Emotional intelligence (EI) is the ability of an individual to use emotions intelligently for positive outcomes. This ability is said to have an impact on many aspects of our personal and professional lives. Well-being (WB) is a person’s state of mind regarding his/her life.

Theory suggests that highly emotionally intelligent individuals are likely to experience psychological well-being at a higher level than individuals who are low in emotional intelligence. Based on this concept, this paper examines the empirical relation between EI and WB, both of which are attitudinal variables. A sample of 104 respondents from the manufacturing sector of South India was considered for the study and their emotional intelligence and well-being levels were assessed using appropriate tools. When two attitude-based constructs are obtained from the same respondent, using the same instrument, at the same time, then the relationship between them is said to be influenced by Common Method Variance (CMV). It is the variance that is attributable to the measurement method rather than to the constructs the measures represent and is said to introduce a spurious correlation between the variables of interest.

In this study, both EI and WB were obtained from the same respondent, through a single instrument. Hence CMV was considered and acted upon. While controlling the effect of CMV on the empirical relation between EI and WB, this paper aims at the following sub-objectives:

- To assess the EI and WB levels of the respondents
- To implement procedural remedies to control CMV
- To implement statistical remedies to control CMV
- To prove that EI is a predictor of WB, over and above the effect of CMV.

Procedural remedies were used with respect to questionnaire design and statistical remedies were used to partial out the effect of CMV. This paper should serve as a framework for researchers, who wish to evaluate the potential biasing effects of method variance in their research, pertaining to behavioural aspects.
Emotional intelligence (EI) has become a key issue in the discussions pertaining to individual and organizational performance and job satisfaction (Collins, 2000). EI is said to have an impact on many factors of the organizational environment and is considered as an important ability that helps us to excel in our personal and professional fronts. It is also said to influence the well-being (WB) of individuals (Carmeli, Yitzhak-Halevy & Weisberg, 2009). This study makes an attempt to bring out the influence of EI on WB, both of which are attitude-related variables. When researchers try to study the relation between two attitude-related constructs, they have to pay attention to Common Method Variance (CMV) as it is likely to introduce a spurious correlation between the variables under study. CMV is the “variance that is attributable to the measurement method rather than to the constructs the measures represent” (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Cross-sectional studies of attitude-behaviour relationships are vulnerable to the inflation of correlation by CMV (Lindell & Whitney, 2001). This study uses a few techniques to single out the interference caused by CMV in the relation between the variables under study and establishes the effect of EI on WB.

THEORETICAL FRAMEWORK

The idea of EI grew out of the concept of social intelligence. The seeds of EI were sown in 1920, when Edward Thorndike started working on social intelligence. In 1939, David Wechsler argued, “Our intelligence model would not be complete unless we incorporate the non-intellectual factors into that model”. Thus, the attention of researchers was drawn towards this aspect and Howard Gardner talked about multiple intelligences (1983), which comprised intrapersonal and interpersonal intelligences. This broadening of the concept of intelligence, inspired the way EI was conceptualized and Salovey & Mayer (1990) developed the first model of EI in the field of psychology.

EI is said to have a strong impact on all walks of human life — at home, school, and work. However, most of the research efforts have been directed towards the organizational context. It has been empirically proven that EI impacts individual well-being (Lenaghan, Buda & Eisner, 2007), stress tolerance (Chapman & Clarke, 2003), leadership qualities (Rosete & Ciarrochi, 2005), organizational commitment (Ioannis & Ioannis, 2002), performance (Shaffer, Hom Hung, Hong Kong & Shaffer, 2005), work-family balance (Lenaghan et al, 2007), team cohesiveness (Rapisarde, 2002), cultural adjustments (Gabel, Dolan & Cerdin, 2005), change management (Chrusciel, 2006), organizational citizenship behaviour (Carson, Carson, Fontenot & Burdin, 2005), entrepreneurial qualities (Cross & Travaglione, 2003), conflict management (Rahim, 2002), and organizational learning (Singh, 2003).

El is said to influence the WB of individuals. WB is defined as the state of being or doing well in life; happy, healthy, or prosperous condition; moral or physical welfare (of a person or community). It encompasses six health-related quality domains namely anxiety, depressed mood, positive well-being, self-control, general health, and vitality (Grossi, Groth, Mosconi, Cerutti, Pace, Compare & Apolone, 2006). WB yields benefits to both the employer and the employee. For the employee, it results in overall good health, a feeling of satisfaction, and an optimistic approach towards life. For the employer, it results in improved performance (Daniels & Harris, 2000).

Theory suggests that highly emotionally intelligent individuals are likely to experience psychological well-being at a higher level than individuals who are low in emotional intelligence (Carmeli, Yitzhak-Halevy & Weisberg, 2009). Those who are able to understand and regulate their emotions should be able to have better emotional health. Empirical evidence comes from research showing that there is a link between high EI and emotional well-being (Schutte, Malouff, Simunek, Mckenley & Hollander, 2002; Krishnaveni & Deepa, 2010). EI was found to have an association with mental health, psychosomatic health, and physical health (Schutte, Malouff, Thorsteinsson, Bhullar & Rooke, 2007). It is associated with positive moods and high self-esteem (Schutte et al, 2002), stress levels (Petrides & Furnham, 2006), and life satisfaction (Palmer, Donaldson & Stough, 2002). The review of literature shows that if an employee possesses high EI, he is supposed to enjoy a positive state of WB. Hence it is hypothesized that as EI increases, the WB level of employees will also increase. Though it can be hypothesized that EI has a relation with WB, as both are attitude-based measures, the effect of CMV has to be accounted for. On this basis, the study has the following objectives.

Objectives

The study has a broad objective of controlling the effect of...
CMV on the empirical relation between EI and WB. While doing so, it aims at the following sub-objectives:

- To assess the EI and WB levels of the respondents
- To implement procedural remedies to control CMV
- To implement statistical remedies to control CMV
- To prove that EI is a predictor of WB, over and above the effect of CMV.

**METHODOLOGY**

The manufacturing sector of South India is the sampling frame for the study. From this frame, a sample of 175 respondents was drawn by convenience sampling. Out of the 175, 104 people completed the survey, yielding a response rate of 59 percent. The demographics of the sample are shown in Table 1.

Table 1: Demographics of the Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Groups</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Men</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>88</td>
<td>85</td>
</tr>
<tr>
<td>Education</td>
<td>UG</td>
<td>60</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>PG</td>
<td>44</td>
<td>42</td>
</tr>
<tr>
<td>Age</td>
<td>20-30</td>
<td>52</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>52</td>
<td>50</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
<td>76</td>
<td>73</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>28</td>
<td>27</td>
</tr>
</tbody>
</table>

In the sample, 15 percent were men and 85 percent were women; 58 percent were under-graduates and 42 percent were post-graduates; 73 percent were married, and 27 percent were single. The Emotional Intelligence measure and well-being scale were made available as online tests for the respondents. Login credentials were created for the respondents and sent to them through e-mail. They took up the test at their convenience, by logging into the test page. The participants took three weeks to complete the test. Periodic reminders were sent to the respondents, requesting them to take up the test.

**Measures**

The research involved two measures.

**Dependent Variable**

A validated General Well-Being Scale (National Centre for Health Statistics, 1970) was used to measure well-being. It assesses psychological and general well-being of respondents in six Health Related Quality of Life (HRQoL) domains: anxiety, depressed mood, positive well-being, self-control, general health, and vitality.

**Independent Variable**

For measuring emotional intelligence, an online test called Deepa Krishnaveni Emotional Intelligence Test (DKEIT) was used. The DKEIT had three sections, namely perception, appraisal, and regulation. It contained multiple choice questions to test the EI abilities of respondents. The overall reliability of the scale was 0.8 (Nunnally, 1978).

**Techniques for Controlling CMV Effect**

To remove the CMV effect, the following techniques were used (Podsakoff, MacKenzie, Lee & Podsakoff, 2003):

**Procedural Remedies**

- Psychological and methodological separation of predictor and criterion variables
- Improvement of scale items

**Statistical Remedies**

- Harman’s single factor test
- Marker variable technique

**ANALYSIS**

The consolidated EI and WB scores were fed into SPSS (Version 16.0) for analysis. The EI and WB level of the respondents is shown in Table 2.

Table 2: EI and WB Level of Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI</td>
<td>108.61</td>
<td>8.72</td>
<td>0.49**</td>
</tr>
<tr>
<td>WB</td>
<td>73</td>
<td>7.4</td>
<td></td>
</tr>
</tbody>
</table>

In the sample, 15 percent were men and 85 percent were women; 58 percent were under-graduates and 42 percent were post-graduates; 73 percent were married, and 27 percent were single. The Emotional Intelligence measure and well-being scale were made available as online tests for the respondents. Login credentials were created for the respondents and sent to them through e-mail. They took up the test at their convenience, by logging into the test page. The participants took three weeks to complete the test. Periodic reminders were sent to the respondents, requesting them to take up the test.

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ure two attitude-based variables of the same respondent, at the same time, using a single instrument, then CMV comes into being. CMV is the variance that is attributable to the measurement method rather than to the constructs the measures represent.

**Controlling for CMV**

The key to controlling method variance through procedural remedies is to identify the common issues between the measures of the criterion and predictor variables and eliminate or minimize them through the design of the study. In this study, the predictor (EI) and criterion (WB) variables had to be obtained from the same respondent using the same instrument. So, the researchers separated the variables psychologically, by using the following methods:

**Procedural Remedies**

*Psychological and methodological separation of predictor and criterion variables.* The authors used an introductory message in the questionnaire, to make it clear that the measurement of the predictor variables was not connected with or related to the measurement of the criterion variable.

Different types of scales were used for the predictor and criterion variables. The EI test was an ability test with multiple choice questions. The WB scale was a 5-point scale.

*Improvement of scale items.* The authors reduced evaluation apprehension and the social desirability effects by stating in the questionnaire that there were no right or wrong answers and that they should answer questions as honestly as possible.

The items of the test were reviewed by experts and hence the clarity of wordings and content validity were ensured.

**Statistical Remedies**

Researchers have used many statistical remedies to control CMV — e.g., Harman’s single factor test, partial correlation procedures designed to control for method bias, controlling for the effects of a directly measured latent methods factor, controlling for the effects of a single unmeasured latent methods factor, use of multiple-method factors to control method variance, correlated uniqueness model, and direct product model. The decision on the right remedy is based on four key questions: (a) Can the predictor and criterion variable be obtained from different sources? (b) Can the predictor and criterion variables be measured in different contexts? (c) Can the source of the method bias be identified? (d) Can the method bias be validly measured? (Podsakoff et al., 2003)

The authors used Harman’s single factor test and Marker variable techniques to show that CMV did not have an impact on the correlation between EI and WB.

**Harman’s single factor test.** This test is one of the widely used techniques to diagnose CMV. All the variables in the study are loaded into an exploratory factor analysis to determine the number of factors that are necessary to account for the variance in the variables. This technique assumes that if a substantial amount of CMV is present, then either (a) a single factor will emerge from the factor analysis or (b) one general factor will account for the majority of the covariance among the variables (e.g., Andersson & Bateman, 1997; Aulakh & Gencturk, 2000; Greene & Organ, 1973; Schriesheim, 1979).

The authors entered all the variables in their study into exploratory factor analysis, using unrotated principal component factor analysis and principal component analysis with varimax rotation to determine the number of factors that are necessary to account for the variance in the variables. The factor analysis revealed the presence of 12 distinct factors with eigen values greater than 1.0, rather than a single factor. The 12 factors accounted for 60 percent of the total variance and the first largest factor was found to account for only 14 percent of the variance. Thus no general factor is apparent. This technique diagnoses the presence of CMV but does nothing to statistically control it. The partial correlation procedure is one technique, which can be used to control the effect of CMV. The marker variable technique is an easy to use and robust partial correlation technique and hence the authors used the same to control CMV.

**Marker variable technique.** This is a partial correlation procedure designed to control for method bias. It uses a measure of the assumed source of the method variance as a covariate in the statistical analysis. Lindell and Whitney (2001) demonstrated the use of a marker variable to partial out the effect of CMV. To acquire a reliable estimate of CMV, a marker variable should be carefully identified before the start of data collection. Alternatively, however,
it is possible to estimate the effect of CMV in a post hoc fashion without the marker variable identified a priori (Lindell & Brandt, 2000). Specifically, Lindell and Whitney (2001) stated that “the smallest correlation among the manifest variables provides a reasonable proxy for CMV” (p. 115). Because an uncorrected correlation is influenced not only by true covariance but also by CMV, the smallest positive value in the correlation matrix, or \( r_{M1} \), would be a conservative estimate of CMV. Although fairly reasonable, the post hoc approach has the potential to capitalize on chance factors. Therefore, according to Lindell and Whitney (2001), investigators can use the second-smallest positive correlation, \( r_{M2} \), as a more conservative estimate of the correlation effect caused by CMV (\( r_{M} \)).

Within the framework of marker-variable analysis, a method factor is assumed to have a constant correlation with all of the measured items. Under this assumption, a CMV-adjusted correlation between the variables under investigation, \( r_A \), will be computed by partialling out \( r_M \) from the uncorrected correlation, \( r_U \). In particular, with a sample size of \( n \), \( r_A \) and its \( t \)-statistic can be calculated as follows:

\[
r_A = r_{U} - r_{M}/(1-r_{M}^2)
\]

\[
t-statistic = r_A/\sqrt{(1-r_A^2)/n-3)}
\]

Using \( r_A \) and the \( t \) value, investigators can examine the impact of CMV on the magnitude and significance of a correlation. The marker-variable method yields a specific estimate of CMV along with the statistical significance of the CMV-adjusted correlation between the variables. In addition, this technique does not force investigators to use multiple methods. Thus, based on theoretical and practical considerations, the marker-variable method seems to be an appealing alternative to assess CMV biases in general (Lindell & Whitney, 2001).

The researchers used the second smallest positive correlation as a marker variable in this study, for which they calculated the correlations between the components constituting EI and WB, as shown in Table 3.

The second smallest positive correlation in this study is 0.03 (between Self control and Perception). Hence this is taken as \( r_M \). Using the two formulae, the adjusted correlation between EI and WB was calculated (Table 4).

| Table 4: Correlation between EI and WB – Before and After Controlling for CMV |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Variables | WB | Unadjusted \( r \) | Adjusted \( r \) |
| EI | 0.49** | 0.47** |

Note: WB = Well Being; EI = Emotional Intelligence, \( r \) = Correlation between EI and WB; ** = Correlation is significant at the 0.01 level (2-tailed).

It is evident from Table 4 that the spurious correlation caused by CMV amounts to 0.02 only as the adjusted correlation comes to 0.47, which is also found to be significant. Thus, the emergence of more than one factor and the marker variable technique have shown that EI has a relation with WB, over and above the effect of CMV.

| Table 3: Correlation between EI and WB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | A | R | EI | GH | V | PWB | DM | AX | SC | WB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 0.85** | 0.68** | 0.31** | 0.12 | 0.11 | 0.05 | 0.05 | 0.08 | 0.03 | 0.14 |
| A | 1 | 0.71** | 0.25** | 0.04 | 0.1 | 0.06 | 0.13 | 0.13 | 0.1 | 0.16* |
| R | 1 | 0.59** | 0.02 | 0.23** | 0.23** | 0.16* | 0.24** | 0.11 | 0.28** |
| EI | 1 | 0.11 | 0.34** | 0.31** | 0.33** | 0.4** | 0.19* | 0.49** |
| GH | 1 | -0.07 | -0.02 | -0.09 | 0.18* | -0.08 | 0.35** |
| V | 1 | 0.36** | 0.42** | 0.35** | 0.35** | 0.18* | 0.61** |
| PWB | 1 | 0.23** | 0.27** | 0.31** | 0.53** |
| DM | 1 | 0.36** | 0.21** | 0.63** |
| AX | 1 | 0.28** | 0.78** |
| SC | 1 | 0.49** |
| WB | 1 | |

Note: P = Perception; A = Appraisal; R = Regulation; EI = Emotional Intelligence; GH = General Health; V = Vitality; PWB = Positive Well-Being; DM = Depressed mood; AX = Anxiety; SC = Self-control; WB = Overall Well-being; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).
DISCUSSION

The correlation between EI and WB is significant even after controlling for CMV which adds strength to the previous research findings (Carmeli, Halevy & Weisberg, 2009; Krishnaveni & Deepa, 2010).

In this study, the predictor and criterion variables had to be obtained from the same source; they could not be obtained at different contexts, and the source of method bias could not be identified. This study measures the correlation between two attitude-based variables and hence is vulnerable to CMV effect. The authors used the Harman’s single factor test to prove that there was no general factor in their study. They also used the marker variable technique, which was quite robust and provided a reasonable means to assess the CMV effect. It was introduced to assess the CMV effect on correlations between dependent and independent variables and was as reliable as the Confirmatory Factor Analysis based Multi Trait Multi Method (MTMM) technique in terms of assessing and controlling CMV (Malhotra, Kim & Patil, 2006; Lindell & Whitney, 2001). It also helped them to do a post hoc control of the CMV effect, as they had not included a marker variable a priori in the study.

This paper has important implications for studies which try to bring out the relationship between predictor and criterion variables in organizational and behavioural research. It has given an overview of CMV and has outlined the remedies for the same. It has also demonstrated the use of a few of those remedies. Though the authors have not used the statistical remedies extensively, they have proven that the correlation between the two variables of interest is significant over and above the effect of CMV.

However, there are a few limitations in both of the techniques used in the study. There are many statistical remedies recommended for controlling CMV (Podsakoff et al., 2003). Each has its own advantages and disadvantages. The authors made a decision on the techniques, based on their research setting and the feasibility of implementing a technique. The research can be further strengthened by incorporating robust procedural and statistical remedies right from the questionnaire design and data collection stages. The correlation between the variables can also be strongly established by MTMM techniques which can be included in the future scope for research.

CONCLUSION

The study has demonstrated the use of a few procedural remedies and statistical methods to control the effect of CMV on the correlation between EI and WB. A careful examination of literature suggests that CMV is indeed a problem and hence researchers should implement measures to control the same. This requires careful assessment of the research settings to identify the potential sources of CMV and implementing procedural and statistical remedies for the same. Although we have not used the statistical methods exhaustively, this paper will serve as a framework for researchers when evaluating the potential biasing effects of method variance in their research pertaining to behavioural aspects. In addition, this study has brought out the significant correlation between EI and WB, over and above the impact of CMV.

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Acknowledgment: This research was supported by the All India Council for Technical Education (AICTE) awarded to Dr.R. Krishnaveni.

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