AN OVERVIEW OF EMOTIONAL INTELLIGENCE RESEARCH IN CONSTRUCTION PROJECT MANAGEMENT: METHODOLOGICAL CONCERNS

Ama Lawani[1]

Aberdeen Business School, Robert Gordon University, Garthdee Road, Aberdeen, AB10 7QB, UK

The aim of this paper is to present an overview of previous studies on Emotional Intelligence (EI) in construction project management. The literature was surveyed to identify and describe the characteristics of previous studies of EI in the construction industry. Research themes and methods are reviewed in order to establish how EI of construction project managers are assessed. The findings indicate that majority of the studies applied a positivist methodology in investigating EI which may cloud the actual perception of the individual and consequently the relevance of the concept. Furthermore, the deficit of any alternative methodology may prevent elucidation of new informative ways to explain EI in a unique context such as construction. The study recommends the exploration of construction professionals' identities through their real life experiences by applying the grounded theory approach in order to better understand how EI can be developed and applied in construction project management.

Keywords: emotional intelligence, professional identity, review

INTRODUCTION

Emotion is described in psychological terms as an individualised, intrapersonal reaction to some stimulus and a socially constituted phenomenon located in the social realm (Fineman 2000). Emotion in the early 1900s was perceived as irrational and unreasonable, likewise management and emotion were viewed as opposites (Hancock and Tyler 2009). However, in recent times, management scholars and practitioners have recognised the significance of emotion and its relevance for successful organisational interrelationships. The social and cultural dimensions of emotion have been suggested as a significant area of study because organisational structures and processes are socially formed and sustained through individual behaviours and actions (Domagalski 1999). Consequently, the concept of EI emerged from organisational behaviour research which has had an unusual significant impact on managerial/ organisational practice (Ashkanasy and Daus 2005).

The construction industry, over time, has embraced several management trends in order to improve the performance of projects. Total Quality Management (TQM), Building Information Modelling (BIM) and Public Private Partnering (PPP) are a few such initiatives aimed at achieving development of the industry. Leadership is progressively being recognised as a fundamental element in construction project management and methods of applying this soft skill in a highly technical environment are constantly debated upon (Toor and Ofori 2008, Griffis and Brown 2003). Due to

[1] a.lawani@rgu.ac.uk

Lawani, A (2016) An Overview of Emotional Intelligence Research in Construction Project Management: Methodological Concerns. *In*: P W Chan and C J Neilson (Eds.) *Proceedings of the 32nd Annual ARCOM Conference,* 5-7 September 2016, Manchester, UK, Association of Researchers in Construction Management, Vol 2, 639-648.

the multi-organisation and multi-stakeholder nature of construction projects, multiple objectives and conflicting interests often exist which lead to division in cultural and social aspects, lack of inter professional understanding, and difficulty in coordinating stakeholders (Xue *et al*., 2010).

According to Bygballe *et al*., (2010) one of the reasons for the relevance of long term relationships is the growth of industrialization in construction which led to a shift from construction site activities to in-house management facilities. These challenges enact a high demand on construction project managers' capability to coordinate and control activities and manage different individuals for effective co-ordination of issues relevant to the project process. Due to such demands, initiatives such as relationship management and partnering were created to focus on building alliances between project participants and the ability to manage interpersonal interaction (Bygballe *et al*., 2010, Gadde and Dubois 2010). Consequently, problems of inadequate leadership skills associated with project relationships emerged (Pryke and Smyth 2006) and according to Love *et al*., (2011) current developments in the field of construction project management resulted in a 'switch of lenses' in order to examine both psychological (Project manager) and sociological (Project participants) project elements. Skills such as emotional intelligence (EI) leadership have been suggested as a means of improving project performance in construction (Love *et al*., 2011, Pryke and Smyth 2006).

Emotional Intelligence in Construction

While there are a variety of definitions for Emotional Intelligence (EI), there seems to be a general understanding of the concept: Salovey and Mayer (1989) define EI as a subset of social intelligence and the ability to monitor one's own feelings and that of others, to distinguish among them and to use this information to guide one's thinking and actions. Bar-On explains the EI construct as being concerned with effectively understanding oneself and others, relating properly with people and coping with the immediate environmental demands (Bar-On 1997). From a pragmatic view, EI is defined as knowing and managing our emotions and those of others for improved performance (Mersino 2007). EI is also defined as the capacity for recognizing our own feeling and those of others, for motivating ourselves, and for managing emotions well in both ourselves and others (Goleman 2004). A common factor is an underlying presence of inter relational skills and management of people's actions and behaviour. According to Mischung *et al*., (2015), there have been significant claims about the preciseness of EI in predicting workplace success as various studies show positive correlations between EI and job performance.

Construction is a project based industry comprising various separate industries where participants are usually in diverse organisations and where different level of skill and experience are demonstrated. Effective management in such a context demands for group communication, relational skills and effective leadership skills. Since one usually cannot speak of relationships without referring to emotions, EI is now regarded as a supplement to leadership capabilities. Interestingly, with the expose of EI in construction and the recognition of its relevance, the construction industry is still somewhat unwilling to embrace the concept of EI (Mischung *et al*., 2015).The relevance of EI for a construction project manager (CPM) has been an area of argument. Some researchers contend that the presence of a level of emotion quotient in the different styles of leadership is a significant contribution to project success (Turner and Muller 2010) and on the other hand, others such as Antonakis, Ashkanasy

and Dasborough (2009) contend that an undue well-tuned EI is not necessary for a project manager and it may be left behind in the arena of a project manager's development. Likewise, while a survey by Cao and Fu (2011) highlighted the relevance of team members and project managers EI for team effectiveness in construction organisations, Butler and Chinowsky (2006) reported that construction executives scored low in interpersonal aspects of the EI scale. Despite the claims that the level of EI of construction executives and CPM are at or above average (e.g. Butler and Chinowsky 2006), scholars and practitioners continue to refer to the construction industry as hostile, dominated by authoritative behaviours where it is appropriate to enact anger (Lindebaum and Fielden 2011, Lindebaum and Cassell 2012). Due to the controversies associated with EI, scientific research particularly in a construction context has been minimal; this has demotivated scholars to come up with a theoretical academic framework and methodological standards for exploring EI in a project environment (Antonakis, Ashkanasy and Dasborough 2009).

The predominance of EI in scholarly literature presents a facade that much research has been conducted in construction with regard to the concept. Simply using the phrase 'emotional intelligence' as a search criterion in any browser will produce over a million online results showing the extent of its recognition. Research on Emotional Intelligence leadership in the workplace spans across various fields, but only recently did the concept penetrate construction project management (Love *et al*., 2011). In view of the fact that the role of leadership in achieving construction project goals and the project manager's style of leadership are both crucial factors in determining the outcome of construction projects (Griffis and Brown 2003, Larsson *et al*., 2015), consideration of EI as a leadership skill in construction project management is posited as useful in advancing the concept.

However, the EI concept remains largely unexplored in the construction industry (Pryke *et al*., 2015, Zhang and Fan 2013). The reason for this may be due to the perception of masculinity stereotypes throughout the industry (Loosemore and Galea 2008), the traditional styles of adversary relationships (McLennan and Scott 2002) or the confrontational behaviour and communication style of individuals which hinders effective research in the construction industry (Loosemore 1998).This paper presents an overview of EI in the construction industry in the form of a summary of the methodological approaches used in past studies as a step to uncovering the different perceptions of the value of the concept and as a precursor to exploring how EI can be developed and applied in construction. Against this background, the paper aims to answer the following research question: What methods are used in past studies to investigate EI of Construction Project Managers and why were they used? The objectives include: To provide an overview of papers published on Emotional Intelligence of project managers in construction and to provide indication for future direction of study in the area of Emotional Intelligence of Construction Project Managers.

METHOD

An overview of past studies on emotional intelligence in a construction context was conducted through an extensive search of published literature. An overview is typically a narrative summary of literature that attempts to reassess the literature and describe its characteristics. It may be a systematic overview or not, depending on the rigour of search conducted, therefore, it is used for various types of reviews with varying degree of 'systematicity' (Grant and Booth 2009). The population of interest

for this study is the construction industry. Therefore, the search was restricted to studies of EI conducted only in a construction environment. Keywords used in the search included: 'emotional intelligence' or 'emotion' appearing in the abstract. Terms used in filtering were it was suitable to do so include: 'construction industry', 'construction project management' and/or 'construction management'. Since the research on EI is sometimes undertaken from an alternate perspective such as leadership styles, this was also included in the search terms. In addition, extra time was taken to read through the references of the final articles that were identified from the search process.

For this study, the search was comprehensively carried out across 3 construction /engineering databases and 2 journals outside the construction field. The databases used were ARCOM, ICONDA and ASCE. The ARCOM database contains about 19 Construction Management journals, recent ARCOM conference proceedings and PhD theses. The online repository of International Construction Database (ICONDA) contains CIB publications which cover all fields in building and construction research and American Society of Civil Engineers (ASCE) contain articles in peer-reviewed journals and conference proceedings from the American society of civil engineers. Leadership theory underpins EI, therefore other keywords such as 'Leadership styles' and 'Construction management' were used in combination with the keyword 'emotional intelligence' in the literature search. As a result, the search extended to the Leadership Quarterly Journal and Human Relation Journal. These amount of journals were accessed so as to obtain the breath of studies of EI in the Construction Industry. Data was extracted and analysed deductively. Since, the diverseness of focus of management studies prevents the aggregation and assessment of results (Tranfield *et al* 2003), synthesis was achieved by drawing similarity and differences from the characteristics of the gathered studies through interpretative means.

Table 1 describes the process by which articles were selected. 3 databases (containing several journals each) and 2 journals were used in the search. 384 citations were retrieved from the search using keywords 'emotional intelligence', leadership styles and the phrase 'emotional intelligence in construction management'. The keyword 'Emotional Intelligence' yielded 243 articles, 'Leadership styles' yielded 52 articles, the phrase 'Emotional Intelligence in Construction Management yielded 89 articles, each in total, across the 5 sources. Only the ASCE library had provision for applying filters such as 'Construction management and Construction Industry', which resulted in 184 articles being filtered out. The total articles for the review reduced to 200. An abstract review on the remaining articles further excluded 180 articles. Criteria for exclusion included a non-construction context, no actual association with emotional intelligence or a thesis. Consequently 20 articles were fully assessed. During the final review 4 additional articles were identified from going through referenced papers and these were added to the 20 initially identified articles. The review process used in the study attempts to provide an explicit report of the knowledge on methods used in past studies to investigate EI of Construction professionals and the rationale for those methods.

FINDINGS

The final assessment included a total of 24 articles indicating that there have not been many studies exploring the nature of emotional intelligence of professionals in the construction industry. The relatively low amount of articles that was retrieved for the study is comparable with the low number of studies (49) that investigated leadership

in the construction industry (Toor and Ofori 2008) and Clarke's (2010) identification of only 5 studies that specifically examined EI in a project context. Existing studies of EI in the construction industry are circumscribed around investigating the level of EI of an individual/ organisation or the relationship between various personality or leadership types on EI. The studies on EI in construction have explored areas including leadership styles (Butler and Chinowsky 2006, Cao and Fu 2011, Sunindijo 2012), project performance (Love *et al.,* 2011, Zhang and Fan 2013), construction management educational programmes (Mo *et al*., 2007, Mischung *et al*., 2015) and the contracting area (Songer and Walker 2004). Project tasks/stages that have been studied in relation to EI include safety management tasks (Sunindijo and Zou 2013), risk taking (Tixier *et al*., 2014), Conflict resolutions (Sunindijo and Hadikusumo 2013), Cognitive and Relational tasks (Lindebaum and Jordan 2012) and Negotiation stage (Der Foo *et al*., 2004).

Table 1. Article selection process

	ICONDA CIB Library	Leadership Quarterly	Human Relation	ASCE Library	ARCOM	Total
Using keyword : Emotional Intelligence	5			227	11	243
Using keyword : Leadership styles	10	30			12	52
Using key phrase: Emotional Intelligence in construction project management		45	44			89
Apply filters : Construction management and construction industry				-184		-184
Total	15	75	44	43	23	200
Exclusion through abstract interview (non construction context)	-13	-75	- 43	- 37	-12	-180
Retrieved for full review	2	0	1	6	11	20

These studies tend to adopt a particular research approach and most of them focused on exploring the correlation to leadership types. Cao and Fu (2011) and Mo *et al* (2006) opine that since EI correlates with transformational leadership, it may be useful to construction project managers. Similarly, Butler and Chinowsky (2006) showed a relationship between EI and transformational leadership behaviours. Although, no empirical research was conducted, Love *et al*., (2011) and Mo, Dainty and Price (2006) acknowledged the importance of EI and recommended that the concept of organisational behaviour and an individual's EI be explored as well as ways of providing trainings on EI. In line with these suggestions, Mo *et al*.'s (2007) investigation, however, revealed a weak correlation between educational courses and EI of construction students. Their finding suggests that the weak dependence of EI on educational courses could be as a result of the sort of educational programmes taught or other factors. Although, the experimental study by Mischung *et al*., (2015) showed that training construction students in EI skills enable teams to perform better in student work group, nevertheless, this may not be a true representation of real life experiences, where the performance of construction professionals is likely assessed against confrontational beliefs (Loosemore and Gala 2008). Apart from those research which established correlations between EI and leadership behaviour, others investigated the impact of a project manager's EI on certain tasks and revealed a positive correlation with certain conflict resolution style while considering the socio cultural custom (Sunindijo and Hadikusumo 2013). On the other hand another study showed that individuals with a negative emotional state perceived considerably more

risk than those with a positive emotional state (Tixier *et al*., 2014). In spite of these recognitions and suggestions, some authors argue on the negligence of context and tasks in studies of EI (Lindebaum and Jordan 2012).

The specific context of construction often tends to be ignored, as much of the literature concerning EI in construction is based on the traditionally deductive positivist approach. Observed findings resonate with Phua (2013) assertion that human, cultural and psychological factors are paid little attention in the construction literature. Majority of the researchers adopted a quantitative approach focusing at the individual or organisational level. However, at both levels, the aim was mainly to determine the impact of EI on certain personality type variables (e.g. transformational leadership) or organisational variables (e.g. performance). The studies often used questionnaires – self report scaled instrument to establish relationships or the level of influence between variables. The current study identified only two articles that employed qualitative measures in their investigation. One of the them assessed the use and application of EI within the construction industry by employing narratives as a means of organizing data (Lindebaum and Cassell 2012) while the other study qualitatively investigated the behaviour of the individual in a construction context with regards to a specific emotion – anger (Lindebaum and Fielden 2011). For a majority of the studies, dimensions of EI seemed to have a positive correlation or effect on the inquired variable while some authors interpreted their results from a perspective of cultural dimensions of the country in which the study was conducted (e.g. Sunindijo and Hadikusumo 2013). The findings of the current study reflect the preference of research in construction towards a positivist paradigm (Phua 2013, Ofori and Toor 2009). Consequently, the view that the construction industry has been populated by positivist methodologies is deduced from this review, therefore, arguably the knowledge and development of a social construct such as EI may be underrated, specifically in the area of applicability and development of the concept.

DISCUSSION AND CONCLUSION

In general, only a small number of studies use qualitative methods to examine and explain the nature of leadership in the construction industry (Toor and Ofori, 2008). The relatively low number of articles identified in the current study not only throws light on the fact that individual and psychological factors still receive relatively less interest in the construction literature but the findings reveal on over reliance of quantitative methods used in investigating EI. The construction industry has been represented as a social system (Love *et al*., 2002) and emotional intelligence originates from the psychology domain which is a function of the social process embedded in a social system. Conversely, the method of analyses for studying such social processes may not be sufficient, and according to Fineman (2004) the use of quantitative approaches to investigate a social constructed phenomenon undervalues the development of that phenomenon. In addition, surveys and questionnaires mainly measure an individual's perception towards an action or behaviour and not the actual behaviour because of social desirability (Ofori and Toor 2009). Arguably, this implies that majority of past investigations have only made an attempt in finding out the views of construction professionals towards emotional intelligence and not what is actually practiced or what behaviour 'works' in their environment with regards to EI. Besides, it was identified that the authoritative style of leadership is significantly used in Turkish construction industry (Giritli and Oraz 2004).The lack of qualitative enquiry of EI in construction, questions how the concept can be thoroughly explored for developmental and applicability purposes. The concept of EI seems to challenge the

way construction project managers understand their identity (Lindebaum and Cassell 2012), this uniqueness or character is often imposed by the nature or circumstance in which these individuals find themselves (Webb 2006).Too often, the focus has been on quantifying the level of EI and establishing relationships between variables such as leadership styles, while neglecting the identity of the individual's understanding with respect to their role and specific context.

Identity is an individual-level construct associated with organisational performance. It is a sense making structure in which individuals interpret themselves and others while interacting with their social environment (Ybema *et al*., 2009). According to Gluch (2009) the role and identity of industry professionals are social constructs shaped through social processes of interaction between individuals and the organisation's milieu. In other words, the work environment has an effect on an individual's attribute which in turn shapes organisational behaviour. Phua (2013) opines that what people say and do are often refined and shaped within organisational and managerial contexts which can be accessed through narratives. The male dominated culture of the construction industry (Loosemore and Gala 2008) impacts on how EI is being interpreted and poses a threat to the identity of CPMs. Accordingly, most CPM believes that EI may have no place in the construction industry leading to low acceptance of the EI concept. As male professionals prefer to hold onto a more technical oriented identity (Faulkner 2007), the objective of applying EI for effective relationship management in construction (Pryke and Smyth 2006) should not precede a clear understanding of the situational and structured realties of how certain conducts are displayed for effective performance.

As Smyth 2000 quoted in Lindebaum and Fielden (2011) states:

> The management style of many contracting companies is based upon the street fighting man. Banter and joking are usually at the expense of others..... verbal abuses are the weapons to instil fear and maintain power...

Construction professionals develop different identities in order to deal with the pressure between their official roles and project practice standards (Gluch 2009). However, the majority of the research conducted on EI in the construction industry do not adequately consider these realities. A focus on establishing correlations, exploring levels of EI in different aspects and/or investigating dimensions of other constructs in relation to EI may prevent the revealing of the dynamics of EI and the complexities of the social process that transpire among individuals in construction. Finally, Mischung and Perrenoud (2015) suggested that educating and assessing individuals in the EI construct may not be successful because of the lack of effectively teaching one how to implement the skill and recognising when it is appropriate to utilise it. In other words, having an awareness of EI or being emotionally competent will not guarantee improved performance. Exploring the individual's identity and in relation to the work environment will help in explaining how the environment or context creates identities of construction professional and how EI skills can be utilized for meaningful improvements.

Grounded theory often used in studying human behaviour is suggested as a relevant and appropriate approach to studying EI in context of construction as it aims to generate inference which is grounded in the data. The use of qualitative methods of investigation such as in-depth interviews, action research and discursive approaches will illuminate the character and behaviour within the context of the construction industry in relation to EI, will support better understanding of the concept in

construction and consequently discover the usefulness and applicability of the concept.

To conclude, this study fills an important gap in existing construction project management literature by identifying an over use of quantitative research approach in investigating emotional intelligence among construction professionals. This study offers suggestion on employing the use of qualitative approach to investigating EI in the construction industry. Qualitative methods will be useful in revealing the implication of Emotional Intelligence on the identity of construction professionals and vice versa. Albeit, the use of statistical measures provides objective and evidenced results, rich interpretations of contextual features which are relevant in understanding and advancing the concept of EI leadership is absent due to the lack of using alternative research methods such as the Grounded theory approach. As a result, the identity and actual behaviours based on real life practices has a large tendency of being overlooked.

REFERENCES

Antonakis, J, Ashkanasy, N M and Dasborough, M T (2009) Does leadership need emotional intelligence? *The Leadership Quarterly*, **20**(2), 247-261.

Ashkanasy, N M and Daus, C S (2005) Rumours of the death of emotional intelligence in organizational behavior are vastly exaggerated. Journal of Organizational Behavior, **26**(4), 441-452.

Bar-on, R (1997) *The Emotional Quotient Inventory (EQ-i): A Test Of Emotional Intelligence*. Toronto: Multi-Health System.

Butler, C J and Chinowsky, P S (2006) Emotional intelligence and leadership behavior in construction executives. *Journal of Management in Engineering*, **22**(3), 119-125.

Bygballe, L E, Jahre, M and Swärd, A (2010) Partnering relationships in construction: A literature review. *Journal of Purchasing and Supply Management*, **16**(4), 239-253.

Cao, J, Fu, Y and Fu, Z (2011) The relationship between emotional intelligence and transformational leadership behavior of project managers in construction project. *International Journal of Digital Content Technology and its Applications*, **5**(12), 166-170.

Clarke, N (2010) Emotional intelligence and its relationship to transformational leadership and key project manager competences. *Project Management Journal*, **41**(2), 5-20.

Der Foo, M, Anger Elfenbein, H, Hoon Tan, H and Chuan Aik, V (2004) Emotional intelligence and negotiation: The tension between creating and claiming value. *International Journal of Conflict Management*, **15**(4), 411-429.

Domagalski, T A (1999) Emotion in organizations: Main currents. *Human Relations*, **52**(6), 833-852.

Faulkner, W (2007) Nuts and bolts and people' Gender-troubled engineering identities. *Social Studies of Science*, **37**(3), 331-356

Fineman, S (2004) Getting the measure of emotion and the cautionary tale of emotional intelligence. *Human Relations*, **57**(6), 719-740.

Gadde, L and Dubois, A (2010) Partnering in the construction industry: Problems and opportunities. *Journal of Purchasing and Supply Management*, **16**(4), 254-263.

Gluch, P (2009) Unfolding roles and identities of professionals in construction projects: Exploring the informality of practices. *Construction Management and Economics*, **27**(10), 959-968.

Goleman, D (2004) *Emotional Intelligence and Working with Emotional Intelligence*. London: Bloomsburg Publishing.

Grant, M.J. and Booth, A (2009) A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, **26**(2), 91-108.

Griffis, F and Brown, N (2003) Leadership in the management of construction. Construction Research Congress, *Winds of Change: Integration and Innovation in Construction, Proceedings of the Congress*, 19th March - 21st March, Honolulu, HI: United States, 559-568.

Giritli, H and Oraz, G T (2004) Leadership styles: some evidence from the Turkish construction industry. *Construction Management and Economics*, **22**(3), 253-262.

Hancock, P. and Tyler, M (2009) Emotion at work. *In*: T Redman and A Wilkinson (Eds.) *Contemporary Human Resource Management*. London: Prentice Hall.

Larsson, J, Eriksson, P E, Olofsson, T and Simonsson, P (2015) Leadership in civil engineering: Effects of project managers' leadership styles on project performance. *Journal of Management in Engineering*, **31**(6), 04015011.

Lindebaum, D and Fielden, S (2011) 'It's good to be angry': Enacting anger in construction project management to achieve perceived leader effectiveness. *Human Relations*, **64**(3), 437-458.

Lindebaum, D and Jordan, P J (2012) Relevant but exaggerated: The effects of emotional intelligence on project manager performance in construction. *Construction Management and Economics*, **30**(7), 575-583.

Lindebaum, D and Cassell, C (2012) A contradiction in terms? Making sense of emotional intelligence in a construction management environment. *British Journal of Management*, **23**(1), 65-79.

Livesey, P (2013) *What Does It Take To Manage Larger Construction Projects: The Role Of Emotional Intelligence, Reflection-in-Action and Autoethnography*. Australian Institute of Project Management, National Conference. AIPM.

Loosemore, M and Galea, N (2008) Genderlect and conflict in the Australian construction industry. *Construction Management and Economics*, **26**(2), 125-135.

Loosemore, M (1998) The methodological challenges posed by the confrontational nature of the construction industry. *Engineering, Construction and Architectural Management*, **5**(3), 285-293.

Love, P E D, Holt, G D, Shen, L Y, Li, H and Irani, Z (2002) Using systems dynamics to better understand change and rework in construction project management systems. *International Journal of Project Management*, **20**(6), 425-436.

Love, P, Edwards, D and Wood, E (2011) Loosening the Gordian knot: The role of emotional intelligence in construction. *Engineering, Construction and Architectural Management*, **18**(1), 50-65.

McLennan, A and Scott, G (2002) Relationships in project delivery. *Civil Contractors Federation 2002 Annual Conference,* 5 October 2002, Hamilton Island, Australia. Civil Contractors Federation.

Mersino, C (2007) *Emotional Intelligence For Project Managers: The People Skills You Need To Achieve Outstanding Results*. New York, NY: Amacom.

Mischung, J, J, Smithwick, J B, Sullivan, K T and Perrenoud, A J (2015) .Using skills based emotional intelligence training to improve team performance in construction management programs. *Proceedings of the 122nd ASEE Annual Conference and Exposition*, 14-17 June 2015. WA: Seattle

Mo, Y, Dainty, A and Price, A (2007) An assessment of the emotional intelligence of construction students: An empirical investigation. *In*: D Boyd (Ed.) *Proceedings 23rd Annual ARCOM Conference,* 3-5 September 2007, Belfast, UK. Association of Researchers in Construction Management, Vol. 1, 325–34.

Müller, R and Turner, R (2010) Leadership competency profiles of successful project managers. *International Journal of Project Management*, **28**(5), 437-448.

Ofori, G. and Toor, S (2009) Research on cross-cultural leadership and management in construction: A review and directions for future research. *Construction Management and Economics*, **27**(2), 119-133

Phua, F T (2013) Construction management research at the individual level of analysis: Current status, gaps and future directions. *Construction Management and Economics*, **31**(2), 167-179.

Pryke, S D and Smyth, H J (2006) *Management of Complex Projects: A Relationship Approach*. Blackwell: Oxford

Pryke, S, Lunic, D and Badi, S (2015) The effect of leader emotional intelligence on leader–follower chemistry: A study of construction project managers. *Construction Management and Economics*, **33**(8), 603-624.

Salovey, P and Mayer, J D (1989) Emotional intelligence. *Imagination, Cognition and Personality*, **9**(3), 185-211.

Songer, A D and Walker, B (2004) Central contractor emotional intelligence in the construction industry. *In*: F Khosrowshahi (Ed.) *Proceedings 20th Annual ARCOM Conference,* 1-3 September 2004, Edinburgh, UK. Association of Researchers in Construction Management, Vol. 1, 487-93.

Sunindijo, R Y and Hadikusumo, B H (2013) Emotional intelligence for managing conflicts in the sociocultural norms of the Thai construction industry. *Journal of Management in Engineering*, **30**(6), 04014025.

Sunindijo, R (2012) Integrating emotional intelligence, political skill, and transformational leadership in construction. *Civil Engineering Dimension*, **14**(3), 182-189.

Tixier, A J, Hallowell, M R, Albert, A, Van Boven, L and Kleiner, B M (2014) Psychological antecedents of risk-taking behavior in construction. *Journal of Construction Engineering and Management*, **140**(11), 04014052.

Toor, S and Ofori, G (2008) Taking leadership research into future: A review of empirical studies and new directions for research. *Engineering, Construction and Architectural Management*, **15**(4), 352-371.

Tranfield, D, Denyer, D and Smart, P (2003) Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, **14**(3), 207-222.

Webb, J (2006) *Organisations, Identities and the Self*. London: Palgrave Macmillan.

Xue, X, Shen, Q and Ren, Z (2010) Critical review of collaborative working in construction projects: Business environment and human behaviors. *Journal of Management in Engineering*, **26**(4), 196-208.

Ybema, S, Keenoy, T, Oswick, C, Beverungen, A, Ellis, N and Sabelis, I (2009) Articulating identities. *Human Relations*, **62**(3), 299-322.

Zhang, L and Fan, W (2013) Improving performance of construction projects: A project manager's emotional intelligence approach. *Engineering, Construction and Architectural Management*, **20**(2), 195-207.