	TLQA-Ao	TLQA-Au	TLQA-Ar	TLQB-As	TLQB-Ao	TLQB-Au	TLQB-Ar	TLQLM-As	TLQLM-Ao	TLQLM-Au	TLQLM-Ar
Mean difference	145.33	145.08	143.42	144.15	146.02	146.11	144.07	144.40	139.34	139.29	137.53	138.00
Group 2	TLQA-Bs	TLQA-Bo	TLQA-Bu	TLQA-Br	TLQB-Bs	TLQB-Bo	TLQB-Bu	TLQB-Br	TLQLM-Bs	TLQLM-Bo	TLQLM-Bu	TLQLM-Br
Mean difference	147.90	147.96	146.52	143.94	145.04	144.96	143.60	144.09	141.40	141.31	140.10	140.62
Group 3	TLQA-LMs	TLQA-LMo	TLQA-LMu	TLQA-LMr	TLQB-LMs	TLQB-LMo	TLQB-LMu	TLQB-LMr	TLQLM-LMs	TLQLM-LMo	TLQLM-LMu	TLQLM-LMr
Mean difference	146.19	147.67	144.56	145.37	147.38	149.00	145.56	146.49	136.84	138.49	134.79	136.22

Notes: TLQ = Transformational Leadership Questionnaire (TLQA, TLQB, TLQLM stand for ratings by team member A, B, and line manager); letters following the hyphen denote the source of the rating (i.e., team member A) and the self-emotion appraisal, for example (therefore, As). Thus, in the upper left corner, the team member A self-emotion appraisal rating was subtracted from TLQ rating of the same rater. In the lower left corner, the line manager rating of self-emotion appraisal (LMs) was subtracted from team member A's TLQ rating. The same principle applies to all other boxes in Table IV.

detected in the correlational and regression analyses (see Tables II and III) has disappeared in the randomization process. If a true correlation existed between trait EI and TFL in the present dataset, this effect should shine through in the randomization. As it does not, it can be justifiably suggested that CMV largely accounts for the significant relationships found in Tables II and III.

DISCUSSION

This article has cast a critical eye on the extant management literature that empirically investigated the relationship between trait EI and TFL. In synthesizing both topical concepts, it has detailed their emotion-laden interface which attracted a fair share of research interest. Despite supportive evidence concerning the relationship between trait EI and TFL (e.g. Butler and Chinowsky, 2006; Mandell and Pherwani, 2003; Palmer et al., 2001), Antonakis (2003) expressed concern about the validity of those studies since they, *inter alia*, fail to prevent CMV. This argument has been extended in this study in relation to TFL as well. We discuss our study in terms its empirical implications, especially with regard to CMV, and its theoretical ramifications.

Empirical Implications

This study was rigorously designed with the objective of both overcoming CMV by collecting data from different sources and, concurrently, demonstrating its potential presence by incorporating same-source ratings. On the surface, the findings presented are consistent with prior empirical studies concerning trait EI and TFL (e.g. Downey et al., 2006; Gardner and Stough, 2002). Results of correlational and multiple regression analyses strongly indicate significant correlations between ratings of trait EI and TFL (see Tables II and III). On closer inspection, however, the analysis demonstrates that these significant findings systematically pertain to same-source ratings. Whilst sporadically significant correlations and *F*-ratios among non-same-source ratings emerge from the analyses, the majority of them are not significant. A similar pattern emerged after controlling for project size as a fixed effect in the regression analysis. Figure 1 illustrates this finding graphically. The figure contrasts the constructs of trait EI and TFL with a view to highlighting where relationships exist between same-source and non-same-source ratings.

Noteworthy is the fact that the EI self-ratings of the project managers do not correlate significantly with any of the line manager or team member ratings of TFL (see Table II), which further indicates the spurious quality of significant same-source ratings. In terms of randomization, it is striking that the significant relationships among same-source data found in Tables II and III disappeared when the raw data have been rearranged in the randomization test.

In effect, this study does not immediately contradict findings from previous studies. It is in congruence with those studies (e.g. Downey et al., 2006; Gardner and Stough, 2002) that rely upon same-source data and suggest a significant relationship between trait EI and TFL. It is also consistent with evidence from Brown et al. (2006), who collected data

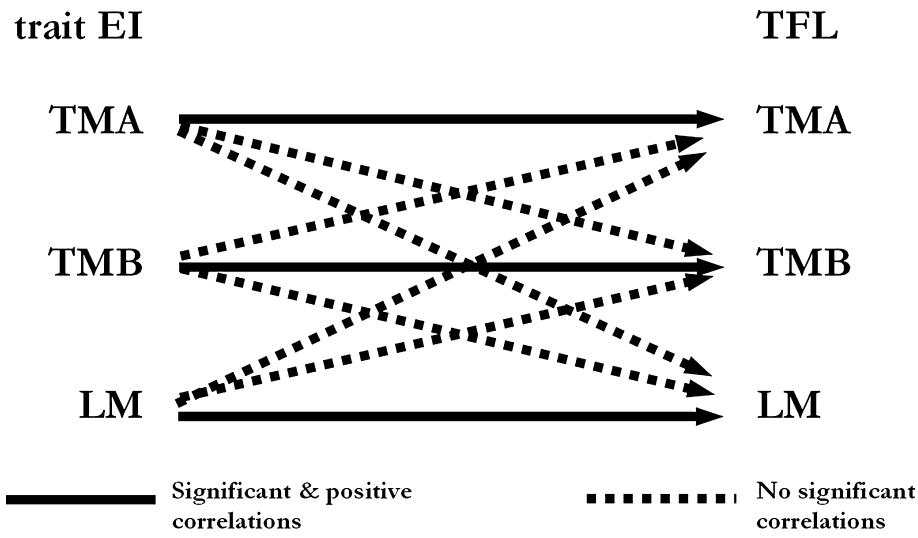

Figure 1. The nature of correlations among same-source and non-same-source ratings

relative to trait EI and TFL from different sources. In their study, no support has been found for a significant relationship between trait EI and TFL.

It is at this juncture that the empirical contribution of this article to the management literature manifests itself. Specifically, it helps put the apparent contradiction of empirical findings explained above into perspective. That is, whether there is a relationship between trait EI and TFL is strongly contingent upon the source of the data (i.e. non-same-source or same-source data). The lack of significant correlations in cross-evaluating the findings suggests that, where results of same-source data are significant, these may be ascribable to a common method shared rather than any genuine relationship between trait EI and TFL. Whilst one could argue that different raters have different views on behaviour depending on their position in the organizational hierarchy (Lieberman, 1956), the inclusion of a pair of raters from the same class (i.e. two team members) assisted in overcoming this problem. Even among the team member ratings, however, correlations and *F*-ratios are largely significant when same-source data were examined. Because the collection of research variables from different sources is the most effective approach to avoiding CMV (Podsakoff et al., 2003), a significant correlation obtained from non-same-source ratings would indicate a true relationship between two variables. However, this is not substantiated by the present study. Thus, the findings of this study call into question the validity of previous studies that relied upon same-source data.

As mentioned earlier, the study of Barbuto and Burbach (2006) is among the very few that point to the pitfalls of CMV in the context of trait EI/TFL studies. Their findings suggest that the strength and significance of the correlation between trait EI and TFL decreases markedly, though does not completely disappear, when non-same-source data are examined. However, the persuasive power of their study is limited for three reasons. First, it is not clear from the study how the multiple ratings of colleagues are aggregated, nor is it clear whether these ratings are by subordinates and/or peers. Second, it does not

use ratings from line managers, peers, and subordinates at the same time, especially from a pair of ratings from the same group (i.e. subordinates), as discussed above. Third, the use of leadership self-assessment is often criticized due to a lack of objectivity (e.g. Hogan and Hogan, 2001).

One noteworthy issue arises from the study by Leban and Zulauf (2004). As indicated earlier, 24 project managers completed the MSCEIT, whereas an unspecified number of subordinates filled in the MLQ relative to that project manager. Prior studies have demonstrated that MSCEIT scores were unrelated to self-report measures of EI (Ashkanasy and Dasborough, 2003). One reason for this could be that, whilst both ability measures and self-report measures may tap into the same sampling domains, they fundamentally differ in the way they are operationalized (Davey, 2005). Moreover, self-reports of ability and actual ability are only modestly correlated in the domain of intelligence research (e.g. $r = 0.20$; Paulhus et al., 1998). Thus, interpretation of the findings must be undertaken with this important fact in mind.

Theoretical Ramifications

Beyond our empirical contribution, there are at least two wider theoretical ramifications of our findings. First, careful consideration of the present findings in relation to existing theoretical and empirical studies points to potent explanation as to why ratings from different raters do not correlate. Whether construction markedly differs from other industries is still a subject of debate (Bresnen and Marshall, 2001). However, what is accepted is that the construction industry is typically characterized by aggressive/authoritative management styles, adversarial relationships, tight profit margins, fierce competition, and the imperative to be able to react to extreme short-term pressures at work (e.g. Agapiou et al., 1998; Holt et al., 2000; Loosemore et al., 2003). In particular, it is seen to reflect a 'macho' culture, which tends to dismiss the practice of many 'softer' approaches to the management of human resources as expensive luxuries (Dainty et al., 2002). Thus, the context of construction may help explain the absence of significant correlations in cross-evaluations of ratings (see Figure 1). It is worth recalling that significant but small correlations are found in cross-evaluations of ratings in another study (Barbuto and Burbach, 2006), which is embedded in the public sector (i.e. elected officials). This would, however, attenuate the claim that EI may not be needed for leadership (see Antonakis, 2003; Antonakis et al. 2009). Rather, it would appear that whether a significant relationship between EI and TFL exists is strongly dependent upon the presence of a favourable context.

The work of Hunter et al. (in press) supports the view that context can also prove detrimental to TFL. They maintain that, in organizations conspicuous by intense time pressure, leaders may find it difficult to provide feedback and guidance to followers. Further to this, they observe that, albeit transformational and other similar forms of leadership may be ideal in *some* contexts, they are difficult to find in *all* contexts. Note, however, that meta-analytic studies do not suggest that leadership has differential effects as a function of business context (Judge et al., 2002). It is conceivable that the same design may yield different findings in another setting.

Second, these contextual factors may also illustrate the imperative to re-conceptualize the outcomes of EI in relation to transformational leadership. There are at least two plausible scenarios in this respect. On the one hand, high trait EI may entail that one's self-perceived ability to appraise emotions and situations leads to the recognition that TFL is inappropriate and less applicable in the context of construction, and that transactional leadership, or other context-sensitive forms of leadership, constitute a more effective approach to attaining desired results as a project manager. It would be, therefore, expedient in future to administer TFL and transactional leadership measures simultaneously across various contexts, so as to draw out in more detail how context potentially mediates or moderates the relationship between EI, TFL, and transactional leadership. Yet, with this argument comes a compelling question through the backdoor; what if the exercise of a more context-sensitive leadership style is incongruent with the manager's view on how to sustain his or her well-being? Thus, some scholars quite legitimately ask: 'Does the individual benefit from high EI or is it the organization?' (Lindebaum, 2009, p. 230). Note that, whilst a recent meta-analysis links trait EI to better mental health (Schutte et al., 2007), Lindebaum (in press) found that project managers often feel they must appear stressed and forceful to be seen as productive, anger being a frequent emotional conduit in this respect (see also Shepherd and Cardon, 2009). Thus, even in a knowledge economy, the expectations of role-obligatory behaviours towards an individual, like those in construction, can exert a powerful influence on behaviour. As the data analysis suggests, this can occur to the extent that the abilities associated with EI no longer predict more collaborative and inspiring forms of leadership. Hence, despite the evidence that underpins the utility of EI and TFL in management studies (e.g. Bass, 1985; Côté and Miners, 2006), role prescriptions attached to specific occupations or roles may render them less influential under these circumstances (see also Vince, 2006; Maitlis and Sonenshein, 2010).

On the other hand, consider a manager who is very demanding and challenging towards a team member in terms of allocating tasks. An outsider may conclude that the manager lacks the empathy to understand how his or her leadership style negatively impacts upon the team member's health. However, the manager's demanding leadership style can also emanate from his or her understanding that the team member prefers to operate inside his/her typical comfort zone – not having realized his/her full potential yet. Placing ever greater demands upon the team member may be a vehicle to push the boundary and, in so doing, aid the team member in realizing the potential for professional and personal growth. This, in turn, would diminish the theoretical linkage between trait EI and TFL discussed at the outset of the paper, for one would not be seen, on the surface, as someone exercising individualized consideration.

Three limitations must be recognized in this study. The first concerns the sample size of the study, which is somewhat lower than desirable when the cross-correlations among the various raters are considered (e.g. 55 project managers), even though the overall sample size is N = 227. This can raise issues of sample variation and the committing of a type II error (Huck, 2004); that is, failing to detect an effect in the sample although one exists. Bear in mind, however, that the sample size must be construed with the cognizance that gaining access to construction companies for research purposes is a notoriously difficult undertaking (Naoum, 1998). Future research would benefit from a larger

and more diverse sample. However, in conjunction with the results of the randomization test and other empirical studies, the conclusions drawn from this statistical analysis appear justifiable.

The second limitation pertains to the circumstance that this study did not control for personality factors *concurrently*, a demand voiced by several scholars (Antonakis, 2003). This is because personality factors have shown considerable conceptual overlap with trait EI measures in past studies (e.g. O'Connor and Little, 2003). Under this formulation, it would be desirable to control simultaneously for personality factors, as coefficients may otherwise be biased or overstated.[2] It is worth noting that once the above stringent criterion is applied, the extant literature shrinks considerably, suggesting that scholars often neglect to adequately test EI (whether as trait or ability), whilst controlling for personality and general mental ability.

Third, the WLEIS only assesses four facets of the trait EI sampling domain, which, according to a recent content analysis (Austin et al., 2008, p. 580), comprises up to 15 facets. Important domains not included in the WLEIS include, *inter alia*, adaptability, assertiveness, self-motivation, and trait optimism. As such, certain traits are not captured by the WLEIS, which implies that it provides only a limited view on an individual's overall trait EI.

In conclusion, owing to the strong demonstration of CMV in the dataset, the imperative to collect research variables from different sources must be reiterated. Hence, this study helps re-energize the debate regarding scientific rigour in designing research projects to ensure that results obtained are valid and credible. By the same token, this study highlights the necessity to re-conceptualize how trait EI can impinge upon, and relate to, the various forms of leadership. In other words, it seems too simplistic to claim that EI may only 'be an antecedent of transformational leadership' (Brown and Moshavi, 2005, p. 869). Given the considerable interest of management scholars in the concepts of EI and TFL, these reminders are of critical importance for future research.

ACKNOWLEDGMENTS

We are indebted to Keith Julian for his invaluable statistical advice, as well as Effi Raftopoulou for her insightful comments. Research into this paper has been facilitated by studentships from Manchester Business School and the Economic Social Research Council (+3), as well as grants from the Statistical Society of Manchester and the Northern Leadership Academy (all UK) to the first author.

NOTES

[1] Out of concern over statistical power, one may argue that the ratings of team member A and B should be collapsed into one variable. However, in this case, such a view is mistaken, as the collapsing of these variables would lead to distinctly unequal sub-samples (i.e. 110 team member ratings versus 55 project manager ratings, ratio 2 : 1), thus raising concerns that the homogeneity of variance assumption for parametric testing is violated. Both Field (2005) and Pallant (2005) argue that the ratio between the largest and smallest group should not be larger than 1.5. They also suggest that when sample sizes are unequal, ANOVA (which forms the basis of multiple regression) is not robust to violations of homogeneity of variance. In fact, preliminary analysis in SPSS confirmed that the assumption is violated if the team member ratings are collapsed (i.e. Leven statistic, $p = 0.005$; Welch, $p = 0.004$; and Brown-Forsythe, $p = 0.008$).

[2] As trait EI is the construct of interest, there is no need to control for general mental ability, as trait EI is located in personality rather cognitive ability theory (see Petrides et al., 2007).

REFERENCES

Agapiou, A., Flanagan, R., Norman, G. and Notman, D. (1998). 'The changing role of builders merchants in the construction supply chain'. *Construction Management and Economics*, **16**, 351–61.

Alban-Metcalfe, J. and Alimo-Metcalfe, B. (2007). 'Development of a private sector version of the (Engaging) Transformational Leadership Questionnaire'. *Leadership and Organisation Development Journal*, **28**, 104–21.

Alimo-Metcalfe, B. and Alban-Metcalfe, J. (2001). 'The development of a new Transformational Leadership Questionnaire'. *Journal of Occupational and Organizational Psychology*, **74**, 1–27.

Alimo-Metcalfe, B. and Alban-Metcalfe, J. (2005). 'Leadership: time for a new direction?'. *Leadership*, **1**, 51–71.

Antonakis, J. (2003). 'Why "emotional intelligence" does not predict leadership effectiveness: a comment on Prati, Douglas, Ferris, Ammeter and Buckley'. *International Journal of Organizational Analysis*, **11**, 355–61.

Antonakis, J., Schriesheim, C. A., Donovan, J. A., Gopalakrishna-Pillai, K., Pellegrini, E. K. and Rossomme, J. L. (2004). 'Methods for studying leadership'. In Antonakis, J., Cianciolo, A. T. and Sternberg, R. J. (Eds), *The Nature of Leadership*. Thousand Oaks, CA: Sage, 48–70.

Antonakis, J., Ashkanasy, N. M. and Dasborough, M. T. (2009). 'Does leadership need emotional intelligence?'. *Leadership Quarterly*, **20**, 247–61.

Ashkanasy, N. M. and Dasborough, M. T. (2003). 'Emotional awareness and emotional intelligence in leadership teaching'. *Journal of Education for Business*, **79**, 18–22.

Ashkanasy, N. M. and Daus, C. S. (2005). 'Rumors of the death of emotional intelligence in organizational behavior are vastly exaggerated'. *Journal of Organizational Behavior*, **26**, 441–52.

Ashkanasy, N. M., Härtel, C. E. J. and Zerbe, W. J. (2000). 'Emotions in the workplace: research, theory, and practise'. In Ashkanasy, N. M., Härtel, C. E. J. and Zerbe, W. J. (Eds), *Emotions in the Workplace*. Westport, CT: Quorum, 3–18.

Atkins, P. W. B. and Wood, R. E. (2002). 'Self-versus others' ratings as predictors of assessment center ratings: validation evidence for 360-degree feedback programs'. *Personnel Psychology*, **55**, 871–904.

Atwater, L. E. and Yammarino, F. J. (1992). 'Does self-other agreement on leadership perceptions moderate the validity of leadership and performance predictions?'. *Personnel Psychology*, **45**, 141–64.

Austin, E. J., Parker, J. D. A., Petrides, K. V. and Saklofske, D. H. (2008). 'Emotional intelligence'. In Boyle, G. J., Matthews, G. and Saklofske, D. H. (Eds), *The Sage Handbook of Personality Theory and Assessment*. London: Sage, 576–96.

Avolio, B. J., Waldman, D. A. and Yammarino, F. J. (1991). 'Leading in the 1990s: the four I's of transformational leadership'. *Journal of European Industrial Training*, **15**, 9–16.

Barbuto, J. J. E. and Burbach, M. E. (2006). 'The emotional intelligence of transformational leaders: a field study of elected officials'. *Journal of Social Psychology*, **146**, 51–64.

Barling, J., Slater, F. and Kelloway, E. K. (2000). 'Transformational leadership and emotional intelligence: an exploratory study'. *Leadership and Organisation Development Journal*, **21**, 157–61.

Bar-On, R. (1997). *The Emotional Quotient Inventory (EQ-i): A Test of Emotional Intelligence*. Toronto: Multi-Health Systems.

Bass, B. M. (1985). *Leadership and Performance beyond Expectations*. New York: Free Press.

Bass, B. M. (1990). 'From transactional to transformational leadership: learning to share the vision'. *Organizational Dynamics*, **18**, 19–31.

Bass, B. M. and Avolio, B. J. (1994). *Improving Organizational Effectiveness Through Transformational Leadership*. London: Sage.

Bresnen, M. and Marshall, N. (2001). 'Understanding the diffusion and application of new management ideas in construction'. *Engineering, Construction, and Architectural Management*, **8**, 335–45.

Brody, N. (2004). 'What cognitive intelligence is and what emotional intelligence is not'. *Psychological Inquiry*, **15**, 234–8.

Brown, F. W. and Moshavi, D. (2005). 'Transformational leadership and emotional intelligence: a potential pathway for an increased understanding of interpersonal influence'. *Journal of Organizational Behavior*, **26**, 867–71.

Brown, F. W. and Reilly, M. D. (2008). 'Emotional intelligence, transformational leadership and gender: correlation and interaction possibilities'. *Journal of International Management Studies*, **3**, 1–9.

Brown, F. W., Bryant, S. E. and Reilly, M. D. (2006). 'Does emotional intelligence – as measured by the EQI – influence transformational leadership and/or desirable outcomes?'. *Leadership and Organisation Development Journal*, **27**, 330–51.
Burns, J. M. G. (1978). *Leadership*. New York: Harper & Row.
Butler, C. J. and Chinowsky, P. S. (2006). 'Emotional intelligence and leadership behavior in construction executives'. *Journal of Management in Engineering*, **22**, 119–25.
Calvert, R. E., Bailey, G. and Coles, D. (1995). *Introduction to Building Management*. London: Butterworth Heinemann.
Campbell, D. T. and O'Connell, E. J. (1982). 'Methods as diluting trait relationships rather than adding irrelevant systematic variance'. In Brinberg, D. and Kidder, L. (Eds), *Forms of Validity in Research*. San Francisco, CA: Jossey-Bass, 93–111.
Cartwright, S. and Pappas, C. (2008). 'Emotional intelligence, its measurement and implications for the workplace'. *International Journal of Management Reviews*, **10**, 149–71.
Caruso, D. R. and Salovey, P. (2004). *The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership*. San Francisco, CA: Jossey-Bass.
Cherniss, C. (2000). 'Social and emotional competence in the workplace'. In Bar-On, R. and Parker, J. D. (Eds), *The Handbook of Emotional Intelligence: Theory, Development, Assessment, and Application at Home, School, and in the Workplace*. San Francisco, CA: Jossey-Bass, 433–58.
Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Hillsdale, NJ: Erlbaum.
Côté, S. and Miners, C. T. H. (2006). 'Emotional intelligence, cognitive intelligence, and job performance'. *Administrative Science Quarterly*, **51**, 1–28.
Dainty, A. R. J., Bryman, A. and Price, A. D. F. (2002). 'Empowerment within the UK construction sector'. *Leadership and Organization Development Journal*, **23**, 333–42.
Dainty, A. R. J., Raiden, A. B. and Neale, R. H. (2004). 'Psychological contract expectations of construction project managers'. *Engineering, Construction and Architectural Management*, **11**, 33–44.
Davey, G. (2005). *Encyclopaedic Dictionary of Psychology*. London: Hodder Arnold.
Doty, D. H. and Glick, W. H. (1998). 'Common methods bias: does common methods variance really bias results?'. *Organizational Research Methods*, **1**, 374–406.
Downey, L. A., Papageorgiou, V. and Stough, C. (2006). 'Examining the relationship between leadership, emotional intelligence and intuition in senior female managers'. *Leadership and Organisation Development Journal*, **27**, 250–64.
Drucker, P. F. (1994). 'The age of social transformation'. *Atlantic Monthly*, **274**, 53–71.
Druskat, V. and Druskat, P. (2006). 'Applying emotional intelligence in project working'. In Pryke, S. and Smyth, H. (Eds), *The Management of Complex Projects: A Relational Approach*. Oxford: Blackwell, 78–96.
Duckett, H. and Macfarlane, E. (2003). 'Emotional intelligence and transformational leadership in retailing'. *Leadership and Organization Development Journal*, **24**, 309–17.
Egan, J. (1998). *Rethinking Construction*. London: HMSO.
Field, A. P. (2005). *Discovering Statistics Using SPSS*. London: Sage.
Foster, C. A. and Law, M. R. F. (2006). 'How many perspectives provide a compass? Differentiating 360-degree and multi-source feedback'. *International Journal of Selection and Assessment*, **14**, 288–91.
Freudenthaler, H. H., Neubauer, A. C., Gabler, P., Scherl, W. G. and Rindermann, H. (2008). 'Testing and validating the trait emotional intelligence questionnaire (TEIQue) in a German-speaking sample'. *Personality and Individual Differences*, **45**, 673–8.
Gabriel, Y. and Griffiths, D. S. (2002). 'Emotion, learning and organizing'. *The Learning Organization*, **9**, 214–21.
Gardner, L. and Stough, C. (2002). 'Examining the relationship between leadership and emotional intelligence in senior level managers'. *Leadership and Organization Development Journal*, **23**, 68–78.
George, J. M. (2000). 'Emotions and leadership: the role of emotional intelligence'. *Human Relations*, **53**, 1027–55.
Goleman, D. (1995). *Emotional Intelligence: Why It Can Matter More Than IQ*. New York: Bantam Books.
Goleman, D. (1998). *Working with Emotional Intelligence*. London: Bloomsbury Publishing.
Guilford, J. P. (1954). *Psychometric Methods*. New York: McGraw-Hill.
Harris, F. and McCaffer, R. (2001). *Modern Construction Management*. Oxford: Blackwell Science.
Hogan, R. and Hogan, J. (2001). 'Assessing leadership: a view from the Dark Side'. *International Journal of Selection and Assessment*, **9**, 40–51.
Holt, G. D., Love, P. E. D. and Nesan, L. J. (2000). 'Employee empowerment in construction: an implementation model for process improvement'. *Team Performance Management*, **6**, 47–51.
Huck, S. W. (2004). *Reading Statistics and Research*. Boston, MA: Pearson Education.

Hunt, J. G. (1991). *Leadership: A New Synthesis*. Newbury Park, CA: Sage.
Hunter, S. T., Tate, B. W., Dzieweczynski, J. L. and Pesin, L. (in press). 'Understanding the antecedents of leader errors: a multilevel perspective'. In Hansbrough, T. and Schyns, B. (Eds), *When Leadership Goes Wrong: Destructive Leadership, Mistakes and Ethical Failures*. Charlotte, NC: Information Age Publishing, in press.
Jansen, J. J. P., George, G., Van den Bosch, F. A. J. and Volberda, H. W. (2008). 'Senior team attributes and organizational ambidexterity: the moderating role of transformational leadership'. *Journal of Management Studies*, **45**, 982–1007.
Jordan, P. J., Ashkanasy, N. M., Härtel, C. E. J. and Hooper, G. S. (2002). 'Workgroup emotional intelligence: scale development and relationship to team process effectiveness and goal focus'. *Human Resource Management Review*, **12**, 195–214.
Judge, G. G., Hill, R. C., Griffiths, W. E. and Lütkepohl, H. (1985). *The Theory and Practice of Econometrics*. New York: Wiley.
Judge, T. A., Bono, J. E., Ilies, R. and Gerhardt, M. W. (2002). 'Personality and leadership: a qualitative and quantitative review'. *Journal of Applied Psychology*, **87**, 765–80.
Kelan, E. K. (2008). 'Emotions in a rational profession: the gendering of skills in ICT work'. *Gender, Work & Organization*, **15**, 49–71.
Kline, T. J. B., Sulsky, L. M. and Rever-Moriyama, S. D. (2000). 'Common method variance and specification errors: a practical approach to detection'. *Journal of Psychology*, **134**, 401–21.
Kroeck, K. G., Lowe, K. B. and Brown, K. W. (2004). 'The assessment of leadership'. In Antonakis, J., Cianciolo, A. T. and Sternberg, R. J. (Eds), *The Nature of Leadership*. Thousand Oaks, CA: Sage, 71–97.
Kuhnert, K. W. (1994). 'Transforming leadership: developing people through delegation'. In Bass, B. M. and Avolio, B. J. (Eds), *Improving Organizational Effectiveness through Transformational Leadership*. Thousand Oaks, CA: Sage, 10–25.
Küpers, W. and Weibler, J. (2006). 'How emotional is transformational leadership really? Some suggestions for a necessary extension'. *Leadership and Organisation Development Journal*, **27**, 363–83.
Latham, M. (1994). *Constructing the Team*. London: HMSO.
Law, K. S., Wong, C. and Song, L. J. (2004). 'The construct and criterion validity of emotional intelligence and its potential utility for management studies'. *Journal of Applied Psychology*, **89**, 483–96.
Lawler, E. (1967). 'The multitrait-multirater approach to measuring managerial job performance'. *Journal of Applied Psychology*, **51**, 369–81.
Leban, W. and Zulauf, C. (2004). 'Linking emotional intelligence abilities and transformational leadership styles'. *Leadership and Organization Development Journal*, **25**, 554–64.
Lieberman, S. (1956). 'The effects of changes in roles on the attitudes of role occupants'. *Human Relations*, **9**, 385–402.
Lindebaum, D. (2009). 'Rhetoric or remedy? A critique on developing emotional intelligence'. *Academy of Management Learning and Education*, **8**, 225–37.
Lindebaum, D. (in press). 'Negative emotion – positive outcomes: a study of construction project managers'. In Hansbrough, T. and Schyns, B. (Eds), *When Leadership Goes Wrong: Destructive Leadership, Mistakes and Ethical Failures*. Charlotte, NC: Information Age Publishing, in press.
Lindell, M. K. and Whitney, D. J. (2001). 'Accounting for common method variance in cross-sectional research designs'. *Journal of Applied Psychology*, **86**, 114–21.
Loosemore, M., Dainty, A. and Lingard, H. (2003). *Human Resource Management in Construction Projects: Strategic and Operational Approaches*. London: Taylor and Francis.
Maitlis, S. and Sonenshein, S. (2010). 'Sensemaking in crisis and change: inspiration and insights from Weick (1988)'. *Journal of Management Studies*, **47**, 551–80.
Mandell, B. and Pherwani, S. (2003). 'Relationship between emotional intelligence and transformational leadership style: a gender comparison'. *Journal of Business and Psychology*, **17**, 387–404.
Matthews, G., Roberts, R. D. and Zeidner, M. (2004). 'Seven myths about emotional intelligence'. *Psychological Inquiry*, **15**, 179–96.
Mayer, J. D. and Salovey, P. (1997). 'What is emotional intelligence?'. In Salovey, P. and Sluyter, D. (Eds), *Emotional Development and Emotional Intelligence: Implications for Educators*. New York: Basic Books, 3–31.
Mayer, J. D., Salovey, P. and Caruso, D. R. (2002). *Mayer-Salovey-Caruso-Emotional Intelligence Test (MSCEIT) Users' Manual*. Toronto: MHS Publishers.
Mayer, J. D., Salovey, P. and Caruso, D. R. (2004). 'Emotional intelligence: theory, findings, and implications'. *Psychological Inquiry*, **15**, 197–215.
Meindl, J. R. (1995). 'The romance of leadership as a follower-centric theory – a social constructionist approach'. *Leadership Quarterly*, **6**, 329–41.

Mitchell, T. R. (1985). 'An evaluation of the validity of correlational research conducted in organizations'. *Academy of Management Review*, **10**, 192–205.
Naoum, S. G. (1998). *Dissertation Research and Writing for Construction Students*. Boston, MA: Butterworth-Heinemann.
O'Connor, R. M. and Little, I. S. (2003). 'Revisiting the predictive validity of emotional intelligence: self-report versus ability-based measures'. *Personality and Individual Differences*, **35**, 1893–902.
ODPM (Office of the Deputy Prime Minister) (2004). *The Egan Review: Skills for Sustainable Communities*. London: ODPM.
Osterman, P., Kochan, T. A., Locke, R. and Piore, M. J. (2001). *Working in America: A Blueprint for the New Labor Market*. Cambridge, MA: MIT Press.
Pallant, J. (2005). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS for Windows*. Maidenhead: Open University Press.
Palmer, B., Walls, M., Burgess, Z. and Stough, C. (2001). 'Emotional intelligence and effective leadership'. *Leadership and Organisation Development*, **22**, 5–10.
Paulhus, D. L., Lysy, D. C. and Yik, M. S. M. (1998). 'Self-report measures of intelligence: are they useful as proxy IQ tests?'. *Journal of Personality and Social Psychology*, **66**, 525–54.
Petrides, K. V. and Furnham, A. (2001). 'Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies'. *European Journal of Personality*, **15**, 425–48.
Petrides, K. V., Pita, R. and Kokkinaki, F. (2007). 'The location of trait emotional intelligence in personality factor space'. *British Journal of Psychology*, **98**, 273–89.
Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y. and Podsakoff, N. P. (2003). 'Common method biases in behavioral research: a critical review of the literature and recommended remedies'. *Journal of Applied Psychology*, **88**, 879–903.
Roberts, R. D., Zeidner, M. and Matthews, G. (2001). 'Does emotional intelligence meet traditional standards for an intelligence? Some new data and conclusions'. *Emotion*, **1**, 196–231.
Rowold, J. and Heinitz, K. (2007). 'Transformational and charismatic leadership: assessing the convergent, divergent, and criterion validity of the MLQ and CKS'. *Leadership Quarterly*, **18**, 121–33.
Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J. and Dornheim, L. (1998). 'Development and validation of a measure of emotional intelligence'. *Personality and Individual Differences*, **25**, 167–77.
Schutte, N. S., Malouff, J. M., Thorsteinsson, E. B., Bhullar, N. and Rooke, S. E. (2007). 'A meta-analytic investigation of the relationship between emotional intelligence and health'. *Personality and Individual Differences*, **42**, 921–33.
Semmer, N., Zapf, D. and Greif, S. (1996). 'Shared job strain: a new approach for assessing the validity of job stress measurements'. *Journal of Occupational and Organizational Psychology*, **69**, 293–310.
Shepherd, D. A. and Cardon, M. S. (2009). 'Negative emotional reactions to project failure and the self-compassion to learn from the experience'. *Journal of Management Studies*, **46**, 923–49.
Smith, P. B., Misumi, J., Tayeb, M., Peterson, M. and Bond, M. (1989). 'On the generality of leadership-style measures across cultures'. *Journal of Occupational Psychology*, **62**, 97–109.
Smithers, G. L. and Walker, D. H. T. (2000). 'The effect of the workplace on motivation and demotivation of construction professionals'. *Construction Management and Economics*, **18**, 833–41.
Thompson, B. (1995). 'Stepwise regression and stepwise discriminant analysis need not apply here: a guidelines editorial'. *Educational and Psychological Methods*, **4**, 525–34.
Todman, J. B. and Dugard, P. (2001). *Single-Case and Small-n Experimental Designs*. Mahwah, NJ: Lawrence Erlbaum.
Vince, R. (2006). 'Being taken over: managers' emotions and rationalizations during a company takeover'. *Journal of Management Studies*, **43**, 343–65.
Walesh, S. G. (2000). 'Engineering a new education'. *Journal of Management in Engineering*, **16**, 35–41.
Wong, C. S. and Law, K. S. (2002). 'The effect of leader and follower emotional intelligence on performance and attitude: an exploratory study'. *Leadership Quarterly*, **13**, 243–74.
Yukl, G. A. (2006). *Leadership in Organisations*. Upper Saddle River, NJ: Prentice-Hall.