

This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.

Author(s): Mäkikangas, Anne; Mauno, Saija; Selenko, Eva; Kinnunen, Ulla

Title: Toward an understanding of a healthy organizational change process : A three-wave longitudinal study among university employees

Year: 2019

Version: Accepted version (Final draft)

Copyright: © 2019 American Psychological Association

Rights: In Copyright

Rights url: <http://rightsstatements.org/page/InC/1.0/?language=en>

Please cite the original version:

Mäkikangas, A., Mauno, S., Selenko, E., & Kinnunen, U. (2019). Toward an understanding of a healthy organizational change process : A three-wave longitudinal study among university employees. *International Journal of Stress Management*, 26(2), 204-212.
<https://doi.org/10.1037/str0000059>

Towards an Understanding of a Healthy Organizational Change Process:
A Three-Wave Longitudinal Study among University Employees

Anne Mäkikangas, Saija Mauno, Eva Selenko, & Ulla Kinnunen

**Manuscript is accepted and will be published in the special issue of International
Journal of Stress Management in 2019.**

Anne Mäkikangas, PhD, Adjunct Professor of Work Psychology

Department of Psychology, P.O. Box 35, 40014 University of Jyväskylä, Finland.

Saija Mauno, PhD, Professor, University of Jyväskylä & University of Tampere, Finland

Eva Selenko, PhD, School of Business and Economics, Loughborough University, United
Kingdom

Ulla Kinnunen, PhD, Professor, School of Social Sciences and Humanities, University of
Tampere, Finland

Acknowledgements: This study was supported by a grant from the Academy of Finland to
Anne Mäkikangas (Grant No. 258882). The results of the article were presented in the IWP
conference held in Sheffield, United Kingdom, 21-23 June 2016.

Abstract

This study aimed to improve our understanding of what constitutes a healthy organizational change process among university employees. Positive attitudes and proactive participation towards organizational change were presumed to affect and be affected by personality resources measured via core self-evaluations and work-related motivational well-being (vigor). The study utilized three-wave longitudinal data collected in two large Finnish universities during their recent process of organizational change ($n = 926$). Structural equation modeling was employed to establish the direction of the relationships between the variables. The results showed that high levels of both core self-evaluations and vigor were associated with more favorable perceptions of organizational change: employees high in core self-evaluations and vigor were more satisfied with the changes and the information provided about the changes, and were also more likely to be actively involved in the change process. It was further found that positive attitudes to change mediated the relation between vigor and core self-evaluations: vigorous employees perceived the organizational changes more positively, which in turn strengthened their internal self-evaluations. Overall, these longitudinal results show that, among university employees, core self-evaluations and vigor are both important resource factors influencing perceptions and reactions to organizational changes.

Keywords: organizational change; core self-evaluations; vigor; university employees

Towards an understanding of a healthy organizational change process:

A three-wave longitudinal study among university employees

Organizational changes, such as a shift away from public state ownership and management structures towards corporate funding, administrative structure remodeling, and demands to work in an entrepreneurial way, are common in universities today (see e.g., Foss & Gibson, 2015; Fumasoli & Stensaker, 2013; Välimaa, 1994). Such changes can have significant unfavorable health consequences for an individual employee (e.g. increased levels of depression and anxiety), as demonstrated by recent reviews (Bamberger et al., 2012; De Jong et al., 2016). In the academic context, constant changes have had a negative effect on employee well-being (Kinman & Jones, 2008; Tytherleigh, Webb, Cooper, & Ricketts, 2005), especially through increased fatigue (Kinman & Wray, in press). Although academic employees typically report relatively high levels of work engagement (Rothmann & Jordaan, 2006) and find their jobs intrinsically motivating and enjoyable (Doyle & Hind, 1998) it is, nevertheless, important to identify the factors that help such employees to cope in turbulent times. Therefore, we aimed at contributing to understanding academic stress by highlighting and investigating the positive processes that may be available to support employees who are facing organizational change.

Based on positive psychology (Seligman & Csikszentmihalyi, 2000), this study sought to enhance knowledge of the factors that can help university employees to cope with, or even promote, their well-being during an organizational change, a known stress factor (Bamberger et al., 2012; De Jong et al., 2016). Specifically, drawing on the personal resources adaptation model (Van den Heuvel, Demerouti, Schaufeli, & Bakker, 2010) and the career success model (Judge & Kammeyer-Mueller, 2011), this study investigated what makes for a healthy organizational change process and what role personality resources have in protecting well-being during real-world period of change. The study utilizes three-wave longitudinal data gathered among staff employed in two large Finnish universities. At the time of the

research, the Finnish university system was undergoing a major reform process on the university organizational level (Finnish Ministry of Education and Culture, n.d.), and thus offered a unique opportunity for investigating the linkages between personality, well-being and employees' attitudes and behavior during a major organizational upheaval.

Healthy organizational change process

To date, empirical research on the prerequisites of a healthy organizational change process is scarce (for a review, see De Jong et al., 2016). It has, however, been depicted theoretically in two models – the personal resources adaptation model (Van den Heuvel et al., 2010) and the career success model (Judge & Kammeyer-Mueller, 2011) – which are also applied in the present study. Both models propose that personality resources can contribute to a positive employee attitude towards organizational change, proactive behavior and the use of adaptive strategies in the change situation. These models assume that the way a person appraises his or her environment is partly determined by how a person thinks about him-/herself. Accordingly, a person who views him/herself in a positive light is more prone to respond positively to work-related events, including changes in the organizational environment and its new requirements (Judge & Kammeyer-Mueller, 2011; Van den Heuvel et al., 2010). A more positive appraisal of the work environment and having faith in one's own capabilities also contribute to more positive attitudes towards organizational changes, and even to self-initiated efforts that can help to shape the change process. This, in turn, is assumed to lead to better performance and increased satisfaction (Judge & Kammeyer-Mueller, 2011), and to improved work motivation and well-being, for example work engagement (Van den Heuvel et al., 2010).

Although the personal resources adaptation model (Van den Heuvel et al., 2010) and the career success model (Judge & Kammeyer-Mueller, 2011) exhibit characteristics of their own, they both aim at understanding the positive aspects of the organizational change process by positing that the influence of personality resources on organizational outcomes is mediated

by the attitudes employees have towards the change. This central mechanism is also studied here. As noted above, there is an extensive literature on the negative impact of organizational change (for reviews, see Bamberger et al., 2012; De Jong et al., 2016), leading organizations in transformation to seek to avert these negative consequences, and to keep their employees as motivated and healthy as possible. Such a positive perspective on organizational change is also highly relevant in the university context. In this study, personality resources, which are generally defined as malleable positive beliefs about oneself and the world (Van den Heuvel et al., 2010), are measured via core self-evaluations (henceforth CSE), in line with the career success model (Judge & Kammeyer-Mueller, 2011).

The concept of CSE subsumes four personality trait-like characteristics: self-esteem, generalized self-efficacy, (low) neuroticism, and (internal) locus of control (Judge, Erez, Bono, & Thoresen, 2003; Judge, Locke, & Durham, 1997). A person with a high level of CSE is characterized as self-confident, well-adjusted, efficacious and capable of controlling one's own volitional actions (Judge et al., 2003). Employees with high CSE generally appraise situations in a positive way, as indicated by the finding of a negative association with occupational stressors (for a review, see Chang, Ferris, Johnson, Rosen, & Tan, 2012). At work, they concentrate on the positive aspects of the task and are generally more satisfied than others (Chang et al., 2012). Moreover, the positivity of high-CSE individuals extends beyond perceptions to include motivation and behavior. High-CSE individuals are persistent and goal-committed, display a strong learning and approach motivation, show proactive behavior (Chang et al., 2012), and use active coping strategies in challenging situations (Kammeyer-Mueller, Judge, & Scott, 2009). Also single CSE characteristics, e.g., low neuroticism, high self-efficacy and locus of control, have been found to be associated with more favorable reactions to organizational changes (for a review, see Oreg, Vakola, & Armenakis, 2011).

Favorable reactions towards organizational change can take many forms. In this study, the focus is on positive attitudes to the change (in general and to specific aspects of it) and proactive behavior during the organizational change process. The perception of being able to actively participate in the change process and satisfaction with the communication of the change process have been found to be critical elements determining the consequences of organizational change for the individual (for a review, see Oreg et al., 2011). Therefore, we measured general satisfaction towards the organizational change process as well as satisfaction with how the change process was communicated. We also measured proactive behavior by asking employees how actively they themselves participated in and contributed to the change process. Based on the crucial role of personality resources both in the personal resources adaptation model (Van den Heuvel et al., 2010) and in the career success model (Judge & Kammeyer-Mueller, 2011) as well as empirical evidence on the influence of CSE (Chang et al., 2012; Oreg et al., 2011), we propose:

Hypothesis 1: High-CSE employees show positive attitudes and act proactively during organizational change.

As noted above, both models (Judge & Kammeyer-Mueller, 2011; Van den Heuvel et al., 2010) propose that positive attitudes and proactive behavior per se explain why individuals with high personality resources, like CSE, maintain their well-being and motivation during the organizational change process. That is, positive change attitudes and proactive behavior are assumed to mediate the link between CSE and motivation and well-being. In this study, work motivation is investigated via work engagement, which represents a positive, fulfilling and consistent state of mind characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Here, the focus is on vigor, as it represents a motivational component of work engagement and is considered important in the change process as it boosts job performance (Reijseger, Schaufeli, Peeters, & Taris, 2012). Previously, high CSE has been associated with several positive job-related

outcomes, such as job satisfaction and increased job performance (for a meta-analysis, see Judge & Bono, 2001), and with low levels of burnout (Best, Stapleton, & Downey, 2005). There is also evidence that high-CSE employees are more work-engaged than others (Rich, Lepine, & Crawford, 2010).

Participation in the organizational change process has also been linked with several positive outcomes, such as positive emotions, greater involvement in implementing the changes and less change-related stress (Oreg et al., 2011). In a similar vein, positively perceived communication about the change has been linked with decreased levels of anxiety and turnover intentions (Oreg et al., 2011). So far, the hypothesized links between attitudes to change, proactive behavior during organizational change and work engagement have not been investigated. Consequently, based on the postulations of the theoretical models (Judge & Kammeyer-Mueller, 2011; Van den Heuvel et al., 2010), we propose:

Hypothesis 2: Positive attitudes and proactive behavior during organizational change mediate the positive relation between CSE and vigor.

However, the direction of the relationship between CSE, positive attitudes and proactive behaviors during the change and vigor is theoretically not clear cut. Therefore, we also examine the reverse direction. That is, we reason that vigor may promote positive attitudes and proactive behavior in the change process which in turn may maintain high CSE or even increase its level. More specifically, we argue that engagement and energy are not only outcomes of the organizational change process, but they can also be seen as crucial elements in how employees adapt to change and how willing they are to contribute to the change process (see Marks, 2006). Since high vigor manifests itself as a motivation to invest effort in work, and resiliency the ability to withstand difficulties and persist despite obstacles (Schaufeli et al., 2002), it is reasonable to assume that high vigor may help to maintain positive attitudes and proactive behavior in the change process. Previous studies have demonstrated that work engagement predicts personal initiative (i.e., proactive behavior)

(Hakanen, Perhoniemi, & Toppinen-Tanner, 2008) as well as organizational citizenship behavior (Simbula & Guglielmi, 2013). Therefore, our next hypothesis is:

Hypothesis 3: Vigor is positively associated with positive attitudes and proactive behavior towards organizational change.

According to the so-called outcome model of occupational well-being, the level of well-being influences personality characteristics (see Mäkikangas, Feldt, Kinnunen, & Mauno, 2013). Such a reciprocal relation between work engagement and personality resources is also noted in the personal resources adaptation model (Van den Heuvel et al., 2010). That is, a high level of vigor has the potential to boost, for example, belief in one's ability to complete tasks and reach goals (i.e., self-efficacy). Longitudinal studies have demonstrated that work engagement and personality resources are reciprocally related. Specifically, these reciprocal associations have been shown in the case of self-efficacy (Salanova, Llorens, & Schaufeli, 2011; Simbula, Guglielmi, & Schaufeli, 2011) as well as by using a broader personality resource measure consisting of self-efficacy, self-esteem and optimism (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

Two theories are relevant in explaining the possible longitudinal link between positive work-related well-being, attitudes towards organizational change and personality resources. Both the conservation of resources theory (Hobfoll, 1989) and the broaden-and-build theory of positive emotions (Fredrickson, 1998) propose that the experience of positive states (such as vigor and satisfaction) may initiate a gain cycle of resources that facilitates the accumulation of other resources, including personality resources. Furthermore, via proactive behavior, employees have the possibility to optimize their work environments and to increase the likelihood of adapting positively to a changing work environment, which in turn have the potential to breed confidence and efficacy beliefs, that is, increase the level of CSE.

Consequently, we investigate the links between vigor and CSE in the organizational change

context, and make the novel prediction that the positive impact of vigor on CSE is mediated by positive attitudes to change and proactive behavior. Hence:

Hypothesis 4: Positive attitudes and proactive behavior during organizational change mediate the positive relation between vigor and CSE.

Method

Participants and procedure

The data used in this study were collected in three waves (each in the autumn) from two Finnish universities; Time 1 (year 2008), Time 2 (2009) and Time 3 (2010). The data cover the period of intensive preparation for the impending organizational changes (T1, year 2008), the period when the changes were implemented (T2, year 2009) and the follow-up period, when the changes were actualized (T3, year 2010). Data were collected using an electronic questionnaire. Email invitations, including a unique password to access the questionnaire, were sent to each target employee's work e-mail address. At T1, 2,137 employees from the baseline sample ($N = 4,508$; response rate 47.4%) participated. One year later, questionnaires were sent only to those persons who participated at T1 and were still working in the same university ($N = 2,020$). At T2, 1,314 employees returned the completed questionnaire (response rate 65%). At T3, 926 participants responded, yielding a response rate of 70% relative to the T2 respondents and 43% relative to the T1 respondents.

The data set was collected in accordance with the principles of good scientific practice and the Finnish Personal Data Act (523/1999), which specifies the conditions under which personal information can be used. Relevant information on participation (e.g. voluntariness, right to withdraw from the study at any stage without any consequences, protection of privacy and confidentiality) was provided to all participants before and during the data collection. The authors were given permission to carry out the study by the rector and director of human resources of each university.

The present study is based on the responses of those who participated in all three phases of the study ($N = 926$). Of the sample, 66.6% were women, the average sample age was 43.8 years ($SD = 10.49$, range 22–65), and the majority had either a master's (42.6%) or licentiate/doctoral (33.7%) degree at T1. The majority (57%) held an academic position, while the other respondents were administrative and technical personnel (43%). Of the participants, 54% were from University A and 46% from University B. The response rates were 52%, 58% and 78% for University A, and 44%, 75% and 73% for University B. The universities did not differ from each other in the distribution of the occupational groups of interest (research/teaching/administrative staff), $\chi^2(2) = 2.32, p = .314$, or type of employment contract (permanent/temporary), $\chi^2(1) = 1.75, p = .186$.

Organizational change in the context of the present study

The study was conducted over a two-year period (2008–2010) during which the university system in Finland was undergoing major reforms following legislative changes. A new law, namely the Universities Act (558/2009), came into force at the beginning of 2010 (Finnish Ministry of Education and Culture, n.d.), but had been announced and planned during the preceding years. The new legislation increased the autonomy of the universities with concomitant effects on the employment relationships of the university personnel, as the ownership of the universities was changed: having been predominantly state-owned, they were now to be predominantly privately owned. Thus, employees no longer enjoyed their former status as civil servants, together with the associated benefits (e.g. protection from redundancy). In addition, owing to administrative changes, job autonomy (e.g. control over decision making) was also weakened.

Measures

CSE and vigor were included at each of the three measurement times, whereas organizational change attitudes and proactive behavior were measured at Time 2 and Time 3.

CSE was measured with a Finnish translation of the Core Self-Evaluations Scale (Judge et al., 2003; Mäkikangas, Kinnunen, Mauno, & Selenko, 2016). The English version was translated into Finnish by a bilingual certified translator. The scale consisted of 12 items (e.g., “I determine what will happen in my life”; “When I try, I generally succeed”; “Sometimes when I fail I feel worthless”) with a response scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The factor structure and factorial invariance over time of the measure has previously been tested using the present dataset (Mäkikangas et al., 2016).

Overall satisfaction with the organizational change was measured with eight items taken from the Pressure Management Indicator (William & Cooper, 1998), which has been translated and validated in the Finnish context (Piitulainen, Mauno, & Kinnunen, 2002). However, the items were further modified for the university context (e.g., “I am satisfied with how the changes in the university are being carried out”). The items were scored on a 5-point rating scale (1 = *strongly disagree*, 5 = *strongly agree*).

Satisfaction with the information provided on the organizational change was assessed with two items (Kalimo, Olkkonen, & Toppinen, 1993): “One is informed about the changes in good time” and “One is openly informed about the changes” (1 = *strongly disagree*, 5 = *strongly agree*).

Proactive behavior in terms of active participation in the organizational change was measured with four new items, specifically developed for the purpose of this study by the research team: “I am well-informed on the present situation of the university”; “I find out myself about the changes which are taking place in the university”; “I am interested in knowing about the changes which are taking place in the university”; and “I do not have time to follow changes which are taking place in the university (reverse coded)”. The items were scored on a 5-point rating scale (1 = *strongly disagree*, 5 = *strongly agree*). These items were generated to capture employee interest in and proactive behavior during an organizational change process. In the present instance, we were particularly interested in staff responses to

such change in a university work environment in which research and teaching are strongly emphasized (e.g., to what extent do employees still have the will and time to participate in briefings?).

Vigor at work was measured with the short form of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006) which has been shown to have good validity among Finnish employees (Seppälä et al., 2009). The vigor scale consisted of three items (e.g., “At my job, I feel bursting with energy”). The items were scored on a 7-point rating scale (1 = *never*, 7 = *always*).

Table 1 shows the means, standard deviations, and Cronbach’s alphas for all the study variables at each measurement time.

Attrition analysis

At T1, the sample was representative of the occupational distribution of university personnel in the two universities (e.g., teachers, researchers, administrative and technical staff). However, women (66% vs. 61%, $p < .001$) and temporary workers (57% vs. 53%, $p < .001$) were overrepresented in comparison with the population from which the sample was drawn. Attrition analysis revealed no significant differences in CSE, $t(2118) = 1.48$, $p = .14$ or in vigor, $t(2135) = 1.21$, $p = .23$, between participants ($n = 926$) and non-respondents, i.e., those who dropped out after the first or second measurement. Furthermore, no systematic selection was found in the experiences of organizational change measured at Time 2 and Time 3: Overall satisfaction with the organizational change, $t(1312) = -1.24$, $p = .21$; Satisfaction with the information provided on the organizational change, $t(1312) = .36$, $p = .72$; or Active participation in the organizational change, $t(1312) = 1.28$, $p = .20$.

Statistical analysis

The statistical analyses were performed in two stages. In the first phase, construct validity and temporal measurement invariance for the studied constructs were established. The longitudinal factor structure of CSE and experiences of organizational change was

investigated using exploratory structural equation modelling (ESEM; Asparouhov & Muthén, 2009) owing to the lack of a clear theoretical factor structure or scale modification for the purposes of the study. The well-validated scale of vigor was, in turn, investigated by using confirmatory factor analysis (CFA) and structural equation modelling (SEM). The invariance of the factor loadings across time was tested by constraining the corresponding factor loadings to be equal over time. The equality assumption is supported if the Satorra-Bentler scaled difference chi-square test (Satorra & Bentler, 2001) produces a non-significant loss of fit for the constrained stability model as compared to the unconstrained model.

In the second phase, alternative longitudinal mediation effects were tested. The structural equation model containing equal factor loadings over time, autoregressive paths between the same measures at different waves, and intercorrelations between the studied factors estimated within each measurement wave was used as a baseline stability model. Two mediation models with cross-lagged paths corresponding to the hypothesized relationships were tested. In the first mediation model, the cross-lagged paths were from CSE (Time 1) to organizational change attitudes and proactive behavior (Time 2), and from these to vigor (Time 3). In the alternative mediation model, the reverse cross-lagged paths were estimated, that is from vigor (Time 1) to attitudes to organizational change and proactive behavior (Time 2) and from these to CSE (Time 3). In order to calculate the estimate, standard error and *p* value for the indirect effects, new parameters were defined (Muthén & Muthén, 1998–2010).

All analyses were performed with the Mplus statistical package (Muthén & Muthén, 1998–2010) using the missing data method. The parameters of the models were estimated using the MLR estimator, which is robust to non-normality of the observed variables. The goodness-of-fit of the estimated models was evaluated using the following four goodness-of-fit indices: 1) χ^2 test, 2) Root Mean Square Error of Approximation (RMSEA), 3) Standardized Root Mean Square Residual (SRMR), and 4) Comparative Fit Index (CFI). RMSEA values of .10 indicate a mediocre fit, values between .06 and .08 an acceptable fit,

and values lower than .06 a good fit (Schermelleh-Engel, Moosbrugger, & Muller, 2003). CFI values of .90 indicate an acceptable fit (Bentler, 1990), and values higher than .95 a good fit (Hu & Bentler, 1999). SRMR values of .08 or below indicate a good fit (Hu & Bentler, 1999).

Results

Establishing measurement and time invariance

The ESEM analyses suggested two-factor solutions for the CSE scale at each measurement, as reported earlier for the same dataset (Mäkikangas et al., 2016). The time-constrained (i.e., equal factor loadings) two-factor model fitted well with the data, $\chi^2(565) = 1875.53$, RMSEA = .033, CFI = .95, TLI = .94, SRMR = .033, and the Satorra-Bentler scaled difference test supported the factor loading equality over time, $\Delta\chi^2(40) = 47.92$, $p = .18$. The two factors obtained represented Internal (i.e., individuals' emotionally charged inwardly directed evaluations) and External self-evaluations (i.e., individuals' perceptions of their effectiveness and ability to handle tasks and challenges successfully).

Organizational change attitudes and proactive behavior were also analyzed together by using ESEM. At both measurements (Time 2 and Time 3), a three-factor solution showed the best fit with the data. The content of the factors followed the original scales: i.e., eight items loaded on the Overall satisfaction with the organizational change factor, two items on the Satisfaction with the information provided on the organizational change factor, and four items on Active participation in the organizational change factor. The Satorra-Bentler scaled difference test, $\Delta\chi^2(33) = 45.911$, $p = .067$, supported the equality of the factor loadings over time. The overall fit of the time-constrained three-factor model was acceptable, $\chi^2(324) = 1312.97$, RMSEA = .048, CFI = .91, SRMR = .038.

The three-item vigor scale was invariant over time as indicated by the Satorra-Bentler scaled $\Delta\chi^2(4) = 2.37$, $p = .67$. The one-factor time constrained model fitted well with the data, $\chi^2(25) = 130.69$, RMSEA = .044, CFI = .98, SRMR = .033.

To summarize, all the scales showed good factorial validity. The same latent dimensions were assessed longitudinally, and showed factor equivalence over time. This means that a necessary condition for longitudinal data analysis was met, and hence we could continue with our analyses.

Testing the hypothesized mediation paths

In the next phase, all the stability models tested above were estimated simultaneously in the same model. In this model, intercorrelations between the latent factors at each measurement point were also estimated. This stability model fitted well with the data, $\chi^2(2479) = 5899.10$, RMSEA = .025, CFI = .93, SRMR = .06, and was used as a baseline stability model in further model comparisons.

First, in accordance with Hypothesis 2, the cross-lagged paths (CSE Time 1 => organizational change attitudes and proactive behavior Time 2 => vigor Time 3) were added to the baseline stability model. The cross-lagged model showed a significant improvement in fit, $\Delta\chi^2(9) = 117.38$, $p < .001$. In this model, External self-evaluations significantly predicted Satisfaction with the information provided (stand. est. = .10, $p < .05$) and Active participation in the organizational change factors (stand. est. = .15, $p < .001$), whereas Internal self-evaluations predicted the Overall satisfaction with the organizational change factor (stand. est. = .17, $p < .01$). However, the linkages from attitudes to change and proactive behavior to vigor were non-significant. Although linkages between CSE and positive attitudes and proactive behavior were found, in line with Hypothesis 1, this was not further manifested as increased levels of vigor. Consequently, Hypothesis 2 was not supported.

Next, the alternative longitudinal mediation model, where organizational change attitudes and proactive behavior mediated the effect between vigor and CSE, was tested. Thus, the following cross-lagged paths were added to the baseline model: vigor at Time 1 => organizational change attitudes and proactive behavior at Time 2 => CSE at Time 3. This model was also significantly better than the baseline stability model, $\Delta\chi^2(9) = 94.75$, $p < .001$.

In this model, vigor associated positively with Overall satisfaction with the organizational change (stand. est. = .18, $p < .001$), Satisfaction with the information provided (stand. est. = .15, $p < .001$) and Active participation in the organizational change factors (stand. est. = .22, $p < .001$). Further, the cross-lagged association from Overall satisfaction with the organizational change to Internal self-evaluations was significant (stand. est. = .06, $p < .05$), as also was the indirect effect from vigor to Internal self-evaluations through Overall satisfaction with the organizational change (stand. est. = .02, $p < .05$). In addition, mean-level testing demonstrated that CSE significantly increased over time, $F(2, 916) = 12.54, p < .001$.

To conclude, vigor was positively associated with both positive attitudes to change and proactive behavior during the organizational change which in turn increased the level of CSE one year later. Therefore, our Hypotheses 3 and 4 were supported. The final model containing all the significant cross-lagged associations (i.e., also including those between CSE and attitudes to the organizational change and proactive behavior) and illustrating the stabilities over time is depicted in Figure 1.

Additional analyses

We additionally tested whether the cross-lagged associations were equal between academic and non-academic staff and between the two universities. Each of the significant cross-lagged associations was tested by equating the parameter estimate values across the two comparison groups using Mplus equality constraints. It was found that, only the cross-lagged association from Vigor to Satisfaction with the information provided differed between the two occupational groups (stand. est. = -.09, $p < .05$): the association was higher among nonacademic employees (stand. est. = .24, $p < .001$) than academic employees (stand. est. = .12, $p < .001$). The same association was also found to be unequal between the universities (stand. est. = -.08, $p < .05$): in University B (stand. est. = .20, $p < .001$) the association was higher than in University A (stand. est. = .12, $p < .001$). All the other cross-lagged associations were equal between the comparison groups. It is also noteworthy that neither the

direction nor the significance level of this sole unequal association differed between the comparison groups.

The mean level inspection revealed that the academic employees ($M = 2.15$ at T2 and $M = 2.06$ at T3) were less satisfied with the organizational change than the nonacademic employees ($M = 2.26$ at T2 and $M = 2.16$ at T3). The employees in university B ($M = 2.27$ at T2 and $M = 2.16$ at T3) were generally more satisfied with the change than those in university A ($M = 2.18$ at T2 and $M = 2.07$ at T3). No other mean level differences were detected between the comparison groups (i.e., between academics/non-academics or universities).

Discussion

Our results show that both personality resources measured via CSE and work-related motivational state of mind, i.e., vigor, contribute to a healthy organizational change process among university employees. This study, with its focus on resource factors, direct measurement of employee attitudes and behaviors towards organizational change, and utilization of a longitudinal dataset, adds substantially to the organizational change literature (see Oreg et al., 2011) by shedding new light on the resources that are crucial among academic employees during a time of organizational change. Below we discuss the most important findings of the study in more detail.

The first contribution of the present study is that it offers empirical evidence for the hypothesis that high CSE, i.e., deeply rooted positive beliefs about the self and one's ability to deal effectively with the environment (Judge et al., 2003), facilitate more positive attitudes and proactive behavior toward organizational change among university employees. These findings are consistent with the propositions of the personal resources adaptation model (Van den Heuvel et al., 2010) and the career success model (Judge & Kammeyer-Mueller, 2011). Close scrutiny of the CSE concept indicated that seeing oneself as worthy and having a tendency to experience pleasant emotions, i.e., Internal self-evaluations, increased overall satisfaction with the organizational change process. However, beliefs about control and

capability, i.e., External self-evaluations, also contributed to more positive attitudes, but also – and more importantly – to proactive behavior during the change process. Although Internal and External self-evaluations are closely related (see Mäkikangas et al., 2016), belief in one's ability to control and complete tasks and reach goals – External self-evaluations – can be considered key attributes for participation and involvement in the change process. These results are consistent with prior research showing that university employees have high levels of various personal resources, such as perceived employability, which help them to reduce their job demands (such as job insecurity) (Mäkikangas, De Cuyper, Mauno, & Kinnunen, 2013) and promote their well-being (De Cuyper, Mäkikangas, Kinnunen, Mauno, & De Witte, 2012).

Despite these positive associations between the dimensions of CSE and organizational change attitudes and behavior, no support was found for the hypothesis, framed in line with the theoretical predictions (Judge & Kammeyer-Mueller, 2011; Van den Heuvel et al., 2010), that CSE would boost vigor via more positive attitudes to change and proactive behaviors. It has been reported that employee participation in organizational change needs to go hand-in-hand with actual changes in the job and its daily practices before it manifests as increased levels of well-being, such as vigor in this study (Nielsen & Randall, 2012). It might be that in the present instances the top-down change process of organizational restructuring had not (yet) affected the employees' tasks or, given that the changes had only been implemented very recently, that the employees' process of sense-making and adaptation had only just begun (see Myers, Hulks, & Wiggins, 2012).

A second contribution of this study is our finding that vigorous employees were actively involved in the organizational change process and more satisfied with the overall change process and how it was communicated. While it is known that work engagement increases extra-role performance (Bakker & Bal, 2010) and organizational citizenship behavior (Simbula & Guglielmi, 2013) our results extend this knowledge by revealing the

favorable outcomes of vigor, that is, vigorous employees are also more willing to make extra efforts to support organizational changes. Overall, vigor displayed stronger associations than CSE with positive attitudes to the organizational change and proactive behavior. Our results, however, also suggested that the link from vigor to satisfaction with the information provided was weaker among academic than nonacademic university employees. It could be that academic staff with broad and demanding assignments and responsibilities (e.g., academic research, teaching, and administrative duties) (Boyd et al., 2011), exhibit higher levels of attachment to their job/work activities than to their organization (Winter, Taylor, & Sarros, 2000). Thus, their work motivation and energy is directed more towards their primary job tasks than institutional duties.

Moreover, the positive association between vigor and CSE was mediated by general satisfaction with the organizational change. More specifically, overall satisfaction mediated the relation between vigor and Internal self-evaluations. That is, satisfaction with the change increased the level of self-worth and the tendency to experience positive emotions later on. This pointed to the existence of a gain spiral of positive emotions over time: the emotional energy of an employee induces favorable attitudes towards the work environment and change in it; this, in turn, breeds personality resources, i.e., positive emotions and self-worth (Fredrickson, 1998; Hobfoll, 1989). The link between proactive behavior and External self-evaluations might have emerged in the long(er) run, if and when employees saw that their own actions mattered in implementing the change and that the change had a genuine impact on their daily work practices (see Nielsen & Randall, 2012).

To further understand healthy organizational change and to avoid the shortcomings of the present study, innovative full-panel long-term study designs are needed that take into account several specific coexisting mechanisms (i.e., moderators and mediators), a wide range of outcomes and the role of working conditions and leadership (see Judge & Kammeyer-Mueller, 2011; Van den Heuvel et al., 2010). We hope that this study inspires researchers to

further discuss and investigate the theoretical outcome models (see e.g., Mäkikangas et al., 2013), as in this study vigor represented a precursor of change experiences and behaviors. Furthermore, the longitudinal effects found in the present study need to be replicated in other contexts, as the results might have been affected by other changes in the labor market. For example, an economic downturn began in Finland during the second half of 2008 and subsequently intensified.

The practical implication of this study is that proactive behaviors and satisfaction with change should be promoted during organizational change processes. In this study, the mean values of these variables were not high, and satisfaction with the organizational change actually decreased over time. The academic employees were even less satisfied with the organizational change than the nonacademic employees. Possibly, they felt they had more to lose (e.g., job autonomy) than the nonacademic employees. Because organizational change, along with other kinds of changes in job/work practices, continues to be common in universities (Foss & Gibson, 2015), more emphasis should be placed on how changes are implemented in order to avert their possible negative consequences (see Bamberger et al., 2012; De Jong et al., 2016) and to keep these employees, in particular academic staff, as motivated and healthy as possible.

To conclude, in order to survive and prosper in a continuously changing university context, employees need to be proactive, show initiative and be capable of self-management (Foss & Gibson, 2015). Today, work in universities is less task-based and more self-directed, which also entails an ability to self-direct and self-motivate. People who are able to set goals and motivate themselves perform better in a changing environment. All in all, universities need vigorous employees, who show initiative in developing themselves and their work (Reijseger et al., 2012) and who react positively to change, as demonstrated in a novel way in this study. Vigor at work is boosted by various job resources (for a review, see Mauno, Feldt, Mäkikangas, & Kinnunen, 2010) and such resources are probably also meaningful for vigor

during processes of organizational change. Autonomy and procedural justice, in particular, have been shown to be job resources with a long-term positive influence on organizational commitment among academic employees (Boyd et al., 2011). As these job resources boost institutional commitment, they are all the more important during times of organizational change (see also, Boyd et al., 2011).

References

- Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling, 16*, 397–438. doi: 10.1080/10705510903008204
- Bakker, A. B., & Bal, M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology, 83*, 189–206. doi: 10.1348/096317909X402596
- Bamberger, S. G., Vinding, A. L., Larsen, A., Nielsen, P., Fonager, K., Nielsen, R. N., Ryom, P., & Omland, Ø. (2012). Impact of organisational change on mental health: A systematic review. *Occupational and Environmental Medicine, 69*, 592–598. doi: 10.1136/oemed-2011-100381
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238–246. doi: 10.1037/0033-2909.107.2.238
- Best, R. G., Stapleton, L. M., & Downey, R. G. (2005). Core self-evaluations and job burnout: The test of alternative models. *Journal of Occupational Health Psychology, 10*, 441–451. doi: 10.1037/1076-8998.10.4.441
- Boyd, C. M., Bakker, A. B., Pignata, S., Winefield, A. H., Gillespie, N., & Stough, C. (2011). A longitudinal test of the job demands-resources model among Australian university academics. *Applied Psychology: An International Review, 60*, 112-140. doi: 10.1111/j.1464-0597.2010.00429.x

- Chang, C-H., Ferris, D. L., Johnson, R. E., Rosen, C. C., & Tan, J. A. (2012). Core self-evaluations: A review and evaluation of the literature. *Journal of Management*, *38*, 81–128. doi: 10.1177/0149206311419661
- De Cuyper, N., Mäkikangas, A., Kinnunen, U., Mauno, S., & De Witte H., (2012). Cross-lagged associations between perceived external employability, job insecurity, and exhaustion: testing gain and loss spirals according to the Conservation and Resources Theory. *Journal of Organizational Behavior*, *33*, 770–788. doi:10.1002/job1800.
- De Jong, T., Wiezer, N., de Weerd, M., Nielsen, K., Mattila-Holappa, P., & Mockało, Z. (2016). The impact of restructuring on employee well-being: a systematic review of longitudinal studies. *Work & Stress*, *30*, 91–114, doi: 10.1080/02678373.2015.1136710
- Doyle, C., & Hind, P. (1998). Occupational stress, burnout and job status in female academics. *Gender, Work and Organizations*, *5*, 67–82. doi: 10.1111/1468-0432.00047
- Finnish Ministry of Education and Culture (n.d.). *University reform*. Retrieved, from: http://www.minedu.fi/OPM/Koulutus/koulutuspolitiikka/Hankkeet/Yliopistolaitoksen_uudistaminen/index.html?lang=en
- Foss, L., & Gibson, D. V. (2015). *The entrepreneurial university: Context and institutional change*. New York: Routledge.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*, 300–319. doi: 10.1037//1089-2680.2.3.300
- Fumasoli, T., & Stensaker, B. (2013). Organizational studies in higher education: A reflection on historical themes and prospective trends. *Higher Education Policy*, *26*, 479–496. doi: 10.1057/hep.2013.25
- Hakanen, J., Perhoniemi, R. & Toppinen-Tanner, S. (2008). Positive gain spirals at work: From job resources to work engagement, personal initiative and work-unit

- innovativeness. *Journal of Vocational Behavior*, 73, 78–91. doi: 10.1016/j.jvb.2008.01.003
- Hobfoll, S. E. (1989). Conservation of resources. A new attempt at conceptualizing stress. *American Psychologist*, 44, 513–524. doi: 10.1037//0003-066X.44.3.513
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1–55. doi: 10.1080/10705519909540118
- Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits – self-esteem, generalized self-efficacy, locus of control, and emotional stability – with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, 86, 80–92. doi: 10.1037//0021-9010.86.1.80
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluation scale: Development of a measure. *Personnel Psychology*, 56, 303–331. doi: 10.1111/j.1744-6570.2003.tb00152.x
- Judge, T. A., & Kammeyer-Mueller, J. D. (2011). Implications of core self-evaluations for a changing organizational context. *Human Resource Management Review*, 21, 331–341. doi: 10.1016/j.hrmr.2010.10.003
- Judge, T. A., Locke, E. A., & Durham, C. C. (1997). The dispositional causes of job satisfaction: A core evaluations approach. In L. Cummings & B. Staw (Eds.), *Research in organizational behavior*. Vol. 19. (pp. 151–188). Greenwich, CT: JAI Press.
- Kalimo, R., Olkkonen, M., & Toppinen, S. (1993). *Ihminen kehittyvässä tuotannossa: Tutkimus- ja kehityshanke teollisuudessa*. Työterveyslaitos. [Humans in evolving production: Research and development in the industry. Finnish Institute of Occupational Health.]

- Kammeyer-Mueller, J. D., Judge, T. A., & Scott, B. A. (2009). The role of core self-evaluations in the coping process. *Journal of Applied Psychology, 94*, 177–195. doi: 10.1037/a0013214
- Kinman, G., & Jones, F. (2008). A life beyond work? Job demands, work-life balance, and wellbeing in UK academics. *Journal of Human Behavior in the Social Environment, 17*, 41–60. doi: 10.1080/10911350802165478
- Kinman, G. & Wray, S. (in press). *Work and wellbeing in academic employees: an evidence based approach*. Palgrave Macmillan.
- Marks, M. L. (2006). Workplace recovery after mergers, acquisitions, and downsizings: Facilitating individual adaptation to major organizational transitions. *Organizational Dynamics, 35*, 384–399. doi: 10.1016/j.orgdyn.2006.08.004
- Mauno, S., Feldt, T., Mäkikangas, A., & Kinnunen, U. (2010). *Job demands and resources as antecedents of work engagement: A qualitative review and directions for future research*. In S. Albrecht (Ed.), *Handbook of employee engagement* (pp. 111–129). Australia: Elgar publishing.
- Muthén, L. K., & Muthén, B. O. (1998–2010). *Mplus User's Guide. Sixth Edition*. Los Angeles, CA: Muthén & Muthén.
- Myers, P., Hulks, S., & Wiggins, L. (2012). *Organizational change. Perspectives on theory and practice*. UK: Oxford University Press.
- Mäkikangas, A., De Cuyper, N., Mauno, S., & Kinnunen, U. (2013). A longitudinal person-centred view on perceived employability: The role of job insecurity. *European Journal of Work and Organizational Psychology, 22*, 490–503. doi: 10.1080/1359432X.2012.665230
- Mäkikangas, A., Feldt, T., Kinnunen, U., & Mauno, S. (2013). Does personality matter? A review of individual differences in occupational well-being. In A. B. Bakker. (Ed.),

Advances in Positive Organizational Psychology - Volume 1 (pp. 107–143). Bingley, UK: Emerald. doi: 10.1108/S2046-410X(2013)0000001008

Mäkikangas, A., Kinnunen, U., Mauno, S., & Selenko, E. (2016). Factor structure and longitudinal factorial validity of the Core Self-Evaluation Scale. Exploratory structural equation modelling. *European Journal of Psychological Assessment*. Advance online publication. doi: 10.1027/1015-5759/a000357

Nielsen, K., & Randall, R. (2012). The importance of employee participation and perceptions of changes in procedures in a teamworking intervention. *Work & Stress*, 26, 91–111. doi: 10.1080/02678373.2012.682721

Oreg, S., Vakola, M., & Armenakis, A. (2011). Change recipients' reactions to organizational change: A 60-year review of quantitative studies. *The Journal of Applied Behavioral Science*, 47, 461–524. doi: 10.1177/0021886310396550

Piitulainen, S. Mauno, S., & Kinnunen, U. (2002). Työn stressitekijöiden ja hyvinvoinnin arvioiminen PMI-kyselyllä. Kyselyn luotettavuuden arviointi ja stressikokemusten eriytyminen taustatekijöiden mukaan [Evaluating job stressors and well-being with the pressure management indicator: The reliability of the questionnaire and variation in stress experiences according to background variables]. *Työ & Ihminen*, 16, 29–42.

Reijseger, G., Schaufeli, W. B., Peeters, M. C. W., & Taris, T. W. (2012). Ready, set, go! A model of the relation between work engagement and performance. In S. P. Gongalves & J. G. Neves (Eds.), *Occupational Health Psychology: From burnout to well-being* (pp. 289–306). Rosemead, CA: Scientific and Academic Publishing.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal*, 53, 617–635. doi: 10.5465/AMJ.2010.51468988

- Rothmann, S., & Jordaan, G. M. E. (2006). Job demands, job resources and work engagement of academic staff in South African higher education institutions. *SA Journal of Industrial Psychology, 32*, 87–96. doi: 10.4102/sajip.v32i4.247
- Salanova, M., Llorens, S., & Schaufeli, W. (2011). “Yes, I can, I feel good, and I just do it!” On gain cycles and spirals of efficacy beliefs, affect, and engagement. *Applied Psychology: An international Review, 60*, 255–285. doi: 10.1111/j.1464-0597.2010.00435.x
- Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*, 507–514. doi: 10.1007/BF02296192
- Schaufeli, W. B., Bakker, A. B. & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66*, 701–716. doi: 10.1177/0013164405282471
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71–92. doi: 10.1023/A:1015630930326
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Test of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*, 23–74.
- Seligman, M., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist, 55*, 5–14. doi: 10.1037/0003-066X.55.1.5
- Seppälä, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A., & Schaufeli, W. B. (2009). The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies, 10*, 459–481. doi: 10.1007/s10902-008-9100-y

- Simbula, S., & Guglielmi, D. (2013). I am engaged, I feel good, and I go the extra-mile: Reciprocal relationships between work engagement and consequences. *Journal of Work and Organizational Psychology, 29*, 117–125. doi: 10.5093/tr2013a17
- Simbula, S., Guglielmi, D., & Schaufeli, W. (2011). A three-wave study of job resources, self-efficacy, and work engagement among Italian schoolteachers. *European Journal of Work and Organizational Psychology, 20*, 285–304. doi: 10.1080/13594320903513916
- Tytherleigh, M. Y., Webb, C., Cooper, C. L., & Ricketts, C. (2005). Occupational stress in UK higher education institutions: a comparative study of all staff categories. *Higher Education Research & Development, 24*, 41–61. doi: 10.1080/0729436052000318569
- Van den Heuvel, Demerouti, E., Schaufeli, W., & Bakker, A. B. (2010). Personal resources and work engagement in the face of change. In J. Houdmont & S. Leka (Eds.), *Contemporary occupational health psychology: Global perspective on research and practice* (pp. 124–150). Chichester: John Wiley & Sons Ltd.
- Välimaa, J. (1994). A trying game: Experiments and reforms in Finnish higher education. *European Journal of Education, 29*, 149–163. doi: 10.2307/1561638
- William, S. & Cooper, C.L. (1998). Measuring occupational stress: development of the pressure management indicator. *Journal of Occupational Health Psychology, 3*, 306–321. doi: 10.1037/1076-8998.3.4.306
- Winter, R., Taylor, T., & Sarros, J. (2000). Trouble at Mill: Quality of academic worklife issues within a comprehensive Australian university. *Studies in Higher Education, 25*, 279–294. doi: 10.1080/713696158
- Xanthopoulou, D., Bakker, A., Demerouti, E., & Schaufeli, W. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior, 74*, 235–244. doi: 10.1016/j.jvb.2008.11.003

Figure captions

Figure 1. Final model showing the significant standardized path coefficients. Covariances between the latent factors are omitted for clarity.

Table 1. *Descriptive information on the study variables. Cronbach's alphas bolded and presented in the diagonal.*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. CSE T1	4.99	0.87	.89											
2. CSE T2	5.05	0.86	.83	.88										
3. CSE T3	5.07	0.89	.79	.84	.88									
4. Overall satisfaction T2	2.22	0.60	.22	.21	.22	.82								
5. Satisfaction information T2	2.67	0.81	.15	.13	.13	.47	.76							
6. Active participation T2	3.31	0.70	.20	.24	.22	-.06	-.06	.74						
7. Overall satisfaction T3	2.11	0.61	.20	.19	.21	.65	.39	.01	.84					
8. Satisfaction information T3	2.41	0.85	.14	.11	.14	.41	.57	-.09	.55	.77				
9. Active participation T3	3.42	0.69	.21	.23	.25	-.04	-.07	.69	-.03	-.04	.72			
10. Vigor T1	4.83	0.99	.62	.56	.56	.16	.14	.19	.18	.14	.20	.89		
11. Vigor T2	4.85	0.99	.51	.59	.54	.22	.17	.23	.21	.12	.22	.76	.90	
12. Vigor T3	4.84	1.04	.51	.56	.63	.21	.13	.22	.23	.15	.24	.72	.76	.91

Note. $r > .13$, $p < .001$. CSE = Core self-evaluations; Overall satisfaction = Overall satisfaction with the organizational change; Satisfaction information = Satisfaction with the information provided on the organizational change; Active participation = Active participation in the organizational change.

