

Authentic Leadership Structural Validity: Higher Education Staff Notion on Authentic Leadership

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Abstract- Contemporary leadership theory and practice describes authentic leadership (AL) in relation to self-awareness, relational transparency, internalized moral perspective, and balance processing of information (Walumbwa et al., 2008). A total of 580 academic, management and professional staffs were asked to rate the AL behaviours of their administrative heads using the rater version of authentic leadership questionnaire (Walumbwa et al., 2008). The present paper examines, if there are distinction among the measures of AL, if the latent variables correlate with each other and then confirm the factor structure. Findings from Principal component Analysis (PCA) revealed the presence of three dimensions of AL -self-awareness, internalized moral perspective and relational transparency. The result also provides evidence that supports discriminant and convergent validity. We also present finding from the confirmatory factor analyses (CFA's) which supports the adequacy of AL. The CFA's Goodness of Fit Indices results reached acceptable level for some tested models. Based on the prior findings and the current findings we concluded that Walumbwa's AL scales is an appropriate tool for assessing AL at a general level, though the extent of replication across population will be influenced by sampling characterization as espoused in this study.

Key Words: Authentic leadership; self-concept; moral self-development; Leadership; Divergent validity; Convergent Validity.

1. INTRODUCTION

Decades of research on leadership is flawed by its inability to capture the reality of moral violations and falling leadership standards (Luthans&Avolio, 2003; Avolio & Gardner, 2005; Avolio& Chan, 2008) due to unethical decision made by leaders in various capacities. Parochial interest of leaders (Begley, 2003) had damaging effect on both the organization social structure, and the role of leadership (Cooper, Scandura, &Schriesheim 2005; Sparrow 2005). The engagement of practices that are inappropriate to the self, organization and the environment threaten the continuity of an organization social system and endanger the practise of leadership. As a response to the leadership dysfunction, it is argued succinctly that, the study of leadership from a new perspective is of great importance (Avolio&Gadner, 2005; George, 2003; Cooper, et.al 2005).The new genre of leadership known as authentic leadership (AL) has received a heightened level of research attention due to the challenges of the declining hopes and confidence of subordinates in their leaders (Luthans&Avolio, 2003). Authentic leadership stands in disparity to inauthentic self-presentation as a means of managing one's image as a leader (Chan, Hannah, & Gardner, 2005). Inauthentic leadership is characterized by the leader's self-centered motivation at the expense of organization and stakeholders needs (Dasborough&Ashkanasy 2005). The idea of authentic leader's is been proposed to achieve high level of authenticity through, beliefs, value and self-awareness and

at the same time acting in congruence with those set of values and beliefs while relating in a transparent and authentic way with cohorts (Avolio, Gardner, Walumbwa, et al, 2004; Duignan, &Bhindi, 1997; Gardner, & Schermerhorn, 2004).). This form of leadership as argue will be knowledge-based, value informed, and skillfully executed (Begley, 2003). The literatures, therefore suggests that authentic leaders epitomize positive image to reflect their true self. They hold onto their positive image regardless of the social demands and pressure.

Given, the much shorter history of research on authentic leadership relatively, not so much study is conducted on, defining the construct of AL despite call to do so. Walumbwa, Avolio, Gardner, Wernsing, and Peterson (2008) in particular provides the initial evidence on the four component of AL (Self-awareness, relational transparency, balance processing of information and internalize moral perspective) using samples from United State, Kenya and People's Republic of China. However distinction among the measures of AL is gloss over (Walumbwa et al, 2008), which may be relevant to the study of authentic leadership to avoid errors in measurement scale and guide against wrong conclusions made regarding relationship between the construct (Farrell, & Rudd, 2009). Moreover, Walumbwa et al, (2008), calls for, additional research to further assess the discriminant, convergent, and predictive validity of these component scales with broader range of samples and contexts. As a response, this study examines if there are distinction among the measures of AL, if the latent variables correlate

with each other and then confirm the factor structure among staffs of higher education using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The EFA was used to see if, it will produce the same factor pattern as the CFAs.

2. AUTHENTIC LEADERSHIP THEORETICAL METAPHORS

In an attempt to conceptualize authentic leadership construct, various theoretical models evolved over time (Kernis, 2003; Ilies, et al., 2005; Gardner, Avolio, et al., 2005a; Walumbwa's et al., 2008). Kernis (2003) authenticity research provides the basic theoretical underpinning for authentic leadership metaphors (Avolio, et al., 2004, Avolio& Gardner, 2005; Gardner et al., 2005a; Ilies et al., 2005; Walumbwa et al., 2008). Kernis (2003) identify four discriminable components of authenticity as part of optimal self-esteem theory: (1) self-awareness (2) unbiased processing (3) authentic behavior/action and (4) relational authenticity. Avolio and Gardner (2005), Ilies et al. (2005), and Gardner et al. (2005a) had drawn findings from Kernis' (2003) earlier study on authenticity research to propose various authentic leadership models. This is done however, with some divergences in the application of Kernis' idea. Yet the varied perspectives on authentic leadership are somehow related though not identical.

The Ilies et al. (2005) model, draws on Kernis (2003) and Goldman and Kernis, (2002) authenticity research to propose a four multi-component model of authentic leadership from leader and follower eudaemonic well-being using the same components as Kernis'. The study further asserted that: *"Authentic leaders, by expressing their true self in daily life live a good life (in an Aristotelian way), and this process results in self-realization (eudaemonic well-being) on the part of the leaders, and in positive effects on followers' eudaemonic well-being"* (p. 376). Consequently, Gardner et al. (2005a) integrated the various theoretical models and definitions of authentic leadership to propose a self-based model of authentic leader and follower development. This integrated model focused on core self-awareness and self-regulation components of authentic leadership, which serves as a theoretical foundation for the recent extensions of authentic leadership metaphors. Gardner et al. (2005a) framed authentic leadership components from Kernis' (2003) authenticity research and Deci& Ryan's, (2000) self-determination theory. However, they recast the term unbiased-processing to balanced-processing, in order to recognize studies from social psychology lens. Suggesting further that the term balanced-processing seems to reflect the self-evaluative ability of an authentic leader's by accepting both positive and negative attribute and qualities. And thus justify the metaphorical essence of authentic leadership.

Furthermore, Avolio and Gardner (2005) model recast Kernis' (2003) conception on authenticity to propose the following metaphors of authentic leadership: positive

moral perspective, self-awareness and self-regulations (balanced-processing, relational transparency and internalized self-regulations). Their model used the term balanced-processing and not unbiased processing to recognize researches from cognitive psychology. They are, however of the, perception that authentic leaders and followers are affected by cognitive biases. With this perception, it was viewed that authentic leader's edge lies in their ability to consider issue from various facets, perspectives and assess information without prejudice (Avolio&Gadner, 2005). Similarly, the term relational transparency was used, because it was seen to be more descriptive than the term relational authenticity. It also, reflects the open and transparent manner at which authentic leaders and followers are theorized to share information with one another (Avolio&Gadner 2005).

Equally, Walumbwa et al. (2008) authentic leadership conceptualization relies on (Avolio& Gardner, 2005; Gardner et al., 2005a; Ilies et al., 2005) theoretical perspectives studies for three reasons: (1) It is firmly rooted in the extant social psychological theory and research as to differentiate inductive or philosophical approach to authentic leadership theory development (2) It explicitly recognized and articulated the central role of an internalized moral perspective to authentic leadership and its development (3) It focused explicitly on the development of authentic leaders and authentic followers. Based on the synergies from prior researches (Walumbwa's et al., 2008) authentic leadership is viewed as being composed of five distinct but related substantive components namely: (1) self-awareness, (2) relational transparency, (3) internalized regulation (i.e., authentic behavior), (4) balanced processing of information, and (5) positive moral perspective. But the internalized regulation processes and authentic behavior were combined into single a concept (internalized moral perspective). Because the two concepts are conceptually equivalent (both involves exhibiting behavior) from the perception of self-determination theory. In an effort to operationalized authentic leadership construct Walumbwa et al., (2008) draw attention to the conceptual overlap between the internalized regulation and positive moral perspective dimensions. Furthermore, these dimensions were collapsed into a single dimension that is called the internalized moral perspective -leader's inner drive to achieve behavioral integrity. These authors concluded that authentic leadership has the following metaphors: (1) self-awareness, (2) internalized moral perspective, (3) balanced processing of information and (4) relational transparency. Meanwhile, Walumbwa's et al.(2008) modified Luthans and Avolio (2003) definition of authentic leadership to reflect the underlying dimensions of the construct posited by Gardener et al., 2005a; and Ilies et al., 2005. And thus define authentic leadership as:

"a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self awareness, and internalized moral

perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering self-development (Walumbwa et al., 2008, p. 94).

Nevertheless, it is worth noting that, among researchers, the inclusion or exclusion of moral component from authentic leadership construct has been a subject of considerable theoretical discourse. Although, Luthans and Avolio (2003) initial conceptualization of authentic leadership and its development includes an inherent ethical/moral component. Avolio and Gardner (2005) are, also of, the notion that positive moral perspective is crucial to the emerging work on authentic leadership development. Moreover psychological capacities and positive moral perspective are conceived as an inherent quality of authentic leadership. However, they are not explicit on the connectivity between psychological capacities and positive moral or morality. Similarly, Gardner et al. (2005b) posits that by their own definition and in terms of development, authentic leaders are of high moral character. In their work, they explain that, it is a prerequisite for authentic leadership from definitional, theoretical/empirical, and philosophical perceptions. This idea was also supported by other studies (May, Chan & Avolio, 2003; Chan et al., 2005; Sean, Lester, & Vogelgesang et al., 2005), as they contended that moral development is a prerequisite to the realization of leader authenticity. Walumbwa et al. (2008) conceptualizations of authentic leadership construct also join the league of researchers that viewed authentic leaders are not ethically neutral.

“.....any theory of leader development, but particularly one focused on authentic leadership development, will be incomplete and misguided if it does not contribute to increased awareness and attention to the inherent ethical responsibilities that reside in the leadership role” (p. 94).

However, the consideration of leader's value and moral in authentic leadership metaphor is in contrast to some researcher's theoretical arguments (e.g. Cooper et al, 2005; Shamir & Eilam, 2005; Sparrowe, 2005). These authors are of the notion that authentic leadership construct need not to include moral component, stressing that it dilutes the construct. And thus defining the construct in research may appear difficult and create serious measurement challenges. There is a lack of, conceptual consistency when authenticity is defined in relation to self-awareness, self-acceptance and with low level of moral development. Positive psychological capacities and a positive moral perspective are perceived as consequences of authentic leadership by researchers who view authentic leadership as ethically neutral. Meanwhile, Sparrow (2005) noted that, laying claims that a particular form of leadership is intrinsically moral is difficult to falsify empirically and exceptionally difficult to argue logically. He reasoned that “the problem in arguing that authenticity is intrinsically ethical is that to thine own self be true is resolute in its indifference to moral postures” (p.424). Shamir and Eilam,

(2005) echoed further Sparrows' (2005) notion and contemplated on the possibility of a leader to be “true to self” without attaining a high level of moral development and ethical conduct. Table 1, shows a summary of authentic leadership metaphor from various researchers.

Table 1: Metamorphosis of Authentic Leadership

Authentic leadership theoretical models	Authentic leadership Metaphor
Kernis (2003)	Self-awareness, unbiased processing, authentic behavior/action and relational authenticity.
Ilies et al. (2005)	Self-awareness, unbiased processing, authentic behaviour/acting and relational authenticity.
Gardner et al. (2005a)	Self-awareness, relational transparency, authentic behaviour/acting and relational authenticity.
Aviolo&Gadner (2005)	Positive moral perspective, self-awareness, balanced processing of information, relational transparency and internalized self-regulations.
Walumbwa et al. (2008)	Self-awareness, internalized moral perspective, balanced processing of information and relational transparency.

Significant to Walumbwa et al. (2008) theory development are the following authentic leadership metaphors based on the previous discussion: self awareness, internalized moral perspective, balanced processing of information and relational transparency and thus formed the basis of this research. In this particular study, authentic leadership is operationalized as a leadership behavior with respect to self-awareness, internalized moral perspective, balanced processing of information and relational transparency that can be emulated by followers. Thereby translate these four dimensions of authentic leadership into visible attributory behaviors that is recognized by followers.

3. METHODS

3.1 Respondent & Procedure

Data for the study were obtained from 580 staff of a public university in Malaysia, thus representing 14.5% of the university staff population. The quota sampled staffs are located in 9 departments within the university. Staffs from each department were selected from diversified domain of academic, management and professional staff members across diverse groups in terms of culture, identity, job specialization and position. Due to incomplete information, 30 responses were discarded, while 182

questionnaires were not returned. In all 368 valid response questionnaires was used for analysis. These sample size was deemed adequate to address the research objectives. The valid responses was divided into two halves a part for exploratory factor analysis (EFA) and the remaining part for confirmatory factor analysis (CFA).

3.1.1 Survey Instrument

The authentic leadership questionnaires (ALQ) are items that measure and provide data on both leaders and followers' conceptions of authentic leadership. For the purpose of data collection, the rater version of authentic leadership questionnaire (ALQ) was used in data analyses. The ALQ consists of 16 items that measure four dimensions of AL which are: relational transparency (RT) (5 items); internalized moral perspective (IMP) (4 items); balanced processing of information (BP) (3 items) and self-awareness (SA) (4 items) (Walumbwa et al., 2008). The respondents rate leaders as authentic on a 0-4 point Likert-type scale, scale choice ranging from 0 (not at all), 1 (once in a while), 2 (sometimes), 3 (fairly often), 4 (frequently, if not always). Higher scores on each scale indicate higher ratings of leader's authenticity on that dimension (table 2). Walumbwa et al. (2008) demonstrated that the instrument had the following estimated internal consistency alphas (Cronbach's alpha) for each of the four main constructs: self-awareness, .92; relational transparency, .87; internalized moral perspective, .76; and balanced processing of information, .81. Furthermore they addressed the validity questions by investigating the hypothesized relationships to authentic leadership for construct support and noted a second order factor accounted for the dependence between each of the factors. The best-fitting model is the second-order factor model. For this particular study, the estimated internal consistency alphas (Cronbach's alpha) for each of the measures are: self-awareness, .83; relational transparency, .82; internalized moral perspective, .78; and balanced processing, .73 respectively. The total internal consistency alpha for authentic leadership construct is .94. Respondent's demography shows that, they are predominantly females 54.1%, 51.2% aged between 40 – 50 years of age, 48.8% of respondents have been in service for more than 15 years, and 69.8% are Bachelor degree and doctoral degree holders.

3.2 Data Analysis

The analyses were conducted using statistical analysis methods via descriptive statistics, EFA and CFA. Data were analyzed using the Statistical Package for Social Science (SPSS) and SPSS AMOS.

4. RESULTS

The mean rating for authentic leadership ranges from 2.79 to 3.31, with standard deviations of 0.86 to 1.10. All the items were found to have a mean score greater than 2.5 on a 0 – 4 point scale being an indication that the respondents perceive their leader's authenticity to be moderately high (table 2).

Table 2 Rating of AL items by Respondents

Item Codes	Item Rating	Mean	Std. Deviation
RT3	1	3.31	.96
RT4	2	3.04	.96
RT1	3	3.10	1.08
IM7	4	2.96	1.02
BP12	5	2.94	.97
IMP8	6	2.92	1.01
SA13	7	2.90	.86
IM9	8	2.89	1.07
RT2	9	2.88	.99
IMP6	10	2.88	.88
BP11	11	2.86	1.03
SA15	12	2.85	.93
SA16	13	2.84	1.03
SA14	14	2.78	1.06
RT5	15	2.75	.94
BP10	16	2.79	1.10

Conway and Huffcutt (2003) argues that using exploratory factor analysis (EFA) on existing measures may not provide clear expectation about the factor pattern but suggest that using the combination of both EFA and confirmatory factor analysis (CFA) on existing measures may be better off. Farrell and Rudd (2009) notes that CFA can be used to assess discriminant and convergent validity however assessing discriminant validity through CFA tends not to be stringent enough. Likewise, EFA identifies poorly performing items, provides direct evidence for Average Variance Explained (AVE) (Farrell & Rudd, 2009) and brings inter-correlated variables together. Choosing EFA technique may be better off in less mature research areas where basic measurement questions are yet to be resolved (Kline; 2013). Following the above argument, this study used both EFA and CFA for analyses. Discriminant validity is the degree to which each dimension is truly distinct from other related dimensions, in which the indicators are better associated with their respective latent variables. Convergent validity is the extent to which the latent variables correlate with each other, that is, the proportion of variance shared (Fornell & Larcker, 1981). The 16 items from authentic leadership questionnaire (rater version) were subjected to EFA. In view of the EFA, principal component technique was used because it yields component scores that have the same correlation coefficients as that of the rotated factors (Thompson & Daniel, 1996). "The PCA method assumes that all indicator variance is common (shared) variance. The assumption is strict because it does not allow for specific variance or measurement error" (Kline 2013, p.181). The rotation method used is oblique rotation because it allows the factors to correlate, it renders a more

accurate, and more reproducible, solution theoretically (Costello & Osborne, 2005). Direct Oblimin rotation produce fewer cross loading, represent reality (behaviour are not independent of one another) and produce better simple structure (Conway & Huffcutt, 2003; Kline, 2013). The rotated component matrix output identified factor loadings with an initial cutoff point of 0.4 or above. The factor loading for each dimension is presented in table 3. The presence of three dimensions (self-awareness, internalized moral and relational transparency) of ALQ with total variance of 63.9% emerged with the engine value greater than 1 (Kaiser, 1960). The scree tests extracted three factors as well.

Factor 1(self-awareness: SA), accounted for 45.8% variance, engine value of 7.89 with four items, Factor 2 (internalised moral perspective: IMP) accounted for 7.7% variance, engine value of 1.23 with four items, while Factor 3 (Relational Transparency: RT) represented 6.9% variance, engine value of 1.115 with four items. Factor loadings for this scale are also clear, and moderately ranging from .59 to .854 (self –awareness factor), .633 to .817 (internalize moral perspective factor), and .703 to .792 (relational transparency factor).

Balance processing of information as a dimension was not retained as evidence from the rotation matrix. However, internalised moral perspective was retained as a factor. It is not surprising that self-awareness has a large variance because, it is considered to be the central element of authentic leadership and its development (Walumbwa et al., 2008; Gadner et al., 2005b). It serve as bedrock for other component, the stronger the leaders self –awareness the better its reliance, when faced with ethical and moral dilemma in a complex situation. Having internalised moral perspective as a factor adds supports to the notion that it is a component of authentic leadership.

The correlation matrix revealed the presence of many coefficients is above 0.4. However, four items did not meet the rotation criteria, two items cross loaded - relational transparency (RT 2) and balance processing of information (BP 11) while the remaining two items are below the rotated component factor weight - self-awareness (Sa 13) and relational transparency (RT 3). The anti-image correlation matrix values were greater than 0.8, an indication that there are strong inter-correlation among the items. Examination of the Kaiser-Meyer-Oklins, suggest that, the samples is factorable (KMO = 0.898). Bartlett's Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix. In all, twelve items were retained and used for the calculation of convergent and discriminant validity. Next we calculate the average variance explained (AVE). AVE is the measures of the error-free variance of a set of items. It is the amount of variance that is captured by a latent variable in relation to the amount of variance due to its measurement error (Fornell&Larcker, 1981). To show the degree at which the latent variable correlation with each other, (AVE) for each factor is calculated using the formula below:

AVE = (sum of squared standardized loading) / (sum of squared standardized loading + sum of indicator measurement error).

AVE of > 0.5 provides support for convergent validity (Fornell & Larcker, 1981) (table 3). The AVE for self-awareness is 0.608, internalized moral is 0.615 and relational transparency is 0.638. Furthermore, the component correlation matrix for each component is squared and the result (share variance) is compared with AVE for each factor. If the AVE is greater than shared variance (SV), there is evidence supporting discriminant validity. The component correlated matric for, self-awareness, Internalised moral perspective and relational transparency are .391, .438 and .452 respectively. The share variance (SV) for self-awareness, internalized moral perspective, and relational transparency are 0.153, 0.192 and 0.204 respectively as indicated in Table 3. The AVE for self-awareness is .608 with a SV output of 0.153; internalized moral AVE is 0.615 with a SV output of 0.192 and relational transparency AVE .638 with a SV output of 0.204 (Fornell & Larcker, 1981). Thus there are evidences supporting discriminant validity of AL.

Adding to these, we tested the factor structures suggested by EFA using Confirmatory Factor Analysis (CFA). This was done by assessing the model fits; see if it is free from offending estimate and to see if the internal constituency estimates satisfy the necessary conditions. The CFA tested three models – Model 1-a first order model, Model 2 -a second order model, Model 3- 1-factor model. To assess how these models represented the data, absolute fit indices such as the chi –square (χ^2) statistic, the root mean square error of approximation (RMSEA), the goodness-of-fit index (GFI), and the incremental fit statistics such as the comparative fit index (CFI) were used. The relative chi-square (Cm/df) of < 0.3 is an indication of model fit (Byrne, 1998). The GFI and CFI, values > 0.95 indicative of good fit and values >0.90 acceptable model fit (Kline 2005; Medsker, Williams, &Holahan, 1994). As suggested for RMSEA the values < 0.05 constitute a good fit, values in the range of 0.05 to 0.08 range an acceptable fit, values in the 0.08 to 0.10 range as a marginal fit, and values >0.10 constitute a poor fit (Kline 2005; Browne &Cudeck, 1992).

Table 4 shows Model 1 and Model 2 reveal identical results that are within the recommended value. The root mean squared approximation of error (RMSEA) is 0.095. The relative chi-square (CMIN/df) is estimated to be 2.9. The Normed Fit Index (NFI) is .884 Comparative Fit Index (CFI) .920 and Goodness-of-Fit Index (GFI) .900. The estimated internal consistency alphas (Cronbach's alpha) for each of the factors are: self awareness, .73; internalized moral perspective, .70; and relational transparency, .73. The 1 factor model result is as follows: RMSEA is .147. The relative chi-square (CMIN/df) is 5.61. The Normed Fit Index (NFI) is .764 Comparative Fit Index (CFI) .795 and Goodness-of-Fit Index (GFI) .795.

Table 3-Obliquely rotated components, AVE, SV for AL

Items	Self-awareness Loadings	Internalised moral perspective Loadings	Relational Loadings	Transparency
SA16	.854			
SA15	.838			
BP12	.730			
SA14	.597			
SA13	.590			
Average Variance Explained (AVE)	.608			
Share Variance	.153			
ME8		.817		
ME9		.749		
BP10		.645		
ME7		.633		
Average Variance Explained (AVE)		.615		
Share Variance (SV)		.192		
RT5			.792	
RT4			.774	
RT1			.705	
ME6			.703	
Average Variance Explained			.638	
Share Variance			.204	

Table 4- Confirmatory Factor Analyses of Authentic Leadership Questionnaire

Maximum Likelihood Parameter Estimates of standardized factor loadings, critical ratio, standard error and square multiple correlations

First and second order models					1-factor model			
Items	Factor loadings	S.E	C.R	SMC	Factor Loadings	S.E	C.R	SMC
<u>Sa16</u>	.65	-	-	.428	.575	-	-	.330
<u>Bp12</u>	.69	.121	8.69	.480	.639	.148	7.41	.408
<u>Sa15</u>	.86	.123	10.13	.732	.755	.152	8.23	.570
<u>Sa14</u>	.81	.131	9.81	.661	.755	.166	8.40	.601
<u>Imp8</u>	.64	-	-	.407	.555	.143	6.69	.308
<u>Imp9</u>	.82	.143	9.43	.679	.685	.159	7.77	.470
<u>Bp10</u>	.72	.134	8.58	.515	.664	.154	7.61	.441
<u>Imp7</u>	.78	.133	9.15	.616	.709	.153	7.93	.503
<u>Rt4</u>	.79	-	-	.623	.676	.153	7.70	.457
<u>Rt5</u>	.72	.081	10.16	.519	.612	.134	7.19	.375
<u>Rt1</u>	.67	.091	9.49	.455	.608	.150	7.16	.370
<u>Imp6</u>	.63	.76	8.87	.400	.602	.124	7.10	.362
Fit indices	Cmin	df	Cmin/df	CFI	GFI	RMSEA	NFI	
1-factor model	302.8	54	5.61	.795	.795	.147	.764	
First and second order models	148.3	51	2.9	.920	.900	.095	.884	

Note the three underlined items were constrained to 1.00 and not tested for statistical significance Critical ratio (CR), standard error (SE) and square multiple correlations (SMC) ** P= 0.000

Without subjecting the data to EFA techniques we use confirmatory Factor Analyses (CFA) to test three main models which include; Model 1 tested a 1-factor model; Model 2 tested a first order 4 factor model and Model 3 tested a second order 4 factor model (Walumbwa et al., 2008). CFA takes sampling error into consideration than EFA, less likely to produce wrong number of factors or to assign variables to the wrong factors (Conway & Huffcutt, 2003). Initially the CFAs result indicates a non-fit model with the absolute fit indices (χ^2 , CFI, GFI, & RMSEA) greater than the recommended value for the tested models. To have a good fit model, it becomes apparent that modification is required in order to identify a model that can empirically test the sample data. After revision, the CFA fit indices reveals that the model fit indicates a minimum requirement for two out of the three tested models (table 5). Model 2 produced an acceptable fit to the sample data: $\chi^2 = 88.59$, $df = 32$ and $RMSEA = .072$. The CFI, GFI and TLI are .959, .952, and .943 respectively. The standardized factor loading ranges from 0.62 to 0.80 and statistically significant at 0.01 levels (Kline 2005). The standardized root mean square residual (SRMR) is 0.040 signifies that the model explain the correlations (Byrne, 2010). The values were in the range of minimum loading for item Rt1 (standardized estimate was .622) to maximum loading for item Sa 14 (standardized estimate was .799).

The model parsimony, parsimony ratio (PRATIO, .748) the assessment of model fit, PNFI (.711) and PCFI of (.698) although tied to other goodness-of-fit indices falls within the range of expected values (Byrne, 2010). Furthermore, Cronbach alpha method was utilized in evaluating internal consistency of the items for the sub construct of ALQ. Self-awareness, internalize moral and relational transparency factor reliability is .75, .80, and .81 respectively.

The fit indices of Model 3 is $\chi^2 = 87.99$, $DF = 31$, $GFI = .955$, $CFI = .953$ and $RMSEA = 0.074$. The standardized root mean square residual (SRMR) represents the derived average residual value; the value for this study is .038. The model parsimony, parsimony ratio (PRATIO, .727) the assessment of model fit, PNFI (.670) and PCFI of (.688) although tied to other goodness-of-fit indices falls within the range of expected values (Byrne 2010). In addition, the magnitude and direction of factor loadings were substantial and statistically significant and the model was free from offending estimates. The factor Loadings were statistically significant at 0.01 levels. Model 3 internal consistency is as follow: self-awareness, internalize moral, relational transparency and balance processing of information factor reliability is .78, .81, .77 and .62 respectively. Model 1 result reports poor fit indices: $\chi^2 = 181.17$, $DF = 35$, $GFI = .902$, $CFI = .888$ and $RMSEA = .115$ as indicated in table 5.

Table 5
Confirmatory Factor Analyses of Authentic Leadership Questionnaire without EFA

Initial Model																	
Factors Loadings		RT3	RT4	RT5	IM6	IM7	IM8	IM9	BP10		BP12	SA13	SA14	SA15	SA16		
Model 1		.75	.61	.56	.68	.63	.52	.60	.63		.67	.71	.73	.71	.54		
Model 2		.78	.64	.57	.56	.76	.63	.70	.64		.73	.80	.79	.57	.61		
Model 3		.77	.68	.59	.58	.76	.63	.70	.65		.72	.72	.80	.76	.62		
Fit indices		Cmin	Df	GFI	CFI	RMSEA	Model summary										
Model 1		454	104	0.812	0.887	0.125	does not represent the data										
Model 2		259.9	63	0.844	0.840	0.097	does notrepresent the data										
Model 3		397.03	98	0.849	0.846	0.94	does not represent the data										
Revised Model																	
Factors Loadings		RT1	RT2	RT3	RT4	RT5	IM6	IM7	IM8	IM9	BP10	BP11	BP12	SA13	SA14	SA15	SA16
Model 1		-	.71	.77	.59	-	-	-	.48	.56	.65	-	.67	.72	.72	-	.54
Model 2			.72	.79	.66	.62	-	.79	.68	.72	-	-	-	.71	.80	-	.78
Model 3		-	.88	.80	.63	-	.83	.69	.78	-	.87	.65	-	.82	-	.78	.64
Fit indices		Cmin	Df	GFI	CFI	RMSEA	Item deleted						Model summary				
Model 1		181.17	35	0.902	0.888	0.115	RT1, RT5, IMP6, IMP7, BP11, SA15						does not represent the data				
Model 2		88.59	32	0.952	0.959	0.072	RT5, IMP6, BP10, BP11, BP12, SA15						represent the data (3 factors model)				
Model 3		87.99	31	0.955	0.953	0.074	RT1, RT5, IMP9, BP12, SA14						represent the data (4 factors model)				

Note: Model 1 – 1-factor model; Model 2 - first order 4-factor model; Model 3 - second order 4-factor ** P= 0.000

5. DISCUSSION & CONCLUSION

Scholars have suggested that the authentic leadership construct need to be subjected to critical analysis before it is used for applied research and correlation studies (Cooper, et al., 2005). The results obtained in this study supports the previous studies using various techniques such as qualitative interview (Terry, 2006; Pittinsky& Tyson, 2005), quantitative methods (Morris, 2009; Walumbwa, et al., 2008; Beyer, 2010), and cross sectional study (Brennan, 2010; Caser &Buttigieg, 2013). Collectively, the results from these methods have demonstrated the presence of authentic leaders within these various research domains. Thus, the general picture is that, as anticipated authentic leadership seems, to be found across a wide variety of organizations, (Avolio& Gardner, 2005; Luthans&Avolio, 2003). However, some differences should also be noted. The EFA results shows that authentic leadership constructs have three dimensions (self-awareness, internalised moral perspective and relational transparency. Other AL researches have demonstrated three dimension as well using EFA (Tate, 2008; Vlado, Marko, Sandra et al., 2013). The result produce by EFA have evidence supporting both discriminant and convergent validity for this population. The structure obtained from EFA was confirmed using CFA. The model fit indicated that the minimum requirement for the fit indexes was achieved. The CFA reveals that both first and second order model produces an acceptable fit indices as well as same results after testing for discriminant and convergent validity. While the 1-factor model produce a poor fit indices.

Meanwhile most research on AL applied CFA analytic techniques to their respective samples. Without subjecting the data to EFA, we use CFA's to assess the inter-relationship between the observed variables and the latent variables. Initially the CFA's seems not to have good fit indices, subsequently, the model was revised. In sum, the results provided supports for two of the three tested model. The fit statistics indicates that Mode 1 has the worst-fit indices while Model 2 and 3 results are somehow similar. This finding is consistent with Rego & Reis junior (2013) research. Model 3 fit indices were consistent with the Walumbwa's 4 - factor model finding and the data seems to represent the model after revising but the balance processing of information has two items with lower internal constituency estimates. However, Model 2 provides supports for a 3 factor model: self awareness, internalized moral perspective and relational transparency. For the data in model 2 to represent the model balance processing of information dimension was taken out as suggested by the modification indices. The CFA factor structure does not include balance processing of information as well. This is indicates that respondent did not recognise the balance processing of information dimension of their leaders. And it implied that leaders might be bias when it comes to processing information that affects their authorities.

Taken together, one of implication demonstrated by this study is that respondent through perception (Pittinsky& Tyson, 2005) recognise their leader's image of personal value (Aviolo et al., 2004) through recognition respondents were able to view their leader as authentic. Another implication is that authentic leadership study is relevant in education; this position is supported by researchers such as Plante (1990), Taylor (1991) and Duignan (2004, 2007). Authentic educative leaders are required to transform teaching and learning beyond the current rhetoric. They have the capacity to sustain the ethics and moral behaviour in the learning environment to what can be emulated by their followers (Duignan, 2007). Additionally the study also adds support to the notion that authentic leadership dimensions need to include an internalised moral perspective.

Substantial care was given to the issue of reliability and validity in designing the study, however, there were certain limitations associated with the research conducted in this study. For example, the study sample is of one public university in Malaysia as such one must be cautious in generalizing the results. The results support the efficacy of the original AL scale (Walumbwa et al., 2008) and substantiated the psychometric properties. However, further study is required to examine how respondent recognizes their leader's image. This is because the items and structure of AL will likely reflect particular characteristics of the samples. Future research attention should focus on the degree to which education should education seek authentic leaders. Further analyses should also identify the extent to which socio-demography characteristics may influence the structural validity of the AL scales (Klenke 2005; Gardner et al, 2005b). However, based on the prior findings and the current findings we concluded that Walumbwa's AL scales is an appropriate tool for assessing AL at a general level, though the extent of replication across population will be influenced by sampling characterization as espoused in this study. The study samples show that respondents are mostly females, older, experienced with more education.

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