

Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire

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A total of 3786 respondents in 14 independent samples, ranging in size from 45 to 549 in US and foreign firms and agencies, completed the latest version of the Multifactor Leadership Questionnaire (MLQ Form 5X), each describing their respective leader. Based on prior literature, nine models representing different factor structures were compared to determine the best fit for the MLQ survey. The models were tested in an original set of nine samples, and then in a second replication set comprised of five samples. Results indicated the factor structure for the MLQ survey was best represented by six lower order factors and three correlated higher-order factors.

Bass's (1985) conceptualization of transactional and transformational leadership included seven leadership factors, which he labelled charisma, inspirational, intellectual stimulation, individualized consideration, contingent reward, management-by-exception and *laissez-faire* leadership. In subsequent writings (see Bass, 1988), he noted that although charismatic and inspirational leadership were unique constructs, they were often not empirically distinguishable, thus reducing his original multifactor model to six factors.

Following Bass's (1985, 1988) proposed six-factor model of transactional and transformational leadership, there have been several comprehensive analyses, reviews, and critiques that have offered recommendations to modify the components in the model (Bass, 1985, 1990; Bass & Avolio, 1990, 1993, 1994; Bryman, 1992; Bycio, Hackett & Allen, 1995; Den Hartog, Van Muijen & Koopman, 1997; House & Podsakoff, 1994; Hunt, 1991; Waldman, Bass & Einstein, 1987; Yammarino & Bass, 1990; Yukl, 1994). Suggestions for modification arose when a

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number of authors were not able to replicate the six-factor model proposed and confirmed by Bass (1985). Their results led these authors to recommend collapsing some of the original leadership factors into higher order factors such as transformational leadership.

The current study tests the six-factor model proposed by Bass (1985), using a larger and more heterogeneous sample than included in prior research. The database used here included 14 separate studies with data collected from raters asked to evaluate their respective leaders using the latest version of the MLQ (Form 5X). The MLQ (Form 5X) was developed to address concerns with earlier versions of the MLQ survey (see Bass & Avolio, 1993; Hunt, 1991; Yukl, 1994), including problems with item wording, lack of discriminant validity among certain leadership factors, and the incorporation of behaviours and attributions in the same scale.

The present authors believe that some of the differences reported in prior research using the MLQ may be attributed to the type of analyses employed, poor item/scale construction, restricted sampling, varying interpretations of what constitutes charismatic leadership (a component of transformational) and to the frequent practice of modifying the MLQ survey (e.g. some researchers have dropped whole scales, while others have not included all of the items contained in the original scales). Coupled with the primary goal to test the six-factor model in a broader and more diverse sample of respondents, the present authors were also interested in examining whether a revised version of the MLQ would produce a more stable and replicable factor structure.

Early work on the multifactor model of leadership

The development of Bass' six-factor leadership model was originally based on preliminary results obtained by surveying 198 US Army field grade officers, who were each asked to rate their respective superior officers using the MLQ (Form 1). Six factors including three transformational, two transactional and a passive-avoidant/*laissez-faire* factor were extracted from principal components analyses using varimax rotation. The five leadership factors and the *laissez-faire* factor reported by Bass (1985) included: Charismatic-Inspirational leadership, Intellectual Stimulation, Individualized Consideration, Contingent Reward, Management-by-Exception and Laissez-faire leadership. Bass (1985) also provided evidence for two higher-order factors which he labelled *active* vs. *passive* leadership.

Subsequent to these preliminary results reported by Bass (1985), a variety of analyses examining various forms of the MLQ appeared in the literature (see Bass, 1997). One consistent problem raised by many authors using the MLQ survey was whether the components of transformational leadership should be considered independent of contingent reward leadership, and/or whether contingent reward leadership should be viewed as a separate factor. Also, many authors argued that the components of transformational leadership could not be distinguished empirically.

Hater & Bass (1988) offered further refinements to the MLQ survey, indicating that management-by-exception could be split into two sub-factors: active vs. passive. However, more recent results indicated that passive management-by-

exception and *laissez-faire* leadership should be formed into a single higher-order factor, paralleling the original pattern of results reported by Bass (see Den Hartog *et al.*, 1997; Druskat, 1994; Yammarino & Bass, 1990). Taken together, prior evidence indicates that active and passive management-by-exception are either not correlated or slightly negatively correlated, while there are typically positive correlations between ratings of passive management-by-exception and *laissez-faire* leadership. For example, Den Hartog *et al.* (1997) reported there was a correlation of .42 between ratings of *laissez-faire* leadership and passive management-by-exception, and that each of these scales correlated negatively with all other scales contained in the MLQ.

Bycio *et al.* (1995) reported results of a confirmatory factor analysis using the original MLQ (Form 1), with a largely female sample of nurses. Bycio *et al.* reported modest support for three separate factors of transformational leadership and two transactional leadership factors, similar to the original structure proposed by Bass (1985). Bycio *et al.* (1995), however, concluded: 'although the overall confirmatory factor analysis fit indices tended to support the existence of five leadership components, the transformational factors were highly correlated, and more importantly they generally did not have strong differential relationships with the outcome variables' (p. 474).

Unfortunately, Bycio *et al.* (1995) excluded from their data collection the *laissez-faire* scale, potentially affecting the pattern of results reported above. Moreover, although the five-factor structure reported by Bycio *et al.* was similar to the original six-factor structure reported by Bass (1985), they suggested that a simpler factor structure may also account for the factors comprising the MLQ (e.g. active vs. passive leadership). They also recommended that future research should focus on including a larger sample for confirmatory factor analyses (CFAs), while also testing a more recent version of the MLQ survey.

Basis for original factor structure solution and refinements

The conceptual basis for the original factor structure for the MLQ began with Burns' (1978) description of transforming leadership. Seventy-eight executives were asked to describe a leader who had influenced what was important to them in their roles as leaders, and how they thought the *best* leaders were able to get others to go beyond their own self-interests for the good of the group. Added were items from prior literature on charisma. The original 142 items generated were sorted by 11 judges into transformational and transactional contingent reward leadership categories. An item was retained only if there was at least 80% agreement about the item. The final set of 73 items were evaluated by 176 US Army colonels who were asked to describe their superiors. As noted above, their ratings were then factor analysed using principal components analysis into three transformational, two transactional, and a passive-avoidant *laissez-faire* factor (Bass, 1985).

Hater & Bass (1988) factor analysed a revised version of the MLQ (Form 4R), reporting that management-by-exception was split into active and passive subcomponents. Charisma and inspirational leadership were scored as two components of the same factor. Based on recommendations by House, Spangler &

Woycke (1991) and Hunt (1991), Bass & Avolio (1990, 1993) attempted to differentiate attributed from behavioural charismatic leadership in the development of the latest version of the MLQ. Specifically, one prior criticism of the MLQ survey was that it included behaviours, attributions and impact items to represent charismatic leadership. The suggestion was made to develop scales that included only behavioural items. The MLQ (Form 5X) survey used in the current study contained behavioural items for all scales, except the charismatic scale. An argument for retaining behavioural and attributional items to represent charisma comes from prior literature on charismatic leadership theory (see Bryman, 1992; Conger & Kanungo, 1987). Specifically, many authors have suggested that there are certain behaviours associated with being viewed as charismatic, yet it is difficult to think of charisma not being in the 'eye of the beholder', or attributed to some degree by raters. Consequently, including *both* behavioural and attributional items to assess charisma potentially trades-off the behavioural purity of the survey, to obtain a more comprehensive evaluation of this central component of transformational leadership.

Basis for six-factor model

This study began with the original six-factor model proposed by Bass (1985) as the base model for conducting CFAs using the MLQ (Form 5X) survey. The six-factor model merges attributed charisma, charismatic behaviour and inspirational leadership into a single factor of charisma. Repeatedly, despite the proposition that measures of attributed charisma, charismatic behaviour and inspirational leadership are conceptually distinct, intercorrelations of .80 to .90 have been reported using the MLQ 5X with different scales representing each of these factors (Bass & Avolio, 1993). Additionally, while charisma includes a desire to identify with the leader whereas inspirational leadership may not, the same leaders frequently appear to score high on both.

As for transactional leadership, although Hater & Bass (1988) reported evidence for splitting management-by-exception into active and passive components, when *laissez-faire* items have been included in the MLQ 5X survey, they have typically correlated very highly with items representing passive management-by-exception (Den Hartog *et al.*, 1997; Yammarino & Bass, 1990). In the six-factor model examined in the present study, the authors constructed a *passive-avoidant* leadership factor that contains both sets of items from the *laissez-faire* and passive management-by-exception scale.

The six factors and their operational definitions are: (1) Charisma/Inspirational—provides followers with a clear sense of purpose that is energizing, is a role model for ethical conduct and builds identification with the leader and his or her articulated vision; (2) Intellectual Stimulation—gets followers to question the tried and true ways of solving problems, and encourages them to question the methods they use to improve upon them; (3) Individualized Consideration—focuses on understanding the needs of each follower and works continuously to get them to develop to their full potential; (4) Contingent Reward—clarifies what is expected from followers and what they will receive if they meet expected levels of

performance; (5) Active Management-by-Exception—focuses on monitoring task execution for any problems that might arise and correcting those problems to maintain current performance levels; and (6) Passive-Avoidant Leadership—tends to react only after problems have become serious to take corrective action, and often avoids making any decisions at all.

Examining alternative leadership factor models

A number of alternative factor models have been reported by researchers who have used the MLQ survey. As noted above, this study uses as its primary base target the six-factor model proposed by Bass (1985), but tests here eight alternative models. Each of these eight models (plus the null model—see notes to Table 3) is briefly described below.

Null model. This model indicates there is no systematic variance associated with the survey instrument, and that one is unable to produce any consistent factor structure.

One leadership factor. A general factor whereby an individual either exhibits or does not exhibit leadership. All of the items comprising the survey are expected to load on a general or global leadership factor.

Two correlated factors: active vs. passive leadership. Bycio *et al.* (1995) have suggested that a simpler factor structure may underlie the MLQ survey, and have described it as active vs. passive leadership. Leaders are active as they work to develop followers, form exchange relationships, stimulate their thinking and inspire them to new heights of performance. They are passive-avoidant when they only react to problems to correct them.

Two correlated factors: active constructive vs. passive corrective leadership. Based on the alternative two-factor model, here it was expected all of the transformational leadership and transactional contingent reward leadership factors would load on one primary factor, while other items representing corrective and avoidant leadership would load on a second factor.

Three correlated factors: transformational vs. transactional vs. passive-avoidant leadership. The first factor comprises all of the transformational components. The second general factor is comprised of active transactional leadership in the form of contingent reward and active management-by-exception. Both of these transactional factors represent a clear delineation of agreements, expectations and enforcements. The third factor consists of items that tap into leadership that is passive in correcting mistakes or, in the extreme, avoidant.

Four correlated factors: transformational vs. contingent reward vs. active management-by-exception vs. passive-avoidant leadership. The first factor is composed of all of the transformational components. Transactional contingent reward and management-by-exception leadership comprise two separate factors. The contingent reward

factor is represented in terms of constructive and positive exchanges with followers, while active management-by-exception is represented by a corrective orientation towards exchanges with followers. Management-by-exception exchanges are designed to encourage followers to actively avoid committing any mistakes. The leader operates as the monitor of the process. The fourth factor represents a passive and avoidant orientation towards leading others. Only when absolutely necessary will the leader intervene to correct mistakes and/or to make decisions.

Five correlated factors: laissez-faire vs. transactional vs. one transformational leadership factor. A five factor model has also emerged in prior research using a pilot version of the MLQ 5X with a largely male sample of insurance executives (Howell & Avolio, 1993). Using partial least squares analysis to evaluate the factor structure of the MLQ survey, Howell & Avolio reported evidence for three transactional factors (contingent reward, active and passive management-by-exception), a *laissez-faire* factor, and a single transformational leadership factor.

Six correlated factors: passive vs. management-by-exception vs. contingent reward vs. three transformational factors. This base or target model, described above, replicates Bass's (1985) original six-factor model. The six factors include: charismatic/inspirational leadership, intellectual stimulation, individualized consideration, contingent reward, management-by-exception (active only) and passive-avoidant leadership.

Seven correlated factors: laissez-faire vs. passive management-by-exception vs. active management-by-exception vs. contingent reward vs. three transformational factors. This model is identical to the original six-factor model except that the *laissez-faire* and passive management-by-exception items have been retained in separate scales. The seven-factor model represents each scale as a distinct and separate factor.

Summary of objectives

To summarize, confirmatory factor analysis was used here to test the original multifactor model proposed by Bass (1985) for three primary reasons. First, there is now over 10 years' worth of published research on Bass's (1985) multifactor leadership model. This extensive body of research provides an adequate basis for proposing several distinct, alternative conceptual models that can be tested with data collected using a revised MLQ survey. A second reason for using confirmatory factor analysis was that it provides a more stringent test of the underlying factor structure for a survey instrument than exploratory factor analysis (Bollen, 1989; Jöreskog & Sörbom, 1989; Long, 1983). Finally, one of the overarching goals of the present study was to examine whether the MLQ survey measured the leadership factors it was developed to assess. Since many previous authors have modified or dropped items and/or scales from the MLQ survey, it has been difficult, if not impossible, to determine whether the range of factors included in the conceptual model can be reliably assessed. The elimination of items or scales in prior research may have also affected progress concerning the development of an expanded theory

Table 1. Organizational samples used in initial and replication analysis

Description of initial samples	N of raters	Description of samples for replication set	N of raters
1. Undergraduate students (American)	162	1. US business firm	215
2. US government research agency	66	2. US political organization	428
3. US Army	202	3. US business firm	549
4. Scottish gas firm	99	4. US fire departments	325
5. US business firm	549	5. US not-for-profit agency	189
6. US business firm	320		
7. US business firm	457		
8. Undergraduate students (American and Taiwanese)	254		
9. US nursing school	45		
Total	2080	Total	1706

of leadership (Schriesheim, Powers, Scandura, Gardiner & Lankau, 1993), which goes beyond simpler two-factor theories of leadership that have dominated this literature for the last 30 years (Bass, 1990).

Method

The current study included 14 samples summarized in Table 1. There was a total of 3786 respondents, who each evaluated his or her respective leader. All 14 samples contained MLQ *rater* evaluations of a target leader using the latest version of the MLQ. The first nine samples were used to test the original six-factor model. This was the first set of samples received by the first and second author from researchers using the MLQ (Form 5X) in their own research programmes. The remaining five samples were obtained following the collection of the first set of samples, and were used to reconfirm the model derived from the first sample set. By including a larger and broader array of samples for these confirmatory factor analyses, the authors expected to come closer to determining a theoretically and empirically replicable structure for future studies of leadership using the MLQ 5X survey. Also, by using a larger and more diverse set of samples, it was less likely to violate the assumption of multivariate normality, which is a critical assumption for using structural equations modelling programmes.

Samples

Three of the nine samples included in the initial set were followers of middle-level managers in US business firms. One sample was from followers of supervisors working on North Sea oil platforms. One sample each were followers of administrators in a nursing school and a government research agency. One sample was of junior US Army officers and their raters. Two samples were undergraduates who described their superiors in their outside work.

The second or replication set of five samples included two from US business firms in which raters described their middle-level managers; one was a fire department whose supervisors were rated by their followers; and the two others were a political organization and a not-for-profit agency whose administrators were rated by their respective followers.

MLQ (Form 5X)

Followers described their supervisor's leadership on each of 80 items using a frequency scale that ranged from 0 = not at all, to 4 = frequently, if not always. The 80 items of MLQ 5X were pooled from several sources. First, a series of factor analyses were completed with the MLQ 5R (Bass & Avolio, 1990), which provided a basis for selecting items that exhibited the best convergent and discriminant validities. Secondly, use was made of Howell & Avolio's (1993) preliminary results, using an earlier version of the MLQ (Form 10) to select items for inclusion in MLQ 5X. Thirdly, new items were developed for MLQ 5X using recent literature that has distinguished charismatic from transformational leadership. Fourthly, six scholars in the field of leadership reviewed the MLQ and made independent recommendations for modifying and/or eliminating items. They also independently judged whether each item was a behaviour, attribution or impact. These recommendations were included in the final scale development of the MLQ 5X.

The MLQ 5X survey tested in the current study contained behavioural items for all leadership scales, except charisma. Since charisma can be viewed as either a behaviour or impact, which is in the 'eye of the beholder' (Bass, 1990), a separate scale was included in the revised survey to capture these non-behavioural and/or impact items. Further information about the MLQ can be obtained from the first author or from mindgarden@msn.com.

Analyses

Confirmatory Factor Analysis (CFA) is a widely used technique for testing the psychometric properties of measurement instruments. CFA tests a pre-specified factor structure against an empirically derived structure, and provides goodness-of-fit indices for the resulting solution (Anderson & Gerbing, 1988; Bagozzi, Yi & Phillips, 1991; Bobko, 1990; Bollen, 1989; Kenny & Kashy, 1992). Bagozzi *et al.* (1991) summarized the superiority of CFA to other methods such as traditional factor analysis and Campbell & Fiske's (1959) multi-trait/multi-methods approaches for examining the construct validity of survey instruments.

The fit indices generated by LISREL to test the models included the Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI) and Root Mean Squared Residual (RMSR) (Bentler, 1990; Bentler & Bonett, 1980; Jöreskog & Sörbom, 1989). In addition to the fit indices mentioned above, also used were the Normed Fit Index (NFI) and Tucker-Lewis Index (TLI) recommended by Medsker, Williams & Holahan (1994).

Results

Confirmatory Factor Analysis (CFA) using LISREL VII

CFA was used to determine whether the data from the initial and replication sample sets confirmed the proposed six-factor model of leadership. The confirmatory factor analysis for the initial sample was run including all 80 items from the MLQ 5X with 8 items measuring attributed charisma; 10 items for charismatic behaviour; 10 items for inspirational motivation; 10 items for intellectual stimulation; 9 items for individualized consideration; 9 items for contingent reward; 8 items for active management-by-exception; and 16 items for passive management-by-exception and *laissez-faire* leadership. CFA was performed on the covariance matrix generated by PRELIS, with LISREL VII using the maximum likelihood estimation method for testing the full six-factor model. The six-factor model did not produce an adequate fit because of high intercorrelations among the transformational leadership factors, and correlations with contingent reward leadership. The Goodness-of-Fit Index (GFI) and the Root Mean Square Residual (RMSR) values were .73 and .10,

respectively. The chi square with 2889 degrees of freedom was 13,378 ($p < .0001$), indicating a poor fit for the six-factor model.

To improve the psychometric properties of the instrument, without altering the base six-factor model, the Modification Indices (MI) provided by LISREL were utilized to trim individual items contained in each scale. The authors chose to trim items from the survey to reduce the number of parameters to be estimated, as well as to eliminate items that cross-loaded on different factors. Refinements to survey instruments using 'item trimming' without altering the underlying model can help further organizational research on survey measures (Podsakoff & Organ, 1986), without necessarily modifying the conceptual model it was designed to assess. The reduction in the number of items per scale also reduced the number of parameters that needed to be estimated by LISREL.

Although there are some legitimate concerns about using the MI for *post hoc* model alterations, it is believed its use here was justified for several reasons. First, the original six-factor model was *not* modified; rather the strategy was to eliminate items that were too highly correlated across similar components of higher order factors (e.g. transformational leadership). Specifically, some items may have been redundant, such as the transformational items within scales, and may tap equally well into a higher-order construct of transformational leadership. Secondly, new items had been written by the first two authors for inclusion in the MLQ 5X survey that may not have accurately assessed the components they were intended to measure. Thirdly, a secondary goal was to reduce the number of items per scale to produce a shorter research tool for use in subsequent investigations. Finally, some items may be good indicators of a general factor of 'active' leadership, but not very helpful in differentiating one general leadership style versus another.

With the above reservations in mind, the MI was used to selectively eliminate items from each scale that had high cross-loadings with other factors, and/or did not load on the factor it was intended to measure. Table 2 presents the factor loadings on the final set of items selected for each scale.

All items selected for final inclusion exceeded the recommended cut-offs for adequate discriminant and convergent validity. The selection process also included an extensive content analysis of selected items representing each leadership factor.

After finalizing the item selection process, the CFA was rerun with the original set of nine samples using the revised 36-item MLQ 5X survey. The fit indices for this and other model tests are presented in Table 3. Since a relatively large sample was used in the initial set of analyses ($N = 1394$), after listwise deletion, the chi square test was not considered very useful in and of itself, because its results are almost always significant with large samples. Several researchers have noted the problems in using the chi square test with large sample sizes, and have recommended using other goodness-of-fit measures such as GFI and TLI (Anderson & Gerbing, 1998; Bentler, 1990; Bollen, 1989; James, Mulaik & Brett, 1982).

Table 3 presents these fit indices, as well as a summary of the chi square difference test results comparing each of the respective models in note *b*. Each of the subsequent models going from one factor on up to seven was nested in the previous model. Using the chi square difference test examined whether each

Table 2. Factor loadings of indicators for initial and replication set of samples

Scale		CH	IS	IC	CR	MA	P/A
CH1	'proud of him/her'	.71 (.63)					
CH2	'goes beyond self-interest'	.70 (.74)					
CH3	'has my respect'	.81 (.75)					
CH4	'displays power and confidence'	.63 (.60)					
CH5	'talks of values'	.62 (.62)					
CH6	'models ethical standards'	.75 (.72)					
CH7	'considers the moral/ethical'	.70 (.70)					
CH8	'emphasizes the collective mission'	.71 (.77)					
CH9	'talks optimistically'	.68 (.69)					
CH10	'expresses confidence'	.68 (.72)					
CH11	'talks enthusiastically'	.78 (.79)					
CH12	'arouses awareness about important issues'	.77 (.75)					
IS1	're-examines assumptions'		.71 (.59)				
IS2	'seeks different views'		.74 (.68)				
IS3	'suggests new ways'		.79 (.72)				
IS4	'suggests different angles'		.81 (.79)				
IC1	'individualizes attention'			.59 (.61)			
IC2	'focuses your strengths'			.82 (.78)			
IC3	'teaches and coaches'			.78 (.68)			
IC4	'differentiates among us'			.73 (.73)			
CR1	'clarifies rewards'				.66 (.75)		
CR2	'assists based on effort'				.65 (.55)		
CR3	'rewards your achievement'				.69 (.58)		
CR4	'recognizes your achievement'				.78 (.64)		
MA1	'focuses on your mistakes'					.58 (.49)	
MA2	'puts out fires'					.58 (.57)	
MA3	'tracks your mistakes'					.60 (.66)	
MA4	'concentrates on failures'					.65 (.68)	
P/A1	'reacts to problems, if serious'						.73 (.73)
P/A2	'reacts to failure'						.82 (.74)
P/A3	'if not broke, don't fix'						.57 (.55)
P/A4	'reacts to problems, if chronic'						.86 (.82)
P/A5	'avoids involvement'						.53 (.58)
P/A6	'absent when needed'						.57 (.67)
P/A7	'avoids deciding'						.64 (.74)
P/A8	'delays responding'						.62 (.72)

Note: CH=Charisma/Inspirational; IS=Intellectual Stimulation; IC=Individualized Consideration; CR=Contingent Reward; MA=Management-by-Exception-Active; P/A=Passive/Avoidant.

subsequent model (1 vs. 2; 2 vs. 3 and so forth) improved the fit indices, as well as comparing all models to the target six-factor model. The six-factor model produced fit indices exceeding the minimum cut-offs recommended in the literature, and

Table 3. Summary of CFA results for each of eight models^{a,b}

Model	1 factor	2 factors:		2 factors:		3 factors	4 factors	5 factors	6 factors	7 factors
		active vs. passive	transformational vs. non- transformational							
Chi-square/d.f.	5674 (6859)/594	3509 (3676)/593	5260 (5509)/593	3528 (4229)/591	2907 (3188)/588	2790 (3178)/584	2509 (2788)/579	2497 (2769)/573		
GFI	75 (67)	86 (85)	77 (77)	86 (82)	89 (88)	89 (88)	91 (91)	90 (91)		
AGFI	72 (63)	84 (84)	74 (75)	84 (80)	87 (86)	87 (86)	90 (89)	90 (89)		
RMSR	07 (09)	05 (06)	08 (11)	05 (07)	04 (06)	04 (06)	04 (05)	04 (05)		
NFI	80 (75)	87 (87)	81 (80)	87 (85)	90 (88)	90 (88)	91 (90)	91 (90)		
TLI	79 (73)	87 (73)	80 (79)	87 (83)	89 (87)	88 (87)	89 (88)	89 (88)		

^aResults of the null model, which produced a suboptimal fit are not presented. All CFAs were conducted using the 36-item MLQ Form 5X survey.

^bChi-square difference tests were performed comparing each subsequent model to the previous one, as well as comparing each model to the target six-factor model, producing the following significant results in both sample sets. There was a significant decrease ($p < .001$) or improvement in chi square value for all model comparisons except for the two alternative two-factor models, and for the comparison between the six- and seven-factor models, which was not significant ($p = .10$).

represented the best absolute fit as compared with the other alternative models based on the results of the chi square difference tests. Specifically, there was a significant improvement ($p < .001$) in the chi square value for the six-factor model as compared to each previous model. There was also no difference found between the six- and seven-factor model.

Drawing any firm conclusions from these preliminary analyses must be done with some caution, in that items were purposely trimmed to enhance the fit of the six-factor model in the first set of samples. Moreover, by reducing the number of parameters that needed to be estimated, it should not be surprising that a better fitting model resulted.

Next, the six-factor model was tested with the revised 36-item MLQ 5X survey in a second set of samples. Results of this analysis are presented in Table 3 in parentheses.

Replication sample tests of fit

Testing the replication set of samples, which included 1706 cases ($N = 1498$ after listwise deletion), a similar pattern emerged. The six-factor model generally produced a better fit on all of the indices reported in Table 3. Although there was some minor shrinkage in the level of fit for the six-factor model on several fit indices, the six-factor solution appeared to produce the best fit over all alternative models based on results of the chi square difference tests.

The six-factor model produced a more optimal fit; however, there was also concern about other psychometric properties associated with the MLQ survey. Specifically, an inspection of Table 4 reveals that in both samples, the reliabilities were generally adequate for all six scales, except for Active Management-by-Exception. Moreover, although the Contingent Reward scale was less correlated with each transformational scale, as compared to the transformational scales' correlations with each other, it appeared that there were still problems with the discriminant validity of these respective scales for both sets of samples.

The problem with a lack of discriminant validity among the scales was even more pronounced when the latent correlations among the factor scales comprising the MLQ survey were generated. The latent correlations for the MLQ scales are presented in the top half of Table 5. Generally speaking, when the fit of a model is adequate, and the scales comprising that model lack discriminant validity, there may be hierarchical factor(s) which can account for the high correlations among the factor scales (Marsh & Hocevar, 1985).

Exploring alternative hierarchical factor models

The main purpose for examining higher-order factors is to explain the covariation among the first-order factors in a more parsimonious way (Marsh & Hocevar, 1985). Bollen (1989) argued for the importance of identifying possible higher-order factors in confirmatory factor analysis, since latent variables directly affecting observed variables may be influenced by higher-order factors that may indirectly

Table 4. Mean, standard deviations and intercorrelations of MLQ 5X scores among initial set of samples and replication set of MLQ 5X scores

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Charisma	2.58, 2.69	.87, .91	.92,	.92				
2. Intellectual Stimulation	2.51, 2.54	.95, .93	.82,	.83,				
3. Individualized Consideration	2.66, 2.64	.99, .99	.81,	.74,	.78			
4. Contingent Reward	2.51, 2.40	.98, .99	.77,	.73,	.75,	.80,	.74	
5. Management-by-Exception—Active	1.69, 1.60	.85, .90	-.17,	-.09,	-.23,	-.11,	.63,	.64
6. Passive—Avoidant	1.02, 1.09	.79, .89	-.51,	-.46,	-.45,	-.38,	.24,	.84, .86

Note: Each of 36 items was rated on the 5-point scale from 0 (not at all) to 4 (frequently, if not always). Coefficient alphas are reported values in boldface along the diagonal. First values in each column show correlations from the original set of samples ($N=1394$ after listwise deletion) and the second values in each column show correlations from the replication set of samples ($N=1498$ after listwise deletion). Reliabilities and intercorrelations for the scales comprising the original 80-item MLQ 5X survey can be obtained by contacting the first author.

impact those variables. Gerbing & Anderson (1984) also noted that correlated errors commonly reported in confirmatory factor analysis may be better explained by carefully considering high-order factors.

Marsh & Hocevar (1985) developed the target coefficient (T) as a measure of how effectively higher-order factors explain the overall measurement model. The target coefficient is the ratio of the chi square of the first-order model to the chi square of the more restrictive higher-order model, and ranges from 0 to 1. A target coefficient of 1 means that the covariation among the first-order factors is totally accounted for by a more restrictive model.

As already noted in the introductory text above, evidence has been provided to support several hierarchical factors associated with the six factors in Bass's original model (e.g. a higher-order transformational leadership factor). Thus, we examined whether the discriminant validity could be enhanced among the factor scales comprising the MLQ survey by testing several *post hoc* hierarchical models described below.

Model 1. Included in addition to the six lower-order factors were two *uncorrelated* higher-order factors designated as Active Constructive (charisma/inspirational, intellectual stimulation, individualized consideration and contingent reward) and Passive Corrective (management-by-exception and *laissez-faire*) leadership. This model suggests that leaders can be described in terms of how frequently they provided transformational and constructive reinforcement as well as how frequently they took corrective actions or avoided leading.

Model 2. This model included three *uncorrelated* higher-order factors designated as Transformational (charismatic/inspirational and intellectual stimulation), Developmental/Transactional (individualized consideration and contingent reward—psychological and material rewarding of the follower contingent on satisfactory performance) and Passive Corrective (management-by-exception and *laissez-faire*) leadership.

Model 3. This model contained two *correlated* higher-order factors designated as Transformational Leadership (charismatic/inspiration, intellectual stimulation), Developmental/Transactional (individualized consideration and contingent reward) and a third uncorrelated Corrective Avoidant factor (management-by-exception and *laissez-faire*) leadership.

The fit indices for Models 1 and 2 were GFI = .89 (.87) and .89 (.87) for the first and second sample sets, respectively. These fit indices were similar to those reported for the six-factor model. The fit indices with the inclusion of the three higher-order factors in Model 3 were also similar to those reported earlier for the six-factor model (e.g. GFI = .89 (.89)). Marsh & Hocevar's (1985) 'target coefficient' was then used to examine how much covariation among the first-order factors was accounted for by the higher-order factors in each model. For Model 1 the target coefficients for each sample were .90 and .87, respectively. The target coefficients for Model 2 were .92 and .87, respectively. The target coefficient for

Model 3 sample set 1 was .93, and for the second it was .91. Both target coefficients for Model 3 exceeded the minimum cut-offs recommended by Marsh and Hocevar.

Results shown in the bottom portion of Table 5 indicate that the best fitting hierarchical model with evidence of discriminant validity was Model 3. An inspection of the latent correlations indicated there was a distinct higher-order transformational factor that correlated with a Developmental/Transactional factor in both samples. Also, the results showed a Passive Corrective higher-order factor that was clearly distinguishable from the other two higher-order factors. The intercorrelations among each of the higher order factors also provided further evidence for discriminant validity. Transformational leadership with Developmental/Transactional was .39 (.33), and with Passive Corrective was $-.73$ ($-.48$) for the initial and replication sample sets, respectively. Developmental/Transactional leadership was .05 (.09) with Passive Corrective leadership in the original and replication sets, respectively.

Final estimates of reliabilities and intercorrelations

Referring back to Table 4, the reliabilities for each of the six leadership factor scales ranged from .63 to .92 in the initial sample set, and .64 to .92 in the replication set. The reliabilities presented here for each scale were consistent with earlier results reported for the MLQ (see Bass & Avolio, 1990). Estimates of internal consistency were above .70 for all scales except for active management-by-exception.

Table 4 provides means, standard deviations, reliabilities and intercorrelations for the six leadership scale scores for the final set of 36 items retained in the MLQ 5X. The first value at each location in the matrix is for the initial sample and the second value is for the replication set. In the diagonal, estimates are presented of internal consistency for both samples using coefficient alpha. The final results presented for both the initial and replication sets described below contained 36 items taken from the original set of items contained in the MLQ 5X pool of items.

Intercorrelations among the transformational scales were generally high and positive, similar to intercorrelations reported for the last version of the MLQ (Form 5R; see Bass & Avolio, 1990). There were also positive and significant correlations between the transactional contingent reward (CR) scale, and each of the scales comprising transformational leadership in both the initial and replication set of samples. The average intercorrelation among the transformational scales was .81, while the average was .75 between the transformational and contingent reward scales in the initial set. In the replication set, the average intercorrelation among the transformational scales was .80, while the average correlation was .69 with contingent reward leadership. These high values can now be better explained by using the hierarchical model results presented above, which indicate that the transformational and transactional contingent reward scales loaded on two higher-order correlated factors.

Positive correlations between the transformational and transactional contingent reward leadership scales can be expected for several reasons. First, both transactional and transformational leadership represent active and constructive forms of leadership. Secondly, effective leaders display varying amounts of *both* transactional

Table 5. Hierarchical model and latent correlations

	CH	IS	IC	CR	MBEA	PA
6 lower-order factors						
Charisma (CH)	—					
Intellectual Stimulation (IS)	.95 (.94) ^a	—				
Individualized Consideration (IC)	.95 (.94)	.91 (.92)	—			
Contingent Reward (CR)	.90 (.81)	.86 (.79)	.93 (.93)	—		
Active Management-by-Exception (MBEA)	-.33 (-.27)	-.32 (-.27)	-.30 (-.24)	-.26 (-.13)	—	
Passive-Avoidant (PA)	-.65 (-.54)	-.62 (-.53)	-.59 (-.47)	-.50 (-.26)	.41 (.65)	—
Model 3: 3 higher-order factors ^b						
Transformational	.99 (.98)	.96 (.96)	.95 (.96)	.90 (.83)	-.33 (-.28)	-.65 (-.55)
Developmental Exchange	.39 (.32)	.37 (.31)	.52 (.50)	.74 (.90)	-.03 (-.05)	-.05 (-.10)
Corrective Avoidant	-.73 (-.47)	-.70 (-.46)	-.66 (-.41)	-.55 (-.23)	.46 (.57)	.89 (.73)

^aValues in parentheses are for the second replication sample.

^bIntercorrelations among the higher-order latent factors were as follows: Transformational with Developmental/Exchange was .39 (.33); Transformational with Corrective Avoidant was -.73 (-.48); Developmental/Exchange with Corrective Avoidant was -.03 (.09).

and transformational leadership (Avolio & Bass, 1995; Bass & Avolio, 1993, 1994). Thirdly, a consistent honouring of agreements provides the conditions for building trust, dependability, and perceptions of consistency among associates of their leaders, which can contribute to the high levels of trust and respect associated with transformational leaders (Shamir, 1995). Therefore, although conceptually unique, it is reasonable to obtain a positive correlation among these factors, while considering their link to the two higher-order factors discussed above. Active management-by-exception was also expected to exhibit either low positive or negative correlations with transformational and transactional leadership. This scale also positively correlated with its more passive management-by-exception and passive-avoidance (PA), which is consistent with previous studies using earlier forms of the MLQ (see Bass & Avolio, 1990, 1993). Finally, the passive-avoidance factor correlated negatively with the transformational and transactional contingent reward leadership scales.

Discussion and conclusion

Burns (1978) introduced the constructs of transforming and transactional leadership as a single continuum with the former at one end and the latter at the other. Early empirical studies showed these two leadership constructs could appear independently of each other, providing evidence for at least two separate leadership dimensions. However, the best of leaders typically displayed *both* transformational and transactional leadership, as evidenced by the positive correlations between ratings of these two leadership styles (Bass & Avolio, 1993). Factor analytic studies showed that each orientation of leadership involved more than one component, leading to an expanded range of factors being examined under these broader constructs.

The primary purpose of the current study was to examine the factor structure of the most recent version of the MLQ survey. It set out to determine 'a best fitting' model for the MLQ (Form 5X) survey, which had been designed to address some of the main limitations of earlier versions of this survey. A six-factor leadership model largely based on the original model proposed by Bass (1985) was used as the base model for running CFAs with two separate collections of samples. Comparisons were also made to eight other models.

Based on results from the initial and the replication set of samples, the best model fit was the six-factor model which held up with relatively little shrinkage in terms of its fit, when tested in the replication sample. However, although the six-factor model produced the best fit indices, evidence was provided for low discriminant validity among the transformational and transactional contingent reward leadership scales. In his original validation work with the multifactor leadership model, Bass (1985) discussed the importance of considering higher-order factors underlying the first-order factors contained in his model. In fact, transformational leadership was often referred to as a higher-order factor by Bass (1985), leading to several higher-order factor models being examined in the present study.

Results of testing the hierarchical models addresses a longstanding criticism of the MLQ survey. Specifically, by including two correlated higher-order factors to represent the transformational and transactional contingent reward leadership factors, the authors were able to reduce the latent correlations and enhance the discriminant validity between the transformational higher-order factor containing charisma, inspirational and intellectual stimulating leadership and the second higher-order factor containing individualized consideration and contingent reward. Transactional contingent reward leadership may be the basis for structuring developmental expectations, as well as building trust, because of a consistent honouring of 'contracts' over time. Thus it is not surprising to find that transactional contingent reward leadership correlates with transformational leadership. Yet the present results show that the higher end of transformational leadership can be distinguished from its lower-end connections to individualized consideration and transactional contingent reward leadership.

In sum, results presented here have made possible, with few exceptions, a high degree of consistency in estimates of reliability, intercorrelations and factor loadings when comparing the initial with the replication sample results. Additionally, further item development of the scales comprising the newly revised 36-item version of MLQ (Form 5X) will not only benefit from the current research findings, but also from numerous studies completed by colleagues since 1985 (e.g. see Bass & Avolio, 1993, 1994; Bryman, 1992; Conger & Kanungo, 1987; Den Hartog *et al.*, 1997; House, 1995; Hunt, 1991; Kotter, 1990; Yukl, 1994). Taken together, the current results provide a broader base of evidence for the six-factor model underlying the MLQ survey, while expanding the range of leadership styles that have been typically examined in prior research on Bass's multifactor theory of leadership (Bass, 1990). Yet, even though the present authors have been able to differentiate the factors comprising this questionnaire, using surveys still poses a difficult challenge to achieve higher levels of discriminant validity given the typical problems associated with any survey measure (e.g. general impression and halo errors).

An equally important objective for the current study was to provide results that would have greater generalizability than earlier research, which used samples that were either much smaller or highly homogeneous with respect to personal characteristics (e.g. only women) and organizational characteristics (e.g. only IBM-ers). Although the current set of samples did contain a broad range of raters and organizations, both the initial and replication sets were comprised of 'convenience' samples, which may or may not be representative of the population of MLQ raters and leaders. Thus, before making any further revisions to the 36-item version of the MLQ (Form 5X), the authors recommend enlarging the range of samples to replicate the present results using the six-factor model, along with the three higher-order factors tested in this study. By broadening the sample base, a better test can be provided of the multifactor leadership model, while also enhancing the generalizability of the current findings. Eventually, extensions to these analyses should include raters from different cultures, using translations of the MLQ 5X survey. It is expected that as one approximates the broader population of potential raters evaluating their leaders, it should be possible to provide finer

distinctions among the factors comprising the multifactor model of leadership originally proposed by Bass (1985).

Conclusions

Since 1980, there have been a number of important 'new' theories of leadership proposed that include charismatic, visionary and transformational leadership. As House (1995) has pointed out, all of the models have contained the components in varying form of inspirational, intellectual stimulation and individualized consideration. What was demonstrated here is that although the transformational leadership components were still positively intercorrelated, for assessment, counselling and training purposes it is probably more useful to assess the lower and higher-order constructs as separate factors. Using an earlier version of the MLQ (Form 8Y), Den Hartog *et al.* (1997) came to a similar conclusion, reporting evidence for a Dutch sample of managers, to support both a three-factor (transformational, transactional and passive leadership) and four-factor model solution (transformational, contingent reward, active management-by-exception and passive leadership). Den Hartog *et al.* (1997) stated: 'Although the three factor solution provides a useful research solution, distinguishing between different components of transformational leadership may remain useful, particularly for training purposes' (p. 32). Instead of limiting future leadership research and practice to a global transformational leadership construct, researchers and practitioners ought to continue to at least include each of these components comprising transformational leadership, while also using methodologies other than surveys to examine leadership. Specifically, there has been very little effort to confirm survey evaluations of leaders with alternative methodologies such as observation and/or interviews. By using multiple methods, it may be possible to get a better handle on discriminating among these respective leadership factors. Not only is this important for research purposes, but it also may provide a basis for more precise training, assessment and evaluation. For example, recent evidence provided by Dvir (1998) indicated that some of the transformational components in terms of MLQ ratings showed significant improvements after training, while others did not. Differentiating transactional from transformational leadership may also be important to training, assessment and development. How a trainee has used transactional contingent reward leadership to build expectations with followers may be quite important feedback, if the trainee does an inadequate job of clearly establishing what is expected from followers in terms of their performance.

Implications

Bass & Avolio (1993) responded to critiques of the MLQ survey by calling for additional research on a broader range of leadership styles and orientations using a revised version of the MLQ survey. Following their call for further research, numerous research projects were undertaken using the MLQ (Form 5X) survey. A large percentage of those studies were included here to provide a more comprehensive examination of the factor structure represented by this survey tool.

There are several implications for these results concerning the revised version of the MLQ (Form 5X). First, by measuring a wider and more detailed range of leadership factors, it is likely to increase the chances of tapping into the actual range of leadership styles that are exhibited across different cultures and organizational settings, particularly ones that may be more universal to different cultures (Bass, 1997). Secondly, to the extent this range of leadership styles holds up in future research, we may have moved closer to developing a basis for a more effective and comprehensive means for leadership assessment, training and development. Thirdly, while the transactional leadership factors included here have been discussed in the leadership literature for at least 50 years (Bass, 1990), little attention in the aggregate has been paid to assessing the transformational components, at least up until the last 20 years. Results of the current investigation potentially offer a more comprehensive survey tool for measuring leadership styles, which it is anticipated can now be refined and improved upon in subsequent research.

Beyond the typical criticisms of survey measures mentioned above, there are several important limitations to the current study. First, since all samples included were collected by other researchers, there was no control over the consistency in the procedures utilized for survey administration. The lack of consistency or biases in sampling may have increased measurement error in the models tested, potentially reducing estimates of model fit. Secondly, it was not possible to determine how long raters had worked with their respective leaders, a factor that may influence results obtained with the frequency scale anchors included in the MLQ (Form 5X) survey. Thirdly, it would have been useful to assess the convergent and discriminant validity of the MLQ survey for different levels of leaders, compared against other leadership and criterion measures of performance; however, these data were not consistently available in all samples. Nevertheless, considering these limitations, the current study provides some evidence to support further use of the current MLQ survey for assessing six leadership factors in future research. This extends the number of factors typically assessed in the leadership literature to a broader range of constructs.

Ironically, as organizations move toward flattening their structures, eliminating many middle-level management positions, the need for more leadership in those organizations at all levels becomes evident (House, 1995). As House (1995) indicated, 'managers or leaders at any organizational level can formulate an ideological vision', and as noted by Avolio & Bass (1995), transformational leadership can and should be observed at all organizational levels. Transactional models of leadership simply do not go far enough in building the trust and developing the motivation to achieve the full potential of one's workforce. Yet, coupled with individualized consideration, they may potentially provide the base for higher levels of transformational leadership to have positive impact on motivation and performance. The level of integration and interdependencies that are needed for the new work environment will require leadership that goes beyond the more basic transactional style to styles that are more intellectually stimulating, inspirational and charismatic. Based on the cumulative evidence thus far, such leadership will likely result in higher levels of cohesion, commitment, trust,

motivation and performance being observed in those organizational environments (Bass, 1997). The challenge still remains how we can best measure such exemplary leadership styles beyond simply using survey tools, as well as to develop them over time in organizations.

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