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Measuring organisational climate and employee engagement: Evidence for a 7 Ps model of work practices and outcomes

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Abstract
This study presents evidence supporting the psychometric properties of the Voice Climate Survey: an employee opinion survey that measures work practices and outcomes. The tool is tested across 13,729 employees from 1,279 business units representing approximately 1,000 organisations. Exploratory factor analyses, confirmatory factor analyses and internal reliability analyses support 31 lower-order work practices and outcomes that aggregate into seven higher-order work systems broadly covering practices and outcomes such as organisational direction, ethics, resources, involvement, recognition, development, teamwork, wellness, work/life balance, change management, customer satisfaction, job satisfaction, organisational commitment and employees' intention to stay. External validation of the tool is demonstrated by linking scores from the employee survey with independent manager reports of turnover, absenteeism, productivity, health and safety, goal attainment, financial performance, change management, innovation and customer satisfaction.

Keywords: *Employee opinion survey, individual differences, industrial/organisational psychology, job satisfaction, organisational behaviour, psychological testing and measurement, psychology of work and unemployment, work practices and outcomes*

Employee surveys provide one of the most common methods of data collection used by researchers and practitioners. Such surveys are used widely for describing the nature of an organisation, assessing how well an organisation is performing, benchmarking organisational performance against other organisations, and estimating the potential causal relationships between work practices and outcomes (Kraut, 2006).

Among both researchers and practitioners, employee surveys are being used increasingly to simultaneously measure a broad range of work outcomes (such as job satisfaction or the now popular construct of employee engagement) as well as a multitude of potential determinants of those outcomes. Such a multi-dimensional approach provides insight into a hierarchy of relative importance of work practices, enabling organisations to better allocate resources to development initiatives that will in turn maximise desired work outcomes. Unfortunately there is a lack of published and psychometrically robust multi-dimensional employee surveys. This paper reviews the recent development of research using employee surveys, and presents a survey with strong psychometric support and a practically useful and theoretically innovative factor structure.

Theory and methodology of climate

Organisational climate (i.e., employees' evaluation of their work environment including structures, processes and events; Schneider & Snyder, 1975) can be understood as a subset of organisational culture. Researchers such as Hofstede (2003), Rousseau (1990) and Schein (2004) have described culture as

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consisting of values and climate. Values, in this sense, are seen as fundamental, often unconscious, ways of understanding and evaluating the world. Climate, in turn, is seen as the tangible and observable practices, systems and outcomes.

There has historically been a concern among some researchers regarding the existence of climate above the level of an individual. Authors such as Guion (1973) and James and Jones (1974) differentiated psychological climate (an individual's perceptions) with organisational climate (measured by aggregating many individuals' perceptions), and argued that an organisational climate should perhaps be regarded to exist only if the variance between the many psychological climates was lower within groups rather than between groups. Not all theorists have agreed with such a stance (e.g., Glick, 1985). Nevertheless, adopting a conservative approach, the current paper uses intra-class correlations to evaluate within-group agreement prior to reporting results associated with organisational climate.

Another methodological debate has involved the distinction between general versus domain-specific climate. Schneider has been a leading critic of the generalised approach to measuring climate (1975, 2000). He has argued that the dimensions and content of climate surveys should differ depending upon the organisational outcome that is of greatest interest. The current paper acknowledges that an outcome variable is likely to be predicted more accurately by measuring key determinants of that outcome in greater detail. Nevertheless, there remains substantial theoretical and practical value in general measures of climate, in much the same way that there is value in general measures of personality. First, researchers and practitioners are often unsure which organisational outcomes (such as stress, satisfaction or productivity) they wish to improve, or they may wish to study simultaneously two or more outcomes. Second, limiting the range of dimensions being measured prevents an easy comparison of the relative importance of each practice for each outcome. Third, general measures of climate facilitate comparisons across studies and organisations.

Practices, systems and outcomes

Huselid (1995) introduced the term ''high performance work practices'' in an attempt to direct research towards examining which of the extremely broad range of possible work practices best predict organisational outcomes. Work practices such as selection, training, performance appraisal, compensation, career development, and teamwork, to name only a few, have been consistently linked to various measures of organisational effectiveness (e.g., Patterson, West, Lawthorn & Nickell, 1997; Paul & Anantharaman, 2003; Pfeffer, 1994, 1998; Von Glinow, Drost, & Teagarden, 2002). The vast majority of past research, however, has examined such practices in isolation, which hinders our understanding of the relative efficacy of these management practices. Hence, there is a growing interest among researchers in studying a broad range of practices within a single study to enable direct comparisons of effect sizes (e.g., Huselid, 1995; Pfeffer, 1998). Practitioners are also interested in being able to compare the performance and potential importance of the many management practices undertaken within their organisations.

Given the wide range of work practices that have been identified and studied, there is a growing call for the investigation of a smaller set of higher-order categories that can be used to group work practices and enable comparison across studies (e.g., Huselid, 1995; Niehaus & Swiercz, 1996; Pfeffer, 1998; Tomer, 2001). Following Huselid, the current paper uses the term ''systems'' to refer to the grouping of work practices and outcomes. In a meta-analysis of measures of climate, Parker et al. (2003, p. 389) stated that there is a need ''to find a means of categorising the enormous number of psychological climate scales into a logical set of core categories''. Similarly, van den Berg and Wilderom (2004, p. 573), in a recent review of the climate and culture literature, argued that ''convergence on the [higher-order] dimensions is very much needed and may stimulate research, as is the case in the development of the Big Five personality traits''. Identifying a simpler, higher-order set of systems may help integrate existing research and provide a language and structure to coordinate future research into management practices.

To date, unfortunately, this research has been largely unsuccessful. Huselid's pioneering studies (Delaney & Huselid, 1996; Huselid, 1995) found modest support for two systems of skills and motivation. The face validity for these two distinct systems, however, is unclear (some of the skills-focused practices could easily be argued to be motivation-focused practices, and vice versa) and indeed Huselid emphasised that this structure was a preliminary model developed with short, exploratory measures.

Another prominent researcher in the area of high performance work systems is Guest (1997; Guest, Conway, & Dewe, 2004), who proposed an elaboration of Huselid's model, with three higher-order systems associated with employee skill, motivation and opportunity to contribute. While conceptually elegant, this division of systems was only loosely based on empirical support and has not yet been validated. In a recent article Guest et al. (2004) used

sequential tree analysis and factor analysis and found support for only a single higher-order factor.

Other researchers have also presented empirical support for a single system. Investigating production systems in the automotive industry, MacDuffie (1995) found that all measured management practices clustered onto a single factor. More recently Den Hartog and Verberg (2004), examining work practices across multiple industries in the Netherlands, found a single high performance work system consisting of a combination of practices with an emphasis on employee development, strict selection and providing an overarching goal or direction. Unfortunately, the finding of a single system does not contribute to the previously discussed call for a small number of multiple systems to simplify theory and improve comparisons across studies.

Recently, Patterson et al. (2005) published a proprietary tool they called the Organisational Climate Measure (OCM). The OCM demonstrated sound psychometric qualities for 17 lower-order work practices. While hypothesising a higher-order factor structure mirroring the four factors of the Competing Values Framework (including factors for human relations, internal processes, open systems and rational goals; Quinn & Rohrbaugh, 1983), Patterson et al. found only weak empirical support for such a higher-order structure.

Finally, the Gallup Workplace Audit (GWA; Harter, Schmidt, & Hayes, 2002) is another recently published and copyrighted survey. In contrast to the length and sophistication of the OCM, the GWA was deliberately designed as a short (12-item) one-factor survey, and the simplicity of the survey and factorial model has demonstrated both commercial and research success.

In summary, there is a surprising lack of empirical support for a higher-order structure of multiple work systems. A significant problem with existing research, however, and hence a possible explanation for the dearth of positive findings, is the use of measures with poor, unknown or untestable psychometric properties and which are implemented in ways likely to lead to poor reliability. For example, Guest et al. (2004) used a 14-item tool to measure 14 different work practices (hence internal reliability for each practice cannot be calculated), completed by only one manager in each participating organisation. Similarly, Huselid (1995) used a 13-item tool to measure 13 work practices with responses given by only one human resource manager in each participating organisation. Patterson et al. (2005) deserve recognition for developing a tool with perhaps the strongest psychometric support that has been published in the academic literature but, even with the development of the OCM, there is still little evidence of a sound higher-order factor structure.

The research into higher-order work systems is still clearly very young. The pioneers in the field, such as Huselid and Guest, deserve considerable recognition for their early work. Researchers such as Patterson et al. are now leading what could be described as the second generation of research into work practices and systems using tools that are conceptually and psychometrically more sophisticated. It is on the foundations laid by Huselid, Guest and Patterson that the current paper aims to build.

The current paper reports the psychometric properties of an employee opinion survey at both the lower-level factor structure of work practices and outcomes, as well as the higher-order factor structure of work systems. The report uses two recently published practitioner-oriented measures: the Patterson et al. OCM and the Harter et al. GWA, as standards against which to evaluate the psychometric properties of the Voice Climate Survey. These measures were chosen because they have demonstrated sound lower-order factor structure (in the case of the OCM) and have correlated with external measures of organisational performance (in the cases of both the OCM and the GWA).

Method

Participants

Data were collected from 2003 through to 2006 from 13,729 employees and 1,279 managers from 1,279 business units representing approximately 1,000 different organisations (the exact number of different organisations is not known because organisations were given the option of anonymous participation). The organisations were predominantly based in Australia although many were Australian operations of multinational corporations. The business units represent a wide range of industries and sizes as shown in Table I.

Participation of business units and their employees was voluntary, with consent required from the manager of a business unit prior to data collection from the manager and his or her employees. In return for their participation, managers received a report summarising the results for their business unit and benchmarking their business unit against all other business units participating in the study in the same year.

Measures

Voice Climate Survey. The name of the Voice Climate Survey is a reflection of the group that developed the survey (Voice Project), which is a research and consulting company based in Department of Business, Macquarie University, Sydney,

Table I. Sample characteristics

Organisation characteristic	Business units *n*	%
Size of organisation (no. employees)		
<20	294	23
20–99	376	29
100–199	138	11
200–999	170	13
1,000–10,000	157	12
>10,000	104	8
Not reported	40	3
Total	1279	100
Industry		
Agriculture, Forestry and Fishing	10	1
Mining	11	1
Manufacturing	65	5
Electricity, Gas and Water Supply	9	1
Construction and Engineering	47	4
Wholesale Trade and Equipment Supply	71	6
Transport and Storage	12	1
Retail Trade	241	19
Accommodation, Hospitality, Tourism and Restaurants	153	12
Information and Communication Technologies	100	8
Finance and Insurance	111	9
Professional, Property and Business Services	87	7
Government Administration and Defence	28	2
Education	72	6
Health and Community Services	63	5
Cultural and Recreational Services	17	1
Personal Services	11	1
Pharmaceutical and Biotechnology	20	2
Other	89	7
Not reported	62	5
Total	1279	100

Australia. The use of the word ''voice'' comes from the theory of Hirschman (1970) and Rusbult, Farrell, Rogers, and Mainous (1988), who argued that people cope with dissatisfaction in relationships and organisations through four methods: exit, neglect, loyalty, and voice. Voice (i.e., attempting to resolve problems by communicating one's concerns and suggestions) is regarded as usually the most effective method of coping. Emphasising its practical orientation, at the time of writing the Voice Climate Survey had been used in its standard form or with tailoring in nearly 200 projects, across more than 100 clients, and with more than 250,000 employees.

The development of the survey commenced three years prior to the start of the data collection reported in the current study. The content of the tool changed substantially during this exploratory phase. An initial collection of 100 survey items was proposed by the author and colleagues. The items were chosen to represent a theoretical model of human resource management and leadership involving the acquisition, development, motivation, support and coordination of staff (based loosely on the diagnostic model presented by Stone, 1998). Items were also included to measure the broad outcomes of employee engagement and employee perceptions of organisational performance. Broadly, the survey was designed to measure performance on important organisational outcomes, performance on management practices assumed to influence the outcomes, and enable estimates of which management practices may be more important than others for influencing the outcomes.

Across seven ad hoc and exploratory waves of research involving approximately 6,400 employees, further scales and items were added, modified or deleted in order to improve the factor structure, predictive validity, breadth (increasing the number of measured practices and outcomes) and efficiency (reducing the number of items per scale) of the tool. In total approximately 200 items were trialled at some point in the development of the survey prior to the data collection reported in the current paper. For a more detailed description of the survey development, please contact the author. By 2003 the items and lower-order factors presented in this paper (Table II) had been provisionally established.

In order to keep the length of the survey to a minimum, while still enabling a broad range of workplace characteristics to be assessed, all lower-order factors in the current version of the survey were limited to three or four items. This number of items was chosen based on research such as that of Langford (2003), Paunonen and Jackson (1985), and Peterson (1994), which has shown that strong scale reliabilities can be achieved with well-designed three-item scales, with only marginal increments in reliability if further items are added. Further, as the number of items in a scale increases, some items tend to correlate very highly, suggesting some redundancy and inefficiency in content.

Employees took an average of 15 min to complete the current set of 102 items. All answers were provided on a 5-point rating scale with the anchors of 1 = *strongly disagree*, 2 = *tend to disagree*, 3 = *mixed feelings/neutral*, 4 = *tend to agree*, and 5 = *strongly agree*, with an additional option of *don't know/not applicable* (responses to which were treated as missing).

Managers' survey. The managers responsible for each participating business unit were also required to complete a brief survey requesting details of the organisation for which they worked. The managers' survey requested information about the industry in which the organisation operated and the size of the organisation (Table I). The content of the managers' survey varied slightly during the collection of the 2003–2006 employee data.

Table II. Voice Climate Survey © 2003: lower-order factor loadings and regression weights

Lower-order factors	Items		EFA Group 1	CFA Group 2
Organisation Direction	1.	I am aware of the vision senior management has for the future of this organisation	.67	.77
(.80, .27)	2.	I am aware of the values of this organisation	.48	.73
	3.	I am aware of the overall strategy senior management has for this organisation	.68	.77
Results Focus	4.	Staff are encouraged to continually improve their performance	.55	.71
(.77, .26)	5.	High standards of performance are expected	.74	.73
	6.	This organisation has a strong focus on achieving positive results	.58	.76
Mission & Values	7.	I believe in the overall purpose of this organisation	.62	.79
(.84, .30)	8.	I believe in the values of this organisation	.64	.82
	9.	I believe in the work done by this organisation	.58	.77
Ethics	10.	This organisation is ethical	.48	.79
(.78, .28)	11.	This organisation is socially responsible	.87	.79
	12.	This organisation is environmentally responsible	.52	.61
Role Clarity	13.	I understand my goals and objectives and what is required of me in my job	.61	.75
(.77, .23)	14.	I understand how my job contributes to the overall success of this organisation	.73	.78
	15.	During my day-to-day duties I understand how well I am doing	.59	.65
Diversity	16.	Sexual harassment is prevented and discouraged	.70	.75
(.84, .26)	17.	Discrimination is prevented and discouraged	.89	.84
	18.	There is equal opportunity for all staff in this organisation	.50	.67
	19.	Bullying and abusive behaviours are prevented and discouraged	.62	.75
Resources	20.	I have access to the right equipment and resources to do my job well	.64	.77
(.82, .24)	21.	I have easy access to all the information I need to do my job well	.80	.81
	22.	We can get access to additional resources when we need to	.56	.76
Processes	23.	There are clear policies and procedures for how work is to be done	.63	.74
(.81, .26)	24.	In this organisation it is clear who has responsibility for what	.67	.77
	25.	Our policies and procedures are efficient and well-designed	.57	.77
Technology	26.	The technology used in this organisation is kept up to date	.78	.84
(.82, .29)	27.	This organisation makes good use of technology	.94	.89
	28.	Staff in this organisation have good skills at using the technology we have	.43	.62
Safety	29.	Keeping high levels of health and safety is a priority of this organisation	.55	.75
(.86, .28)	30.	We are given all necessary safety equipment and training	.78	.81
	31.	Staff are aware of their occupational health and safety responsibilities	.83	.78
	32.	Supervisors and management engage in good safety behaviour	.69	.78
Facilities	33.	The buildings, grounds and facilities I use are in good condition	.69	.76
(.85, .32)	34.	The condition of the buildings, grounds and facilities I use is regularly reviewed	.88	.87
	35.	The buildings, grounds and facilities I use are regularly upgraded	.78	.81
Leadership	36.	I have confidence in the ability of senior management	.61	.77
(.86, .30)	37.	Senior management are good role models for staff	.69	.81
	38.	Senior management keep people informed about what's going on	.49	.74
	39.	Senior management listen to other staff	.51	.76
Recruitment & Selection	40.	This organisation is good at selecting the right people for the right jobs	.58	.75
(.84, .27)	41.	Managers in this organisation know the benefits of employing the right people	.85	.82
	42.	Managers in this organisation are clear about the type of people we need to employ	.73	.82
Cross-Unit Cooperation	43.	There is good communication across all sections of this organisation	.62	.80
(.83, .28)	44.	Knowledge and information are shared throughout this organisation	.65	.85
	45.	There is cooperation between different sections in this organisation	.52	.71
Learning & Development	46.	When people start in new jobs here they are given enough guidance and training	.52	.72
(.80, .27)	47.	There is a commitment to ongoing training and development of staff	.70	.83
	48.	The training and development I've received has improved my performance	.48	.75
Involvement	49.	I have input into everyday decision-making in this organisation	.59	.70
(.79, .24)	50.	I am encouraged to give feedback about things that concern me	.64	.75
	51.	I am consulted before decisions that affect me are made	.50	.79
Rewards & Recognition	52.	The rewards and recognition I receive from this job are fair	.44	.81
(.83, .26)	53.	This organisation fulfils its obligations to me	.44	.81
	54.	I am satisfied with the income I receive	.78	.70
	55.	I am satisfied with the benefits I receive (super, leave, etc.)	.61	.66
Performance Appraisal	56.	My performance is reviewed and evaluated often enough	.58	.71
(.83, .24)	57.	The way my performance is evaluated is fair	.78	.83
	58.	The way my performance is evaluated provides me with clear guidelines for improvement	.68	.84

(*continued*)

Table II. (*Continued*)

Lower-order factors	Items	EFA Group 1	CFA Group 2
Supervision	59. I have confidence in the ability of my manager	.67	.79
(.89, .24)	60. My manager listens to what I have to say	.83	.84
	61. My manager gives me help and support	.86	.86
	62. My manager treats me and my work colleagues fairly	.71	.80
Career Opportunities	63. Enough time and effort is spent on career planning	.53	.77
(.83, .24)	64. I am given opportunities to develop skills needed for career progression	.70	.83
	65. There are enough opportunities for my career to progress in this organisation	.59	.77
Motivation & Initiative	66. My co-workers put in extra effort whenever necessary	.54	.77
(.81, .22)	67. My co-workers are quick to take advantage of opportunities	.72	.73
	68. My co-workers take the initiative in solving problems	.59	.81
Talent	69. I have confidence in the ability of my co-workers	.48	.80
(.87, .22)	70. My co-workers are productive in their jobs	.77	.87
	71. My co-workers do their jobs quickly and efficiently	.64	.83
Teamwork	72. I have good working relationships with my co-workers	.69	.77
(.86, .24)	73. My co-workers give me help and support	.81	.85
	74. My co-workers and I work well as a team	.73	.84
Wellness	75. I am given enough time to do my job well	.49	.69
(.83, .21)	76. I feel in control and on top of things at work	.68	.75
	77. I feel emotionally well at work	.59	.79
	78. I am able to keep my job stress at an acceptable level	.56	.74
Work/Life Balance	79. I maintain a good balance between work and other aspects of my life	.70	.77
(.86, .21)	80. I am able to stay involved in non-work interests and activities	.85	.84
	81. I have a social life outside of work	.78	.77
	82. I am able to meet my family responsibilities while still doing what is expected of me at work	.70	.76
Organisation Objectives	83. The goals and objectives of this organisation are being reached	.42	.75
(.84, .32)	84. The future for this organisation is positive	.70	.83
	85. Overall, this organisation is successful	.62	.81
Change & Innovation	86. Change is handled well in this organisation	.43	.73
(.84, .31)	87. The way this organisation is run has improved over the last year	.62	.73
	88. This organisation is innovative	.61	.77
	89. This organisation is good at learning from its mistakes and successes	.51	.80
Customer Satisfaction	90. This organisation offers products and/or services that are high quality	.52	.76
(.83, .31)	91. This organisation understands the needs of its customers	.72	.82
	92. Customers are satisfied with our products and/or services	.62	.76
Organisation Commitment	93. I feel a sense of loyalty and commitment to this organisation	.60	.84
(.88, .31)	94. I am proud to tell people that I work for this organisation	.53	.82
	95. I feel emotionally attached to this organisation	.73	.76
	96. I am willing to put in extra effort for this organisation	.58	.78
Job Satisfaction	97. My work gives me a feeling of personal accomplishment	.53	.78
(.86, .24)	98. I like the kind of work I do	.77	.83
	99. Overall, I am satisfied with my job	.68	.85
Intention To Stay	100. I am likely to still be working in this organisation in 2 years time	.72	.83
(.89, .28)	101. I would like to still be working in this organisation in 5 years time	.92	.89
	102. I can see a future for me in this organisation	.74	.86

Notes: CFA = confirmatory factor analysis; EFA, exploratory factor analysis.
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(n, n): scale alphas and intra-class correlations.

Employee turnover. Managers were requested to report the percentage voluntary employee turnover during the previous 12 months for the business unit involved in the survey as well as for their overall organisation.

Employee absenteeism. Managers were requested to report the absenteeism (no. days per year per employee) over the previous 12 months for the business unit involved in the survey as well as for their overall organisation.

Employee productivity. Managers were requested to rate the level of productivity of their employees in their business unit and across their overall organisation on a 5-point rating scale with the options of 1 = *very poor*, 2 = *poor*, 3 = *adequate*, 4 = *good*, and 5 = *excellent*.

Health and safety. Managers were asked to rate the current level of health and safety in their business unit and organisation on a 5-point rating scale with the options of 1 = *very poor*, 2 = *poor*, 3 = *adequate*, 4 = *good*, and 5 = *excellent*.

Goal attainment. Managers were asked to rate their organisation's progress against goals in the previous 12 months on a 5-point rating scale ranging from 1 = *goals were substantially missed* to 5 = *goals were substantially exceeded*.

Financial performance. Managers were asked to rate their organisation's financial performance in the previous 12 months on a 5-point rating scale ranging from 1 = *there was a substantial loss/deficit* to 5 = *there was a substantial profit/surplus*. Managers were also asked to rate the change in their organisation's financial performance, comparing their current financial performance to the performance 12 months prior, using a 5-point rating scale ranging from 1 = *substantially worse than the previous year* to 5 = *substantially better than the previous year*.

Organisation objectives, change and innovation, and customer satisfaction. Managers were requested to complete the same lower-order factors of Organisation Objectives, Change and Innovation, and Customer Satisfaction that employees also completed. As was the case for the employee survey, responses were given on a 5-point rating scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

Managers were also asked to report the employee turnover and absenteeism for their industry. It was thought that by controlling for industry turnover, industry absenteeism, number of employees in an organisation and industry category, stronger correlations between Voice Climate Survey factors and organisation outcomes may be found. Controlling for these variables, however, did not noticeably alter correlations between Voice Climate Survey factors and organisation outcomes. Hence these variables are not reported or analysed elsewhere in this article.

To ensure that managers were of sufficient seniority to have access to the requested information, they were asked to report their level of seniority in their organisation on a 9-point rating scale with descriptive anchors of 1 = *towards the bottom, e.g., front line worker*, 5 = *around the middle, e.g., middle-level manager* and 9 = *towards the top, e.g., senior executive*. The mean score of 6.9 indicated that the managers on average were quite senior in their organisations and hence could be expected to reliably report the information requested.

Results

Missing data

Employee responses to the Voice Climate Survey contained 1.1% of responses that were either unanswered or were answered ''don't know/not applicable''. This level of missing data compares favourably with the 8% missing data reported by Patterson et al. (2005) in the development of their OCM, and supports the generalisability of the Voice Climate Survey items across different occupations, organisations and industries. Given the small percentage of missing responses, and that the missing responses appeared essentially random, all missing responses were replaced using a standard regression-based expectation maximisation algorithm, as was used by Patterson et al. for their analyses of the OCM.

Levels of analysis

Data were analysed at the levels of both individual employees and business units. Factor analyses of the Voice Climate Survey were conducted at the level of individual employees, because all required data were based on employee perceptions and available from all participating employees. Analyses examining the relationship between employee scores and data provided by managers were conducted at the business unit level because the outcome data were available only at the business unit level.

Factor analyses

In order to examine the stability of factor analyses across multiple samples the 13,729 employees were randomly allocated into two groups. Group 1 was used for conducting exploratory factor analyses (EFAs) on the lower and higher-order factors using principal axis factoring and direct oblimin rotation. An oblique rotation was used because it was expected that the factors would be positively correlated (employees tend to develop an overall ''good'' or ''bad'' evaluation of an organisation that will influence ratings on all work practices and outcomes), and based on the recommendation of Fabrigar, Wegener, MacCallum, and Strahan (1999) who encouraged use of oblique rotations when factors are expected to correlate. Although this paper reports results from oblique rotations, the author also conducted orthogonal rotations using varimax rotation with no practically important differences in results. Group 2 was used for confirmatory factor analyses (CFAs) of both lower and higher-order factors.

The EFA using oblique rotation for the lower-order factors showed a very clean factor structure.

All 102 items loaded clearly on expected factors, with an average on-factor loading of .65 (Table II) and an average off-factor loading of .02. No noticeable cross-loading of items was evident, with the smallest on-factor loading being .42 and the highest off-factor loading being .22.

Similarly, the CFA on lower-order factors using data in Group 2 demonstrated strong regression weights (Table II) and fit statistics ($\chi^2 = 25{,}459$, $df = 4584$, $p < .01$; cumulative fit index [CFI] = .95; normed fit index [NFI] = .94 and standardised root mean square residual [SRMSR] = .03), all of which were much stronger than equivalent published statistics for the OCM (CFI = .85, NFI = .83). Inspection of modification indices suggested no alternative paths for items loading on lower-order factors.

The alphas for the Voice Climate Survey for all lower-order factors are shown in Table II against each scale name and averaged a healthy .83 across all 31 lower-order factors. This result was similar to the average of .81 for the OCM, even though the number of items per factor is fewer for the Voice Climate Survey. Harter et al. (2002) report an alpha of .91 for the GWA based on a business-unit level of analysis. The equivalent measure from the Voice Climate Survey would be the 10 items covering the three lower-order factors of Organisation Commitment, Job Satisfaction and Intention To Stay (predicted, as explained below, to all load on a higher-order factor representing employee engagement), which show an alpha of .96 when analysed at the business-unit level.

To explore potential higher-order systems for the 31 lower-order factors within the Voice Climate Survey, lower-order scale scores were submitted to EFAs using the data in Group 1, again using principal axis factoring and oblique rotation. A one-factor solution accounting for 43% of the variance in the data was found, suggesting that employees tended to rate their organisations higher or lower on all categories. Nevertheless, given the desire for greater explanatory power further exploration was undertaken. Based on eigenvalues and scree plot discontinuities, two alternative models were suggested: a five-factor solution accounting for 60% of the variance and a seven-factor solution accounting for 66% of the variance. In comparison to the seven-factor solution shown in Table III, the five factor solution combined the factors of Property and Participation into a single factor, and also combined the factors of Purpose and Progress into a single factor. This five-factor solution had the disadvantage of creating unbalanced factors, with one factor representing 14 of the 31 lower-order factors (comprising categories as diverse as resources, safety, leadership, cross-unit cooperation and career opportunities). Because of this concern, the seven-factor model was selected as the hypothesised model to be tested with CFAs using the Group 2 data, but CFAs for the one- and five-factor solutions were also examined as alternative models.

Table III. Higher-order factor loadings

Higher-order factors	Lower-order factors	EFA Group 1	CFA Group 2
Purpose	Organisation Direction	.40	.70
(.91, .36)	Results Focus	.34	.67
	Mission and Values	.52	.75
	Ethics	.46	.71
	Role Clarity	.27	.61
	Diversity	.35	.63
Property	Resources	.38	.76
(.91, .32)	Processes	.33	.73
	Technology	.48	.67
	Safety	.55	.64
	Facilities	.51	.58
Participation	Leadership	.48	.77
(.95, .32)	Recruitment and Selection	.42	.73
	Cross-Unit Cooperation	.58	.71
	Learning and Development	.48	.72
	Involvement	.55	.71
	Reward and Recognition	.36	.70
	Performance Appraisal	.47	.66
	Supervision	.31	.68
	Career Opportunities	.55	.69
People	Motivation and Initiative	.74	.77
(.91, .27)	Talent	.98	.87
	Teamwork	.65	.75
Peace	Wellness	.70	.92
(.87, .23)	Work/Life Balance	.66	.58
Progress	Organisation Objectives	.59	.79
(.91, .36)	Change and Innovation	.44	.81
	Customer Satisfaction	.59	.77
Passion	Organisation Commitment	.68	.87
(.92, .31)	Job Satisfaction	.61	.80
	Intention To Stay	.73	.69

Notes: CFA = confirmatory factor analysis; EFA, exploratory factor analysis.
(n, n): scale alphas and intra-class correlations.

The CFAs on Group 2 supported the seven-factor model. Given the large sample, it was unsurprising that the chi-square test was significant ($\chi^2 = 10{,}424$, $df = 413$, $p < .01$). The CFI, NFI, and SRMSR, however, were all satisfactory (.91, .91 and .04 respectively) and stronger than those for the OCM's lower and higher-order factors. The comparable statistics for the five-factor model were marginally weaker ($\chi^2 = 13{,}339$, $df = 424$, $p < .01$, CFI = .89, NFI = .88 and RMSR = .04). Finally, the comparable statistics for the one-factor model were noticeably worse ($\chi^2 = 23{,}883$, $df = 434$, $p < .01$, CFI = .80, NFI = .79, SRMSR = .06): lower CFI and NFI scores, and higher SRMSR scores, indicate weaker fit. Inspection of modification indices for the Group 2 sample suggested that no alternative allocation of lower-order factors to higher-order factors would

produce stronger fit indices than those for the seven-factor model. Hence, the seven-factor model was chosen as the preferred higher-order factor structure for the survey. Using the entire dataset of 13,729 employees, these higher-order factors showed a strong average alpha of .91 (Table III). Correlations between factors are shown in Table IV. These results suggest solid internal psychometric properties for the higher-order factors within the Voice Climate Survey.

It should be noted that the ordering of the scales in Tables III,V is a consequence of the discovery of the seven higher-order factors reported in this paper, with the original ordering being different to that presented here; that is, the finding of the seven-factors cannot be explained through the ordering of the items in the original surveys.

The seven higher-order factors are here labelled Purpose, Property, Participation, People, Peace, Progress, and Passion. The alliteration in the naming of the higher-order factors is a result of the practical orientation of the Voice Climate Survey: presenting this model as the ''7 Ps'' has proved popular with managers who have used the tool for organisational development.

Discrimination between organisations

For an employee survey to be useful in discriminating between organisations, it should be able to demonstrate significant differences in employee ratings across organisations. An analysis of variance across all lower and higher-order factors was conducted, with all organisations as the independent variable. *F*s for all lower and higher-order factors were all significant, indicating differences in scores between organisations. Similarly, intra-class correlations (ICCs) were calculated for all lower and higher-order factors (Tables II,III). Multiple ICCs have been suggested and used in the past, but the type most relevant to the current study is known as ICC(1,1), which assesses the level of agreement in responses from individual employees within organisations in comparison to the variance between organisations; the higher the value the greater the discrimination between organisations (Shrout & Fleiss, 1979). The ICC scores for the Voice Climate Survey were strong (Tables II,III), ranging from .21 to .36, showing discrimination between organisations that is higher than averages reported by James (1982), and stronger than those of the OCM.

Table IV. Characteristics of higher-order factors

Higher-order factors**	*M*	*SD*	1	2	3	4	5	6
1. Purpose	3.90	0.57						
2. Property	3.64	0.64	.69					
3. Participation	3.44	0.66	.75	.72				
4. People	3.92	0.65	.53	.49	.51			
5. Peace	3.85	0.68	.46	.49	.46	.47		
6. Progress	3.74	0.68	.70	.68	.73	.49	.47	
7. Passion	3.59	0.83	.63	.53	.65	.45	.37	.62

Note: **All inter-correlations are significant at $p < .01$.

Organisational outcomes

Table V shows the correlations between the lower and higher-order factors within the Voice Climate Survey and a range of organisational outcomes, using business-unit-level analyses. Whereas the results in Tables II,III provide support for the internal psychometric properties of the Voice Climate Survey, the results in Table V support the criterion-related validity of the survey.

Along the top row of Table V there are 14 outcome measures plus a Composite Performance measure, which is an average of standardised scores for the other 14 outcome measures. The results in Table V demonstrate good convergent, discriminant and criterion-related validity. For example, of all the higher-order factors Passion shows the strongest correlations with employee turnover ($r = -.25$ to $-.28$). Further, within Passion, the lower-order Intention To Stay shows stronger correlations with employee turnover ($r = -.27$ to $-.29$) than do Organisation Commitment and Job Satisfaction. Of all the higher-order factors, Progress shows the strongest correlations with the composite performance measure ($r = .41$), goal attainment ($r = .24$), profit/surplus ($r = .15$), change in profit/surplus ($r = .19$), and managers' ratings of Organisation Objectives ($r = .34$), Change and Innovation ($r = .34$) and Customer Satisfaction ($r = .33$). Moreover, employees' ratings of the three lower-order factors within Progress show the strongest correlations with managers' ratings on the same scales (e.g., employees' ratings for Customer Satisfaction show the strongest correlations with managers' ratings of Customer Satisfaction, $r = .39$).

The results in Table V can be compared to similar results for the previously discussed GWA and OCM. The GWA showed a correlation of $-.13$ with employee turnover, whereas the Voice Climate Survey measure of Passion correlated $-.28$ with business-unit turnover, and the lower-order Intention To Stay scale showed a correlation of $-.29$ with organisational turnover. Similar results were found with the Voice Climate Survey equally or outperforming the GWA on correlations with outcome measures including financial performance, safety, customer satisfaction and productivity. Although identical outcome measures were not used for the GWA and the Voice Climate Survey, overall the

Table V. Business-unit-level details and correlations between Voice Climate Survey factors and organisational outcomes

			Data collected from managers														
Employees' ratings	*M*	*SD*	Composite Performance	Turnover (Business Unit)	Turnover (Organisation)	Absenteeism (Business Unit)	Absenteeism (Organisation)	Productivity (Business Unit)	Productivity (Organisation)	Health and Safety (Business Unit)	Health and Safety (Organisation)	Goal Attainment	Profit/ Surplus Actual	Profit/ Surplus Change	Organisation Objectives	Change & Innovation	Customer Satisfaction
n			831	301	1135	303	1108	337	339	338	1235	1232	1192	1195	589	590	588
M			0	15.43	17.69	6.66	6.29	3.97	3.86	4.30	4.16	3.47	3.98	3.77	4.12	3.80	4.22
SD			.52	16.62	18.50	6.69	5.68	0.63	0.61	0.76	0.74	0.95	0.96	0.98	0.65	0.67	0.54
Purpose	3.90	0.38	.33**	−.11	−.13**	−.21**	−.14**	.28**	.24**	.16**	.18**	.17**	.09**	.11**	.28**	.23**	.28**
Organisation Direction	3.59	0.50	.32**	−.08	−.10**	−.18**	−.11**	.20**	.18**	.08	.12**	.19**	.14**	.14**	.30**	.28**	.24**
Results Focus	4.02	0.44	.31**	−.06	−.06	−.18**	−.13**	.21**	.16**	.07	.15**	.18**	.16**	.15**	.30**	.29**	.29**
Mission and Values	3.87	0.51	.28**	−.13*	−.15**	−.21**	−.13**	.28**	.27**	.16**	.16**	.15**	.04	.07*	.25**	.16**	.23**
Ethics	3.81	0.48	.25**	−.06	−.16**	−.19**	−.08**	.25**	.23**	.19**	.18**	.12**	.06*	.05	.18**	.15**	.23**
Role Clarity	4.02	0.40	.22**	−.10	−.08**	−.11	−.07*	.22**	.22**	.19**	.13**	.10**	.04	.08**	.20**	.12**	.21**
Diversity	4.07	0.46	.22**	−.08	−.11**	−.18**	−.14**	.19**	.13*	.13*	.13**	.08**	.03	.05	.16**	.14**	.21**
Property	3.64	0.41	.28**	−.10	−.08**	−.18**	−.09**	.21**	.20**	.11	.16**	.16**	.10**	.09**	.18**	.21**	.23**
Resources	3.69	0.47	.25**	−.12*	−.07*	−.11	−.08*	.23**	.21**	.11*	.12**	.10**	.07**	.04	.18**	.16**	.22**
Processes	3.57	0.49	.25**	.00	−.01	−.14*	−.07*	.19**	.20**	.10	.15**	.15**	.08**	.08**	.21**	.23**	.25**
Technology	3.56	0.53	.22**	−.15*	−.09**	−.12*	−.06*	.15**	.13*	.02	.11**	.14**	.06*	.08**	.14**	.17**	.16**
Safety	3.80	0.49	.21**	.01	−.06*	−.19**	−.10**	.12*	.08	.12*	.14**	.12**	.05	.07*	.13**	.12**	.19**
Facilities	3.58	0.58	.21**	−.13*	−.07*	−.15*	−.05	.15**	.16**	.08	.12**	.14**	.11**	.07*	.09*	.15**	.13**
Participation	3.45	0.43	.33**	−.14*	−.12**	−.21**	−.12**	.23**	.23**	.08	.16**	.18**	.09**	.12**	.24**	.29**	.27**
Leadership	3.57	0.52	.33**	−.14*	−.11**	−.16**	−.10**	.23**	.23**	.08	.16**	.16**	.09**	.10**	.26**	.32**	.27**
Recruitment and Selection	3.57	0.51	.30**	−.07	−.06*	−.16**	−.12**	.26**	.23**	.06	.13**	.14**	.08**	.11**	.25**	.25**	.31**
Cross-Unit Cooperation	3.31	0.53	.29**	−.08	−.07*	−.12*	−.07*	.17**	.20**	.04	.12**	.13**	.03	.06*	.22**	.34**	.30**
Learning and Development	3.51	0.53	.28**	−.05	−.07*	−.18**	−.09**	.16**	.15**	.10	.15**	.15**	.07*	.08**	.21**	.27**	.25**
Involvement	3.26	0.54	.28**	−.07	−.12**	−.16**	−.08**	.16**	.18**	.02	.13**	.13**	.06	.09**	.19**	.24**	.24**
Reward and Recognition	3.39	0.51	.28**	−.15**	−.15**	−.19**	−.11**	.21**	.25**	.10	.12**	.16**	.08**	.11**	.13**	.15**	.14**
Performance Appraisal	3.44	0.53	.28**	−.15**	−.11**	−.22**	−.11**	.18**	.17**	.07	.11**	.17**	.10**	.12**	.17**	.19**	.16**
Supervision	3.87	0.50	.22**	−.11*	−.11**	−.18**	−.14**	.21**	.14*	.15**	.15**	.10**	.06	.07*	.16**	.13**	.17**
Career Opportunities	3.11	0.54	.22**	−.15**	−.11**	−.13*	−.04	.19**	.20**	.02	.07*	.15**	.08**	.08**	.16**	.19**	.14**
People	3.92	0.39	.24**	−.15*	−.09**	−.20**	−.15**	.27**	.19**	.16**	.14**	.10**	.04	.05	.12**	.13**	.17**
Motivation and Initiative	3.72	0.43	.26**	−.15*	−.11**	−.20**	−.15**	.22**	.20**	.12*	.13**	.13**	.05	.06*	.13**	.16**	.16**
Talent	3.90	0.42	.22**	−.14*	−.09**	−.18**	−.12**	.26**	.19**	.14**	.13**	.08**	.02	.03	.12**	.13**	.17**
Teamwork	4.13	0.42	.18**	−.10	−.05	−.18**	−.14**	.24**	.13*	.17**	.13**	.07*	.05	.05	.09*	.07	.13**
Peace	3.86	0.39	.16**	−.05	−.03	−.13*	−.09**	.16**	.20**	.21**	.16**	.04	−.01	.01	.09*	.10*	−.18**
Wellness	3.76	0.41	.18**	−.06	−.05	−.11	−.09**	.17**	.20**	.15**	.14**	.06*	.01	.03	.09*	.11**	.17**
Work/Life Balance	3.96	0.44	.12**	−.03	.00	−.12*	−.08*	.12*	.15**	.22**	.15**	.01	−.03	−.01	.07	.06	.15**
Progress	3.75	0.45	.41**	−.11	−.12**	−.17**	−.12**	.24**	.28**	.12*	.19**	.24**	.15**	.19**	.34**	.34**	.33**
Organisation Objectives	3.90	0.48	.41**	−.11	−.11**	−.17**	−.12**	.20**	.22**	.08	.17**	.28**	.23**	.23**	.38**	.28**	.28**
Change and Innovation	3.44	0.52	.36**	−.10	−.11**	−.13*	−.09**	.21**	.26**	.08	.15**	.20**	.09**	.17**	.28**	.37**	.25**
Customer Satisfaction	3.92	0.48	.36**	−.09	−.11**	−.17**	−.13**	.25**	.27**	.16**	.20**	.18**	.11**	.14**	.28**	.26**	.39**
Passion	3.58	0.53	.32**	−.28**	−.25**	−.21**	−.12**	.26**	.27**	.07	.12**	.16**	.07**	.11**	.19**	.16**	.17**
Organisation Commitment	3.72	0.55	.32**	−.25**	−.18**	−.20**	−.14**	.27**	.26**	.09	.15**	.15**	.08**	.11**	.22**	.19**	.22**
Job Satisfaction	3.77	0.49	.29**	−.23**	−.20**	−.16**	−.12**	.31**	.31**	.11*	.14**	.13**	.04	.10**	.17**	.12**	.18**
Intention To Stay	3.25	0.71	.27**	−.27**	−.29**	−.21**	−.09**	.16**	.21**	.03	.06*	.15**	.08**	.09**	.13**	.13**	.08*

Notes: Higher scores for turnover and absenteeism indicate worse performance, hence negative correlations indicate that higher scores on the Voice Climate Survey correlate with lower turnover and absenteeism.

*$p < .05$; **$p < .01$.

Voice Climate Survey compares well with the GWA, providing further evidence for the Voice Climate Survey's validity.

With regards to the OCM, Patterson et al. correlated scores on the OCM with results from interviews with managers that produced scores on dimensions very similar to the content of the OCM. Patterson et al. were able to demonstrate some impressively strong correlations between the OCM scores and interview scores (e.g., $r = .52$ between Training on the OCM and Training scores from the interviews), although the discriminant validity is sometimes unclear for the OCM; for example, Patterson et al. (2005) reported a surprisingly high correlation of .62 between the OCM scale for Outward Focus, measuring focus on the external market, and interview scores for the level of benefits available for employees. Perhaps the most comparable results for the Voice Climate Survey are the correlations between employee and manager scores on the Progress scales of Organisation Objectives, Change and Innovation, and Customer Satisfaction, with correlations ranging from .37 to .39 for the Voice Climate Survey. While not as high as some of the correlations reported for the OCM, the pattern of correlations for the Voice Climate Survey shows stronger discriminant validity.

Discussion

This study had the primary aim of demonstrating the psychometric strength of an employee opinion survey designed to give researchers and practitioners a robust and efficient measure of a wide range of work practices and outcomes, including the currently popular construct of employee engagement.

Psychometrics of the Voice Climate Survey

The Voice Climate Survey was found to have sound internal and external psychometric qualities. First, the small percentage of unanswered or ''don't know/not applicable'' answers given by respondents supports the generalisability of the Voice Climate Survey across a wide range of occupations, organisations and industries. Second, both the lower and higher-order factor structures showed sound factor loadings and fit indices. Third, internal reliability estimates for the Voice Climate Survey were strong, while also achieving a high level of efficiency (as indicated by a low number of items per factor). Finally, the Voice Climate Survey was found to have satisfactory criterion-related validity, predicting outcomes including employee turnover and managers' reports of financial performance. In most areas the survey was superior to alternative surveys.

Passion and Employee Engagement

The construct of employee engagement has developed a strong practitioner following, despite a significant lack of understanding and agreement regarding its nature and how it can be measured. At the time of writing of this paper there were no widely accepted measures of employee engagement freely available to researchers. The current paper presents a measure of employee engagement, labelled here as Passion in order to keep a consistent nomenclature across all the higher order factors within the Voice Climate Survey. The Voice Climate Survey measure of Passion is brief (10 items) but nevertheless is grounded in existing, well-researched constructs, incorporating the three lower-order factors of Organisation Commitment, Job Satisfaction and Intention To Stay. The measure has strong internal psychometrics, and the lower- and higher-order factors associated with Passion show factorial independence from other measures typically incorporated in employee opinion surveys.

Quasi-linking with Progress

Researchers have extensively explored the relationship between management practices and employee outcomes such as organisation commitment, job satisfaction and intention to stay. There is increasing interest, however, in linking management practices with non-employee outcomes such as, but by no means restricted to, profitability, customer satisfaction, innovation and successful change management. While acknowledging the benefits of using tangible outcome measures collected from a source other than employees, Mason, Chang, and Griffin (2005) argued for the efficiency and utility of collecting employee self-report measures of organisational outcomes, and hence being able to examine hypothesised antecedents and outcomes using data collected from an employee opinion survey. Mason et al. described such a process as ''quasi-linking''.

To support such activity, the Voice Climate Survey contains a brief (10-item) employee self-report measure of Progress that showed strong internal psychometrics and factorial independence from other measures typically included in employee opinion surveys. Moreover, the measure showed expected correlations with measures of organisational effectiveness reported by managers, including goal attainment, profitability, change in profitability, and managers' ratings on the same Progress measure.

Seven-factor model of work systems

Researchers such as Parker et al. (2003) and van den Berg and Wilderom (2004) have highlighted the

need to compress the wide variety of work practices that have been studied into higher-order systems. Doing so may advance our understanding of organisational differences in much the same way that the Big Five enabled substantial development of research in the area of individual differences. Pioneering researchers of organisational climate and work practices, such as Huselid and Guest, have unfortunately been unable to find strong evidence for a sound set of higher-order factors, leading some to suggest the presence of only a single higher-order factor.

The current paper, however, presents evidence for a seven-factor model including higher-order measures of Passion and Progress, as well as five other higher-order work systems. The Purpose system, involving setting direction and clarifying the reason for the organisation's existence, appears related to previous research into goals (Locke & Latham, 2002), vision (Podsakoff, MacKenzie, Moorman, & Fetter, 1990), and ethics and justice (Greenberg, 1987). The Property system, involving managing the processes and hard assets of a business, appears related to research into a component of empowerment associated with provision of resources and information (Spreitzer, 1997), re-engineering (Hamel & Prahalad, 1996), and the importance of good-quality facilities, equipment and procedures for promoting workplace safety (Reason, Parker, & Lawton, 1998). The Participation system, associated with giving staff a sense of involvement, recognition and development, appears associated with research into high-involvement organisations (Lawler, 1986). The People system, associated with the quality of staff and managing the immediate workplace relationships with co-workers, is clearly associated with the extensive literature on teamwork (West, Borrill, & Unsworth, 1998). Finally, the Peace system is clearly related to the prominent focus on workplace stress as well as the emerging literature on work/life balance and work/family conflict (O'Driscoll & Cooper, 1996; Spector et al., 2004).

The finding of multiple higher-order factors begs the question of why a multi-factor structure was found here whereas others have not found such a structure. One reason may be the briefer measures used by previous researchers. For example, Guest and Huselid have used very short measures (14 and 13 item measures respectively), with each work practice being represented by only a single item. Patterson et al. (2005) overcame this one item–one practice weakness in the development of their OCM, which had a psychometrically sound lower-order factor structure covering 17 work characteristics. Despite developing their tool around the four-factor model of the competing values framework (Quinn & Rohrbaugh, 1983), however, Patterson et al. reported finding "no neat second-order factor structure" (p. 393). It is possible that the researchers' use of a framework for values may have not generalised well to a measure of practices.

Another reason other researchers may not have discovered multiple higher-order factors is that previous research has focused largely on traditional human resource management practices such as rewards and recognition, learning and development, career opportunities, involvement, leadership and supervision. All these practices were found in the present study to load on a single higher-order factor, labelled here as Participation. It is hence possible that previous researchers have been hindered in finding multiple higher-order factors because they were not exploring a sufficiently broad range of work practices.

Limitations and strengths

There are some limitations of the current study that provide opportunities for future research. First and most obviously the cross-sectional nature of the data and results presented here needs to be supported with longitudinal studies. Further, some of the data collected from business-unit managers asked managers to report performance over the previous 12 months (e.g., asking managers to rate the change in financial performance compared to the previous 12 months). As such, some of the correlations reported in Table V are correlations between current employee perceptions and arguably historical data from the organisation. In subsequent studies it would be useful to collect data from managers at a later point than when employee scores were collected.

Second, the size of correlations between work practices and outcomes in Table V are likely to be underestimated. No attempt has been made to adjust the correlations to account for inaccuracy of measurement (see Harter et al., 2002, for a discussion of why true validity may in some cases be as much as double that of observed correlations). A further reason for the likely underestimation is the method of data collection: organisational outcomes were correlated with employee perceptions of an organisation from a single business unit. Perceptions from employees of a single unit within an organisation are likely to provide a biased view of an organisation as a result of their limited experience of the entire organisation.

Finally, the data collected here have been predominantly collected from a single national culture: that of Australia. It is likely that results presented here would generalise to other individualistic Western cultures such as the United Kingdom and the United States. Nevertheless, it would clearly be

of interest to validate the psychometrics of the Voice Climate Survey in other Western and non-Western, individualistic and collective cultures.

Despite these limitations, the study has several strengths. Empirical support has been presented for brief yet psychometrically strong measures of work practices and outcomes, including a measure of Passion (representing the currently popular construct of employee engagement) and Progress (enabling more effective quasi-linking). A lower-order factor structure of work practices and outcomes and a higher-order structure of work systems have been demonstrated for the first time using a single tool. It is hoped that the seven-factor model of work systems presented here may provide a structure and language to further advance research into work systems and organisational differences. Finally, unlike previously published tools, the Voice Climate Survey and the capacity for benchmarking against the existing database is, although copyrighted, freely available to all university-based researchers involved in non-profit research. It is hoped that the continued use of the tool and further expansion of the associated database will enable a more rapid development of our understanding of the link between management practices and organisational outcomes.

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