AN INVESTIGATION INTO THE FACTOR STRUCTURE OF THE 'FULL RANGE LEADERSHIP' MODEL IN THE UK: THE EFFECTS OF GENDER, HIERARCHICAL LEVEL AND RATER PERCEPTION

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Abstract

This paper investigates the factor structure the Multifactor Leadership Questionnaire in a UK context. Three key areas of influence on the factor structure are analysed – gender, hierarchical level and rating source. A sample of 1,244 participants was drawn. Of these, 366 rated themselves, 238 rated their peers, 325 their superiors and 315 their followers (lower level leaders). 112 of the participants were CEOs/chairmen/chairwomen, 116 directors, 268 senior managers, 377 middle managers, and 371 lower managers. The results showed that the proposed nine factor model is not valid for all types of subsamples but only for men and senior managers. Also, it leaves open questions whether in general the full range model of leadership does not fit for a UK context.

Keywords: Leadership, MLQ, Gender, Level of Hierarchy, Self-rating, Other rating

The factor structure of the MLQ in the UK

There has been an ongoing discussion in the last few years with respect to the factor structure of one of the currently most often used instruments in leadership research, the multifactor leadership questionnaire (MLQ; e.g., Antonakis, Avolio & Sivasubramaniam, 2003; Den Hartog, van Muijen & Koopman, 1997). Originally set up to consist of nine factors, namely, five factors to assess transformational leadership, three to assess transactional leadership, and one to assess laissez-faire leadership, many researchers have failed to reproduce this factor structure in their data. Specifically, the assessment of transformational leadership and the differentiating to transactional leadership is under scrutiny (e.g., Den Hartog et al., 1997). In this paper, we are examining the factor structure of the MLQ using different subsamples of a large UK-based data set in order to find out whether the observed differences in the factor structure of the MLQ are due to a different fit for different samples. A similar analysis has been conducted by Antonakis et al. (2003) with a large US data set. They assessed several contextual factors, such as environmental risk, leader-follower gender (same gender groups) and hierarchical level and their influence on the MLQ's factor structure. In this study, we will

analyse leader gender and hierarchical level and, in addition to Antonakis et al., we also include self- versus other rating of leadership. In the following, we will first explain the different theoretically possible factor structures of the MLQ before we describe our sample, method and results.

The 'Full Range Leadership' Model

The first known reference to 'transformational leadership' was in a study of rebel leadership and revolution (Downton, 1973). It was in the late-1970s in a seminal analysis that 'transforming leadership' was contrasted with 'transactional leadership' (Burns, 1978). Transactional leadership was defined as a transaction or exchange between leader and followers, such as providing a material or psychological reward for followers' compliance with the leader's wishes. Transforming leadership, on the other hand moves people up the 'hierarchy of needs' (Maslow, 1954, 1968) and addresses people's higher-order needs for achievement, self-esteem and self-actualisation – for self-fulfilment (Burns, 1978).

Several theorists (Alimo-Metcalfe and Alban-Metcalfe, 2001; Bass, 1985, 1998; Bennis and Nanus, 1985; Saskin, 1988; Tichy and Devanna, 1986, 1990) have proposed versions of transformational leadership that include or extend these ideas (Yukl, 1999). One of which is the 'Full Range Leadership' (FRL) Model (see Figure 1), (Avolio, 1999; Avolio and Bass, 1993, 2002). This model comprises the dimensions *laissez-faire*, transactional and transformational leadership. According to this model transformational leadership encourages people to look beyond self-interest for the common good (Bass, 1985, 1990; Bass and Avolio, 1994).

Insert Figure 1 about here

Nine factor model

In the original manual of the MLQ, nine factors are distinguished for the assessment of the full range model of leadership. Five of those assess transformational leadership, namely, idealised influence (attributed), idealised influence (behaviour), inspirational motivation, intellectual stimulation, and individualised consideration. Three factors are used to assess transactional leadership. These are contingent reward, management-by-exception active, and management-by-exception passive. Finally, non-leadership is assessed using only one factor, that is, laissez-faire (Bass and Avolio, 1994). Definitions of the nine dimensions are given in Table 1.

Insert Table 1 about here

Antonakis et al. (2003) in their study with overall almost 10,000 participants confirm the nine factor structure for all male and female groups (leader and followers of the same gender), different risk situations (high risk versus stable environment) and different hierarchical level of the leaders. They conclude that the MLQ nine-factor structure fits well in homogenous samples but not so well for heterogeneous samples.

The Factor Structure of the 'Full Range Leadership' Model

There are concerns about the factor structure described above. For example, there are concerns about the lack of distinction between passive management-by-exception and *laissez-faire* (Den Hartog, Van Muijen and Koopman, 1997) and studies (Den Hartog et. al. 1997; Lievens, Van Geit and Coetsier, 1997; Yammarino and Bass, 1990) have suggested that passive management-by-exception forms a separate factor rather than loading on transactional leadership. Empirical evidence also indicates that contingent reward is highly positively correlated with transformational leadership and displays a

similar pattern of relationships to outcomes as do the transformational leadership sub-dimensions (Den Hartog et. al. 1997; Judge and Piccolo, 2004; Rafferty and Griffin, 2004; Tepper and Percy, 1994).

These suggestions and research findings have given rise to a number of different conceptualisations of the FRL model (Avolio, Bass and Jung, 1999) summarised below:

- *Null model* – there is no systematic variance associated with the MLQ and no consistent factor structure can be produced (Avolio et. al. 1999).
- *One-factor model* – all items on the MLQ load onto a "general or global" leadership factor (Avolio et. al. 1999).
- *Two-factor model* – active and passive leadership behaviours (Bycio, Hackett and Allen, 1995; Den Hartog et. al. 1997)[1].
- *Alternative two factor model* - active constructive (transformational leadership and contingent reward) and passive corrective leadership (active and passive management-by-exception and *laissez-faire*) (Avolio et. al. 1999).
- *Three-factor model* - transformational, transactional (contingent reward and active management-by-exception), and passive avoidant leadership (passive management-by-exception and *laissez-faire*) (Avolio et. al. 1999).
- *Alternative three-factor model* - transformational leadership (charismatic/inspirational and intellectual stimulation), developmental/transactional leadership (individualised consideration and contingent reward), passive corrective leadership (management-by-exception and *laissez-faire*) (Avolio et. al. 1999).

[1] This two-factor model has been discounted (Den Hartog et. al. 1997) owing to the theoretical importance of the three factors and the differential effects of the two active types of leadership (transformational and transactional) found in many studies (a good review source for these studies (Bryman, 1992) has been suggested (Den Hartog et. al. 1997).

- *Four-factor model* – transformational leadership, contingent reward, active management-by-exception and passive avoidant leadership (Avolio et. al. 1999).
- *Five-factor model* – transformational leadership, contingent reward, active management-by-exception, passive management-by-exception, *laissez-faire* leadership (Howell and Avolio, 1993).
- *Six-factor model* - charismatic/inspirational leadership, intellectual stimulation, individualised, contingent reward, active management-by-exception, passive avoidant leadership (Avolio et. al. 1999).
- *Seven-factor model* - charismatic/inspirational leadership, intellectual stimulation, individualised consideration, contingent reward, active management-by-exception, passive management-by-exception, *laissez-faire* leadership (Avolio et. al. 1999).

This literature suggests that the FRL model is best represented by ten lower-order factors and three higher-order factors. The model that has been suggested comprises: transformational leadership (attributed charisma, idealised influence, inspirational motivation and intellectual stimulation), developmental/transactional leadership (individualised consideration and contingent reward), and corrective avoidant leadership (management-by-exception [active and passive] and *laissez-faire*) (Avolio et. al. 1999). This paper further investigates the factor structure of the FRL model using two-factor, three-factor and nine-factor models.

Factors influencing the MLQ factor structure

Several factors that might influence the MLQ factor structure can be differentiated. In the following, we will be briefly outline gender, self- versus other ratings and level of hierarchy.

Leader gender

In principle, there is no reason to assume that male and female leaders differ in the structure of the MLQ. Results indicating that women lead in a more transformational way (Eagly, Johannesen-

Schmidt & van Engen, 2003) do not allow conclusions about different factor structures. We will, nevertheless, examine gender differences in the MLQ factor structure for exploratory reasons.

Self- versus other ratings

Research into 360 degree feedback has found that self-ratings are often inflated, in the sense that individuals have the tendency to give themselves higher ratings than the ones they receive from others (e.g., followers, peers, or supervisors; Atwater & Yammarino, 1992). However, we know little about the effect self- and other ratings have on the factor structure of a given leadership questionnaire. We may assume that self-ratings are more differentiated than other ratings, leading to a better fit of the nine factor model to self-ratings than to other ratings as individuals may have the tendency to regard themselves as more differentiated than they see others. This idea is backed up by research into social identity theory (e.g. Ellemers et al., 2004; Haslam, 2004; Hogg, 2001; Tajfel, 1978; Turner, 1982), where members of one's own group are seen as more heterogeneous than member of other groups as one sees oneself more differentiated and, thus, less similar to others (see Reicher *et al.* 2005 for a review).

Level of hierarchy

Theory suggests that transformational leadership is practised more and is more relevant at upper levels than at lower levels in organizations, as the higher levels offer more opportunity to transform organizations through strategic decision-making (Antonakis et al., 2003; Avolio and Bass, 1988; Sinha, 1995; Tichy and Ulrich, 1984). Transformational leadership, however, is not about transforming organizations *per se* but about achieving performance beyond normal expectations by changing how *people* feel about themselves and what is possible and raising their motivation to new heights (Bass, 1985). This hypothesis, therefore, may be unfounded owing to the reliance on an organizational perspective rather than an individual perspective.

In contrast, transactional leadership, and in particular active management-by-exception, is expected to be practised more and to be more relevant at middle-level and lower levels of an organization. This is because managers at middle-level and lower levels have neither sufficient authority nor the scope to make large-scale changes in the organization (Antonakis *et al.*, 2003; Avolio and Bass, 1988; Sinha, 1995; Tichy and Ulrich, 1984).

Although there is a clear theoretical picture, the results of the research in this area are inconsistent and ambiguous (Bass, 1998; Felfe, 2006; Oshagbemi and Gill, 2004; Stordeur et al., 2000). A number of studies have investigated transformational, transactional and *laissez-faire* leadership across hierarchical levels in organizations (Alimo-Metcalfe and Alban-Metcalfe, 2003; Bass *et al.*, 1987; Lowe *et al.*, 1996; Oshagbemi and Gill, 2004; Stordeur *et al.*, 2000; Yammarino and Bass, 1990; Yokochi, 1989) (see Table 2). Results, however, have been varied and do not provide a consistent pattern.

Insert Table 2 about here

Method

Sample

A sample of 1,244 participants was drawn. Of these, 366 rated themselves, 238 rated their peers, 325 their superiors and 315 their followers (lower level leaders). 112 of the participants were CEOs/chairmen/chairwomen, 116 directors, 268 senior managers, 377 middle managers, and 371 lower managers. Table 3 depicts the number of persons per cell.

Insert Table 3 about here

Analyses

We first analyzed all data combined, using different theoretical models as a starting point: two factors (active versus passive), three factors (active, corrective, passive), and nine factors (all original MLQ factors differentiated). Prior to the confirmatory factor analyses, exploratory factor analyses were conducted for the complete data set with the respective number of factors given. The next step of our analyses comprised of confirmatory factor analyses of all data, again using the theoretical models indicated above. In third step, the confirmatory factor analyses were conducted per level of hierarchy (CEO, director and so on, the last row in Table and differentiating between self- and other ratings (366 self-ratings versus 878 other ratings).

Results

Exploratory factor analyses, complete sample. The screeplot shows one strong factor (explained variance: xx) that can be interpreted as the "leadership" factor, a factor that is likely to emerge as a second order factor in the CFA. The screeplot criterion hints at a three factor solution, rather than a two or nine factor solution. Looking at the factor loadings, items clearly reflect active, corrective, and passive leadership. The first factor comprises all transformational and transactional leadership items, the second factor included all management-by-exception active items and the last factor reflects all laissez-faire items.

Confirmatory factor analyses, complete sample. Confirmatory factor analyses were conducted using the three above-mentioned models (two factors -active versus passive, three factors - active, corrective, passive, and nine factors - all original MLQ factors differentiated). Table 4 shows the model fit of the respective models.

Insert Table 4 about here

Confirmatory factor analyses, gender.

The data were separately factor analysed for men and women. Table 5 and Table 6 show the results. Interestingly, none of the models fits very well. However, the 9-factor model has a reasonable fit for men but not for women.

Insert Table 5 about here

Insert Table 6 about here

Confirmatory factor analyses, self- versus other ratings. Confirmatory factor analyses were conducted using the three above-mentioned models (two factors -active versus passive, three factors - active, corrective, passive, and nine factors - all original MLQ factors differentiated). The results are displayed in Table 7 and Table 8. None of the models fits the data well.

Insert Table 7 about here

Insert Table 8 about here

Confirmatory factor analyses, levels of hierarchy. Confirmatory factor analyses were conducted using the three above-mentioned models (two factors -active versus passive, three factors - active, corrective, passive, and nine factors - all original MLQ factors differentiated). Table 9, Table 10, Table 11, Table 12 and Table 13 show the model fit of the models for the CEO/chairmen, director, senior, middle and lower level managers, respectively. Again, the model fits are quite disappointing.

Insert Table 9 about here

Insert Table 10 about here

Insert Table 11 about here

Insert Table 12 about here

Insert Table 13 about here

Summary and discussion

The aim of this study was to examine the factor structure of the MLQ in a large British sample, using several subgroupings (gender, self- versus other ratings, and level of hierarchy). We derived hypothetical models from prior literature, resulting in the examination of the original nine-factor model, and alternatively proposed three- and two-factor models. All in all the proposed models with

two, three and nine factors do not fit the data from the different subsamples very well. Whereas the fit for the complete data set, for the male sample and for senior managers is reasonable, the fit for all other subsamples is poor. In comparison to prior research none of the factor model fits is comparable to the ones obtained by Antonakis et al. (2003). Indeed our model fits are all below a satisfactory level. This could mean that the proposed nine factor model is not valid for all types of subsamples but only for men and senior managers. Also, it leaves open questions whether in general the full range model of leadership does not fit for a UK context. Further explorations of the fit of different factor models for the MLQ in different countries needs to be undertaken.

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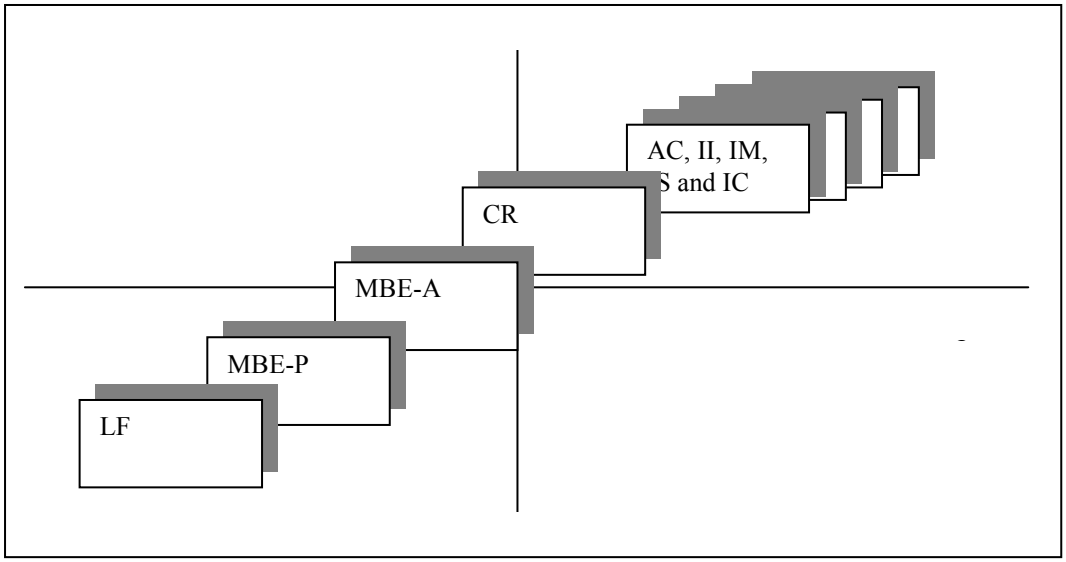
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Figure 1. The 'Full Range Leadership' Model



Adapted from B. M. Bass and B. J. Avolio (1994], Introduction, in B.M. Bass and B.J. Avolio (Editors], *Improving Organizational Effectiveness through Transformational Leadership.* Thousands Oaks, CA: Sage, pp.5-6.

Table 1. Definitions of the Dimensions of the 'Full Range Leadership' Model

Transformational leadership
• *Attributed Charisma/ Idealised Influence* - Leaders behave or are attributed with characteristics that result in their being role models for their followers. Leaders are admired, respected and trusted. Followers identify with the leaders and want to emulate them. Leaders are perceived by their followers as having extraordinary capabilities, persistence and determination. Leaders are willing to take risks and are consistent rather than arbitrary. They can be counted on to do the right thing, demonstrating high standards of ethical and moral conduct.
• *Inspirational Motivation* - Leaders behave in ways that motivate and inspire those around them by providing meaning and challenge to their followers' work. Team spirit is aroused. Enthusiasm and optimism are displayed. Leaders involve followers in envisioning attractive future states. Leaders clearly communicate expectations that followers want to meet. And they demonstrate commitment to goals and the shared vision.
• *Intellectual Stimulation* - Leaders stimulate their followers' efforts to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways. They encourage creativity. There is no public criticism of individual members' mistakes. New ideas and creative problem solutions are solicited from followers, who are included in the process of addressing problems and finding solutions. Followers are encouraged to try new approaches, and their ideas are not criticised even if they differ from the leaders' ideas.
• *Individualised Consideration* - Leaders pay special attention to each follower's needs for achievement and growth by acting as coach or mentor. Followers and colleagues are developed to successively higher levels of potential. Individualised consideration is practised when new learning opportunities are created, along with a supportive climate. Individual differences in needs and desires are recognised and accepted by the leader. A two-way exchange in communication is encouraged, and 'management by walking around' is practised. Interactions with followers are personalised. The leader listens effectively and delegates tasks as a means of developing followers. Delegated tasks are monitored to discover whether followers need additional direction or support and to assess progress, but followers do not feel they are being checked on.
Transactional leadership
• *Contingent Reward* - The leader assigns or gets agreement on what needs to be done and promises rewards or actually rewards others in exchange for satisfactorily carrying out the assignment.
• *Management-by-Exception (Active and Passive]* - The leader actively monitors deviations from performance standards, mistakes and errors in followers' assignments and takes corrective action as necessary or waits passively for deviations, mistakes and errors to occur and then takes corrective action.
***Laissez-faire* leadership** - The leader avoids taking a stand, ignores problems, does not follow up, and refrains from intervening.

Source: B. M. Bass (1998), *Transformational Leadership: Industry, Military, and Educational Impact*. Mahwah, NJ: Lawrence Erlbaum Associates, pp.5-7.

Table 3: Sample characteristics

		Level					
		CEO/Chairman	Director	Senior	Middle	Lower	Total
Rating	self-rating	50	38	81	100	97	366
	peer-rating	6	24	54	72	82	238
	superior-rating	5	20	68	102	120	315
	subordinate-rating	51	34	65	103	72	325
Total		112	116	268	377	371	1244

Table 2: Previous Research on Transformational, Transactional and Laissez-Faire Leadership and Hierarchical Level

Author(s)	Research Description and Results
Bass et al. (1987)	The study produced data on 112 first-level (lower-level) and second-level (middle-level) managers in New Zealand. The results showed second level managers evidenced more transformational leadership (idealised influence, inspirational motivation, individualised consideration and intellectual stimulation) and contingent reward and slightly less management-by-exception.
Yokochi (1989)	The study produced data on Japanese Chief Executive Officers and lower-level managers. The results show no significant differences between CEOs and managers, except contingent reward was used significantly more by CEOs than by managers.
Yammarino and Bass (1990)	A third study of junior and senior naval officers in the US showed varied results For example, junior level officers rated higher on charisma, intellectual stimulation, individualised consideration, contingent reward and passive management-by-exception. Senior level officers, however, rated higher on inspirational leadership, active management-by-exception and laissez-faire.
Lowe et al. (1996)	The results of a meta-analysis showed that leaders at a lower level were judged by their followers as practising more intellectual stimulation, individualised consideration and management-by-exception than their upper level counterparts. This study also found no differences in the effectiveness of transformational leadership across hierarchical levels.
Stordeur et al. (2000)	A fifth study found that transformational leadership was more positively related to perceived unit effectiveness at upper levels that at lower-levels of nursing departments in Belgium. The study also found that active management-by-exception was more related to effectiveness and passive management-by-exception was less negatively associated with effectiveness when they were practised by upper-level leaders than by lower-level leaders in nursing departments
Alimo-Metcalfe and Alban-Metcalfe (2003)	The study conducted an analysis of the top three management levels in the NHS in the UK. The study found that the most transformational managers were senior managers. Chief executive officers and board-level directors were generally less transformational.
Oshagbemi and Gill (2004)	The most recent study to research the 'Full Range Leadership' model across hierarchical levels investigated 405 UK managers from all hierarchical levels. The study produced data on three levels - senior, middle and first-level management. The results showed that contingent reward was exhibited significantly more by senior and middle-level managers than by first-level managers and intellectual stimulation, inspirational motivation and transformational leadership overall were exhibited significantly more by senior-level managers than by both middle and first-level managers. There were no significant differences between hierarchical level in the use of idealised influence, individualised consideration, management-by-exception, laissez-faire or transactional leadership overall.

Source: Edwards, G.P. 2005. *An Investigation of Transformational, Transactional and Laissez-faire Leadership at Different Hierarchical Levels in UK Manufacturing Companies using Multiple Ratings.* PhD Thesis, Strathclyde Graduate School of Business, University of Strathclyde, UK, p 45.

Table 4: Goodness-of-fit for all data

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	16,210.566	630			
2-factor model	3,734.938	592	0.798	0.785	0.064
3-factor model	2,927.45	590	0.85	0.84	0,056
9-factor model	2,103.583	558	0.901	0.888	0.047

Table 5: Goodness-of-fit for men

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	13,122.328	630			
2-factor model	3,042.586	592	0.804	0.791	0.064
3-factor model	2,406.716	590	0.855	0.845	0.055
9-factor model	1,776.164	558	0.902	0.890	0.046

Table 6: Goodness-of-fit for women

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	3,427.318	630			
2-factor model	1,286.186	592	0.752	0.736	0.079
3-factor model	1,142.6	590	0.802	0.789	0.071
9-factor model	995.095	558	0.844	0.824	0.065

Table 7: Goodness-of-fit for self-ratings

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	3,386.664	666			
2-factor model	1,362.435	592	0.711	0.693	0.059
3-factor model	1,071.117	590	0.810	0.807	0.047

9-factor model	921.455	558	0.864	0.846	0.042

Table 8: Goodness-of-fit for other ratings

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	12,371.237	630			
2-factor model	3,030.299	592	0.792	0.779	0.068
3-factor model	2,471	590	0.840	0.829	0.060
9-factor model	1,781.851	558	0.896	0.882	0.050

Table 9: Goodness-of-fit for CEO/chairmen

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	1,673.459	630			
2-factor model	993.253	592	0.615	0.591	0.074
3-factor model	905.724	590	0.697	0.677	0.066
9-factor model	768.587	558	0.798	0.772	0.055

Table 10: Goodness-of-fit for directors

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	2,223.460	630			
2-factor model	1,182.094	592	0.630	0.606	0.093
3-factor model	1,027.861	590	0.725	0.707	0.080
9-factor model	910.941	558	0.779	0.750	0.074

Table 11: Goodness-of-fit for senior managers

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	4,210.817	630			

2-factor model	1,364.574	592	0.784	0.770	0.070
3-factor model	1,193.583	590	0.831	0.820	0.062
9-factor model	909.717	558	0.902	0.889	0.048

Table 12: Goodness-of-fit for middle managers

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	5,423.75	630			
2-factor model	1,680.69	592	0.773	0.758	0.070
3-factor model	1,408.265	590	0.829	0.818	0.061
9-factor model	1,172.527	558	0.872	0.855	0.054

Table 13: Goodness-of-fit for lower level managers

Model	Chi²	DF	CFI	TLI	RMSEA
Baseline model	5,312.034	630			
2-factor model	1,359.768	592	0.836	0.825	0.059
3-factor model	1,226.811	590	0.864	0.855	0.054
9-factor model	1,036.089	558	0.898	0.885	0.048