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The Dimensions of Emotional Intelligence Construct Validation Using Manager and Self-Ratings

Edilberto F. Montemayor
Michigan State University

James Spee
University of Redlands

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EDILBERTO F. MONTEMAYOR
School of Labor and Industrial Relations
Michigan State University
East Lansing, MI 48824-1032

JAMES SPEE
University of Redlands

INTRODUCTION

The construct called Emotional Intelligence (EI) has received a lot of attention in the applied and scholarly literatures. However, the scant research intended to explicate and validate this construct has yielded only mixed results (Ferris, Perrewe & Douglas, 2002). Becker (2003) and other critics point to serious conceptualization and measurement problems. Even its advocates agree that more validation work is needed before this construct can be established scientifically (Jordan, Ashkanasy, & Hartel, 2003; Matthews, Zeidner, & Roberts, 2002).

A clear definition is a fundamental pre-requisite for the validation of any construct. Unfortunately, much of the EI literature is plagued by conceptual contamination. The construct is said to include everything from motivation and influence to conscientiousness and integrity (cf., Goleman, 1998, Hay, 2002, and Higgs, 2001). Such conceptual contamination seems to be a major obstacle to advancing the scientific status of the EI construct (Ferris et al., 2002). It is worth noting that EI definitions provided by major authors, such as Goleman (1998), Mayer and Salovey (1997), and Mathews, *et al* (2002) share a two-fold distinction in foci –one's versus others' emotions, and a two-fold distinction in intelligent operations – awareness versus management of emotions. Thus, we hypothesize EI is comprised of four dimensions:

(1) Emotional Self-Awareness – the ability to recognize one's emotions;
(2) Emotional Other-Awareness – the ability to recognize others' emotions;
(3) Emotional Self-Management – the ability to control one's emotions; and
(4) Emotional Other-Management –the ability to control others' emotions

Besides conceptualization, measure quality is a major concern regarding EI's validity (Becker, 2002). EI measures should exhibit reliability, convergent validity and discriminant validity (Matthews et al., 2002). In this study, we applied confirmatory factor analysis to multi-source EI ratings. Confirmatory factor analysis is a useful technique in the earlier stages of construct validation because it provides robust information for assessing fit. It also provides information to judge convergent and discriminant validity. We used multiple raters to control for potential rater biases, which are a risk when using behavioral observation/rating measures. Moreover, we used items from the Emotional Competence Inventory (Hay, 2002). We chose this instrument because of its widespread use in work organizations and because it is the only one that allows multiple raters for the same subject. Further, to our knowledge, there are no validity reports related to this instrument in the scholarly literature.

METHOD

The data used in this study consisted of self-ratings and manager ratings for 210 working adults enrolled in a graduate program in Management at a private university in the western US. These 210 working-adult graduate students had a four-year college degree (with an average GPA of 3.3) and were working full-time in a variety of private, public, and not-for-profit organizations. Average age for these adults was 39 years and 51% of them were female. Ratings were obtained using the Emotional Competence Inventory (ECI), a questionnaire developed by the Hay Group (2002). Respondents rated the extent to which each of the questionnaire items characterized the individual being rated using a seven-point Likert-type format with the following anchors: 1 = "Slightly"; 4 = "Somewhat"; and 7 = "Very".

We chose four items for each of the four hypothesized dimensions. The ECI items we chose were those that were closest to each EI dimension's character and appeared in random order within the questionnaire. Regarding the first dimension, Emotional Self-Awareness, we chose the following items: (1) "Knows how feelings impact own performance"; (2) "Recognizes situations that arouse own emotions"; (3) "Expresses own feelings"; and (4) "Has a sense of humor about oneself". Regarding the second dimension, Emotional Other-Awareness, we chose the following items: (5) "Asks questions to understand another person"; (6) "Accurately reads people's moods, feelings and nonverbal cues"; (7) "Understands the underlying causes for someone's feelings, behavior, or concerns "; and (8) "Demonstrates an ability to see things from someone else's perspective". Regarding the third dimension, Emotional Self-Management, we chose the following items: (9) "Resists the impulse to act immediately"; (10) "Behaves calmly in stressful situations"; (11) "Stays composed and positive, even in trying moments"; and (12) "Is not defensive in receiving new information or perspectives about oneself". Regarding the fourth dimension, Emotional Other-Management, we chose the following items: (13) "Convinces by appealing to people's self interest"; (14) "Builds team spirit by creating symbols of identity and pride"; (15) "Inspires others to action by articulating a compelling mission or vision"; and (16) "Actively promotes a friendly climate, good morale, and cooperation".

ANALYSIS AND RESULTS

We performed confirmatory factor analyses using LISREL 8.54 (Joreskog & Sorbom, 2003) with raw data as input and applying maximum-likelihood estimation to fit models that restricted items to a single factor and allowed factors to correlate with each other. Confirmatory Factor Analysis (CFA) allows systematic comparisons between a factor model based on the theorized constructs and alternative factor models that are inconsistent with the constructs' validity (Thompson & Daniel, 1996). Because each of the various goodness-of-fit indices that exist has specific shortcomings and limitations (Hu & Bentler, 1999; Medsker, Williams & Holohan, 1994), we employed a commonly used battery of four goodness-of-fit indices comprised of the Chi-square (χ^2) statistic, the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Non-Normed Fit Index (NNFI). Values below 5 in the ratio of χ^2 divided by the number of degrees of freedom indicate good model fit (Medsker et al., 1994). As a rule of thumb, Browne and Cudeck (1993) suggested that RMSEA values up to 0.05 indicate a "close" degree of model fit and RMSEA values up to 0.08 indicate a "fair" degree of model fit. Hu and Bentler (1999) have suggested that values above 0.95 for indices such as CFI and NNFI indicate good fit especially for studies using relatively small

samples such as the present one. Moreover, CFI and NNFI differences greater than 0.01 between alternative models indicate significant fit improvement (La Du & Tanaka, 1995).

Construct Validation using Multi-Source Data

Early-stage construct validation within a multi-source design calls for examining the generalize-ability of factor structures across data from different sources. That is, this study calls for a multi-group CFA with different sources being treated as different groups. However, multi-group CFA does not make any sense unless there is evidence of analogous group-specific factor structures. Therefore, this research followed a two-step CFA strategy. The first-step concerned source-specific CFA examining self-ratings and manager ratings independently of each other. The second step concerned the equality of factor structures across the two sources.

Step 1: Source-specific validation of the four EI dimensions. Working on self-ratings and manager ratings independently of each other, we compared a series of six nested factor models intended to provide pre-requisite validity support to the four EI dimensions proposed in this research. The nested model series included the following factor models: (I) one factor grouping all the sixteen items under analysis; (II) two factors distinguishing Awareness-related from Management-related items, (III) two factors distinguishing Self-related from Other-related items; (IV) three factors, one factor for all Management items plus two factors distinguishing Self-Awareness from Other-Awareness items; (V) three factors, one factor for all Awareness items plus two factors distinguishing Self-Management from Other-Management items; and (VI) the four factor model that distinguishes all four EI dimensions proposed here.

The pattern of indices obtained indicated the same CFA results for both sources: Model V provides the best fitting and parsimonious model. Considering the rules of thumb reported above, Model V, exhibited a "fair" degree of fit in terms of the RMSEA criterion and a "good" degree of fit in terms of the other three criteria (χ^2 per degree of freedom, CFI and NNFI). Thus, source-specific CFA results are the same for both sources (self-ratings and manager ratings) and provide partial support to our propositions regarding EI dimensions. Source-specific CFA suggests there are three dimensions in EI: General Emotional Awareness (including awareness of one's and others' emotions), Emotional Self-Management and Emotional Other-Management. As stated above, early-stage construct validation research concerns the generalize-ability of theorized factors (among other things). Within a multi-source design, early-stage construct validation must show there is enough factor structure equality across sources, which would support the generality in theorized dimensions. Step 2 focused on the equality in factor structures across sources.

Step 2: Factor structure equality across self-rating and manager ratings. This step involved performing multi-group CFA, which allows comparing alternative models that impose various factor structure equality constraints across groups (rating sources in our case). The results indicated the maximum equality model (the multi-group factor model that forced factor pattern, inter-construct correlations, and factor loadings to be equal across sources) exhibited a "fair" degree of fit in terms of the RMSEA criterion and a "good" degree of fit in terms of the other three criteria (χ^2 per degree of freedom, CFI and NNFI). This maximum equality model fitted the data as well as other models that correspond to lower degrees of factor structure equality. Finally, Table 1 reports internal consistency estimates (Cronbach alphas) for the three constructs identified in Step 2, and maximum likelihood LISREL estimates for factor loadings

and inter-construct correlations, which were obtained when fitting the maximum equality model, that is, when the entire factor structure was forced to be equal across sources.

The statistics reported in Table 1 indicate the three EI dimensions found in this study exhibited convergent and discriminant validity. Internal consistency, as measured by Cronbach's alpha, for these three factors ranged from a low of 0.73 for self-ratings of Emotional Self-Management to a high of 0.88 for manager ratings of General Emotional Awareness. These statistics indicate, to some extent, a good degree of convergent validity. Further, Bagozzi, Yi and Phillips (1991) proposed that t-statistics for factor loadings that exceed 1.96 indicate good convergent validity, t-statistics for all the factor loadings reported in Table 3 exceeded 10. Two of the sixteen factor loadings, those for the eleventh and fourteenth items, exceeded one just barely. These minor deviations from the interpretable range probably reflect the combination of random estimation error and good internal consistency of the Emotional Self-Management and Emotional Other-Management measures used here.

Discriminant validity is indicated by the superior fit of the three-factor model found throughout the single-source and multi-source CFA and by the fact that all inter-construct correlations are substantially lower than 1 (Anderson & Gerbing, 1988). The estimates for inter-construct correlations reported in Table 3 provide some interesting information as well. General Emotional Awareness and Emotional Self-Management (sometimes called Emotional Self-Control in the EI literature) only have one third of their variance in common. Also, Emotional Self-Management and Emotional Other-Management only have one fourth of their variance in common. Considering the diversity in individuals rated and the factor structure equality across sources reported above, these moderate correlations provide support for the constructs' discriminant validity.

Table 1 about here

DISCUSSION

Before discussing its results and contributions, it is important to highlight two limitations this research has. First, this research introduced a two-by-two view of Emotional Intelligence that has not been used explicitly in published research. Confirmatory factor analyses with a multi-source design yield solid, although preliminary, credibility for the three dimensions found. However, the empirical base for this research is somewhat limited. Data were obtained, using the pre-existing Emotional Competence Inventory, from professionals who have enrolled in a graduate program due to a strong interest in developing their own social and emotional competence. More studies based on the factor model reported here but employing different research designs are needed. We need studies that employ different items, that focus on other employee groups (such as blue-collar and clerical), and that include other rating sources (such as peers, subordinates, and/or customers). Second, this research did not attempt a complete validation. This research only examined the dimensionality and factor structure equality for the reported constructs, which is a fundamental pre-requisite for their validation. More comprehensive studies including multiple criterion constructs and multiple predictor constructs

are needed to further develop convergent and discriminant validity support and to investigate whether the constructs introduced here have predictive validity.

Besides these limitations, this research makes important contributions to the emerging literature on EI's construct validity. We presented a conceptualization of Emotional Intelligence that is based on major authors' definitions and leads to the hypothesis that Emotional Intelligence is comprised of four dimensions. Results from source-specific and multi-source confirmatory factor analyses reported above found support for three dimensions: General Emotional Awareness, Emotional Self-Management and Emotional Other-Management.

Moreover, we found maximum factor structure equivalence for these constructs in a multi-source design. That is, a model specifying equal factor pattern, inter-construct correlations and factor loadings across a sample of self-ratings and managerial ratings for the same subjects fitted the data very well. This finding suggests that: (a) people organize EI behaviors along the same three dimensions when thinking about others and when thinking about themselves, (b) both sources (types of raters) agree in the relative importance of each of sixteen behavioral items as an indicator for a specific EI dimension, and (c) there are no differences in halo error between self- and manager ratings for EI (Cheung, 1999). Our results parallel findings, using a different measurement instrument, by Schutte and colleagues (cited in Matthews et al, 2002). They found three reliable dimensions, which they called Emotion Perception, Managing Self-relevant Emotions, and Managing Others' emotion.

In terms of a process perspective on EI, our results are compatible with a cognitive basis for emotional intelligence (cf., Oatley & Johnson-Laird, 1987). A major paradigm in cognitive psychology views human cognition as a hierarchical arrangement comprised of a monitoring module that supervises several response mechanisms. This monitoring-response distinction parallels the two functions that emotions play: emotions serve as a signal and as a response-trigger (Ketelaar & Clore, 1997). In terms of our results, General Emotional Awareness relates to the signal function that emotions play and represents the monitoring mechanism in EI's architecture and the two other dimensions – Emotional Self-Management and Emotional Other-Management – relate to the trigger function that emotions play and represent the response mechanisms in EI's architecture.

In terms of the value of EI for management practice, our results support the value of distinguishing between the three dimensions discussed above in practices concerning selection, person-job matching, 360-degree appraisal and feedback, training and development, etc. For example, the existence of a single General Emotional Awareness suggest some people may be relatively impervious to emotions in the workplace, which may affect their ability to perform in tasks and situations with a heavy inter-personal component such as negotiation and conflict resolution, customer service, etc.

REFERENCES AVAILABLE FROM THE FIRST AUTHOR

Table 1
Standardized parameter estimates for maximum equality model

	General Emotional Awareness	Emotional Self-Mgmt	Emotional Other-Mgmt
Cronbach alphas			
Self-ratings	0.81	0.73	0.75
Manager ratings	0.88	0.79	0.80
Construct correlations			
Emotional Awareness	1.00		
Emotional Self-Management	0.66	1.00	
Emotional Other-Management	0.78	0.52	1.00
Factor loadings			
(1) Knows how feelings impact own performance	0.69		
(2) Recognizes the situations that arouse own emotions	0.74		
(3) Expresses own feelings	0.64		
(4) Has sense of humor about oneself	0.56		
(5) Asks questions to understand another person	0.65		
(6) Accurately reads people's moods, feelings, or nonverbal cues	0.86		
(7) Understands the underlying causes for someone's feelings, behavior, or concerns	0.93		
(8) Demonstrates an ability to see things from someone else's perspective	0.81		
(9) Resists the impulse to act immediately		0.72	
(10) Behaves calmly in stressful situations		0.92	
(11) Stays composed and positive, even in trying moments		1.02	
(12) Is not defensive in receiving new information or perspectives about oneself		0.68	
(13) Convinces by appealing to people's self-interest			0.74
(14) Builds team spirit by creating symbols of identity and pride			1.06
(15) Inspires others to action by articulating a compelling mission or vision			0.99
(16) Actively promotes a friendly climate, good morale, and cooperation			0.61