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## Abstract

The first aim of this study was to identify long-term patterns of ethical organizational culture based on the perceptions of 368 Finnish managers over two years' time. The second aim was to investigate whether there is a difference in the long-term occupational well-being (burnout and work engagement) of managers belonging to different patterns of ethical culture. Based on Latent Profile Analysis five different patterns of the strength of ethical culture were identified: moderate, high, increasing, decreasing and low. The results show that managers who belong to the low or decreasing pattern of ethical culture experienced significant changes in their well-being over time. Decreasing or permanently low ethical culture was related to increased cynical attitudes towards work, and with decreased work engagement. On the positive side, stably high ethical culture was associated with enduringly high levels of well-being over time. In sum, low or decreasing ethical culture poses a risk to occupational well-being, whereas an organization with a culture that is perceived as permanently strong represents a favourable work environment.

*Keywords:* ethical culture, corporate ethical virtues, longitudinal, latent profile analysis, well-being

How perceived changes in the ethical culture of organizations influence the well-being of managers: A two-year longitudinal study

Ethical organizational culture refers to the ethical quality of a work environment, which is defined as the shared values, norms, and beliefs that can stimulate ethical behaviour (Kaptein, 2008; Treviño & Weaver, 2003). To date, research has largely focused on investigating how ethical culture can promote ethical behaviour and reduce unethical behaviour (for reviews, see Kish-Gephart, Harrison, & Treviño, 2010; Trevino, Weaver, & Reynolds, 2006). On the other hand, the significance of the work environment in relation to occupational health and well-being has been studied extensively (for reviews, see Cooper, Dewe, & Driscoll, 2001; Stansfeld & Candy, 2006). Recent studies have begun to combine these lines of research, and explore how ethical culture (as a work context) is related to a broader range of employee outcomes in addition to (un)ethical behaviour (see e.g., Mayer, 2014). However, the potential of ethical values, practices and norms in preventing job strain has been investigated only marginally, and especially the lack of longitudinal studies remains a significant shortcoming in the field of ethical culture studies.

It has been shown that the ethical culture of organizations can provide identifiable values which strengthen the psychological contract between employee and organization (Andrews, Baker, & Hunt, 2011). This can have a beneficial effect on employees' well-being: if the organization upholds ethical values, norms and beliefs, it can promote positive interaction among employees (Valentine, Godkin, Fleischman, & Kidwell, 2011) and increase job satisfaction (Valentine, Greller, & Richtermeyer, 2006). By contrast, organizations with an unethical culture may pressure employees into engaging in unethical behaviours, and result in person-organization conflicts (Shafer, 2002). An ethical conflict can cause distress and dissatisfaction with the situation (Viswesvaran, Deshpande, & Joseph, 1998), and have a negative effect on employees' organizational commitment (Schwepker Jr., 1999) and job performance (Schwepker Jr., 2003). Ethical culture, on the other hand, can provide organizational support (Viswesvaran et al., 1998),

and lead to better value congruence (Cartwright & Holmes, 2006). Thus, previous findings suggest that an ethical organizational culture represents a favourable work context, where employees thrive.

However, these previous studies were solely based on cross-sectional designs (for reviews, see Huhtala, 2013; Mayer, 2014). When findings are based on one measurement of the quality of ethical culture, the relationships to different outcomes found (such as well-being, organizational commitment, and job satisfaction) merely show that the hypothesized association exists. Cross-sectional studies do not give information about the direction of the association (i.e., possible reversed or reciprocal effects) nor do they provide information about the time lag that is needed for the association to appear. For example, how long does it take for an unethical culture to have an adverse effect on employee outcomes, such as impaired well-being and decreased commitment? Cross-sectional studies also have not shown whether the quality of ethical culture can change over time, and if so, how changes affect different outcomes. Therefore longitudinal research is needed to investigate how the quality of ethical culture can affect well-being over time.

This study addresses the aforementioned gap in previous research and contributes to the understanding of ethical culture as a work context in three main ways. First, we examined how managers working in different organizations evaluate the strength of their organization's ethical culture using follow-up data with two time points across two years. This provides information for the first time about whether the ethical culture remains stable over time or whether changes will appear based on managers' evaluations. Second, we utilized a person-centred approach (Laursen & Hoff, 2006; Wang, Sinclair, Zhou, & Sears, 2013), which allows individual differences to emerge from the ethical culture evaluations. That is, instead of variables, we focused on identifying subgroups of managers who have similar perceptions of ethical culture strength over time. This helps to distinguish heterogeneity in the sample and identify more detailed patterns than would be possible by studying the stability of ethical culture with a traditional, variable-centred approach. This enriches the theoretical knowledge of ethical culture. Third, we investigated whether managers belonging to these subgroups (based on their evaluations about the strength of ethical culture) differ

from each other in their long-term well-being. By using the person-centred study design, it is possible to detect changes in well-being that do not appear in the whole population, but can be specific to certain patterns of ethical culture. This can extend our knowledge about how ethical values in an organization can contribute to occupational well-being also from a longitudinal perspective.

Managers are the focus of our study because they are especially susceptible to facing ethical challenges which can be a risk for well-being. Managers have been found to face complex and demanding situations at work, stemming from the uncertainty of trying to address multiple stakeholder claims from, for example, subordinates, higher executives, and customers (Reynolds, Owens, & Rubenstein, 2012). They can experience a lack of clarity about specific appropriate behaviour while at the same time feeling a general obligation to act in accordance with organizational ethical standards (Waters & Bird, 1987). These kinds of dilemmas can be a significant source of stress (DeTienne, Agle, Phillips, & Ingerson, 2012), and high levels of ethical strain have been shown to be a risk for burnout (Huhtala, Feldt, Lämsä, Mauno, & Kinnunen, 2011). Strong ethical culture can provide support in ethical decision making situations (Treviño, 1986) and therefore longitudinal research on the effects of ethical organizational culture can provide important information about how organizations can promote managers' well-being.

### **Ethical organizational culture and the Corporate Ethical Virtues model**

Ethical culture refers to the ethical quality of a work environment, which is defined as the shared values, norms, and beliefs that can *stimulate* ethical behaviour (Kaptein, 2008; Treviño & Weaver, 2003). The other main concept that has been used to conceptualize the ethical work environment, namely ethical climate, differs from ethical culture as it is defined as “those aspects of work climate that determine what *constitutes* ethical behaviour at work” (Victor & Cullen, 1988, p. 101). Thus, ethical climate pertains to the perceptions about what is seen as ethical behaviour (e.g., the desired level of serving client interests), whereas ethical culture includes those conditions that exist in the organization and guide compliance with ethical expectations (e.g., the extent to which

the desired level of serving client interests is stimulated by conditions such as role-modelling of managers, and rewards and punishment; Heugens, Kaptein, & Van Oosterhout, 2006; Kaptein, 2011b). Although some researchers may argue that these are overlapping phenomena (Denison, 1996), there is empirical evidence that ethical culture has a stronger association with (un)ethical behaviour than ethical climate (Kaptein, 2011b; Treviño, Butterfield, & McCabe, 1998). Thus, ethical culture provides an important foundation for understanding how values and norms can affect individual employees in organizations.

In this study we conceptualize ethical culture by using the Corporate Ethical Virtues model (CEV; Kaptein, 2008, 2011b). The CEV model takes a normative stand towards ethical culture: by strengthening eight key virtues that are introduced in this model, organizations can create and maintain an ethical culture. The main strengths of this model stem from its normativity and multidimensionality: the model provides a strong basis for interventions that can be targeted around the virtues presented in the model. The CEV model is based on the Aristotelian virtue approach, which was first applied to business ethics by Solomon and Hanson (1985) and Solomon (1992, 2004). This approach stresses individual integrity which should, however, be supported by good corporate and social policies in the organization. Kaptein (1998, 2008) broadened Solomon's theory from individuals to organizations, underlining that organizations need to possess certain characteristics (virtues) that will lead to ethical actions.

The CEV model includes eight virtues, which were generated based on existing theory and empirical research (including a qualitative analysis of 150 cases of unethical behaviour; Kaptein, 1998), and validated by four interlocking studies (Kaptein, 2008). These virtues include *clarity* (of ethical standards), referring to concrete, comprehensive, and understandable expectations, which support ethical decision-making. Second, *congruency* (ethical role modelling) of *supervisors* and *congruency of senior management* reflect managerial behaviours. Even if organizations have clear ethical standards, but managers themselves behave unethically, they not only contradict existing ethical expectations but also set an example which signals to employees that unethical actions are

allowed in the organization. *Feasibility*, the ability to behave ethically, includes the actual resources available for ethical actions: sufficient time, financial resources, equipment, and information, and personal authority to act according to norms and values without pressure to break the rules.

*Supportability* refers to creating shared commitment to ethical behaviours through fair treatment and an organizational atmosphere of mutual trust. *Transparency* means that (un)ethical behaviours and their consequences should be perceptible to organizational members, thus leading employees to be more aware of the consequences of their actions, and increasing the possibility of being caught for unethical conduct: both act as deterrents to unethical behaviour (e.g., Hollinger & Clark, 1982; McCabe, Treviño, & Butterfield, 1996). *Discussability* entails the opportunity to raise and discuss ethical issues so that, for example, the risk is reduced of employees making wrong decisions when they are faced with ethical dilemmas. Finally, the virtue of *sanctionability* refers to the likelihood of employees and managers being rewarded for ethical behaviour and punished for behaving unethically (Kaptein, 2008). A more detailed discussion of the theory grounding these dimensions can be found in Kaptein (2008, 2011b).

Taken together, the stronger the presence of these aforementioned virtues, the more ethical the organizational culture. To date, the CEV model has been used in a small but growing number of studies, indicating, for example, that a strong ethical culture is related to lower levels of unethical behaviour (Kaptein, 2011b), ethical leadership (Huhtala, Kangas, Lämsä, & Feldt, 2013), better organizational innovativeness (Riivari, Lämsä, Kujala, & Heiskanen, 2012), higher number of managers' personal work goals related to the organization's success (Huhtala, Feldt, Hyvönen, & Mauno, 2013), lower ethical strain, lower burnout and higher work engagement (Huhtala et al., 2011), and more willingness among managers and employees to report unethical behaviour (Kaptein, 2011a).

The most salient weakness in all previous ethical context studies is the lack of longitudinal research. All of the aforementioned studies of ethical culture were based on cross-sectional study designs, and thus we lack basic theoretical knowledge about the stability or susceptibility of ethical

culture to change over time, and its long-term outcomes. The study by Kaptein (2010) remains the only one to have investigated ethical culture using more than one time point: it compares ethical culture ratings from 1999, 2004, and 2008. However, Kaptein uses three study samples involving different individuals, with the result that the study only explores mean differences between the time points. Even in the related research field of ethical climate, only one longitudinal study has been conducted to date (Weber & Seger, 2002). In this study two different samples from one organization were utilized to investigate the stability of ethical subclimates over four years. Weber and Seger (2002) conclude that “ethical subclimates may be relatively stable over time”, although they base this claim on comparing mean differences between two separate samples. Thus, there is still a clear need for longitudinal studies in the field.

To examine the longitudinal associations between ethical culture and different outcomes, the most commonly used strategy would be a variable-centred approach, such as regression or structural equation modelling (e.g., cross-lagged analysis). However, variable-centred research strategies would give us information only about the average estimates of the relationships observed across the study sample over time. There are two main shortcomings with this strategy. First, because it produces average estimates of the variables within the whole population, it may mask more atypical patterns concerning only a minority of the study participants. Second, if the sample includes different subpopulations, the observed relations between variables (i.e., between ethical culture and well-being) may differ quantitatively and qualitatively. This possibility is excluded by using a variable-centred strategy. For this reason, we use a person-centred approach (Laursen & Hoff, 2006; Wang, Sinclair, Zhou, & Sears, 2013), which identifies and compares subgroups of individuals sharing similar patterns of ethical culture. Because this is the first longitudinal study using the CEV model, we want to get a more detailed picture of the possible changes and different patterns of ethical culture over time. We are interested in how the eight ethical culture dimensions combine, how these combinations are perceived to change over time, and how groups of managers with varying combinations differ with regard to their well-being.



Because there are no previous longitudinal studies of ethical culture, we draw on the organizational culture theory in our hypothesis formation regarding the longitudinal patterns of ethical culture (henceforth “EC patterns”). According to the widely used definition of organizational culture, this refers to the shared and relatively stable patterns of assumptions and actions that are both concrete and abstract, formal and informal, which are manifested in different levels of the organization or its sub-units (Schein, 1990). Ethical virtues as culture dimensions can therefore be seen as relatively stable and an established part of the organization. Thus, we expect that over the two years duration majority of the managers will evaluate their organization’s ethical culture as remaining at a stable level. Second, because the managers in this study represent different organizations with presumably differing ethical cultures, we expect to find stable patterns with different mean levels of ethical virtues. Finally, we expect that a person-centred approach can also reveal atypical patterns, where managers perceive that the level of their organization’s ethical culture has changed (increased or declined) over time. These kind of changes may be due to different changes in the organization, such as interventions (e.g., adopting and intensifying an ethics program can strengthen the ethical culture) or new organizational members (e.g., new leaders) who can challenge the prevailing values and underlying assumptions with their different views (Schein, 1990). Because of the complexity of all possible combinations between stability and/or change over time in the eight CEV dimensions, and the exploratory nature of our first research goal, we cannot formulate a detailed hypothesis about the number, level or direction of the latent EC patterns. However, based on the aforementioned theorizing, we expect that at least four different EC patterns will emerge: stable patterns of ethical culture with little change from Time 1 to Time 2 that range from (1) relatively low to (2) relatively high; and unstable classes of either (3) decreasing or (4) increasing ethical culture from Time 1 to Time 2. Based on the theory behind the CEV model (Kaptein, 2008), ethical culture is a multifaceted construct, but the dimensions are strongly correlated with each other, and together comprise the quality of the total ethical culture. Therefore we expect that the eight virtues will more likely constitute profiles with similar patterns of change.

That is, if the mean level of ethical culture changes, all the individual virtues would show similar trends of change (e.g., an increase or decrease). However, our exploratory research design enables us also to detect atypical patterns, which will give further information about the possible distinctiveness of the virtues. Taken together, we propose:

*Hypothesis 1:* At least four EC patterns will emerge from the study sample, which will provide a better fit to the data than a one-pattern model.

### **Ethical organizational culture and well-being**

The second aim of this study is to investigate, whether managers exhibiting different EC patterns will differ from each other in their occupational well-being. We utilize the transactional approach in aiming to explain the theoretical connection between ethical culture and well-being. In transactional models, stress is seen to arise from a lack of fit between the environment and the individual: stress arises when an individual finds that the demands and expectations of the environment exceed his or her personal resources (Cooper et al., 2001; Lazarus & Folkman, 1984). Applied to the ethical context, a strong ethical culture (with deeply embedded ethical virtues) provides many positive resources, such as support for ethical decisions, clear norms and expectations, and adequate practical conditions (such as time and personal authority) for ethical behaviour (Kaptein, 2008). By contrast, if the ethical culture is perceived to be weak, it can result in vague and ambiguous ethical expectations, insufficient resources to carry out responsibilities at work, lack of support from the organization to meet normative expectations, and lack of discussion of ethical issues, all representing high job demands and thus risk factors for stress (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Although the managers in this study do not share a common work context, we argue that their individual evaluations are of importance. In line with the transactional stress theory (Lazarus & Folkman, 1984), personal appraisals of the environment can differ from shared and collective views about the organizational culture and can lead to different personal outcomes. In one previous study (Huhtala, Tolvanen, Mauno, & Feldt, 2014) the degree to which ethical virtues were shared in

work units was 12–27% of the total variation. This means that there can also be individual variation in the perceptions of ethical culture. These perceptions may even have a stronger influence on outcomes such as stress or job satisfaction than the actual characteristics of the organization (Kristof, 1996; Nisbett & Ross, 1980). Thus, we argue that also individual perceptions of the quality of ethical virtues (i.e., of the strength of the ethical culture) can have significant consequences for individual well-being.

We focus on two long-term reactions to working in an ethical or unethical work environment: burnout as a strain indicator and work engagement as an indicator of positive well-being. These outcomes were chosen because of their prominent status to represent both the negative and positive antipodes of employee well-being (see, e.g., Halbesleben, 2010; Schaufeli, 2003). Burnout is a prolonged stress experience that is caused by incongruence between the worker and the job, depicted by feelings of exhaustion, cynicism, and reduced professional efficacy (Bakker, Van Emmerik, & Euwema, 2006; Leiter & Schaufeli, 1996; Maslach & Leiter, 1997). In this study we focus on the dimensions of exhaustion and cynicism, which are often seen as the core dimensions of burnout (González-Romá, Schaufeli, Bakker, & Lloret, 2006). As Schaufeli, Leiter, and Maslach (2009) state, an imbalance between job demands and resources, and value conflicts between the individual and the organization are the most prominent factors leading to burnout. These antecedents of burnout come very close to the virtues presented in the CEV model. For example, high levels of feasibility mean sufficient resources (e.g., time, financial resources, and equipment) as well as personal authority to fulfil responsibilities at work. Also as stated earlier, ethical culture is likely to provide identifiable values, thus leading to fewer conflicts between personal and organizational values. One previous study has shown that organizational justice (employee perceptions of the fairness of their organization and its practices) is negatively related to burnout: in particular, fair treatment from one's supervisor has been related to lower levels of burnout (Moliner, Martinez-Tur, Peiro, Ramos, & Cropanzano, 2005).

Work engagement has been defined as “a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74), referring respectively to high levels of energy and mental resilience while working, feelings of enthusiasm, significance, and pride, and becoming immersed in one’s work with full concentration. We focus on the dimensions of vigour and dedication, as they are seen as the conceptual antitheses of the dimensions of burnout, namely exhaustion and cynicism (González-Romá et al., 2006). Several studies have shown that different job resources have a positive association with work engagement, such as social support (Schaufeli & Bakker, 2004), social climate (Hakanen, Bakker, & Schaufeli, 2006), and rewards and value fit (Koyuncu, Burke, & Fiksenbaum, 2006). Ethical organizational culture includes such resources (e.g., supportability and rewards for ethical actions) and it may therefore be theoretically argued to constitute a favourable working environment that can promote work engagement. In addition, one previous empirical study found a positive connection between organizational justice and work engagement (Inoue et al., 2010).

We suggest that a lower level of ethical culture represents a social and psychological work environment stressor, which is most likely of a chronic (constant) nature, as culture is a relatively stable part of the organization. Based on a recent meta-analysis of the time effects on the stressor–strain relationship (Ford et al., 2014) chronic workplace stressors were found to relate to greater increases in synchronous stressor–strain effects. In other words, prolonged exposure to the same stressors was found to increase concurrent stress reactions (Ford et al., 2014). This leads us to expect that managers who evaluate their organization’s ethical culture to be at a low level at both time points (representing a prolonged stressor) will show the highest level of impaired well-being over time. However, if atypical patterns of changing ethical culture are found, we expect, in line with the synchronous stressor–strain effects (Ford et al., 2014), that these changes will be reflected in concurrent changes in their well-being. If managers perceive a decrease in the quality of the ethical culture, they might experience a short-term increase in strain which will be reflected in a

lower level of well-being. However, based on Ford et al.'s (2014) meta-analysis, these kinds of adverse reaction may not be as detrimental to well-being as the cumulative loss of resources that follows from being exposed to prolonged, chronic stressors. In a similar vein, but from a positive perspective, a constant perception of a strong ethical culture can represent a long-term job resource leading to permanent, high levels of work engagement, whereas short-term positive changes towards a more ethical culture can result in more moderate increases in engagement. To summarize, we hypothesize that:

*Hypothesis 2:* Managers in the stable, low EC pattern show the *lowest* level of well-being (high burnout, low work engagement) compared with other patterns.

*Hypothesis 3:* Managers in the stable, high EC pattern show the *highest* level of well-being (low burnout, high work engagement) compared with other patterns.

*Hypothesis 4:* Managers in the decreasing EC pattern show *decreasing* levels of well-being (increasing burnout, decreasing work engagement) compared with other patterns.

*Hypothesis 5:* Managers in the increasing EC pattern show *increasing* levels of well-being (decreasing burnout, increasing work engagement) compared with other patterns.

## Method

### Participants and procedure

This study is based on a longitudinal data collected at two time points: baseline in 2009 (T1) and follow-up in 2011 (T2). The participants were managers working in technical and commercial business fields. The original sample ( $N = 3,000$ ) at T1 was randomly selected from the members of two Finnish national labour unions (The Finnish Association of Business School Graduates and The Finnish Association of Graduate Engineers). In Finland, the majority of employees (67%) belong to a labour union organized on the basis of industry (Ahtiainen, 2011) and therefore this sample is relatively representative of the target group. Altogether 902 managers responded to the questionnaire sent to their home addresses. In addition, 369 recipients returned an empty form, because based on their personal information they did not belong to the research target group at the

time (e.g., were unemployed or did not work in a managerial position); these responses were removed from the original sample, the final response rate being 34%. The attrition analysis showed that women were slightly overrepresented among the participants [ $\chi^2(1) = 6.23, p < .05$ ], and the respondents were on average one year older than the non-respondents [ $t(1751) = 2.69, p < .05$ ].

In 2011, those participants who had not declined to be contacted after the baseline data collection were sent a follow-up questionnaire ( $N = 728$ ). Altogether 491 recipients returned the questionnaire, of which 464 were currently employed in a managerial position and were included in the final sample. Of the recipients, 27 returned an empty form, because they did not belong to the target group at Time 2. Of these 11 were unemployed, 15 had retired, one was currently on a long-term sick leave, and one participant had died during the time period. After omitting these recipients from the sample, the response rate of the follow-up study was 66%. The attrition analysis comparing the follow-up and baseline samples showed that participants at T2 did not differ from those who did not participate in the second study point in terms of gender [ $\chi^2(1) = 1.54, p > .05$ ], age [ $t(900) = 0.91, p > .05$ ], or management level [ $\chi^2(3) = 0.86, p > .05$ ].

The present study focused on the 368 participants who had taken part in the study at both measurement points, who had been employed during the data collection and who had not changed their organization between T1 and T2. The last criterion was added to ensure that possible changes in ethical culture evaluations are not due to the fact that managers are assessing two different organizations. The participants represented several different organizations across Finland from different industries: manufacturing (40.5%), telecommunications or data processing (12.8%), public administration (11.4%), business services or renting (9.8%), finance and insurance (9.5%), commerce and trade (6.0%), education (3.0%), and other fields (e.g., health care, public relations, and traffic, 7.0%). The managers represented organizations that varied significantly in size (number of employees ranged from 2 to 35 000, including 134 different classes of size) and location: the sampling procedure took place at fixed intervals after sorting the trade union members based on their postal code, thus covering the whole country. Based on this variation in industry, organization

size and location, no significant clusters of managers from the same organization were found that would affect the analyses of this study (i.e., some of the managers would evaluate a shared organizational culture). The participants' average age at T1 was 46.7 years (range 25–67,  $SD = 8.94$ ). The majority of the participants were men ( $n = 254$ , 69.0%), and they worked in lower ( $n = 65$ , 17.7%), middle ( $n = 138$ , 37.5%), and higher level ( $n = 165$ , 44.8%) management.

## Measures

*Ethical organizational culture* was measured using the Corporate Ethical Virtues questionnaire (CEV; Kaptein, 2008). The scale includes eight factors: *clarity* (e.g., “The organization makes it sufficiently clear to me how I should obtain proper authorizations”), *congruency of supervisors* (e.g., “My supervisor sets a good example in terms of ethical behaviour”), *congruency of senior management* (e.g., “The conduct of the board and (senior) management reflects a shared set of norms and values”), *feasibility* (e.g., “I have insufficient time at my disposal to carry my tasks out responsibly”), *supportability* (e.g., “In my immediate working environment, an atmosphere of mutual trust prevails”), *transparency* (e.g., “If a colleague does something which is not permitted, my manager will find out about it”), *discussability* (e.g., “In my immediate working environment, there is adequate scope to discuss unethical conduct”), and *sanctionability* (e.g., “In my immediate working environment, ethical conduct is rewarded”). Participants rated these items on a Likert scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Except for the items of the feasibility factor, which were scored in reverse, a higher score (range 1–6) refers to a higher level of ethicality for each factor. The eight-factor structure of the scale, including a second-order factor for overall ethical culture, has been shown to be valid among a managerial sample (Huhtala et al., 2011). Also the factorial group invariance is supported by a previous study using four organizational samples (Kangas, Feldt, Huhtala, & Rantanen, 2013).

*Burnout* was assessed in relation to exhaustion and cynicism, which are generally seen as the core dimensions of burnout (Schaufeli & Bakker, 2004). Both dimensions were measured using the 15-item Bergen Burnout Inventory (Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003), including

five items for each (e.g., “I am snowed under with work” (*exhaustion*) and “I feel dispirited at work and I think of leaving my job” (*cynicism*)). The items were rated on a 6-point frequency-based scale ranging from 1 (*completely disagree*) to 6 (*completely agree*), higher mean scores indicating a higher level of burnout.

*Work engagement* was measured with the short version of the Utrecht Work Engagement Scale (UWES-9, Schaufeli, Bakker, & Salanova, 2006). The short version has shown good internal consistency and test-retest reliability (Schaufeli et al., 2006; Seppälä et al., 2009), and better factorial validity than the longer version when studied with Finnish occupational groups (Seppälä et al., 2009). We used two of the UWES-9 dimensions: *vigour* (three items; e.g., “At my job, I feel bursting with energy”); and *dedication* (three items; e.g., “My job inspires me”). Responses were given on a 7-point frequency scale from 1 (*never*) to 7 (*every day*), higher mean scores indicating a higher level of work engagement.

The descriptive information regarding the study variables is displayed in Table 1 and Table 2 depicts the correlations between the study variables.

### **Analytical strategy**

The statistical analyses were performed in three major phases, and all analyses were performed with Mplus version 7 (Muthén & Muthén, 1998–2012). First, we investigated the equality of the measurement structure across time for the dimensions of ethical culture, burnout and work engagement using longitudinal confirmatory factor analysis with MLR estimation. This was done to test whether the indicators measure the same construct in the same way over time. Because of the large number of parameters in the CEV model in relation to our sample size (see, e.g., Marsh, Hau, Balla, & Grayson, 1998; there should be a 5:1 ratio of sample size to number of free parameters) we tested the time invariance separately for each of the CEV dimensions. The cross-sectional validity of the whole 58-item CEV scale is supported by a previous study using the full sample from Time 1 (Huhtala et al., 2011). In the present study we also tested individual



measurement models for the dimensions of burnout and work engagement (see Table 3). All of the latent factors were based on observed items.

We started the longitudinal measurement equivalence testing by estimating a configural invariance model, which tests whether the same general factor structure holds for both time points without any equality constraints (for the full procedure, see, e.g., Vandenberg & Lance, 2000). This is the baseline model for subsequent restricted model comparisons. At this stage significant error covariances between the same items measured at different time points were freed. We also allowed two pairs of errors to correlate within the same factor: one in the feasibility factor, and one in the transparency factor. These high error covariances were found in a previous study, and are probably due to similar wordings of these items (see Huhtala et al., 2011). Second, we tested a metric invariance model, where the factor loadings were constrained to be equal across time. Third, we estimated a scalar invariance model, where both factor loadings and intercepts were specified to be invariant across time. Fourth, we tested an invariant uniqueness model, where also the residual variances were fixed to be equal across time, testing whether the explained variance for each item is the same across time. Finally, we tested structural invariance by fixing the factor variances equal across time (model five), and by fixing the factor means equal across time (model six). In all of the models we imposed the equality constraints on the corresponding factor loadings across the two time points (e.g., clarity factor with 10 items at Time 1 and Time 2). When comparing the most restricted model to the previous, less restricted model, we used the Satorra-Bentler scaled difference chi-square test (Satorra & Bentler, 1999), which produces a non-significant loss of fit between the models if the equality assumption is supported.

The second phase included performing a latent profile analysis (LPA; Muthén, 2001) to identify long-term patterns of ethical culture. In this step the mean sum scores of the eight ethical culture dimensions were used to determine the number and composition of latent groups with robust maximum likelihood (MLR) as the method of estimation. We used mean sum scores instead of saved factor scores because of the very high reliabilities of the scales measuring each dimension.

There are two main advantages of the LPA compared with traditional, more commonly used cluster analysis. First, LPA is a model based approach, which generates probabilities for group membership. More specifically, observations in each latent group are hypothesized to have a multi-normal distribution, and due to estimated model parameters, each individual (i.e., observation) has an estimated group membership probability. Second, using the LPA method allows for statistical testing of these models and analyses of their goodness of fit. To summarize, LPA seeks to identify the smallest number of latent groups that adequately describes the mean profiles of observed continuous variables.

We determined the adequate number of latent groups based on several statistical criteria (Nylund, Asparouhov, & Muthén, 2007; Tolvanen, 2007): (a) the Akaike's Information Criterion (AIC), (b) the Bayesian Information Criterion (BIC), (c) the Adjusted Bayesian Information Criterion (aBIC), (d) the Vuong–Lo–Mendell–Rubin Likelihood Ratio Test (VLMR), (e) entropy, (f) Bootstrap Likelihood Ratio Test (BLRT), and (g) the usefulness and clarity of the groups. The model with the lowest AIC, BIC, and aBIC values indicates the best solution. The VLMR and BLRT tests compare solutions with different numbers of latent groups. In all these tests, a low  $p$  value ( $p < .05$ ) indicates that the  $k$  model has to be rejected in favour of a model with at least  $k + 1$  groups. The quality of the classification (i.e., the distinctiveness of the latent groups) was evaluated with the entropy for the most likely latent group membership. Entropy values range from 0 to 1, and high entropy values ( $>.90$ ) indicate that the latent groups are highly discriminative. Finally, theoretical justification and interpretability of the group solutions was evaluated.

We used the three-step approach (Asparouhov & Muthén, 2013) to model auxiliary variables (i.e., the well-being outcomes in the latent profiles). The first step was to conduct the LPA to determine the best solution (i.e., number of profiles) that fits the data, as described earlier. In the second step, the most likely class membership was obtained based on the posterior distribution from the previous step (Asparouhov & Muthén, 2013). This was done using the OPTSEED command. In the third step, the auxiliary variables were assessed in relation to the profile solution. In this way the

most likely class membership and classification error rate were taken into consideration. First, we calculated two well-being indicators from the whole sample for each of the well-being variables (exhaustion, cynicism, vigour, and dedication): a mean sum score for each measure between T1 and T2 (i.e., the mean levels of the burnout and work engagement variables across time), and a difference score between T1 and T2 (subtracting the level of burnout and work engagement variables at T1 from the corresponding variable at T2, producing a change estimate). Next, these indicators were investigated as auxiliary variables and compared between the probabilities-based EC patterns. We used the AUXILIARY function which relies on a Wald chi-square test of statistical significance to test differences between the latent patterns.

## **Results**

### **The measurement invariance of ethical culture, burnout, and work engagement**

Table 3 shows the results of measurement invariance tests for each of the latent variables in our study. The results for the configural invariance models indicated acceptable model fit (CFI values above .90 and RMSEA values below .10), and also metric invariance was supported in all cases. Model 3, which tested scalar invariance, also provided a good fit for all dimensions. We also found support for invariant uniquenesses for all factors except feasibility. In this case the intercepts of the feasibility variables could not be constrained to remain equal over time. However, residual invariance can be difficult to achieve for a variety of reasons (see Widaman & Reise, 1997), and because strong (scalar) factorial invariance was obtained, the requirements for valid comparisons of scale score means over time were met. Finally, we did not find support for structural invariance for all of the dimensions. In some cases factor variances and/or factor means could not be set equal over time. However, once measurement invariance (configural, metric, and scalar invariance) is established, it is not necessary to reach structural invariance, as the unequal factor variances and means can be due to true differences across time (e.g., Cheung & Rensvold, 2002).

### **Patterns of ethical culture**

Altogether eight individual LPA models were tested, from one to eight groups. As shown in Table 4, none of the solutions got unanimous support based on the fit indices, but the entropy values supported the 2-, 4-, 5- and 8-group solutions. Therefore we used the criteria of looking at the content, clarity, and usefulness of the different patterns in these different solutions, and we compared more closely the 4-, 5-, 6- and 7-group solutions. In all of these solutions we found three patterns that remained distinct and coherent from other groups (ethical culture was evaluated as either high, low, or increasing). However, in the 4-group solution one pattern showed mixed results for the eight virtues, where some virtues increased over time whereas others decreased. In the 5-group solution this mixed pattern was clearly divided into two subgroups, one with decreasing evaluations for all virtues, and other with increasing evaluations. Looking at the 6-group solution, we did a careful content interpretation between this and the 5-group solution. All the other patterns remained identical and only one of the increasing ethical culture patterns divided further into two patterns with similar direction of change (all virtues increased over time). Comparing ethical culture levels between these two patterns with MANOVA (with Bonferroni pairwise comparisons) showed a small mean level difference (.63,  $p < .001$ ). Although this difference was statistically significant, it did not allow a theoretically meaningful clarification of the 5-group solution. The same was found for the 7-group solution: the decreasing ethical culture pattern divided into two smaller patterns with similar decreasing evaluations of ethical culture, only with a small mean level difference between the new patterns (.31,  $p < .001$ ).

In sum, after the 5-group solution no new patterns with contentually meaningful differences were found. Also the interpretability of further results using these patterns with only small differences in mean levels would have been poor. Therefore the 5-group solution was chosen as the most appropriate to be used in the following analyses, supporting Hypothesis 1. The 5-group solution also had very high class probabilities for most likely latent class membership (ranging .95–

.97), indicating high rates of correct classification. Therefore the latent group probabilities are henceforth referred to as groups/patterns.

The patterns of the latent 5-group solution are displayed in Figure 1(a) – (e). Based on their most likely latent group membership, the majority of the managers belonged to the *moderate* pattern (42.7%), characterized by moderately high levels of the ethical culture dimensions, with slight increases in some of the ethical virtues over time. The second largest group was the *high* pattern (22.8% of managers), with high and stable levels of all eight ethical culture dimensions. The third pattern was *increasing* (18.5%): all eight virtues increased over time. *Decreasing* ethical culture was the fourth pattern (11.1%), with a decrease in all virtues over the two years. Finally, the smallest latent pattern consisted of managers with the lowest evaluations of ethical culture (4.9%). In this *low* pattern all the ethical culture dimensions received low ratings from the managers at both time points.

### **Differences in well-being among the ethical culture patterns**

The differences in psychological outcomes between the five latent patterns of ethical culture are presented in Table 5. The mean levels of burnout dimensions were higher in the decreasing and low EC patterns, especially compared with the stably high and moderate EC patterns (partly supporting Hypothesis 2). In the increasing EC pattern, the starting level of exhaustion was somewhat close to the more unfavourable EC patterns (low and decreasing), but unlike in the low and decreasing patterns, exhaustion remained almost stable over time. Thus, we did not find support for Hypothesis 5. Cynicism increased significantly in the decreasing EC pattern compared with the other patterns, supporting Hypothesis 4. For work engagement, the mean levels were significantly higher in the stable high (supporting Hypothesis 3) and moderate patterns compared with others. Finally, in the low and decreasing EC patterns the levels of vigour and dedication decreased significantly compared to other EC patterns.

## Discussion

This study investigated what types of longitudinal pattern can be found from managers' evaluations of the ethical culture of their organization over a two-year follow-up period and whether managers exhibiting different latent EC patterns differed from each other in their occupational well-being. In line with the organizational culture theory (Schein, 1990) and our expectations, ethical virtues as culture dimensions turned out to be relatively stable over time, as the majority of the managers exhibit stable patterns of ethical culture. However, we also found two atypical patterns that showed significant changes in the perceptions of ethical culture over time. The best fitting model included five latent long-term patterns of ethical culture: moderate, high, increasing, decreasing, and low. This five-pattern solution fitted better to the data than a one-pattern model, supporting the heterogeneity rather than homogeneity of the sample regarding the perceptions of ethical organizational culture. Significant differences in the managers' experiences of burnout and work engagement were found between managers belonging to the different patterns. Next, these patterns and their well-being associations are discussed in more detail.

*Moderate* ethical culture was the largest pattern, including 43% of the managers with evaluations about the strength of ethical culture (for all of the eight ethical virtues) remaining at a moderately high level. Managers exhibiting this pattern showed no marked change in their well-being over time, but they differed favourably from the managers in the stable, low EC pattern: managers in the moderate pattern reported higher work engagement and lower burnout.

The second largest group was the *high* pattern, which included 23% of the managers. In this pattern all eight ethical culture dimensions remained at a permanently high level at both study points. Managers belonging to this pattern had the most favourable psychological outcomes: lowest level of burnout and highest level of work engagement. Thus, we found that when ethical values are deeply and stably embedded in the organizational culture, it represents a supportive and beneficial work environment. This was associated with enduringly high levels of well-being over time in our

study, in line with the psychological stress theory (Cooper et al., 2001; Kahn & Byosiere, 1992; Lazarus & Folkman, 1984) and previous cross-sectional study results (Huhtala et al., 2011).

The third pattern, *increasing* ethical culture (18%), had from moderate to low mean levels of ethical culture dimensions at Time 1, which increased over the two years. Against our expectations, managers in this group showed no significant change in their well-being over time. However, based on our findings increasing ethical culture can act as a buffer against more negative well-being outcomes. Managers in the increasing pattern had similar, relatively high levels of burnout and low levels of work engagement to those in the low and decreasing patterns of culture. However, over the two years, managers who had experienced an increase in their organization's ethical culture had not experienced the decline in their well-being suffered by managers exhibiting low and decreasing EC patterns. Thus, although increasing evaluations of ethical virtues were not associated with improved well-being, this can act as a protective factor from burnout (and for maintaining engagement) compared with a permanently low or decreasing ethical culture.

Fourth, 11% of the managers exhibited the *decreasing* pattern. Managers in this group reported increasing feelings of cynicism (but not exhaustion) compared with other patterns, and a decreasing experience of work engagement. Managers' increased feelings of cynicism was a somewhat surprising find, as previous findings from burnout intervention studies (e.g., van Dierendonck, Schaufeli, & Buunk, 1998) have shown that exhaustion is more susceptible to various interventions, whereas cynicism has turned out to be more difficult to change. Even though the starting level of the ethical culture strength was evaluated as moderate in the decreasing pattern, experiences of decreasing culture strength were associated with a rise in cynical attitudes towards work over the two-year follow-up period. Therefore changes towards an unethical culture may represent a special risk for cynicism.

Finally, a minority of the managers (5%) were in the group with permanently *low* evaluation of ethical culture. In this pattern most of the virtues received the lowest mean ratings at both time points compared with the other patterns, only clarity and feasibility reaching more moderate levels.

This group was characterized by the highest mean levels of burnout when compared with other patterns, but changes in these dimensions did not differ significantly from other patterns.

Furthermore, managers in this pattern experienced the lowest levels of work engagement, and vigour also decreased over time. To summarize, when managers felt that their organization's ethical culture remained low (representing a chronic work place stressor), their overall levels of well-being were most unfavourable compared with other EC patterns, but managers did not show significant impairment in all dimensions of well-being over time. Thus, the experience of decrease in what was once an ethical culture can be even more detrimental to occupational well-being than working in an organization with a stably lower ethical culture.

Looking at the ethical virtues in each individual pattern, the eight dimensions of ethical culture showed parallel trajectories in all EC patterns. For example, in the increasing pattern all virtues had higher ratings at Time 2 than at Time 1, with no exceptions for individual virtues. Thus, for example, no patterns were found where some of the dimensions would have decreased whereas others became stronger. This finding is in line with the general conception of the CEV model (Kaptein, 2008), where the virtues are seen as individual dimensions, but correlating with each other and together comprising the overall level of ethical culture. When the mean level of ethical culture decreases or increases all individual virtues show similar trends of change.

However, in each pattern certain differences were found between the mean levels of the individual dimensions. The virtue of supportability had the lowest ratings in all patterns except in the moderate pattern, where it received the second lowest mean scores. Based on this finding, Finnish organizations should invest more in creating an atmosphere of mutual trust and commitment that would encourage employees and managers to identify with organizational values. The low EC pattern was the only one where the mean level of congruency of senior management received equally low mean scores to supportability. This can be interpreted to indicate that if the overall ethical culture is at a low level, exemplary ethical behaviour by senior management becomes particularly important. Because managers (especially high in the organizational hierarchy)



can influence and change the organizational culture (Schein, 2004; Tsui, Zhang, Wang, Xin, & Wu, 2006; Yukl, 2010), in the low pattern the behaviour of senior management could even be seen as the cause of the unethical culture, which may explain the critical evaluations concerning the congruency of senior management.

In all five patterns, clarity had the highest mean ratings compared with other virtues. Our findings are in line with previous research (Huhtala et al., 2011; Kaptein, 2009, 2010, 2011a) where clarity yielded the highest mean scores of the eight dimensions. It is possible that clarity, including concrete and comprehensible expectations and norms for ethical behaviour, is the virtue that can be most easily embedded in the organizational culture. Setting clear standards for ethical behaviour can require less effort and organizational resources than implementing other virtues, such as providing rewards for or actual resources to ethical behaviour, which require more investment from the organization. Clarity can also be the virtue first augmented by organizations when they want to improve their ethics, because it is the basis for the other virtues. For example, implementing a code of ethics can be seen as the cornerstone (Murphy, 1988) of the ethical culture of organizations.

The final finding that warrants closer examination is the longitudinal validity of the CEV scale. To the best of our knowledge, this is the first study to investigate the time invariance of this measure. Our results show that the factor structure of the eight dimensions of the CEV scale remained invariant across the two time points. This is an important finding because it means that changes in ethical culture evaluation are not due to instability of the measure. Thus, the use of the CEV scale can also be recommended in future longitudinal studies.

### **Limitations and future directions**

There are, of course, some limitations that should be considered when drawing conclusions from this study. First, our participants only represented managers from only Finnish organizations, thus limiting the extent to which our results can be generalized. Possibly because of this challenging target population (i.e., managers), the response rate at T1 was quite low (34%), although following the recommendations for organizational and managerial research as suggested by (Baruch &

Holtom, 2008), the response rate can be seen as acceptable. Baruch and Holtom (2008) point out that seeking responses to organization-level phenomena from top executives is likely to result in a lower response rate, and based on their extensive review they suggest a benchmark of approximately 35–40%. However, at T2 our response rate reached a high level (66%).

Second, our data was based on self-reports. Thus, we acquired information only about the managers' personal views on the strength (and change or stability) of their organizations' culture. Even though we argue, based on the transactional stress theory, that these individual perceptions are important for subsequent well-being, we cannot make concrete conclusions about the stability or possible changes in ethical culture as a collective, shared phenomenon.

Third, following on from the previous limitation, self-reports also lead to the possibility that managers' personal well-being may affect their evaluation of the quality of the ethical organizational culture (i.e., the magnitude of the effects can be affected by bias due to common method variance or consistent answers to the questionnaires). Thus, although we used a longitudinal study design, we cannot infer causality based on our results. However, several remedial measures were taken to reduce the risk of common method bias: we used measures from established questionnaires which have good psychometric properties: the items in CEV, burnout, and engagement had different scale anchors; and the scales in the questionnaire sheets were printed on different pages (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To conclude, the results revealed concurrent differences and changes between the patterns of ethical culture and well-being outcomes. This gives further support to previous cross-sectional findings about the importance of ethical practices in supporting well-being in the workplace. Nevertheless, future research could shed more light on the effects of ethical culture by using more objectively measured variables, such as company records of absenteeism rates or supervisor ratings of performance.

Future studies could utilize longitudinal organizational samples to acquire wider information about how employees and managers working in the same organization or in the same work unit evaluate the strength and changes in the ethical culture dimensions. Future studies could also shed

more light on the antecedents of change: for example, whether some organizational factors affect the changed levels of ethical culture. This could be done by investigating whether different interventions (e.g., implementing an ethics code or providing ethical training) can contribute to strengthening the ethical culture. Also, cross-lagged panel designs could be conducted to gain more insight about longitudinal (causal or reciprocal) effects between ethical culture and different outcomes, such as ethical leadership or ethical behaviour.

### **Conclusions and practical implications**

Being the first study to investigate ethical culture with a longitudinal design, these findings make an important contribution to the field of organizational ethics. We found that the CEV scale is time invariant and can be used in longitudinal studies: it can tap the possible changes of the strength of ethical virtues. Furthermore, we used a person-oriented approach which gave a more detailed picture of the investigated phenomena. We found that two atypical patterns, namely ethical cultures that were perceived as permanently low and with decreasing ethical virtues pose the greatest risk for longitudinal well-being. Even though a minority of the managers exhibited these patterns, the findings provide important evidence about the negative consequences for an unethical organizational culture. Not only does this pose risk in regard to organizational image and success (see, e.g., Sims & Brinkmann, 2003), but it can have detrimental effects on managers' well-being over time. This important finding might have gone undetected using a variable-oriented study, where the use of average estimates could have levelled out these atypical groups and their well-being effects.

The aforementioned finding leads to practical implications, because it shows that even if an organization had previously achieved a strong ethical culture, if managers feel that the strength of ethical culture has decreased, this is associated with increasing levels of burnout and cynicism. In addition to impaired well-being, cynicism can also be a risk for lowered organizational commitment (Martinussen, Richardsen, & Burke, 2007) or job performance (Bakker, van Emmerik, & van Riet, 2008), for example. Based on our results, if managers begin to feel more cynical and less committed

in their work, this can also be a signal to the organization (and its leaders) that the level of ethical culture has decreased. A lowered level of ethical culture can lead to other negative outcomes, such as unethical behaviour (Kaptein, 2011). Therefore organizations should react to the reduced well-being of their personnel and respond by initiating actions to strengthen the level of ethical culture from this perspective as well.

On the positive side, organizations can support long-term well-being by striving towards a strong ethical culture. When the eight ethical virtues become better incorporated into the organization's culture, this perceived increase in ethics can first buffer from more negative changes in well-being. Finally, when the culture reaches a stable, high level of ethics, this is related to low levels of burnout and increased feelings of vigour and dedication at work. The normative CEV model provides useful guidelines that can be used to plan different interventions which may help to establish the virtues as a cornerstone of the overall organizational culture.

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Table 1  
*Descriptive results for study variables (N = 368)*

Variable			Mean ( <i>SD</i> )		Cronbach's $\alpha$			
	No. of items	(range)	T1	T2	T1	T2		
Ethical culture dimensions:								
Clarity	10	(1–6)	4.71	(.80)	4.80	(.86)	.93	.91
Congruency of supervisors	6	(1–6)	4.52	(1.03)	4.61	(.76)	.93	.93
Congruency of senior management	4	(1–6)	4.39	(1.04)	4.51	(.91)	.91	.91
Feasibility	6	(1–6)	4.48	(.90)	4.53	(1.00)	.80	.83
Supportability	6	(1–6)	3.94	(.92)	3.99	(1.05)	.90	.91
Transparency	7	(1–6)	4.03	(.79)	4.09	(1.02)	.87	.87
Discussability	10	(1–6)	4.60	(.81)	4.61	(.70)	.94	.94
Sanctionability	9	(1–6)	4.29	(.81)	4.24	(.86)	.89	.89
Psychological outcomes								
Exhaustion	5	(1–6)	3.24	(.71)	3.21	(.92)	.74	.79
Cynicism	5	(1–6)	2.41	(.98)	2.53	(.89)	.76	.81
Vigour	3	(1–7)	5.79	(.90)	5.66	(1.11)	.88	.89
Dedication	3	(1–7)	5.96	(.95)	5.80	(1.15)	.87	.90

Table 2  
*Correlations between study variables (n = 368–362)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1. Clar T1																								
2. Cosu T1	.52																							
3. Cosm T1	.52	.61																						
4. Feas T1	.31	.37	.44																					
5. Supp T1	.52	.43	.57	.41																				
6. Tran T1	.46	.46	.45	.34	.51																			
7. Disc T1	.63	.60	.65	.48	.64	.62																		
8. Sanc T1	.59	.61	.72	.48	.63	.62	.81																	
9. Exh T1	-.16	-.10	-.08	-.41	-.19	-.14	-.16	-.09																
10. Cyn T1	-.34	-.25	-.32	-.43	-.32	-.28	-.35	-.31	.49															
11. Vig T1	.29	.27	.32	.28	.26	.23	.30	.31	-.30	-.55														
12. Ded T1	.27	.25	.31	.22	.27	.21	.25	.30	-.20	-.53	.78													
13. Clar T2	.57	.35	.31	.23	.36	.35	.46	.45	-.13	-.20	.21	.13												
14. Cosu T2	.41	.53	.41	.30	.32	.30	.46	.46	-.12	-.24	.27	.19	.47											
15. Cosm T2	.44	.41	.53	.35	.41	.28	.50	.52	-.06	-.16	.20	.13	.49	.68										
16. Feas T2	.34	.37	.35	.58	.30	.31	.40	.38	-.32	-.35	.27	.22	.45	.49	.48									
17. Supp T2	.47	.39	.44	.36	.63	.39	.52	.54	-.20	-.26	.28	.23	.51	.57	.67	.49								
18. Tran T2	.42	.32	.36	.31	.45	.51	.48	.48	-.09	-.21	.24	.18	.53	.51	.54	.41	.67							
19. Disc T2	.46	.39	.41	.32	.42	.40	.64	.54	-.12	-.23	.22	.14	.61	.63	.69	.49	.66	.63						
20. Sanc T2	.48	.42	.48	.34	.50	.43	.59	.68	-.07	-.20	.25	.20	.61	.62	.71	.46	.73	.68	.79					
21. Exh T2	-.19	-.14	-.12	-.34	-.15	-.14	-.15	-.12	.65	.35	-.19	-.11	-.20	-.21	-.19	-.53	-.29	-.20	-.21	-.20				
22. Cyn T2	-.26	-.23	-.28	-.37	-.23	-.25	-.27	-.24	.37	.58	-.40	-.37	-.35	-.39	-.31	-.56	-.41	-.32	-.40	-.37	-.51			
23. Vig T2	.25	.15	.24	.27	.19	.17	.23	.22	-.23	-.40	.67	.58	.35	.36	.28	.37	.35	.29	.36	.34	-.26	-.65		
24. Ded T2	.25	.15	.22	.20	.22	.15	.21	.24	-.12	-.36	.54	.59	.31	.37	.31	.32	.39	.30	.36	.38	-.18	-.62	.81	

*Note.* Clar = clarity; Cosu = congruency of supervisors; Cosm = congruency of senior management; Feas = feasibility; Supp = supportability; Tran = transparency; Disc = discussability; Sanc = sanctionability; Exh = exhaustion; Cyn = Cynicism; Vig = vigour; Ded = dedication.

Correlation values above  $|.18|$  are significant at the  $p < .001$  level, values between  $|.18-.14|$  are significant at the  $p < .01$  level, and values between  $|.14-.11|$  are significant at the  $p < .05$  level.

Table 3

*Tests of longitudinal measurement equivalence for ethical culture, burnout, and work engagement dimensions*

Model	<i>df</i>	$\chi^2$	CFI	RMSEA	$\Delta df$	$\Delta \chi^2$
<b>Clarity</b>						
1. Configural invariance	161	420.84	.91	.066	-	-
2. Metric invariance	170	428.22	.92	.064	9	7.18 <i>ns</i>
3. Scalar invariance <sup>a</sup>	177	441.86	.91	.064	7	11.86 <i>ns</i>
4. Invariant uniquenesses	187	443.99	.92	.061	10	7.47 <i>ns</i>
5. Invariant factor variances	188	452.42	.91	.062	1	9.33**
6. Invariant factor means	188	449.18	.91	.061	1	6.18*
<b>Congruency of supervisors</b>						
1. Configural invariance	49	227.76	.94	.100	-	-
2. Metric invariance	54	232.41	.94	.095	5	3.65 <i>ns</i>
3. Scalar invariance	57	239.74	.94	.093	3	6.07 <i>ns</i>
4. Invariant uniquenesses	62	247.16	.94	.090	5	8.63 <i>ns</i>
5. Invariant factor variances	63	246.66	.94	.089	1	0.50 <i>ns</i>
6. Invariant factor means	63	248.26	.94	.090	1	0.52 <i>ns</i>
<b>Congruency of senior management</b>						
1. Configural invariance	15	28.41	.99	.049	-	-
2. Metric invariance	18	33.81	.99	.049	3	5.41 <i>ns</i>
3. Scalar invariance <sup>a</sup>	20	36.35	.99	.047	2	2.29 <i>ns</i>
4. Invariant uniquenesses	24	37.30	.99	.039	4	1.92 <i>ns</i>
5. Invariant factor variances	25	39.21	.99	.039	1	1.99 <i>ns</i>
6. Invariant factor means	25	39.77	.99	.040	1	2.72 <i>ns</i>
<b>Feasibility</b>						
1. Configural invariance	43	174.35	.91	.091	-	-
2. Metric invariance	48	177.66	.91	.086	5	2.80 <i>ns</i>
3. Scalar invariance <sup>a</sup>	52	183.35	.91	.083	4	4.12 <i>ns</i>
4. Invariant uniquenesses	58	199.34	.90	.081	6	15.81*
5. Invariant factor variances	59	200.09	.90	.081	1	0.14 <i>ns</i>
6. Invariant factor means	59	202.12	.90	.081	1	2.63 <i>ns</i>
<b>Supportability</b>						
1. Configural invariance	47	92.18	.98	.051	-	-
2. Metric invariance	52	97.84	.98	.049	5	4.97 <i>ns</i>
3. Scalar invariance	57	106.15	.98	.048	5	8.12 <i>ns</i>
4. Invariant uniquenesses	63	109.78	.98	.045	6	3.23 <i>ns</i>
5. Invariant factor variances	64	110.95	.98	.045	1	0.97 <i>ns</i>
6. Invariant factor means	64	110.79	.98	.045	1	0.87 <i>ns</i>
<b>Transparency</b>						
1. Configural invariance	66	260.98	.90	.090	-	-
2. Metric invariance	71	267.46	.90	.087	5	6.13 <i>ns</i>
3. Scalar invariance	77	274.51	.90	.083	6	4.49 <i>ns</i>
4. Invariant uniquenesses	84	278.72	.90	.079	7	4.94 <i>ns</i>
5. Invariant factor variances	85	280.2	.90	.079	1	1.04 <i>ns</i>
6. Invariant factor means	85	282.73	.90	.080	1	4.15*
<b>Discussability</b>						
1. Configural invariance	159	375.16	.95	.061	-	-
2. Metric invariance	168	383.75	.95	.059	9	9.05 <i>ns</i>
3. Scalar invariance	177	399.91	.95	.058	9	14.98 <i>ns</i>
4. Invariant uniquenesses	187	397.79	.95	.055	10	3.26 <i>ns</i>
5. Invariant factor variances	188	398.57	.95	.055	1	0.46 <i>ns</i>
6. Invariant factor means	188	398.38	.95	.055	1	0.22 <i>ns</i>

(continued)



Table 3. Tests of longitudinal measurement equivalence for ethical culture, burnout, and work engagement dimensions (continued)

Model	<i>df</i>	$\chi^2$	CFI	RMSEA	$\Delta df^1$	$\Delta \chi^2$
<b>Sanctionability</b>						
1. Configural invariance	125	248.45	.95	.052	-	-
2. Metric invariance	133	255.47	.95	.050	8	6.89 <i>ns</i>
3. Scalar invariance <sup>a</sup>	140	268.72	.95	.050	7	13.21 <i>ns</i>
4. Invariant uniquenesses	149	277.52	.95	.048	9	9.68 <i>ns</i>
5. Invariant factor variances	150	278.09	.95	.048	1	0.13 <i>ns</i>
6. Invariant factor means	150	280.91	.95	.049	1	3.76 <i>ns</i>
<b>Exhaustion</b>						
1. Configural invariance	29	63.30	.97	.057	-	-
2. Metric invariance	33	65.24	.97	.052	4	2.43 <i>ns</i>
3. Scalar invariance	37	74.17	.97	.052	4	8.98 <i>ns</i>
4. Invariant uniquenesses	42	80.29	.97	.050	5	6.07 <i>ns</i>
5. Invariant factor variances	43	84.32	.96	.051	1	4.52*
6. Invariant factor means	43	80.97	.97	.049	1	0.64 <i>ns</i>
<b>Cynicism</b>						
1. Configural invariance	29	83.18	.95	.071	-	-
2. Metric invariance	33	86.30	.95	.066	4	4.06 <i>ns</i>
3. Scalar invariance <sup>a</sup>	36	90.45	.95	.064	3	3.48 <i>ns</i>
4. Invariant uniquenesses	41	94.32	.95	.059	5	3.45 <i>ns</i>
5. Invariant factor variances	42	108.62	.94	.066	1	15.64***
6. Invariant factor means	42	108.63	.94	.066	1	18.20***
<b>Vigor</b>						
1. Configural invariance <sup>2</sup>	5	4.78	1.00	.000	-	-
2. Metric invariance	7	5.98	1.00	.000	2	1.17 <i>ns</i>
3. Scalar invariance	9	7.85	1.00	.000	2	1.91 <i>ns</i>
4. Invariant uniquenesses	12	9.91	1.00	.000	3	2.14 <i>ns</i>
5. Invariant factor variances	13	16.64	.99	.028	1	5.50*
6. Invariant factor means	13	15.61	.99	.023	1	6.90**
<b>Dedication</b>						
1. Configural invariance <sup>2</sup>	5	4.29	1.00	.000	-	-
2. Metric invariance	7	5.73	1.00	.000	2	1.41 <i>ns</i>
3. Scalar invariance	9	8.04	1.00	.000	2	2.32 <i>ns</i>
4. Invariant uniquenesses	12	12.23	1.00	.007	3	4.01 <i>ns</i>
5. Invariant factor variances	13	15.32	.99	.022	1	2.75 <i>ns</i>
6. Invariant factor means	13	19.75	.99	.038	1	9.53**

Note. CFI = Comparative Fit Index; RMSEA = Root Mean Squared Error of Approximation

<sup>1</sup>Comparison between two nested models (Model 2 vs. Model 1; Model 3 vs. Model 2; Model 4 vs. Model 3; Model 5 vs. Model 4; Model 6 vs. Model 4) using the Satorra-Bentler scaled difference chi-square test (Satorra & Bentler, 1999). <sup>2</sup>Saturated model.

<sup>a</sup>Test of partial invariance, one item intercept across time is freely estimated.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 4

*Fit indices for the latent profile analysis of ethical organizational culture with different numbers of latent groups (long-term patterns)*

No. of groups	Log likelihood	Entropy	AIC	BIC	VLMR	LMR	BLRT
1	-7486.153	-	15036.306	15161.365	-	-	-
2	-6469.371	.95	13036.741	13228.237	.000	.000	.000
3	-6170.972	.90	12473.943	12731.877	.768	.769	.000
4	-5973.456	.93	12112.913	12437.284	.230	.230	.000
5	-5823.518	.93	11847.037	12237.845	.617	.620	.000
6	-5742.126	.92	11718.253	12175.499	.731	.731	.000
7	-5666.812	.92	11601.625	12125.308	.794	.794	.000
8	-5626.339	.93	11554.678	12144.798	.622	.624	.000

*Note.* AIC= Akaike's Information Criterion; BIC=Bayesian Information Criterion; VLMR=Vuong-Lo-Mendell-Rubin test; LMR=Lo-Mendell-Rubin test; BLRT=Bootstrap Likelihood Ratio Test.

Table 5

*Differences in well-being outcomes between the five patterns of ethical culture (equality tests of means across classes using the 3-step procedure)*

	(1) Moderate	(2) High	(3) Increasing	(4) Decreasing	(5) Low	Mean differences (pairwise comparisons <sup>1</sup> )
	<i>M</i> (S.E.)	<i>M</i> (S.E.)	<i>M</i> (S.E.)	<i>M</i> (S.E.)	<i>M</i> (S.E.)	
<b>Exhaustion</b>						15.53**
level	3.21 (.07)	2.93 (.09)	3.29 (.08)	3.57 (.17)	3.75 (.16)	(5 > 1, 2; 4 > 1, 2, 3)
change	-.10 (.06)	-.08 (.09)	-.02 (.10)	.24 (.14)	.13 (.17)	6.14 <i>ns</i>
<b>Cynicism</b>						21.61***
level	2.44 (.06)	2.00 (.06)	2.82 (.09)	2.73 (.12)	3.23 (.16)	(5 > 1, 2, 3, 4; 2 < 3, 4; 3 > 1)
change	.04 (.06)	-.06 (.07)	.05 (.09)	.74 (.19)	.42 (.19)	41.48***
						(4 > 1, 2, 3)
<b>Vigor</b>						23.45***
level	5.78 (.08)	6.29 (.06)	5.28 (.14)	5.47 (.16)	4.88 (.23)	(5 < 1, 2, 4; 2 > 4, 3; 3 < 1)
change	-.09 (.07)	-.02 (.07)	.00 (.14)	-.66 (.18)	-.38 (.28)	18.89**
						(4 > 1, 2, 3)
<b>Dedication</b>						23.16***
level	5.93 (.08)	6.49 (.05)	5.37 (.16)	5.48 (.18)	5.35 (.23)	(3, 4, 5 < 1, 2)
change	-.03 (.08)	-.06 (.07)	.02 (.16)	-.89 (.18)	-.80 (.32)	29.13***
						(4 > 1, 2, 3; 5 > 1, 3)

Note. <sup>1</sup>The Wald chi-square difference test with 4 degrees of freedom for the overall test.

\*\* $p < .01$ ; \*\*\* $p < .001$ .