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## The Organizational Culture Profile Revisited and Revised: An Australian Perspective

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### ***Abstract:***

*This paper examines the development and validation of an updated version of the Organizational Culture Profile (OCP) (O'Reilly, Chatman & Caldwell 1991). The current study aimed to overcome the limitations associated with the Q-sort methodology used in earlier versions by developing an instrument based on a Likert-type scale and using a large, Australia-wide sample of executives (N = 1918). Confirmatory factor analysis using AMOS (Arbuckle & Wothke 1999) was used to test the theoretically-derived factor structure. The psychometric properties of the seven-factor instrument were examined and provided evidence of the reliability and validity of the OCP. Using confirmatory factor analyses, competing models were specified and assessed according to a range of fit indices. A higher-order model produced the most parsimonious solution and indicated that innovation appeared to play a pivotal role in terms of executive perceptions of organizational culture. The further development of a rigorous instrument to evaluate perceptions of culture should encourage researchers and practitioners to use the instrument for empirical and diagnostic purposes.*

### ***Keywords:***

*ORGANIZATIONAL CULTURE; AUSTRALIAN MANAGERS; CONFIRMATORY FACTOR ANALYSIS; PSYCHOMETRIC PROPERTIES; CONTENT VALIDITY; CONSTRUCT VALIDITY; PREDICTIVE VALIDITY; NEW MEASUREMENT PROPERTIES; HIGHER ORDER FACTORS.*

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This research has been supported by an Australian Institute of Management Research Grant, a Monash University Faculty of Business and Economics Research Grant, and a University of New South Wales Research Grant.

*Australian Journal of Management, Vol. 30, No. 1 June 2005, © The Australian Graduate School of Management*

## 1. Introduction

The purpose of this paper is to examine the development and validation of an updated version of the Organizational Culture Profile (OCP) (O'Reilly, Chatman & Caldwell 1991). The current study overcomes the limitations of Q-sort methodology used in earlier versions of the OCP by developing a more user-friendly Likert-type scale format for the instrument and using a large, Australia-wide sample of executives in its psychometric validation.

Studies of organizational culture are varied, multilevel (department, division, company, country), and ubiquitous. Denison (1996, p. 654) asserts that culture is 'the deep structure of organizations, which is rooted in the values, beliefs and assumptions held by organizational members.' That is, when we speak of organizational culture, we refer to the meanings inherent in the actions and procedures of organizational commerce and discourse. *Culture* evolves and is not manipulated easily, while *climate* is temporal and often subject to manipulation by people with power and influence (Denison 1996).

Generally, culture studies are conducted at different levels of analyses (for instance, organizational versus societal) using different methodological approaches (conceptual, quantitative, and qualitative) and a variety of associated constructs. For example, culture has been studied in association with leadership as proposed by Schein (1985), or values as examined by O'Reilly, Chatman and Caldwell (1991). The focus for the present study is delimited to an examination of organizational culture from an individual perspective (e.g. Kristof 1996; Van Vianen 2000) and uses the perspectives of managers and senior executives as the data source. This approach is consistent with the proposition that only the top echelons of leaders are in a position to significantly influence cultural identity and change (Barlow, Jordan & Hendrix 2003; Katz & Kahn 1978), and replicates the approach adopted by O'Reilly, Chatman and Caldwell (1991 p. 491) in their development of the original version of the Organizational Culture Profile (OCP).

A number of measures of organizational culture have been developed. We chose to investigate the OCP because it represents one of the major measures of organizational culture in use today (Agle & Caldwell 1999; Howard 1998; Judge & Cable 1997). Based on a review of 18 culture measures published between 1975 and 1992, Ashkanasy, Broadfoot and Falkus (2000) reported that the OCP was one of only a few instruments to provide details concerning reliability and validity. This instrument is designed to measure the culture profile of organizations. The original version of the OCP uses a Q-sort method of data collection (Block 1978) to identify values that characterize a target organization and an individual's preference for that particular configuration of values. O'Reilly, Chatman and Caldwell (1991) and Chatman and Jehn (1994) used Q-methodology on the understanding that there is no better way to understand the shared meanings of cultures than by exploring the conceptual frameworks and subjective meanings underlying these cultures. However, the Q-sort method for acquiring respondent data could compromise the utility of using the OCP in large samples, because it requires a facilitator to assist respondents answering the survey. Consequently, the current study aimed to overcome the limitations associated with Q-methodology by developing a revised version of the OCP using a Likert-type type scale format. Permission to use an amended and revised version of the OCP was received from the American

Psychological Association (27 September 1999) and Professor Charles O'Reilly (21 December 1999).

Our study also further contributes to the extant research by clarifying the factor structure of the revised OCP as a foundation for subsequent research. We also felt it important to develop a more user-friendly version of the OCP that has been modernized through its factor names and structure to reflect more precisely the competitive and socially-aware nature of the business world (Chatman 1991).

## 2. The Original OCP Instrument

The original version of the OCP consisting of 54 value statements was developed using exploratory factor analysis to establish eight dimensions of organizational culture, namely innovation, attention to detail, outcome orientation, aggressiveness, supportiveness, emphasis on rewards, team orientation, and decisiveness. O'Reilly, Chatman and Caldwell (1991, pp. 494–95) developed factor names that best matched the descriptions in the literature of organizational culture and values at the time, and that were easy to understand. O'Reilly, Chatman and Caldwell (1991, p. 495) reported an average reliability coefficient for the OCP of 0.88, while Vandenberghe's (1999a) study established an average reliability of 0.86. The OCP has since been revised and shortened by Cable and Judge (1997) to measure organizational and personal culture orientations. Recent research by Vandenberghe (1999a) has applied the OCP in a European context (Belgium) and a different occupational setting (health care industry) compared to the original US study.

Several researchers have suggested that validation studies should be conducted using the OCP. Vandenberghe (1999a, p. 183) recommended that more cross-cultural analysis of the OCP is warranted: 'additional work is needed on the structure of the OCP across nations and industries.' Windsor and Ashkanasy (1996) suggested that items in the original OCP should be evaluated in terms of their suitability for particular samples. In addition, Howard (1994) suggested that the reliability of all OCP dimensions requires investigation. In personal correspondence to the researchers, both Cable (1999) and Vandenberghe (1999b) confirmed the need to examine the structure of the OCP in more detail.

Because the sample of interest for this study was Australian managers, their perceptions of organizational culture might not be generalizable to the wider international community of organizational managers (e.g. Javidan & House 2001, p. 292). Organizational culture is shaped by varying aspects of organizational life, such as strategies, interpersonal relationships, and context (Cabrera & Bonache 1999; Carroll & Harrison 1998; Dension & Mishra 1995; Joyce & Slocum 1982, 1984; Schneider 1980; Seihl & Martin 1990) which vary across and within cultures. For instance, a study by Ashkanasy and Trevor-Roberts (2001/2002) of Australian executives' attitudes to nine discrete cultural dimensions as part of the international 62-nation GLOBE (Global Leadership and Organizational Behaviour Effectiveness program) project (House, Hanges, Ruiz-Quintanilla, Dorfman, Javidan, Dickson, Gupta & GLOBE 1999; House, Javidan & Dorfman 2001) identified considerable idiosyncrasies of Australian leader behaviour. In brief, Australian manager-leaders reported higher levels of egalitarianism compared to their Anglo-American and European counterparts. The findings of the present study

need to be interpreted in light of these historical and cultural imperatives. Therefore, we hypothesized that:

H1: The factor structure of the revised OCP for a sample of Australian executives will differ from the original OCP factor structure.

### **3. Predictive validity of the OCP**

Validity refers to the extent to which a measure reflects what it purports to measure (Babbie 2004). In addition to establishing the content and construct validity of a measure, predictive validity is important in examining whether the revised OCP using a Likert-type scale can actually predict outcomes on hypothesized theoretical relationships. Organizational culture is linked to organizational effectiveness and is presumed to create the mental, emotional, and attitudinal states that precede and affect employee performance (Robertson, Callinan & Bartram 2002). Wilderom, Glunk and Maslowski (2000, p. 193) advocate the conduct of comprehensive, empirical studies using sophisticated measures to validate the 'strong belief among researchers that the performance of organizations is attributable, in part, to organizational culture.' Existing research suggests that organizational culture influences the development of loyalty, satisfaction, and trust (Ashforth & Mael 1989) and affects the level of stress experienced by organizational members (Barney & Griffin 1992). More specifically, it appears that organizational culture directly influences trustworthy behaviour through social learning processes (Whitener, Brodt, Korsgaard & Werner 1998), whereby managers receive social rewards when they behave in a manner consistent with cultural values and norms (O'Reilly & Caldwell 1985). Therefore, in terms of the predictive validity of the OCP, we hypothesized that:

H2a: There will be a positive relationship between OCP scores and managers' self-reported trust.

H2b: There will be a positive relationship between OCP scores and managers' self-reported loyalty.

H2c: There will be a negative relationship between OCP scores and managers' self-reported stress.

Differences in organizational culture have been identified across various industries (see Anderson & West 1998). Chatman and Jehn (1994) demonstrated that organizations within an industry share distinct cultural values and consequently, industry groups would be expected to differ significantly in terms of OCP factors such as supportiveness and innovation. Examining differences among industry groups provides for a test of the sensitivity of the OCP to discriminate among groups with varying characteristics. For example, Chatman and Jehn (1994) argued that manufacturing industries rely less on cultural values as control mechanisms compared with service oriented industries, given that the latter may benefit more from a 'strong culture' to guide members' service delivery actions. Therefore we hypothesized that:

H3: Manufacturing industries will score lower on the OCP than service sector industries.

The relationship between organizational culture and innovation has been the subject of much debate. There is an assumption in the extant literature that innovation is important in organizations and research has been conducted to investigate the relationships between and among organizational culture, innovation, and creativity (e.g. Amabile, Schatzel, Moneta & Kramer 2004; Mumford, Scott, Gaddis & Strange 2002; Shalley & Gilson 2004). According to some researchers, innovation has been viewed as an outcome of particular organizational cultures (See Anderson & West 1998; Chandler, Keller & Lyon 2000; Hurley 1995). In contrast, innovation has been considered a discrete dimension of organizational culture as measured by the OCP. Following O'Reilly, Chatman and Caldwell (1991), we hypothesized that:

H4: Factor analysis will identify innovation as a discrete dimension of the OCP.

Originally, the OCP was developed to examine the congruence between individual and organizational values (O'Reilly, Chatman & Caldwell 1991) and to confirm the importance of person-organization fit when evaluating and hiring job applicants (Cable & Parsons 2001). Such a focus suggests that the OCP factor structure would reflect a pattern of relationships among factors based on individual (e.g. supportiveness, emphasis on rewards, team orientation, decisiveness) and organisational (e.g. innovation, attention to detail, outcome orientation, aggressiveness) concerns. However, in the current climate, organizational culture cannot be examined in isolation without taking into account the impact of the external environment. Further, a critical aspect of executive behaviours concerns boundary-spanning activities which involve interacting with multiple external constituencies (Zaccaro 2001). Consequently, we predict that in addition to the individual and organizational aspects of culture, the factor structure of the OCP would consist of a discrete dimension that takes into account the importance of the external environment on executive perceptions. Therefore, we hypothesized that:

H5: Factor analysis will identify an environment factor as a discrete dimension of the OCP.

## **4. Method**

### *4.1 Sample*

The sample consisted of senior executive members of the Australian Institute of Management (AIM) from all Australian states and territories. The sample was stratified on the basis of personal membership categorized by state of origin. A total of 1918 usable responses was returned from a target sample size of 4962, representing a 39% response rate. This was a good response rate considering that the average survey response rate for top managers is 36% (Baruch 1999). There were no statistically significant differences between the achieved and proposed sample categorized by state of origin. Responses were collected through four mail-outs of the survey to the AIM database over a three-month period. Non-respondents were not able to be identified because of confidentiality agreements between the AIM and the researchers' institutional research ethics regulations.

The majority of respondents were male (76%), between 40–59 years of age (68%), evenly distributed between top and executive (CEO, COO, VP) (50%) and

upper middle (Department Executive, Superintendent, Plant Manager) (50%) levels of management, had 12 or more years experience as an executive (55%), with 54% in organizations of 499 or fewer employees and 30% in organizations with 1000 or more employees.

#### 4.2 Instrumentation

An abbreviated version of the OCP as used by Cable and Judge (1997) and consisting of 40 items was used, which had a reported overall test-retest reliability of 0.87. This version of the OCP was further modified for the current study by developing a Likert-type scale for ease of completion of the instrument by respondents without the need of the researcher facilitating the study as required in Q-sort methodology. In this modified and reformatted version, respondents were asked to complete the statement 'To what extent is your organization recognized for its . . .' in relation to each of the 40 OCP value items and using a five-point Likert-type scale where 1 = Not At All, 2 = Minimally, 3 = Moderately, 4 = Considerably, and 5 = Very Much (amending the original Q-sort procedure to a normative scale). Representative items were:

'To what extent is your organization recognized for its adaptability;' 'To what extent is your organization recognized for its emphasis on quality;' 'To what extent is your organization recognized for its being innovative.'

#### 4.3 Procedure

The 40-item OCP was incorporated into a multi-instrument survey which was mailed to the target sample of 4962 AIM members. Due to excess statistical power, large samples can inflate tests of statistical significance (e.g. chi-square estimates of model fit and standard errors) (Loo & Loewen 2002) and satisfactory models can be rejected because of trivial discrepancies (Bollen 1989). Consequently, randomly selected sub-samples of 20% ( $n = 397$ ) of the total sample ( $N = 1918$ ) were used, and all investigations of the factor structure were repeated for each group to cross-validate the results.

#### 4.4 Statistical Analyses

Previous analysis of the OCP conducted by O'Reilly, Chatman and Caldwell (1991) used exploratory factor analysis to establish the underlying dimensions of the OCP. The current study followed the recommendation of Schriesheim, Powers, Scandura, Gardiner, and Lankau (1993) that Confirmatory Factor Analyses (CFA) should be used to improve the rigor with which content and construct validity is assessed.

The statistical software package AMOS (Arbuckle & Wothke 1999) was used to undertake confirmatory factor analysis (CFA), which tests the theoretically derived, hypothetical structure of factors. CFA overcomes the limitations associated with mathematically determined factor structures using exploratory factor analysis (Long 1983). Empirical data reduction techniques such as exploratory factor analysis do not address the issue of content adequacy which should be based on the theoretical correspondence between a measure's items and a factor's delineated content domain (Schriesheim et al. 1993). In contrast, specific

theoretical relationships among observed indicator items can be identified and tested using CFA to produce composite factors.

The most basic form of CFA is a one-factor congeneric measurement model as described by Jöreskog (1971), and which enables the specified interrelationships among observed variables (items) for a single latent factor to be examined in detail. One-factor congeneric measurement models were calculated for each of the factors of the OCP to determine factor score weights for composite factors, to model error in the measurement of observed variables, and to calculate composite factor reliabilities. We followed Chin's (1998) recommendation, that four items loading on each factor are required to test for convergent validity. Items which had *t*-values which were not statistically significant, and where low squared multiple correlations (e.g. < 10% explained variance) indicated that the item was not a good measure of the factor were omitted from further calculations.

The resulting composite factors took into account the differences in the degree to which each individual item contributed to the overall composite (latent) factor, thus ensuring that each factor provided a more realistic representation of the data (Fleishman & Benson 1987). This method is more rigorous than computing composite factors based on factor scores or additive indices of items which ignore the relative contribution of each item to the composite factor. Further, congeneric measurement models minimize measurement error in the items contributing to each factor and thus increase the reliability (and validity) of the composite factors (Rowe 1995). The validity of the composite factors was assessed by examining the fit statistics which estimate how well the model fits the data.

The CFA models were tested using maximum likelihood estimation. The assumption of multivariate normality was assessed by examining the skewness and kurtosis of all variables in the variance-covariance matrix as recommended by Marcoulides and Hershberger (1997). Once composite factors were determined, several plausible measurement models were specified to investigate the relationships in the data set (see Bentler & Bonett 1980; Hoyle 1991). A one factor model with all items loading on to a single factor was estimated. Subsequently, two, three, and seven factor item-level models were estimated, as were several higher order factor models. Following Anderson and West (1998), each model was tested in turn with correlated factors and then with uncorrelated factors. These models are outlined in more detail in the results section.

The models were assessed sequentially by comparing fit indices including  $\chi^2/df$  where a value of less than 2 was considered adequate (Loo & Loewen 2002); Root Mean Square Residuals where zero indicates perfect fit; The Tucker-Lewis Index (TLI) where a value of .90 or greater indicates goodness of fit (Tucker & Lewis 1973); the Normed Fit Index (NFI) with measures ranging from zero (no fit) to 1.0 (perfect fit) and values of .90 or more indicating acceptable fit (Bentler & Bonett 1980); the Comparative Fit Index (CFI; Bentler 1990) where values close to 1 indicate goodness of fit and values of 0.90 or greater indicate adequate fit; and the Akaike Information Criterion (AIC) where small values indicate parsimony (Akaike 1987). Finally, bootstrapping procedures (Bollen & Stine 1992) provided additional data to determine the best fitting model.

## 5. Results

The assumption of normality was examined which indicated that the skewness for individual variables ranged from  $-0.78$  to  $-0.19$  and the kurtosis for individual variables ranged from  $-0.66$  to  $0.45$ . All values were considered acceptable and meeting the assumption that if variables are individually normally distributed, then it is likely that the assumption of multivariate normality is met (Mercoulides & Hershberger 1997).

Exploratory factor analyses revealed that the factor structure of the Cable and Judge (1997) version of the OCP was not replicable when the Q-sort method of data collection was not utilised. Using one-factor congeneric measurement models, the hypothesized factors derived from theory were tested for each factor separately. All items were examined for face validity and for their contribution to the particular latent variable by assessing standardised factor loadings, critical ratios, and factor scores. Factors such as outcome orientation and innovation which had more than four items were trimmed in accordance with the recommendations by Anderson and Gerbing (1988). The aim was to retain only those items which best measured the construct. For example, there were eight items in the original factor structure that loaded on outcome orientation. Our analyses indicated that outcome orientation should be split into two factors. The first factor included the items of achievement orientation, an emphasis on quality, being distinctive—different from others, and, being competitive. This factor corresponds to the original OCP factor labelled ‘aggressiveness’ (O’Reilly, Chatman & Caldwell 1991) which was not an appropriate label because items from the original OCP such as ‘opportunities’ and ‘aggressiveness’ no longer loaded on the factor. The new factor subsequently was labelled competitiveness to reflect an external orientation. The second factor included the items of being results oriented, being highly organized, enthusiasm for the job, and, having high expectations for performance. This factor was labelled performance orientation to reflect an internal or individual orientation. The items loading on these two factors were tested using competing models (i.e. as two single factors and as a combined factor). The results indicated that the two single factors of competitiveness and performance orientation provided a better fit to the data than a single combined factor.

Several items had negative loadings on their corresponding factor such as being rule oriented, stability, and being highly organized which had negative loadings on innovation. These items subsequently were removed from the factor of innovation. Several items became redundant such as tolerance, informality, and confronting conflict directly, and were excluded from further analyses. The item, fairness, was examined in terms of its contribution to the factor labelled emphasis on rewards and consequently, augmented the existing three items to produce a four-item, parsimonious model. The factors of team orientation, attention to detail, decisiveness, and aggressiveness, with only three items each and low Cronbach’s alphas produced inadequate models, and were removed. However, two new factors were identified, namely social responsibility, and stability. Several items lacked face validity in terms of their contribution to particular factors which was confirmed on further analyses. For example, the items of being rule oriented (previously loading on innovation) and working long hours (previously loading on supportiveness) had low standardized factor loadings and non-significant critical ratios, and were excluded from further analyses. All calculations were cross-

validated resulting in no significant differences among the randomly selected sub-samples. Therefore, results have only been reported for a single sub-sample to simplify the reporting of the results.

Based on the nature of the items loading on each composite factor and taking into account the original factor labels where appropriate, the new, shortened version of the OCP consists of a 28-item, seven factor structure comprising the following factors: supportiveness, innovation, competitiveness, performance orientation, stability, emphasis on rewards, and social responsibility. *These results indicate that Hypothesis 1, that the factor structure of the revised OCP for a sample of Australian managers would differ from the original OCP factor structure, was supported.* The 28 items comprising the revised OCP are shown in table 1.

**Table 1**  
**Factors and Items of the Revised OCP**

Factors	Items
1 Competitiveness	Achievement orientation An emphasis on quality Being distinctive—being different from others Being competitive
2 Social Responsibility	Being reflective Having a good reputation Being socially responsible Having a clear guiding philosophy
3 Supportiveness	Being team oriented Sharing information freely Being people oriented Collaboration
4 Innovation	Being innovative Quick to take advantage of opportunities Risk taking Taking individual responsibility
5 Emphasis on Rewards	Fairness Opportunities for professional growth High pay for good performance Praise for good performance
6 Performance Orientation	Having high expectations for performance Enthusiasm for the job Being results oriented Being highly organized
7 Stability	Stability Being calm Security of employment Low conflict

Table 2 presents the means, standard deviations, and variances for each composite factor which were used to calculate the composite factor reliability coefficients according to the procedure suggested by Fleishman and Benson (1987) and

Jöreskog (1971) which maximises the reliability of the composite factor. For comparative purposes, the traditional estimates of internal consistency, Cronbach’s alpha coefficients have been provided. However Cronbach’s alpha coefficients are lower-bound estimates based on negatively-biased and inappropriate Pearson product-moment correlations among the constituent items (McDonald 1981). The results indicate that the composite factor reliability coefficients exceed the Cronbach’s alpha coefficients for all factors except for supportiveness and social responsibility. Both measures indicate acceptable internal consistency for each factor. A Cronbach’s alpha coefficient of 0.66 was recorded for stability which exceeded the minimum recommendation for Cronbach’s alpha of 0.60 for a new instrument (Hair, Anderson, Tatham & Black 1998).

**Table 2**  
**Means, Standard Deviations, Variance, and Internal Reliabilities for OCP Factors (N = 1,918)**

Composite Factor <sup>a</sup>	Mean	SD	Variance	Range of Inter-Item Correlations	$\alpha^b$	$r_c^c$
Performance Orientation	4.02	0.71	0.51	0.54—0.57	0.74	0.88
Social Responsibility	3.93	0.74	0.55	0.59—0.69	0.74	0.71
Supportiveness	3.70	0.90	0.81	0.67—0.74	0.87	0.77
Emphasis on Rewards	3.61	0.90	0.80	0.48—0.59	0.80	0.87
Innovation	3.50	0.91	0.82	0.44—0.59	0.80	0.92
Stability	3.46	0.72	0.52	0.41—0.47	0.66	0.94
Competitiveness	3.37	0.65	0.42	0.49—0.73	0.75	0.85

Note: <sup>a</sup>1 = Not at all, 2 = Minimally, 3 = Moderately, 4 = Considerably, and 5 = Very much;

<sup>b</sup> $\alpha$  = Cronbach’s alpha coefficient; and

<sup>c</sup> $r_c$  = composite factor reliability coefficient calculated from the maximally weighted factor score regression coefficients obtained from fitting one-factor congeneric measurement models to constituent indicator items.

In addition, table 2 provides the inter-item correlations which provide diagnostic information concerning internal consistency and unidimensionality (Stanton, Sinar, Balzer & Smith 2002). The mean inter-item correlations for each factor ranged from 0.53 to 0.62, in other words, the items loading on each factor were moderately correlated and thus provide evidence of convergent validity at the item level. According to Kivimaki, Kuk, Elovaniio, Thomson, Kalliomaki-Levanto and Heikkila (1997), the range of correlations suggests that the items represent a broad variety of characteristics for each factor.

Table 3 presents the correlations between the observed factors of the OCP. There were statistically significant correlations at the  $p < 0.01$  among all OCP factors. The most highly correlated factors were performance orientation with competitiveness (0.76), and emphasis on rewards and supportiveness (0.80). Weaker correlations were evident for stability with innovation (0.34), stability with competitiveness (0.43), and stability with performance orientation (0.35). These correlations may vary across samples (Jackson, Wall, Martin & Davids 1993), but

should not compromise the overall validity of the instrument. However, given the relatively high correlations among some of the factors, further testing of construct validity using high order factor analysis was conducted and is reported below.

**Table 3**  
**Correlation Matrix for the Organizational Culture Profile**  
**(N = 1,918)**

	1	2	3	4	5	6	7	8	9
1.Supportiveness									
2. Innovation	0.61**								
3. Competitiveness	0.62**	0.67**							
4. Performance	0.55**	0.58**	0.76**						
5. Stability	0.58**	0.34**	0.43**	0.35**					
6. Rewards	0.80**	0.62**	0.66**	0.62**	0.57**				
7. Soc. Resp	0.67**	0.49**	0.66**	0.57**	0.58**	0.67**			
8 Stress	-0.03	0.02	0.04	0.07**	-0.10**	-0.05*	-0.00		
9. Trust	0.61**	0.47**	0.48**	0.43**	0.54**	0.61**	0.53**	-0.05	
10.Loyalty	0.54**	0.40**	0.43**	0.38**	0.48**	0.52**	0.49**	-0.01	0.70**

Note: \*  $p < 0.05$ ; \*\*  $p < 0.01$ .

### 5.1 Analyses of Competing Models

As recommended by Anderson and West (1998), several competing models with uncorrelated and correlated factors was examined. Item-level models consisting of one (where all 28 items loaded on to a single factor), two, three, and seven factors were calculated to further examine the factor structure of the OCP. The two factor model grouped items according to whether the focus was on ‘concern for people’ (i.e. items loading on emphasis on rewards, supportiveness, and social responsibility), or ‘goal accomplishment’ (i.e. items loading on innovation, competitiveness, performance orientation, and stability) (see Van Vianen 2000). The three factor model was the same as the two factor model except items loading on stability and social responsibility formed the third factor which was consistent with the dimension labelled ‘environment’ in the study by Ashkanasy, Broadfoot and Falkus (2000).

Table 4 provides details of the fit indices for the range of models assessed and indicates that of the item level models, the seven correlated factor model (7b) provided the best overall fit. However, the fit indices for the model suggested poor fit. The model was re-specified using the seven composite factors to reduce the complexity of the model and to produce more stable estimates of structural relationships (Landis, Beal & Tesluk 2000). When all the factors were correlated, an over-specified model (with zero degrees of freedom) resulted but the seven composite factor model (uncorrelated) (7c) resulted in improved overall fit with a substantially reduced chi-square compared to previous item-level models and all

**Table 4**  
**Overall fit indices for the Organizational Culture Profile**

	Absolute indices				Relative indices			Parsimony index	
	$\chi^2$	df	$\chi^2/df$	RMR	GFI	TLI	NFI	CFI	Akaike
Item level models									
Null	6179.99	378	16.34	0.37	0.19	–	–	–	–
One Factor (1)	1680.26	349	4.81	0.07	0.70	0.75	0.73	0.77	1794.26
Two uncorrelated factors (2a)	4096.07	351	11.67	0.28	0.76	0.71	0.72	0.73	4206.07
Two correlated factors (2b)	3166.88	350	9.05	0.12	0.78	0.78	0.78	0.79	3278.89
Three uncorrelated factors (3a)	4328.70	350	12.37	0.31	0.76	0.69	0.70	0.72	4440.70
Three correlated factors (3b)	2756.27	346	7.97	0.07	0.79	0.81	0.80	0.83	2876.27
Seven uncorrelated factors (7a)	3204.88	349	9.18	0.34	0.55	0.47	0.48	0.51	3318.88
Seven correlated factors (7b)	1316.90	338	3.88	0.07	0.81	0.83	0.80	0.85	1366.90
Composite factor models									
Seven uncorrelated factors (7c)	99.51	10	9.95	0.03	0.94	0.90	0.95	0.95	135.51
Higher-order factor models									
Three higher order factors correlated (Model A)	55.05	10	5.51	0.02	0.96	0.95	0.97	0.98	91.05
Three higher order factors loading on OCP (Model B)	53.97	9	5.99	0.02	0.96	0.94	0.97	0.97	91.96
Three higher order factors loading on OCP (modified) (Model C)	9.32	7	1.33	0.01	0.99	0.99	0.99	0.99	51.31

Note: TLI = Tucker Lewis Index;  
NFI = Normed Fit Indices; and  
CFI = Comparative Fit Index.

relative fit indices above 0.90. However, the model was still unsatisfactory with a  $\chi^2/df$  of 9.95 which exceeded the ratio of 2 recommended by Anderson and West (1998).

Finch and West (1997) suggested that where several constructs are highly correlated, a more general factor may underlie several constructs which can be tested using higher order factor analysis. Table 3 indicates that supportiveness and emphasis on rewards were highly correlated ( $r = 0.80$ ). These factors are congruent with two dimensions identified by Ashkanasy, Broadfoot and Falkus (2000, p. 141), namely 'humanistic workplace' where 'the organization respects and cares for individuals; [and] represents the people end of the task-versus-people dichotomy,' and 'development of the individual'. When supportiveness and emphasis on rewards are grouped together, these factors and their constituent items are consistent with the dimension labelled 'concern for people' in a Dutch study of organizational culture by Van Vianen (2000). The label 'people' was retained in the current study, as indicated in figure 1. The factors of competitiveness and performance orientation which were highly correlated ( $r = 0.76$ ), and competitiveness and innovation ( $r = 0.67$ ) reflect aspects similar to 'goal accomplishment' (Van Vianen 2000), and therefore were grouped together and labelled 'business' in this study. The remaining composite factors of stability and social responsibility ( $r = 0.58$ ) formed a third group where the factors reflected a concern for aspects in the external environment beyond the organization. These aspects correspond to the dimension labelled 'environment' in the study by Ashkanasy, Broadfoot and Falkus (2000) and accordingly, the higher order factor in the current study was labelled 'environment'.

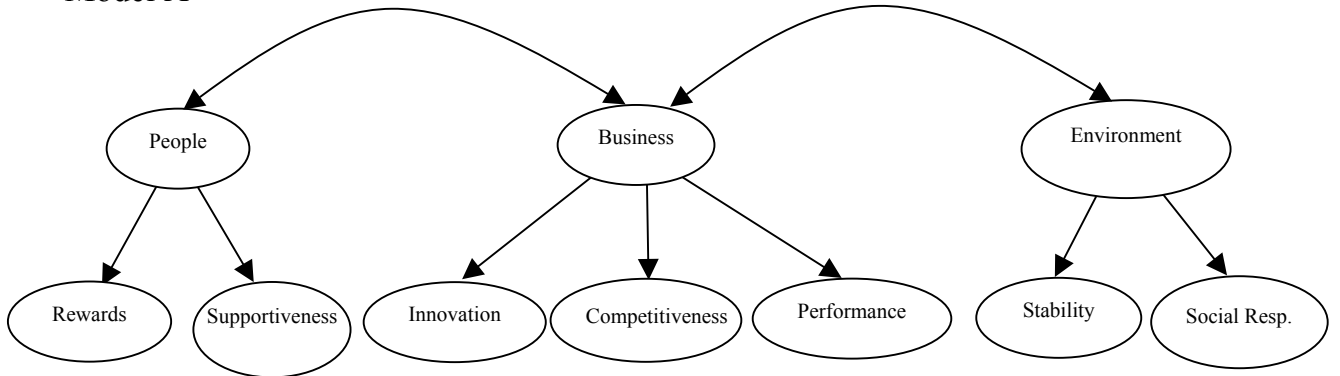
The second order factors were correlated (Model A) resulting in a  $\chi^2 = 55.05$ ,  $df = 10$ ,  $\chi^2/df = 5.51$ ,  $RMR = 0.02$ , all relative indices above 0.90, and  $AIC = 91.05$ . The model was subsequently respecified with all second order factors loading on OCP, (Model B). The results indicated improved but still unsatisfactory overall fit ( $\chi^2 = 53.97$ ,  $df = 9$ ,  $\chi^2/df = 5.99$ ,  $RMR = 0.02$ , all relative indices above 0.90, and  $AIC = 91.96$ ). However, when innovation was loaded on the higher order factors of people and business, and the overall OCP factor (Model C), the results indicated parsimonious fit ( $\chi^2 = 9.32$ ,  $df = 7$ ,  $\chi^2/df = 1.33$ ,  $RMR = 0.01$ ). The ratio of chi-square to degrees of freedom being less than 2.0 indicated a good fit of the data to the model (Anderson & West 1998), all relative indices were above 0.90, and the Akaike index was the lowest compared to all other models tested ( $AIC = 51.31$ ). Model C was the only model without modification indices listed and was the best overall. *Although Model C was identified as the best fitting model, these results do not clearly support Hypothesis 4 that factor analysis will identify innovation as a discrete dimension of the OCP. Rather, the factor of innovation is multidimensional in nature and loads on the higher order factors of people and business. However, Model C with its identification of environment as a higher order factor provides support for Hypothesis 5 that factor analysis will identify an environment factor as a discrete dimension of the OCP.*

Further evaluations of the competing models A, B, and C were made through bootstrapping (Bollen & Stine 1992), where the original sample served as the population for bootstrap sampling of 200 sub-samples. Table 5 indicates that the lowest mean discrepancy was achieved for Model C (8.37), which confirmed the

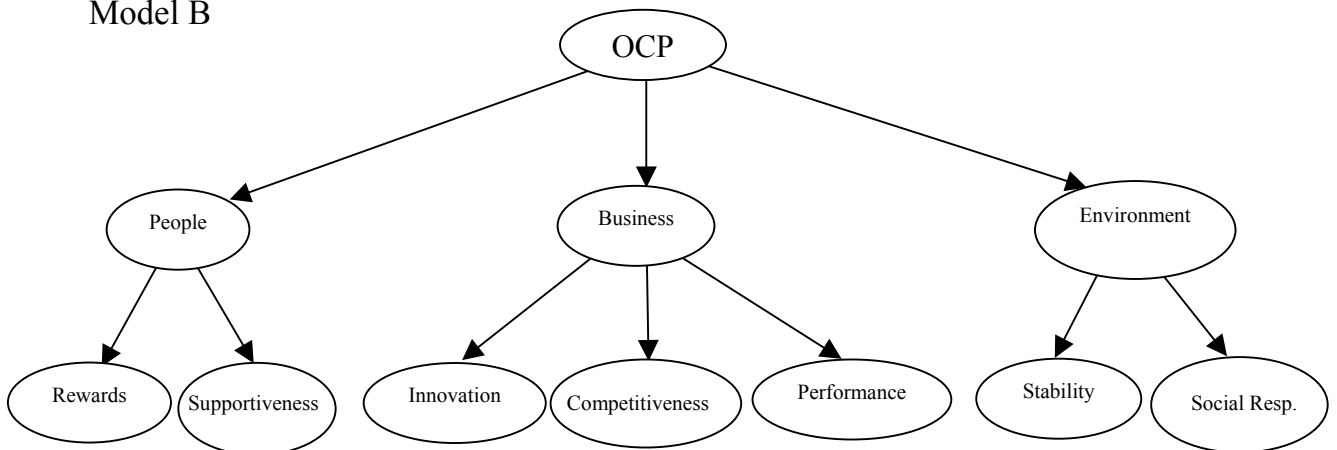
model choice based on fit indices, the Akaike Information Criterion, and Consistent Akaike Criterion statistics.

**Figure 1**  
**Competing Models A, B, and C**

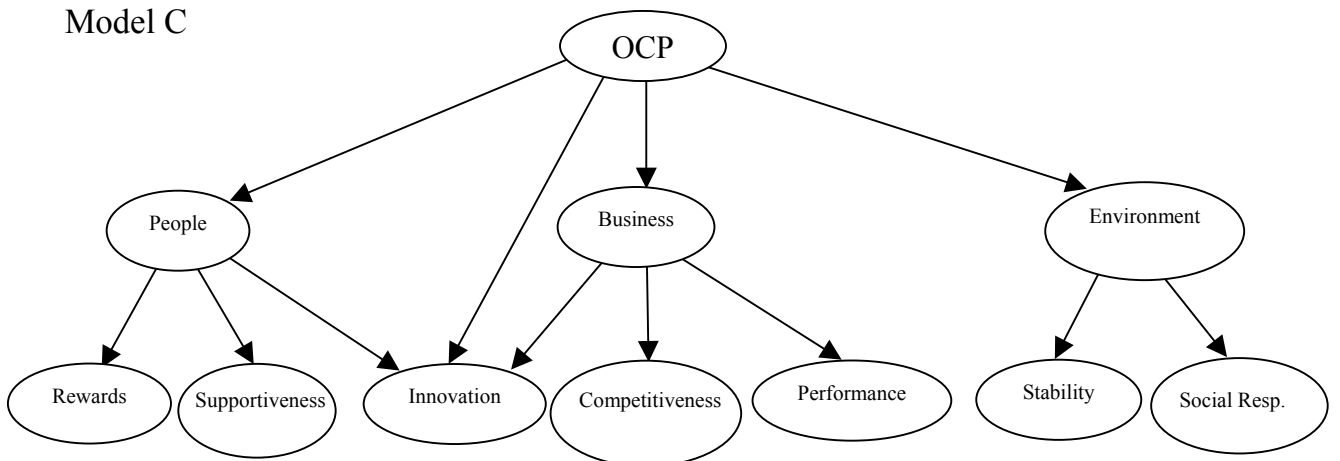
Model A



Model B



Model C



**Table 5**  
**Fit Measures for Three Competing Models**

Index	Model A	Model B	Model C
Mean discrepancy	9.51	10.84	8.37
Standard Errors	0.38	0.39	0.34
Akaike Information Criterion	91.05	91.96	51.31
Consistent Akaike Criterion	170.85	186.66	155.98

### 5.2 Predictive Validity

The current study gathered data concerning respondents' perceptions of stress, trust, and loyalty. The correlation matrix in table 3 indicates that there were statistically significant positive relationships between supportiveness and trust ( $r = 0.61$ ) and loyalty ( $r = 0.54$ ) and between emphasis on rewards and trust ( $r = 0.61$ ) and loyalty ( $r = 0.52$ ). There was a statistically significant but weak, negative correlation between emphasis on rewards and stress ( $r = -0.05$ ). Additionally, there was a statistically significant weak, negative correlation between stability and stress ( $r = -0.10$ ) and a significant weak positive relationship between performance orientation and stress ( $r = 0.07$ ). *Overall, these results provide some evidence of the instrument's predictive validity. Specifically, the findings provide some support for Hypotheses 2a and 2b that OCP scores will be positively related to managers' self-reported trust and loyalty. Hypothesis 2c that OCP scores will be negatively related to stress received only partial support, given that the correlations, although statistically significant, were relatively weak in magnitude.*

The current study examined differences on the OCP factors among industry groups. As shown in table 6, one-way ANOVAS and Tukey post-hoc tests revealed there were statistically significant differences for supportiveness among manufacturing, retail/wholesale, service, and IT/communications; a significant difference between manufacturing and services for innovation; significant differences between manufacturing and services, and services and IT/Communications for competitiveness; a significant difference between manufacturing and services for performance orientation; for stability there were significant differences between manufacturing and retail/wholesale, manufacturing and services, retail/wholesale and IT/Communications, and services and IT/Communications; and for emphasis on rewards there were significant differences between manufacturing and retail/wholesale, and manufacturing and services. Finally, there were significant differences in social responsibility between manufacturing and retail/wholesale, manufacturing and services, retail/wholesale and IT/communications, and services and IT/communications. On all statistically significant comparisons, manufacturing firms scored lowest on organizational culture. The effect sizes ranged from 0.02 to 0.05 which suggests that the differences although statistically significant due to the large sample size were relatively small in magnitude. *Nevertheless, the results provide evidence of the sensitivity of the OCP to discriminate among industry groups and support*

*Hypothesis 3 that manufacturing industries will score lower on organizational culture than service sector industries.*

**Table 6**  
**One-Way ANOVA for Mean Organizational Culture Profile Factors**  
**Classified by Industry (N = 1,918)**

	1	2	3	4	F	Sig Diff	Effect Size <sup>a</sup>
1. Supportiveness	3.54	3.89	3.95	3.83	12.31***	1-2,1-3,1-4	0.04
2. Innovation	3.52	3.67	3.77	3.73	4.71**	1-3	0.02
3. Competitiveness	3.42	3.52	3.62	3.34	9.29***	1-3,3-4	0.03
4. Performance	3.96	4.10	4.23	4.07	8.56***	1-3	0.03
5. Stability	3.43	3.70	3.63	3.29	11.39***	1-2,1-3,2-4, 3-4	0.04
6. Rewards	3.49	3.77	3.93	3.75	13.59***	1-2,1-3	0.04
7. Soc. Resp	3.79	4.03	4.13	3.75	16.70***	1-2,1-3,2-4,3-4	0.05

Note: 1 = Manufacturing; 2 = Retail/Wholesale; 3 = Services; 4 = IT & Communications;

\*\**p* < 0.01; \*\*\* *p* < 0.001; and

<sup>a</sup> Effect size = Eta squared.

## 6. Discussion

The purpose of this paper was to examine the psychometric properties of the revised Organizational Culture Profile. Our analyses did not support the original factor structure which led to revision and restructuring of the measurement attributes of the OCP. The revised OCP uses a Likert-type scale instead of an ipsative scale, and provides a more versatile and user-friendly means to investigate individual perceptions of organizational culture using large samples. The total number of items has been reduced from 40 items (Cable & Judge 1997) to 28 items in our revised version, demonstrating good psychometric practices as suggested by Stanton, Sinar, Balzer and Smith (2002).

Based on an examination of the face validity of all items and using a content-oriented approach, thorough testing of the relationships between items and their corresponding factors was conducted using one-factor congeneric models to produce seven composite factors which substantiated the overall content validity of the instrument. The mean Cronbach's alpha coefficient of 0.75 indicates acceptable reliability for the revised instrument, despite being lower than the overall reliability of 0.87 achieved in the Cable and Judge (1997) study. The lower Cronbach's alpha in the current study may be the result of the reduced number of items per factor. Cortina (1993) confirms that fewer items may reduce the Cronbach's alpha coefficient. However, having a greater number of items (i.e. > 4) which may improve the Cronbach's alpha could create problems in terms of item redundancy (Kivimaki et al. 1997). Further, Bagozzi and Heatherton (1994) suggest that having more than four or five indicators per factor in a large sample could lead to an unsatisfactory fit in the measurement model.

The content, construct, and predictive validity of the revised instrument were investigated in the current study. The failure to investigate and report the content validity of the OCP has been a major shortcoming in the research field. Schriesheim et al. (1993) advocated that demonstration of instrument content validity should be an initial step toward construct validation for new or modified instruments. In general, the seven factors of the OCP were significantly inter-correlated to a moderate extent. The high correlation between supportiveness and emphasis on rewards ( $r = 0.80$ ) may indicate a lack of discriminant validity, which could suggest that the factors are measuring the same construct. The higher order factor analysis confirmed that the two factors are related, as both loaded on the same higher order factor, 'people'.

The evidence provided by our study of predictive validity and sensitivity to discriminate among industry groups suggests that the revised instrument is robust, and the factors are likely to reflect true differences among aspects being measured. Further, the identification of the higher-order factor structure clarifies the relationships among factors. The current study thereby advances our understanding of the construct validity of the OCP previously investigated by exploratory factor analyses.

We found support for our hypothesis that the factor structure of the revised OCP would differ from the original OCP factor structure. The current study identified two new factors, namely stability and social responsibility, which together loaded on to a higher order factor labelled environment. These factors are consistent with executives taking responsibility for decisions which extend beyond the organization (Jacobs & Jaques 1987; Jacobs & Lewis 1992). According to Zaccaro (2001), a large proportion of leaders' responsibilities involve direct boundary management between external and internal environments. Further, the importance of these factors is consistent with the views of Jacobs and Jaques (1987) who suggest that a major concern for leaders (executives) is interacting with the external environment in order to produce a more rational (stable) environment for the organization. As predicted, the findings emphasize the importance of an environmental factor, which is in contrast to previous studies where culture has been regarded as an internal construct of organizations (Chandler, Keller & Lyon 2000). Thus, the identification of stability and social responsibility may represent a more up-to-date perspective of organizational culture where executives are concerned.

The pivotal role of innovation in the evaluation of organizational culture was evident in the higher order factor analyses where the higher order factors of people and business loaded on to innovation. The importance of innovation is consistent with recent management literature which emphasizes the importance of innovation management in meeting the challenges of a rapidly changing environment (Amabile et al. 2004; Mumford et al. 2002; Shalley & Gilson 2004; West & Anderson 1996). However, because the factor of innovation is multidimensional in nature (loading on two higher order factors comprising both interpersonal and performance orientation), our results do not clearly support Hypothesis 4 that factor analysis will identify innovation as a *discrete* dimension of the OCP.

Instead, an important finding of this study is in its presentation of organizational culture as a multilayered construct that has an internal people-focused dimension and external business- and environment-specific dimensions.

Our study reports on organizational as distinct to societal cultures, different to Ashkanasy and Trevor-Roberts (2001/2002) comparisons of nine societal culture dimensions in Australia with American, European, and Asian societies (see also House et al.'s GLOBE study, 1999, 2001). Ashkanasy and Trevor-Roberts (2001/2002) found that Australian manager-leaders reported higher levels of egalitarianism compared to their Anglo-American and European counterparts. In the context of the GLOBE study, egalitarianism refers to the ability of Australian leaders to engage socially with workers while also nurturing and developing their careers. This national predilection of concern for others is in part replicated in our study, where supportiveness is the third most prominent culture in Australian organizations after performance orientation and social responsibility. Supportiveness is represented by the people-focused higher construct in Model C and is a team-oriented approach that consists of the ability to collaborate and share information with work colleagues. Other Australian societal culture dimensions identified by Ashkanasy and Trevor-Roberts (2001/2002:35) included low power distance, high uncertainty avoidance, high humane orientation, low collectivism, high assertiveness, high future orientation, and high performance orientation. Similar to the GLOBE study findings, a high performance orientation is the prominent form of culture among Australian organizations in our study. In both studies, a performance orientation culture is rewards focused and is identified by its expectations of high performance among workers. As the second most prominent type of culture in Australian organizations, social responsibility in this study is unlike any of the GLOBE culture dimensions, and may reflect a growing awareness of organizations to not only be successful fiscally but also environmentally. For instance, Model C reveals that social responsibility is a sub-dimension of the environment higher order construct. There may be linkages with social responsibility and the future orientation dimension identified by Ashkanasy and Trevor-Roberts (2001/2002), as both are geared toward future initiatives while being grounded firmly in everyday operational realities such as strategic planning and reflection. These relationships bear further scrutiny and validation.

Previously, the OCP could not be administered as part of an organization-wide survey because of the complexities involved in Q-sort data collection procedures. The updated and revised OCP now allows organizations to incorporate the OCP into existing employee opinion surveys, with results able to be compared with the large data set reported in this paper. This option makes the instrument more viable for practitioners, and is likely to be particularly valuable for organizations that are implementing and evaluating culture change interventions, mergers, and acquisitions for example.

There is considerable evidence that the success of performance enhancing strategies such as reengineering, TQM, and downsizing is dependent on cultural change (Becker & Gerhart 1996; Daymon 2000; Delaney & Huselid 1996; Heifetz & Laurie 1997; Martin, Sitkin & Boehm 1985; Siehl & Martin 1990). The new instrument may facilitate the monitoring of organizational cultural change in conjunction with changes in values, leadership styles, and approaches to problem solving. According to Cable and Parsons (2001), job applicants self-select into organizations based on subjective person- organization fit, and interviewers use an estimation of person-organization fit when evaluating and hiring job applicants. The revised OCP may enable more accurate information to be provided on person-

organization fit which could lead to improved recruitment, selection, and socialization practices.

## 7. Limitations

A number of limitations apply to our study, the first of which is the use of individual-level data. Similar to Subramaniam and Ashkanasy (2001), and consistent with Rousseau (1990), we assert that our approach has validity as the focus is on individuals whose job outcomes such as trust, loyalty, and stress are affected by their perceptions of culture. Nevertheless, the data are self-report and we acknowledge that the results may have been artificially inflated by common method variance (Kline, Sulsky, & Rever-Moriyama 2000; Podsakoff, MacKenzie, Lee & Podsakoff 2003). To address this second limitation, future studies should obtain measures from different sources, including non self-report measures of criterion variables.

A third related limitation of the study is in its inability to differentiate possible social desirability bias in the responses. O'Reilly, Chatman and Caldwell (1991, p. 496) assert that social desirability, if undetected, may limit the variability in responses. Further research may consider the incorporation of a social desirability measure in order to counteract this potential tendency for skewed results. Nonetheless, Donaldson and Grant-Vallone (2002, p. 256) caution us that respondents with a propensity to socially desirable attitudes report more favourable behaviours than those lower on this dispositional characteristic. It could be argued that executives willing to be surveyed and to report on their leadership behaviours or organizational cultures may be more conscious of their social responsibilities. On this point, it is crucial that more detailed research of the OCP construct using multiple data sources is conducted.

A fourth limitation relates to data collection at a single point in time (as in the case of this study), which does not allow for changes in perception and attitudes over time. For this reason, a longitudinal study of culture is strongly recommended and long overdue. Future research should examine the usefulness of the revised instrument in different populations.

A final limitation thereby stems from the previous comments when examining the findings in the context of an organizational culture in a specific national culture. As stated earlier, the formative dimensions of culture and associations in Australia may have resulted in specific organizational culture types not replicable elsewhere (e.g. Ashkanasy & Trevor-Roberts 2001/2002). As Javidan and House (2001, p. 292) assert, 'to the extent that different communities face different types of . . . challenges, their collective learning in the form of culture may be different.' Further research is needed to test this hypothesis using the modified version of the OCP included in this paper in a variety of organizational and national cultures.

## 8. Conclusion

This study represents a major revision and up dating of the OCP and addresses deficiencies evident in the research literature by examining the psychometric properties of the instrument. The results, based on a large, nation-wide, sample of business executives, established the internal reliability and validity of the seven

factors of the revised OCP. The study identified two new factors associated with environmental aspects of culture, namely stability and social responsibility. Innovation appears to play a central role in terms of executive perceptions of organizational culture. Thus, the analysis advances the conceptual understanding of the instrument by clarifying the relationships among first and second order factors.

This study provides a foundation for future research concerning organizational culture and relationships with a range of organizational behaviour variables, and addresses Subramaniam and Ashkanasy's (2001) call for a more comprehensive understanding of culture. The multidimensional measure of organizational culture identified in this paper should contribute to our understanding of various aspects of organizational behaviour, and provide a valuable and user-friendly instrument for researchers and practitioners.

(Date of receipt of final transcript: February 28, 2005.  
Accepted by Claire Mason, Area Editor.)

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