

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



A Meta-Analytic Review of Quantitative Studies on Emotional Intelligence and Leadership

Hui-Wen Vivian Tang¹ and Mu-Shang Yin²

¹*Department of Applied English, Ming Chuan University
Taoyuan,*

²*Department of Travel Management, Hsing Wu Institute of Technology
Taipei,
Taiwan*

1. Introduction

Ever since Daniel Goleman (1998) maintained that emotional intelligence is the “sine qua non” of leadership, the link between emotional intelligence and leadership has become a topic of widespread interest in leadership research. The overriding focus of the leadership literature has been on emotional intelligence as hypothesized competencies or traits of individual leaders to affect leadership behaviors, effectiveness or emergence (e.g., Leban and Zulauf, 2004; Hawkins and Dulewicz, 2007; Rego *et al.*, 2007). Many studies have found that leaders’ emotional intelligence explains a high proportion of variance in leadership effectiveness and a variety of organizational outcomes (e.g., Carmeli, 2003; Ozcelik *et al.*, 2008). A significant range of literature also provides empirical evidence to support the notion that emotional intelligence is a predictor of transformational leadership (Barbuto and Burbach, 2006; Leban and Zulauf, 2004; Mandell and Pherwani, 2003; Duckett and Macfarlane, 2003). Despite all the evidence supporting the positive value of emotional intelligence on leadership, several studies have produced contradictions regarding the necessity of emotional intelligence for leadership behavior, practices or effectiveness by arguing that more data based on defensible methodologies are needed to prove the validity of the EI/leadership link (Antonakis, 2003; Antonakis *et al.*, 2009; Locke, 2005).

EI constructs have been generalized into two competing models: the ability-based model and the trait-based (or mixed) model (Conte, 2005; Day *et al.*, 2002). The ability-based model conceptualized by Mayer and Salovey (1997) defines emotional intelligence as a type of intelligence reflecting the ability to process emotional information. The trait-based model of emotional intelligence was endorsed by Goleman and Bar-On (Goleman, 1998; Bar-On, 1997); emotional intelligence is defined as a set of non-cognitive attributes, encompassing five broad skill areas: intrapersonal skills, interpersonal skills, adaptability, stress management and general mood (Conte, 2005; Van der Zee and Wabeke, 2004). Previous studies and anecdotal evidence have verified the claim that transformational leadership style could be predicted from trait-based emotional intelligence (Harms and Credé, 2010; Barbuto and Burbach, 2006; Brown and Moshavi, 2005; Mandell and Pherwani, 2003). A number of studies have also been carried out, indicating the ability-based EI to be a

determinant of transformational leadership (Daus and Ashkanasy, 2005; Coetzee and Schaap, 2004; Walter and Bruch, 2007). Despite all the above, further doubt has been casted on validation issues with the various EI constructs prior to operational uses in scientific investigations (Cartwright and Pappas, 2009; Landy, 2005; Walter *et al.*, 2011).

With a wide range of literature supporting the significant role of EI in leadership effectiveness and various leadership outcomes, developing EI skills and competencies is thus crucial to leadership development. Empirical studies on interventions of emotional intelligence have provided convincing evidence relating to the positive results of teaching emotional intelligence on individuals' life success and work performance. Accordingly, EI can be learned and developed successfully among employees and managers through well-designed EI training activities and programmes (Perks and Bar-On, 2010; Meyer *et al.*, 2004; Latif, 2004); however, speculation does exist on the content of such interventions and the nature of EI training outcomes (Zeidner, Roberts, & Matthews, 2002). The issue whether emotional intelligence can be taught is as important as the question of whether emotional intelligence competencies relate to leadership in the research community.

Meta-analytic studies which have examined literature on the relationships between various facets of leadership and emotional intelligence have been found over the period of 2001 to 2010. These synthesized studies, such as Mills' (2009) meta-analysis on whether a consistent, research-driven link can be established between the concept of emotional intelligence and effective leadership, have provided evidence that emotional intelligence may have immense significance and relevance for leadership effectiveness. Another meta-analytic investigation is a dissertation performed by Whitman (2009) on potential process mechanisms that may account for the EI-leadership effectiveness relationship further ascertained that mixed model EI appears to be a better predictor of leadership than ability EI. Similar results were found in Harms and Credé's (2010) meta-analysis containing 62 independent samples derived from existing literature from 1982 to 2009. It was revealed that trait-based (mixed) model of EI has more promise as a predictor of leadership effectiveness than did ability-based measures. Despite the fact that EI may contribute to successful leadership at some level, results of Harms and Credé's meta-analytic estimate suggested that EI being the core determinant of transformational leadership were overstated. The aforementioned meta-analytic studies which quantitatively reported their findings in terms of standardized effect sizes have continued to spur research interest in whether emotional intelligence had a significant effect on leadership.

Two meta-analytic reviews were found to qualitatively examine the linkage of emotional intelligence and nurse leadership. The two integrative reviews undertaken by Akerjordet and Severinsson (2008, 2010) revealed that emotionally intelligent nurse leadership is associated with favorable work climate characterized by resilience, innovation and change. However, controversies do exist in knowledge regarding the nature of EI and the current state of the art in the conceptual development of EI as abilities, skills and personality dispositions (Akerjordet and Severinsson, 2008, 2010).

Meta-analytical investigation is therefore needed as a common practice to resolve conflicts found in similar research approach (Rosenthal and DiMatteo, 2001; Dixon-Woods *et al.*, 2005). Through systematic review of literature on emotional intelligence and leadership, the study aims at providing a detailed synthesis of what have been investigated and what are in

need of further exploration in EI and leadership research. The methodology employed in this qualitative meta-analytic review is inspired by Kun and Demetrovics (2010), Gooty *et al.* (2010) and Walter *et al.* (2011). In the qualitative investigation conducted by Gooty *et al.* (2010), a selective, qualitative review of affect, emotions, and emotional competencies in leadership studies was adopted to examine theory, methods and quality of affect-based scholarship in leadership. The present study was also informed by a comprehensive attempt by Kun and Demetrovics (2010) who qualitatively reviewed and critically discussed literature on the relationship of emotional dysregulation and addictive disorders. In an effort to ascertain whether EI is the sine qua non of leadership, Walter *et al.* (2011) critically reviewed recent empirical studies aiming at constructively framing EI's role in three criteria of leadership research: leadership emergence, leadership effectiveness and leadership behavior. In a similar vein, the present study follows research procedure employed by Gooty *et al.* (2010), Kun and Demetrovics (2010) and Walter *et al.* (2011) in the design and reporting of this systematic review.

The primary objective of the study is to assess research methods/designs and data analysis procedures employed by researchers investigating the relationship between EI and leadership over the period 2001-2010. The contributions of research on the linkage between the two constructs using quantitative approach were reviewed in terms of data analysis techniques, research design, measures used to assess EI, and subject matters in relation to leadership. The purpose was to provide the breadth of knowledge available on the potential utility of EI for predicting leadership effectiveness. The second purpose of the study was to identify research gaps and formulate research questions that could drive further endeavor in exploring topics relevant to the EI-leadership relationship.

2. Literature search

To provide a composite knowledge of the diversity of the theories, measures, samples, and contexts that have been employed by research studies on emotional intelligence and leadership, this study made extensive search for relevant research articles from the following six academic databases: *Academic Search Premier*, *Show all Education Research Complete*, *ERIC*, *PsycARTICLES*, *Psychology and Behavioral Sciences Collection*, *PsycINFO*. The focus was on scholarly articles employing quantitative approaches to examine studies exploring the relevance of emotional intelligence to leadership from January 2001 through December 2010. *Emotional intelligence and leadership* were the two keywords used to execute the electronic search. The electronic search was supplemented by a manual search for further studies found on reference lists shown up by the electronic search. Up to 116 articles were found with topics related to emotional intelligence and leadership. Inclusion and exclusion criteria formulated to identify articles for further examinations were: (1) Papers should be quantitative research studies related to emotional intelligence of leaders, supervisors, or managers in all professions; (2) Papers included should go through peer-review process and published between 2001 to 2010; (3) Articles focusing mainly upon multiple intelligence, general intelligence or social intelligence were excluded; (4) The present analysis is restricted to English language publications. For the purpose of this research, all articles using pure quantitative research methods focusing on the relevance of EI to leadership were reviewed. A total of 43 articles were included in the final data analysis. Major categories being analyzed include:

- Statistical/mathematical techniques used
- Research design used
- EI measure used
- Subject matters investigated in relation to leadership

3. Statistical/mathematical techniques & research design used

In 1980s', commonly employed data analysis procedures to study educational psychology and educational phenomena were ANOVA, correlation, *t*-test, chi-square, non-parametric and factor analysis. The trends and shifts of data analysis procedures during the last decades were well summarized by Hsu (2005). In general, there is a continuous drop of experimental research and the trends of frequently used data analysis procedures remain steady. By surveying articles published by the *American Educational Research Journal* (AERJ), *Journal of Experimental Education* (JEE) and *Journal of Educational Research* (JER), Hsu (2005) synthesized that the most frequently used statistical procedures in educational research during 1971 to 1998 in rank order were descriptive statistics, ANOVA/ANCOVA, correlation, regression, *t*-test, and psychometric statistics. ANOVA, chi-square, correlation, multiple regression and *T* test were found to be the most frequently employed statistical techniques to assess statistical power in applied psychology and management research published between 1992 and 1994.

To explore current trends of quantitative studies in emotional intelligence and leadership, categorization for plotting statistical techniques was based on reviews of literature on applied psychology, management and educational research designs (Elmore and Woehlke, 1998; Hsu, 2005; Gooty *et al.* 2010). The coding process included statistical techniques used in each article and categorizing techniques used in each article. Since a single article may employ more than one statistical technique, the total coded techniques would exceed the total number of article reviewed. The focus is on inferential statistical techniques used in conducting research on the relevance of emotional intelligence to leadership; therefore, when an article employed a specific technique more than once as different data analysis procedures, it was coded as one technique. For instance, if a research used 3 independent sample *t*-tests in one study, it was counted as one statistical technique. However, subsets under a category were treated as separate techniques. Therefore, if an article used both linear regression and hierarchical regression analyses, it was coded as two statistical techniques under the category of regression. Another instance was that if an article employed both one-sample *t*-test and independent sample *t*-test, they were counted as two subsets of techniques under the category of *t*-test.

After coding and categorizing statistical techniques used in articles employing quantitative approach, we found that during the period of 2001 to 2010 the most frequently used technique was correlational analysis; 28 analyses (33.7%) were coded and categorized into that category. Regression analysis ranked the second frequently used techniques, with a total number of 24 analyses (28.9%). Factor analysis ranked the third, with a total of 11 analyses (13.2%), followed by *t* test (7 analyses; 8.4%), ANOVA/ANCOVA and others (4 analyses respectively; 4.6%), meta-analysis and psychometric theory (2 analyses respectively; 2.3%). The results are presented in Tables 1, & 2.

Statistical Techniques	Frequency of techniques used by years									
Years/ No.of articles	2001 3	2002 5	2003 6	2004 3	2005 3	2006 7	2007 5	2008 3	2009 4	2010 6
Chi-square	0	0	0	0	0	0	0	0	0	0
correlation	2	4	3	2	1	4	3	3	1	5
t-test	1	0	2	1	0	0	1	2	0	0
ANOVA/ ANCOVA	0	0	0	0	0	1	1	0	0	2
Multivariate	0	0	0	0	0	0	1	0	0	0
Psychometric theory	1	0	0	0	0	0	0	0	1	0
Regression	1	4	4	1	2	6	2	1	1	2
Factor analysis (SEM)	0	2	0	2	1	1	1	1	2	1
Meta-analysis	0	0	0	0	0	0	0	0	1	1
Others	0	0	1	0	1	0	0	1		1

Table 1. Major Statistical/mathematical techniques used in EI-leadership research (2001-2010)

Statistical Techniques	Total Techniques used	
Number of & % of techniques (total)	# 83	%
Chi-square	0	0%
correlation	28	33.7%
t-test	7	8.4%
ANOVA/ ANCOVA	4	4.8%
Multivariate	1	1.2%
Psychometric theory	2	2.4%
Regression	24	28.9%
Factor analysis (Structural equation modeling)	11	13.2%
Meta-analysis	2	2.4%
Others	4	4.8%

Table 2. Major Statistical/mathematical techniques used in EI-leadership research (Total 2001-2010)

In studying emotional intelligence in relation to leadership, more emphasis has been given to non-experimental research designs than experimental ones. After classifying the 43 research studies included in the final analysis, only 2 out of the 43 (4.5%) were experimental research. Forty-one research studies reviewed in the study (95.0%) employed non-experimental approach, which obviously outweighed the number of experimental research. The two experimental exploratory studies confirmed EI can be learned and developed through deliberate training and interventions (Groves *et al.*, 2008; Meyer *et al.*, 2004). Forty-one studies using non-experimental designs are tabulated below in Table 3.

Research Design	Non-experimental
Descriptive study	5(10.6%)
Correlational study	9 (20.0%)
Correlational predictive study	23 (48.9%)
Casual-comparative study	4 (8.5%)
Psychometric testing/ model testing	4(8.5%)
Secondary data analysis/meta analysis	2 (4.2%)
Total	47 research designs used by 41 articles

Table 3. Studies by Research Design (Non-Experimental)

Since an article may involve the application of multimethod analysis, the total number of research designs may exceed the total number of articles reviewed in the present study. Among the 40 non-experimental research articles, 47 research designs were found. Correlational predictive (23 entries, 48.9%) and correlational analyses (9 entries, 20.0%) were the most popular research designs, with a total of 32 studies, followed by descriptive study, with a total of 5 studies (10.6%). It is important to note that descriptive statistics was excluded if they were used to present frequencies, percentages, averages of demographic variables; only those involved with analyzing data collected from surveys and reported in findings were counted as studies using descriptive statistics.

4. EI measures used

As noted in the introduction section, the ability-based model and the trait-based (or mixed) model are the two most prominent theoretical constructs for creating EI measures. Researchers in Mayer and Salovey’s ability-based tradition have developed various comprehensive measures, including the Multifactor Emotional Intelligence Scale (MEIS; Mayer *et al.* 2000), the Mayer, Salovey and Caruso Emotional Intelligence test or MSCEIT, Version 2.0 (Mayer *et al.* 2002), the Levels of Emotional Awareness Scale or LEAS (Lane *et al.* 1990), the Emotional Accuracy Research Scale or EARS (Mayer and Geher, 1996), the WLEIS measure (Wong and Law EI Scale, 2002), and self-rated emotional intelligence scale (SREIS; Brackett *et al.*, 2006). Examples of widely used trait-based (or mixed) EI measures include Bar-On’s Emotional Quotient Inventory or EQ-I (Bar-On 1997), Emotional Quotient (EQ) questionnaire (Goleman, 1999), Emotional Competence Inventory (ECI, a 360-degree instrument by Boyatzis *et al.* 2000), the Swinburne University Emotional Intelligence Test or SUEIT (Palmer and Stough 2001), trait meta-mood scale (TMMS; Salovey *et al.*, 1995) and the Emotional Intelligence Question (EIQ; Dulewicz and

Higgs 1999). The ability-based model has been under criticism with low reliability and with slight correlations with cognitive ability; whereas the trait-based (or mixed) model was found to lack discriminant validity and overlap with existing personality trait measures (Conte, 2005; Oboyle *et al.*, 2011).

Tables 4 and 5 present a summary of 46 EI measures used by the 43 articles reviewed in the present study. Since one article may use more than one EI measure, the sum of EI measures used is not expected to equal the total number of articles examined in the study. The trait-based (mixed) model of EI appears to be predominant in articles published from 2001 to 2010, with an overall percentage of 39% (18 articles). Twelve entries of EI measures (26%) were classified as ability-based measures of EI, whereas 16 EI measures (35%) were “others”. Among all the measures used, the most frequently used ones were the ability-based MSCEIT, the trait-based EQ-i and SUEIT , with 6 entries each (13%), followed by the ability-based WLEIS (5 entries, 11%). The classified models of EI measures used from 2001 to 2010 were presented in Tables 4, showing that the trait-based measures were the predominant constructs used to examine EI and leadership during 2001 to 2006, with an exception of 2004 when it was the first time the ability-based measures exceeded the trait-based measures. The trait-based and ability-based constructs seem to have leveled off during 2007 to 2010. Ever since the ability-based model entered the leadership research community in 2003, the two theoretical constructs became competing models in examining quantitative studies in relation to EI and leadership.

EI Measures	Frequency of measures used by years									
Years/ No. of measures	2001 3	2002 5	2003 7	2004 3	2005 3	2006 9	2007 5	2008 3	2009 3	2010 5
Ability-based	0	0	3	2	0	3	1	1	1	1
Trait-based	2	3	4	1	1	5	1	1	0	1
Others	1	2	1	0	2	1	3	1	2	3

Table 4. EI measures used (2001-2010)

Table 5 depicts total numbers of different EI models based on which various EI measures were created. Among all the measures classified as “others”, the Leadership Dimensions Questionnaire developed by Dulewicz and Higgs in 2004 had been used in two studies published in 2005 and 2007 respectively (Hawkins and Dulewicz, 2007; Dulewicz et al., 2005). The LDQ was used to measure 15 leadership competences clustered under the three dimensions of intellectual competencies (IQ), managerial competencies (MQ), and emotional competencies (EQ) of leaders or managers in the two studies. The above two studies provided empirical evidences to support the positive effect of EQ on leadership performance.

New models of EI have emerged during 2001 to 2010. For example, a nonverbal measure of the ability to recognize emotional expressions displayed by others was developed in 2001 by Morand. Psychometric properties of the emotional intelligence self-description inventory (EISDI), a measure developed based on the ability-based model of EI, was examined and improved for operational use with fully employed business students in the United States (Groves *et al.*, 2008). In 2008, a newly developed 16-item measure of EI was validated for use with supervisor-subordinate dyads in Hong Kong. The issue of translation and psychometric validation of a measure before adapted across cultures was investigated in two studies. In 2004, the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey) was cross-culturally validated for use with management students in Hong Kong (Law *et al.*, 2004). In 2010, a standardized forward-backward translation procedure was conducted ensure the quality of the translated version of Emotional Skills Assessment Process (ESAP) developed in the United States before administering it on academic leaders in Taiwan (Tang *et al.*, 2010).

EI Measures Used	Total	Percent
No. & % of EI Measures (total)	46	100%
Ability-based	12	26%
MSCEIT	6	13%
WLEIS	5	11%
SREIS	1	2%
Trait-based (Mixed)	18	39%
EQ-i	6	13%
SUEIT	6	13%
TMMS	3	7%
EIQ	2	4%
ECI	1	2%
Others	16	35%

Table 5. EI measures used (Total 2001-2010)

5. Subject matters investigated in relation to leadership

Leadership was first conceptualized into leadership emergence and leadership effectiveness, the two criteria based on which the bulk of leadership researchers in favor of trait theory have made investigations linking personality traits to leadership. Accordingly, traits within a Big Five framework may yield differential associations with leadership across the study settings (Bono and Judge, 2004; De Hoogh *et al.*, 2005; Judge *et al.*, 2002). In model of the aforementioned studies, subject matters in relation to leadership, or leadership criteria, are used in the present study as an organizing framework to estimate leadership-EI relations. As mentioned earlier, the critical review by Walter *et al.* (2011) was of assistance in informing the present review in classifying subject matters in relation to leadership. For the purpose of offering more generalizability as to subject matters investigated, quantitative studies reviewed in the present study will be classified based on three distinct leadership criteria employed by Walter *el al.* (2011): leadership emergence, behavior, and effectiveness. Leadership emergence refers to the degree an individual is viewed by others as a leader when limited information about that

individual’s performance is known. Leadership effectiveness, on the other hand, represents a leader’s performance in exerting influence on and giving guidance to the activities toward achievement of goals. Performance of a leader is often measured in terms of team, group, or organizational effectiveness. Studies on leadership behavior are described as predominately focusing on transformational leadership behaviors of idealized influence, inspirational motivation, individualized consideration, and intellectual stimulation. Bernard Bass’s assessment tool, the Multifactor Leadership Questionnaire (MLQ), is a typical measure used to assess transformational leadership behaviors. However, several studies could hardly be classified into the three leadership criteria. Examples include the two experimental studies examining the possibilities and impacts of EI interventions, validation studies on measurement tools developed for leaders, and meta-analytic studies on EI’s role in leadership. The present study therefore suggests that there is a forth criterion classified as “others” used to accurately code experimental, construct validation and meta-analytic studies on EI-leadership relationships.

Leadership criteria	Frequency of leadership criteria focused by years									
Years/ No. of articles	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Emergence	1	1	2	0	1	0	2	0	0	2
Effectiveness	1	2	1	0	1	2	2	2	1	0
Behavior	0	2	2	1	1	4	1	0	1	3
Others	1	0	1	2	0	1	0	1	2	1

Table 6. Subject matters investigated coded based on leadership criteria (2001-2010)

Leadership criteria focused	Total	Percent
No. & % of articles (total)	45	100%
Emergence	9	20.0%
Effectiveness	12	26.6%
Behaviors	15	33.3%
Others	9	20.0%

Table 7. Subject matters investigated coded based on leadership criteria (Total)

In Tables 6 and 7, subject matters in relation to leadership coded into the four leadership criteria are presented, showing the number of articles in each criterion and the total percentage of the articles they represent, for each year and overall. Articles coded under the four criteria appear to be evenly distributed throughout the past ten years. The most commonly studied criterion is leadership behavior, with a total of 15 articles (33.3%), followed by leadership effectiveness (12 articles; 26.6%), leadership emergence (9 articles;

20%) and others (9 articles; 20%). Among those coded as others, two meta-analytic studies were found providing syntheses of the literature on the theoretical and empirical basis of emotional intelligence and its linkage to leadership. The two experimental studies were conducted to support the notion that EI can be learned, enhanced and developed through proper training techniques (Groves *et al.*, 2008; Meyer *et al.*, 2004). New EI constructs or measures were established with a focus on particular groups of leaders, such as servant leadership and managers in Hong Kong (Barbuto and Wheeler, 2005; Wong and Low, 2002). In 2001, one way of measuring emotional intelligence validated by Morand (2001) is to combine psychological with perception measures. It is worth pointing out that Morand, in developing a composite measure of emotional intelligence (2001), used Ekman and Friesen's (1975) *The Face of Emotion* encompassing a set of 17 photos and Merabian and Epstein's empathy scale to conceptualize a nonverbal perception measure of skill at nonverbal communication to assess individuals' recognitions of emotional expressions displayed by others. This perspective is somewhat in contrast to the prevailing psychological-based Likert-scale EI measurements developed to conceptualize and assess emotional intelligence.

6. Conclusions

This study identified and tabulated research methods and data analysis procedures from studies on leadership and EI relationships over the past 10 years. In addition, it also identified the types of EI measures used and subject matters in relation to leadership investigated. Percentages of frequently used statistical/mathematical techniques, research designs, types of EI measures used and subject matters focused were presented annually so that their trends and practices can be assessed. The results were synthesized from 43 studies conducted between 2001 to 2010 retrieved from six academic databases.

Correlational analysis, regression analysis and factor analysis were identified as frequently employed techniques in research on leadership-EI research. Correlational predictive and correlational analyses research, two most dominant research designs used, overweight casual-comparative research design using ANOVAs or *t* tests frequently seen in educational and management studies. In addition, research studies on leadership and EI relations employing quantitative methodologies show preference of non-experimental research designs to experimental ones and this preference has remained steady in the research community.

With regard to EI measured used, the majority of them, based on either ability or trait-based models, are heavily reliant on the assessment of self-perceived EI. Despite the increasing number of particular EI instruments developed during the decade, self-reported approach has been widely adopted in framing the newly created constructs of EI. Only a few studies reviewed in the present studies incorporate multi-rater assessments, such as LDQ, ECI and WLEIS, to provide a more accurate and complete evaluation of an individual's EI competences (Hawkins and Dulewicz, 2007; Wang and Huang, 2009; Barbuto and Wheeler, 2006). The vast dominance of self-reported measures developed for use in exploring the links between leadership and EI may be seen as problematic since socially desirable self and self-knowledge may cause faking goods, which in turn would bring distortion.

With regard to leadership criteria researched, the research community has more or less neglected the subject of leadership development, such as the effects of incorporating EI training in leadership development programs. The impact of EI interventions on leadership development is still at the exploratory stage. The two experimental studies reviewed in the present study have thus far provided empirical evidence suggesting that EI can be heightened among groups of student samples. More research efforts are needed to demonstrate whether EI abilities can be taught, learned, and developed among those holding leadership or management roles. In addition, the empirical shortening in the area of potential effects of an EI training program on leaders' work-related outcomes will provide an avenue for further investigation.

7. Limitations and overall implications

Several important limitations must be considered. First, studies included in the present meta-analytic review are highly selective. Quantitative studies published from 2001 to 2010 that explicitly focused on leadership and emotional intelligence were collected and coded; therefore, many peripheral themes, such as emotional labor and emotional literacy, are left out. Such narrow focus helped clearly delineate a predictor of leadership criterion. To expand the present research effort, further studies can adopt a broad literature search using keyword combinations around leadership (leaders, team leadership, management/leadership effectiveness, management/leadership outcomes, leader-member exchange) and emotional intelligence (emotion, emotional labor, emotional literacy, emotional learning).

The current study is also limited by the focus on elite journals from databases in management, psychology and education. To increase the number of studies and avoid publication bias, future studies may identify possible sources of data via searches of Dissertation Abstracts and Internet searches for additional unpublished data sources. A third limitation of the current study lies in the lack of inter-observer agreement on specific coding variables (Clarke *et al.*, 2002). To ensure a high level of accuracy and coding consensus, coding variables could be performed by experienced experts or trained graduate students working independently on coding sheets provided by the authors (Clarke *et al.*, 2002; Van Rooy and Viswesvaran, 2004).

In 2010, Harms and Crede conducted a meta-analysis on transformational leadership and emotional intelligence and found that the claim that EI serves as a core competence for transformational leadership was overstated. It was noted that the majority of studies used in their investigation were from unpublished sources; the lack of methodological rigor in data source may yield weak results in their findings. Findings from the present analysis on published peer-reviewed quantitative studies lead to the similar conclusion: the 15 research studies coded under the subject area of "leadership behavior" using transformational leadership measures indicate that EI contribute to transformational leadership at some level, but different studies found significant relationships between distinct areas of EI and distinct components of transformational leadership across cultures and research settings (e.g. Corona, 2010; Tang *et al.*, 2010; Polychroniou, 2009; Sunindijo *et al.*, 2007).

In conclusion, there was obviously still a pressing need among the leadership research community for valid experimental research designs in the area of EI interventions for leaders. The potential application of EI as a pedagogical tool into leadership education may offers a new approach to improving various leadership outcomes. It is also recommended that multiple ratings or 360-degree feedbacks on leaders' EI and leadership competences should be applied to provide a more holistic conceptualization of the nature of this relationship. With regard to cross-cultural adaptation of EI or leadership measures, dominant among the EI measures in use are those developed in English and later translated for use with samples in cultures other than English speaking countries. Appropriate translation and rigorous validation process therefore may have detrimental effects on the study results (Wang *et al.*, 2006; Guillemin *et al.*, 1993; Jones and Kay, 1992). EI measures reviewed in the present studies have been widely applied to Hong Kong, Greece, Portugal, Singapore, Taiwan and Thailand (Law *et al.*, 2004; Polychroniou, 2009; Rego *et al.*, 2007; Tang *et al.*, 2010; Sunindijo *et al.*, 2007). However, there is some lack of clarity regarding appropriate translation and rigorous validation process before those measures were operationally used in other cultures. Trans-cultural validation of EI assessment tools is therefore required in leadership research in order to develop more refined measures of the construct utilized to investigate the full potential of EI on leadership practices in different countries.

8. Acknowledgement

This study is an extension of a research project sponsored by National Science Council, Taiwan (Grant No: NSC 100-2410-H-130-028-)

9. References

- Akerjordet, K. and Severinsson, E. (2008), Emotionally intelligent nurse leadership: a literature review study. *Journal of Nursing Management*, 16(5), 565–577
- Akerjordet, K. and Severinsson, E. (2010), The state of the science of emotional intelligence related to nursing leadership: an integrative review. *Journal of Nursing Management*, 18 (4), 363–382
- Antonakis, J. (2003), Why 'emotional intelligence' does not predict leadership effectiveness: A comment on Prati, Douglas, Ferris, Ammeter, and Buckley, *The International Journal of Organizational Analysis*, 11, 355–361.
- Antonakis, J., Ashkanasy, N., & Dasborough, M. (2009). Does leadership need emotional intelligence? *The Leadership Quarterly*, 20, 247–261.
- Barbuto, J. E. and Burbach, M. E. (2006), The emotional intelligence of transformational leaders: A field study of elected officials, *Journal of Social Psychology*, 146 (1), 51–64.
- Barbuto, J.E. and Wheeler, D.W. (2005). Scale development and construct clarification of servant leadership, *Group & Organization Management* 31(3), 300–326
- Bar-On, R. (1997). *Bar-On Emotional Quotient Inventory: Technical manual*. Multi-Health Systems, New York: NY.

- Bono, J. E. and Judge, T. A. (2004). Personality and Transformational and Transactional Leadership: A Meta-Analysis, *Journal of Applied Psychology*, 89(5), 901-910
- 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*, Vol. 26 No. 7, pp. 867-71.
- Carmeli, A. (2003), The relationship between emotional intelligence and work attitudes, behavior and outcomes: An examination of senior managers, *Journal of Managerial Psychology*, 18 (7/8), 788-811.
- Cartwright, S. and Pappas, C. (2008), Emotional intelligence, its measurement and implications for the workplace. *International Journal of Management Reviews*, 10 (2), 149-171
- Clarke, S., Dunlap, G., & Stichter, J. P. (2002). A descriptive analysis of intervention research in emotional and behavioral disorders from 1980 through 1999. *Behavior Modification*, 26, 659-683.
- Conte, J. M. (2005), A review and critique of emotional intelligence measures" *Journal of Organizational Behavior*, 26 (4), 433-40.
- Corona, M.G.. (2010). The relationship between emotional intelligence and transformational leadership: A Hispanic American examination, *The Business Journal of Hispanic Research*, 4(1), 22-34
- Day, A., Newsome, S. and Catano, V. M., (2002), Emotional intelligence and leadership, (CFLI Contract Research Report #CR01-0078). Kingston, ON: Canadian Forces Leadership Institute.
- De Hoogh, A. H. B., Den Hartog, D. N. and Koopman, P. L. (2005), Linking the Big Five-Factors of personality to charismatic and transactional leadership; perceived dynamic work environment as a moderator. *Journal of Organizational Behavior*, 26(7), 839-865
- Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., & Sutton, A. (2005). Synthesizing qualitative and quantitative evidence: a review of possible methods. *Journal of Health Services Research & Policy*, 10(1), 45-53.
- Duckett, H, and Macfarlane, E. (2003). Emotional intelligence and transformational leadership in retailing, *Leadership & Organization Development Journal*, 24 (6), 309 - 317
- Dulewicz, C., Young, M., & Dulewicz, V. (2005). The relevance of emotional intelligence for leadership performance. *Journal of General Management*, 30(3), 71-86.
- Elmore, P. B. and Woehlke, P. L. (1998). *Twenty years of research methods employed in "American Educational Research Journal," "Educational Researcher" and "Review of Educational Research."* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, California.
- Goleman, D. (1998). What makes a leader? *Harvard Business Review*, 76, 92-103.
- Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books: New York.
- Goody, J., Connelly, S., Griffith, J, and Gupta, A. (2010). Leadership, affect and emotions: A state of the science review, *Leadership Quarterly*, 21(6), 979-1004
- Groves, K.S., McEnrue, M.P., and Shen, W. (2008). Developing and measuring the emotional intelligence of leaders, *Journal of Management Development*, 27 (2), 225 - 250

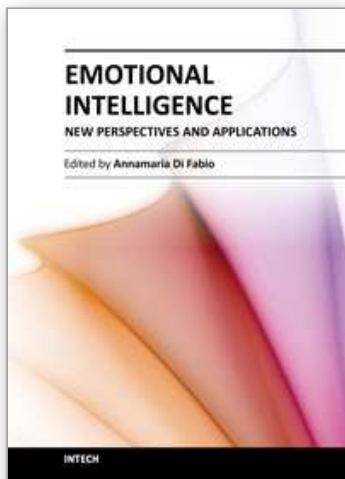
- Guillemin, F., Bombardier, C., & Beaton, D. (1993). Cross-cultural adaptation of healthrelated quality of life measures: Literature review and proposed guidelines. *Journal of Clinical Epidemiology*, 446, 1417-1432.
- Harms, P.D. and Credé, M. (2010). Emotional intelligence and transformational and transactional leadership: a meta-analysis, *Journal of Leadership and Organization Studies*, 17, 5-17.
- Hawkins, J. and Dulewicz, V. (2007), The Relationship between Performance as a Leader and Emotional Intelligence, intellectual and Managerial Competences. *Journal of General Management*, 33(2), 57-58.
- Hsu, T.C. (2005). Research methods and data analysis procedures used by educational researchers, *International Journal of Research & Method in Education*, 28(2), 109-133.
- Jones, E.G., & Kay, M. (1992). Instrumentation in cross-cultural research. *Nursing Research*, 41(3), 86-188.
- 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(4), 765-780
- Kun, B. and Demetrovics, Z. (2010). Emotional intelligence and addictions: A systematic review, *Substance Use & Misuse*, 45(7-8), 1131-1160
- Landy, F. J. (2005), Some historical and scientific issues related to research on emotional intelligence. *Journal of Organizational Behavior*, 26(4), 411-424
- Latif, D. A. (2004). Using emotional intelligence in the planning and implementation of a management skills course. *Pharmacy Education*, 4(2), 81- 89.
- Law, K. S., Wong, C.S. 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(3), 483-496
- Leban, W. and Zulauf, C. (2004). Linking emotional intelligence abilities and transformational leadership styles, *Leadership & Organization Development Journal*, 25 (7), 554 – 564
- Locke, E.A. (2005), Why emotional intelligence is an invalid concept, *Journal of Organizational Behavior*, 26 (4), 425-31.
- Mandell, B. and Pherwani, S. (2003), Relationship between emotional intelligence and transformational leadership style: A gender comparison, *Journal of Business & Psychology*, 17 (3), 387-404.
- Morand, D.A. (2001). The emotional intelligence of managers: Assessing the construct validity of a nonverbal measure of "people skills", *Journal of Business and Psychology*, 16(1), 21-33.
- Meyer, B. B., Fletcher, T. B., & Parker, S. J. (2004). Enhancing emotional intelligence in the health care environment: An exploratory study. *Health Care Manager*, 23(3), 225-234.
- Mayer, J.D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Ed.). *Emotional development, emotional literacy, and emotional intelligence* (pp. 3-31). Basic Books: New York.
- Mills, L.B. (2009). A meta-analysis of the relationship between emotional intelligence and effective leadership, *Journal of Curriculum and Instruction*, 3(2), 22-38

- O'Boyle, E. H., Humphrey, R. H., Pollack, J. M., Hawver, T. H. and Story, P. A. (2011), The relation between emotional intelligence and job performance: A meta-analysis. *Journal of Organizational Behavior*, 32(5), 788-818
- Ozcelik, H., Langton, N. and Aldrich, H. (2008), Doing well and doing good: The relationship between leadership practices that facilitate a positive emotional climate and organizational performance, *Journal of Managerial Psychology*, 23 (2), 186-203.
- Perks, J., & Bar-On, R. (2010). Coaching for Emotionally Intelligent Leadership. In J. Passmore (Ed.), *Coaching for leadership*. London, UK: Kogan Page.
- Polychroniou, P.V. (2009). Relationship between emotional intelligence and transformational leadership of supervisors: The impact on team effectiveness, *Team Performance Management*, 15 (7/8), 343 - 356
- Rego, A., Sousa, F., Pina e Cunha, M., Correia, A. and Saur-Amaral, I. (2007), Leader Self-Reported Emotional Intelligence and Perceived Employee Creativity: An Exploratory Study. *Creativity and Innovation Management*, 16(3), 250-264.
- Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Review of Psychology*, 52(1), 59-82
- Sunindijo, R.Y., Hadikusumo, B.H.W. and Ogunlana, S. (2007). Emotional intelligence and leadership styles in construction project management, *Journal of Management in Engineering* 23(4), 166-171.
- Tang, H.W., Yin, M.S., & Nelson, D.B., (2010). The relationships between leadership effectiveness and emotional intelligence: A cross-cultural study of academic leaders in Taiwan and the USA. , *Journal of Managerial Psychology*.25(8), 899-926. (Special Issue on Intercultural Competency, SSCI).
- Van der Zee, K. and Wabeke, R. (2004), Is trait-Emotional Intelligence simply or more than just a trait? *European Journal of Personality*, 18 (4), 243-63.
- Van Rooy, D. L., & Viswesvaran, C. (2004). Emotional intelligence: A meta-analytic investigation of predictive validity and nomological net. *Journal of Vocational Behavior*, 65, 71-95.
- Walter, F., & Bruch, H. (2007), Leadership: The role of leaders' positive mood and emotional intelligence. In C. E. J. Härtel, N. M. Ashkanasy, & W. J. Zerbe (Eds.), *Research on Emotion in Organizations (Vol. 3): Functionality, Intentionality and Morality*: pp. 55-85. Amsterdam: Elsevier.
- Walter, F., Cole, M.S. and Humphrey, R.H. (2011). Emotional Intelligence: Sine Qua Non of Leadership or Folderol? *Academy of Management Perspectives*, 25 (1), 43-59.
- Wang, Y.S. and Huang, T.C. (2009). The relationship of transformational leadership with group cohesiveness and emotional intelligence, *Social Behavior and Personality: an international journal* 37(3), 379-392
- Wang, W.L., Lee, H.L., & Fetzer, S.J. (2006). Challenges and strategies in instrument translation, *Western Journal of Nursing Research*, 28(3), 310-321.
- Wong, C., Law, K. S. (2002). The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study. *Leadership Quarterly*, 13(3), 243-274.

Zeidner, M., Roberts, R.D., & Matthews, G. (2002). Can emotional intelligence be schooled? A critical review. *Educational Psychologist*, 37(4), 215-231

IntechOpen

IntechOpen



Emotional Intelligence - New Perspectives and Applications

Edited by Prof. Annamaria Di Fabio

ISBN 978-953-307-838-0

Hard cover, 288 pages

Publisher InTech

Published online 01, February, 2012

Published in print edition February, 2012

Emotional intelligence is an emerging construct for applied research and possible interventions, both in scholastic, academic and educational contexts, organizational contexts, as well as at an individual level in terms of people's well-being and life satisfaction. From the presented contributions, it emerges how this volume is characterized by an interest to give an international overview rich of stimuli and perspectives for research and intervention, in relation to a promising variable of current interest, such as emotional intelligence. The goal is that this book further contributes to the affirmation of a particularly promising variable, such as emotional intelligence, which requires a greater interest and attention in both research and application field.

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Hui-Wen Vivian Tang and Mu-Shang Yin (2012). A Meta-Analytic Review of Quantitative Studies on Emotional Intelligence and Leadership, Emotional Intelligence - New Perspectives and Applications, Prof. Annamaria Di Fabio (Ed.), ISBN: 978-953-307-838-0, InTech, Available from: <http://www.intechopen.com/books/emotional-intelligence-new-perspectives-and-applications/a-meta-analytic-review-of-quantitative-studies-on-emotional-intelligence-and-leadership>

INTech
open science | open minds

InTech Europe

University Campus STeP Ri
Slavka Krautzeka 83/A
51000 Rijeka, Croatia
Phone: +385 (51) 770 447
Fax: +385 (51) 686 166
www.intechopen.com

InTech China

Unit 405, Office Block, Hotel Equatorial Shanghai
No.65, Yan An Road (West), Shanghai, 200040, China
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

© 2012 The Author(s). Licensee IntechOpen. This is an open access article distributed under the terms of the [Creative Commons Attribution 3.0 License](https://creativecommons.org/licenses/by/3.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

IntechOpen

IntechOpen