

**Organizational climate, relative psychological climate and job satisfaction:
the example of supportive leadership climate**

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Abstract

Purpose – Organizational climate has been shown to predict job satisfaction and other employee attitudes. Using the concept of organizational climate strength has shown mixed success. However, diversity in psychological climate at the individual level has not been explored. We introduce a new individual-level concept: relative psychological climate.

Design/methodology/approach – Using the example of supportive leadership climate, we assess the significance of this concept for predicting job satisfaction. We use data from a large national British survey (the Workplace Employment Relations Survey of 2004) of 19,993 employees within 1,593 workplaces.

Findings – Workplace supportive leadership climate quality, climate strength, and individual relative leadership climate position are shown to be significantly associated with job satisfaction. So is the interaction of climate quality and climate strength. When all three variables are assessed simultaneously, only the individual relative position and the climate quality are substantially related to job satisfaction.

Research limitations/implications – Individual relative climate has been shown to be a useful alternative to other climate assessments, especially when climate quality and climate strength are highly related making the use of both in one regression not feasible.

Practical implications – The newly introduced concept of individual relative position is a climate factor that is very relevant in terms of predicting job satisfaction. Therefore, we recommend that leaders take into account that differentiation between followers negatively influences those that perceive less supportive leadership.

Originality/value – We introduce individual relative climate and show that this new concept is related to job satisfaction, thereby demonstrating its usefulness in climate research.

Type of paper – Research paper

Keywords – Supportive leadership climate, job satisfaction, psychological climate, relative psychological climate, organizational climate, multilevel analysis.

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Research on climate in organizations has attracted a lot of attention in the last decade (for a recent overview, see James *et al.*, 2008). Climate research began with analysis at the individual level, concentrating on what is termed psychological work climate. In this approach, individual co-workers are asked to indicate the climate at their workplace (for a recent example see Tordera *et al.*, 2008). Later, the concept of organizational climate emerged, which is shared amongst the members of the work or organizational unit. It is measured by averaging the individual scores of psychological work climate (for example Gillespie *et al.*, 2008). According to Bliese (2000), aggregate values of climate should only be used if there is sufficient agreement in the individual climate ratings. However, a lack of agreement regarding individual climate ratings has in itself emerged as an interesting topic of research. Differences in variance in climate ratings from one unit to another may be relevant for explaining outcomes. This variance is now known as climate strength (Lindell and Brandt, 2000; Schneider *et al.*, 2002; for a recent example of a study on climate strength see Dawson *et al.*, 2008). A high variance indicates that members of an organization differ in how they view the climate of the organization, a low variance indicates that they agree on the climate in their organization. In the latter case, the organization can be said to have a strong climate.

Using aggregate level climate mean and variance in the same model to predict employee attitudes and other employee outcomes has sometimes been shown to be ineffective in furthering our understanding. This is because the mean and variance at the aggregate level are statistically related in a curvilinear fashion (Lindell and Brandt, 2000;

Dickson *et al.*, 2006). However, other researchers do report substantial findings for aggregate level climate strength on employee outcomes (Colquitt *et al.*, 2002; González-Romá *et al.*, 2002; Schneider *et al.*, 2002; Moliner *et al.*, 2005).

In analyses combining individual psychological climate scores and aggregate level organizational climate scores simultaneously, the latter has sometimes been found to be redundant in explaining employee outcomes (e.g. Lindell and Brandt, 2000). In this paper we propose to use another indicator for the individual-level experience of climate within organizations: the individual relative psychological climate score. This score is computed by calculating each individual employee's deviation from the mean score for their organization. As an indicator on the individual level, the individual relative psychological climate may be more relevant for predicting individual-level outcomes than the organization-level climate strength concept. It is important to point out that individuals do not necessarily rate themselves relative to others (social comparisons), but they rate their own perceptions of psychological climate, which are then, a posteriori, empirically positioned in relation to other members' perception of psychological climate. Henderson *et al.* (2008) have adopted a similar approach in the field of leader–member exchange (LMX). For relative individual psychological climate, which direction an individual deviates from their colleagues is important, and we hypothesize that whether somebody exceeds or falls short of their colleagues' rating of climate makes a difference to their attitudes and perceptions. In organizational climate strength the distance towards the mean of organization members is also important, but here the direction of the deviation does not matter: any deviation, positive or negative, counts equally when measuring climate strength. The individual relative score is statistically independent of the aggregate mean score as well as the aggregate standard

deviation. We want to show that including the individual relative psychological climate concept along with organizational climate measures in predictive models of employee outcomes adds to our understanding of these. We do this using supportive leadership climate as it is one important dimension of climate research. As job satisfaction is one of the most researched employee-level outcomes addressed in climate research (James *et al.*, 2008), and leadership has been shown to be related to job satisfaction (e.g. Gerstner and Day, 1997), we focus on job satisfaction as the dependent variable in our example.

1. The example of supportive leadership climate

In this section, we examine in more detail the different assessments of climate (climate quality, climate strength, and individual relative climate), specifically for leadership climate. Much of the research into organizational climate is grounded in the work of James and Jones (1974) and James and James (1989). These authors used different dimensions to describe climate. Leadership facilitation and support is one of these dimensions. However, the call to look into leadership on an organizational level does not only come from climate research but also from leadership research. For example, Chen and Bliese (2002) have highlighted the importance of assessing leadership on the organizational level, referring to this idea as leadership climate, which is similar in content to one of James and James's (1989) sub-dimensions to describe organizational climate – the dimension of “leadership facilitation and support”. In our study, we focus on supportive leadership. Supportive leadership is associated with a concern for the needs and well-being of followers, and the facilitation of a desirable climate for interaction between leaders and followers. A climate of supportive leadership is one where members of the organization perceive that the leadership is equally highly

supportive of them and particularly encourages their empowerment and development. Following Whitener *et al.* (1998), we argue that trustworthy behaviour on the part of management is core to the development of such perceptions. Thus, displaying behavioural consistency, behavioural integrity, and concern for followers' needs will be decisive in this. Supportive leadership climate is important in its own right but also it is likely to influence other dimensions of leadership behaviour, because it underpins the style of interactions in the organization. In line with the conceptualization by Schneider *et al.* (2002), we refer to the mean of the supportive leadership as *leadership climate quality* and to (low) variability in perceptions of leadership climate as *leadership climate strength*.

Theoretically, good reasons exist why supportive leadership is not evaluated similarly by all members of an organization. First, they may have different perspectives, resulting in different judgements about the extent to which the same leadership behaviour is supportive. Second, they may have different immediate leaders and levels of contact with more distal leaders. Third, and most importantly for our current concerns, the same leader may treat individuals in the group differently.

This third reason for diversity in member perceptions of leadership has been highlighted by research on LMX, which has focused on dyad leader–follower relationships. This line of research has shown that individuals do experience the leadership in their workplace differently (for an overview of LMX see Graen and Uhl-Bien, 1995).

While most LMX research has focused on the relationship between LMX and outcomes on an individual level (e.g., Gerstner and Day, 1997), recent research has focused on effects of LMX variability. Empirically, Hofmann *et al.* (2003) found a considerable level of variation in LMX within groups. In their study, they reported an intra-class correlation

coefficient value of 0.39 for member–member agreement across workgroup dyads; consequently, about 61% of the variance in LMX was explained at the individual level rather than by group membership. Ford and Seers (2006) showed that average LMX and variation in LMX are related, in so far that the higher the agreement on LMX, the higher the average LMX. This is in line with research into climate that has shown the interdependence of climate quality and climate strength (Dickson *et al.*, 2006; Lindell and Brandt, 2000). In terms of the outcomes of differentiation, a recent study by Hooper and Martin (2008) found that perceived variability in LMX is negatively related to job satisfaction and well-being. However, their study used the individual perception of variability rather than the actual variability on individual LMX ratings (which would be comparable to climate strength). Generally, research indicates that LMX differentiation is negatively related to work outcomes. For example, in Schyns' 2006 study, variation in contribution (one dimension of LMX) was negatively related to satisfaction and commitment. Maslyn and Uhl-Bien (2005) found that differentiation affects the judgements of co-workers' use of ingratiation. In contrast, Liden *et al.* (2006) found that LMX differentiation is positively related to performance but only in the case of low individual LMX. Wikaningrum (2007), on the other hand, found that similarity in LMX is positively related to co-worker exchange.

Thus, we can conclude that looking into differences between groups in their amount of within-group variation in the perception of leadership climate (climate strength) is a fruitful road to pursue. However, the above mentioned problem of the interdependence of climate quality and climate strength poses problems, as one would assume that positive results only emerge when climate is strong and at the same time climate level is high (a phenomenon that in the context of LMX has recently been dubbed "LMX excellence" – Schyns and Day, in

press). In light of this, we introduce the concept of relative individual psychological climate, an individual-level concept that may provide a better approach than organizational climate strength in that it combines individual and organizational level climate predictors in models that aim to predict employee outcomes.

A relative climate score represents differences in climate experience between individuals in an organizational unit. A recent study by Henderson *et al.* (2008) also uses a relative concept, but in the area of research on LMX. They found that relative LMX is positively related to organizational citizenship behaviour, whereas variability in LMX within groups was not related to organizational citizenship behaviour. This indicates that individuals who rate their LMX higher than their group members (blind and direct: without knowing what ratings their colleagues have given and without using social comparison to colleagues in their rating) show more extra-role behaviour than those who rate themselves lower than their peers. We suggest for climate research that, independent from the quality and strength of climate, an employee's perception of the leadership climate may be better or worse when compared to their colleagues. The relative position of the employee within the organization can be expected to affect relevant employee outcomes, for example, as they may feel they are treated unfairly (see Scandura, 1999 on the importance of fairness in LMX). This assumption is supported by literature on justice and fairness related to leadership. Ansari *et al.* (2007) found that the LMX dimension "respect" is related to commitment via procedural justice climate. Van Breukelen and Wesselius (2007) found, in a sports context, that differentiation was only perceived as negative when it was not considered fair. This leads us to expect that followers will react to their individual relative position with respect to leadership climate when they perceive this position to be a violation of the basic principle of fairness.

2. The study

Our study assesses whether the individual relative psychological climate is indeed a good addition to organizational climate in models predicting employee outcomes. The study focuses on the relationship between supportive leadership climate and job satisfaction. On the individual level, the relationship between leadership and job satisfaction is fairly well documented. Several meta-analyses show that different assessments of leadership are positively related to job satisfaction. For this research, the most relevant leadership approach is LMX. Gerstner and Day (1997) have indeed shown that LMX is positively related to job satisfaction. Theoretically, the common argument is that leaders are responsible for several aspects of a worker's job, such as task delegation (Yukl and Fu, 1999), and thus leadership influences satisfaction with the job as a whole. In terms of the aggregate level, job satisfaction is one of the most popular outcomes researched in the area of organizational climate (James *et al.*, 2008) and indeed it has been shown that climate is positively related to job satisfaction (Parker *et al.*, 2003). The leadership aspect of climate was one of the dimensions with the highest relationship to job satisfaction in Parker *et al.*'s study. We argue here that supportive leadership climate quality is positively related to job satisfaction. We also argue that supportive leadership climate strength, that is low variation in supportive leadership climate, is positively related to job satisfaction as indicated by prior research into LMX and organizational climate.

Including supportive leadership climate quality and strength in a model of job satisfaction helps us assess whether individual employees feel more satisfied when others in their organization feel the same as they do about the leadership. Including the relative

individual psychological leadership climate concept in the same model assesses how the individual's perception of leadership compared to that of others in the organization affects their individual satisfaction.

Our research evaluates whether our three climate variables, derived from individual psychological climate ratings, predict job satisfaction. First, we assess whether the three variables – supportive leadership climate quality, supportive leadership climate strength, and relative individual psychological supportive leadership climate – are each related to job satisfaction, through univariate analysis. We test:

Hypothesis 1: Supportive leadership climate quality, supportive leadership climate strength, as well as individual relative supportive leadership climate will each have a positive relationship with individual job satisfaction.

Second, we assess the unique contribution of each by including all three variables in a multivariate analysis. To complete the picture, the multivariate analysis follows the suggestion of several climate quality and strength researchers to investigate these two factors in combination with their interaction term, in order to demonstrate their full effect on employee outcomes (Dawson *et al.*, 2008; Schneider *et al.*, 2002). A strong climate should lead to positive results, mainly in combination with a good climate quality, as pointed out by Dawson *et al.* (2008), for example. Thus we test:

Hypothesis 2: Supportive leadership climate quality, supportive leadership climate strength, their interaction, and individual relative supportive leadership climate are uniquely related to individual job satisfaction.

Based on mixed findings in previous studies, we expect organizational climate quality and the individual relative psychological climate to have substantial effects and that the

effects of climate strength and the interaction of climate quality and strength will not be substantial in the multivariate case.

3. Method

3.1 Data

We use data from the UK Workplace Employment Relations Survey 2004, a data set comprising a government-funded national representative sample combining data from over 2,000 workplaces (management interviews) and more than 20,000 employees (surveys). This data set is highly fit for our purpose. First, the number of units observed is large at the individual level, but also at the aggregate, workplace level. Second, there is a great deal of variability in the organizational settings investigated, and hence also in the organizational-level climate scores. Third, measures derive from a study with adequate response rates at the organizational level, so climate quality and strength scores, as well as individual relative position scores, can be considered valid (Lindell and Brandt, 2000; Schneider *et al.*, 2002).

In this study we use only the employee survey data collected in the WERS. The workplace is the unit for which organizational climate is assessed both by us and by the individual respondents in the survey. The workplace is defined in the WERS as comprising “the activities of a single employer at a single set of premises”. Detailed technical information on this data set can be found in Chaplin *et al.* (2005).

Only respondents with complete measures on supportive leadership climate, job satisfaction, and a range of control variables were selected for this study, resulting in a data set of 19,993 employees in 1,593 workplaces. The average number of employees per

workplace completing the questionnaire was 15.46. The range of the number of respondents per workplace is from 1 to 25, and the standard deviation is 5.36.

3.2 Instruments

Job satisfaction Job satisfaction was assessed using an eight-item scale asking for the level of satisfaction an employee feels about these elements: pay, job security, amount of training received, sense of achievement from work, scope for using own initiative, amount of influence over work, the work itself, and involvement in decision-making. The items were selected by the WERS survey team to cover core elements of jobs relating to extrinsic, intrinsic and relational motivations, and that were comparable with those used in other major surveys (Rose, 2007). A secondary consideration was that the elements would be especially relevant for assessing human resource practice and leadership style. The Cronbach's alpha for the scale 0.85. An individual scale score is computed for job satisfaction on the basis of the mean score on each item.

Supportive leadership climate Supportive supervision is measured by six items all relating to management's behavioural integrity, consistency or demonstration of concern for employee needs (Cronbach's $\alpha = 0.93$). They were designed by the Workplace Employment Relations Survey 2004 team as new questions in the series, aimed at capturing the essence of Whitener *et al.*'s trustworthy behaviours (Guest *et al.*, 2007). Three questions – “can be relied upon to keep to their promises”, “deal with employees honestly”, “treat employees fairly” – are concerned with consistency and integrity. Two questions are based on specific employee concerns: a) skill development, because of the importance of this and intrinsic motivations in theories underlying supportive management (e.g. Likert's Theory Y), b)

responsibilities outside work, a major topical issue in light of the concern for “work–life balance”. The sixth item, “are sincere in attempting to understand employees’ views”, is about integrity of leadership in a general attitude of attention for employee matters.

Supportive leadership climate quality was measured by the mean of the individual supportive leadership climate scores for each workplace.

Supportive leadership climate strength is the standard deviation of the distribution of the individual supportive leadership climate scores for each workplace.

The individual’s **relative supportive leadership climate position** is calculated by subtracting the individual’s climate score from the workplace mean.

3.3 Analysis procedure

We used the statistical package MLWIN V2.02 to analyze these two-level data. Before we started to investigate the relationship between supportive leadership climate and job satisfaction in a multilevel equation, we looked into this relationship at the level of the individual scores only. Pearson’s product-moment coefficient for this relationship is 0.66. The size of this correlation confirms the relevance of the particular climate–employee attitude example chosen in this paper. Supportive leadership is very important for job satisfaction.

Before proceeding to the multilevel analyses we ran several checks. First, we checked for an adequate amount of group-level variance in the dependent variable, job satisfaction. This condition is also met: 7% of the variance in individual job satisfaction scores can be explained by the independent variable workplace in a one-way analysis of variance, which is highly significant in an *F*-test ($p < 0.001$). Second, if we want to use workplace-level aggregate scores of supportive leadership climate, ICC1/ICC2 statistics for the supportive

leadership climate scale need to be good (Bliese, 2000). ICC1 for this scale is 0.18, which indicates that a substantial amount of variance in supportive leadership climate is shared by employees within workplaces. ICC2 is 0.75, which is well above the 0.70 criterion proposed in Klein and Kozlowski (2000). This means we can reliably make between-workplace comparisons. A third and final check concerns possible multi-collinearity between the three scores that are derived from the individual climate scale scores. It is known in the literature that means and standard deviations of aggregates based on individual climate scale scores are related in an inverted U-shape way (Lindell and Brandt, 2000; Dickson *et al.*, 2006). This is replicated here for the relationship between climate quality and strength as for supportive leadership climate. The curve is not symmetrical, however, but is skewed to the left. Therefore, we find a workplace level correlation of -0.44 between climate quality and climate strength. The combination of finding both a U-shaped association and a linear relationship between the two variables has prompted us to use a quadratic transformation of the climate quality and strength variables in our study. We have compared all models using uncorrected versus quadratic terms, and models with the quadratic terms are always slightly better. This is because they bring the distribution of the climate quality and strength variables closer to that of a linear variable, and our multilevel analyses assume linearity in all the variables.

The hypotheses are examined by evaluating unstandardized beta-coefficients in a multilevel regression equation, by means of the *T*-value (Bryk and Raudenbush, 1992). Apart from statistical significance, it is also important to look at the size of the *T*-value when interpreting our results, given the large sample size at both levels in this study. With the exception of the empty model, all models include these six control variables: number of employees in the workplace, being part of a larger organization, amount of unionization,

gender, age, and tenure. The first three control variables are at the workplace level, the last three are at the individual level.

4. Results

Table 1 includes means, standard deviations and Pearson correlations for the four survey measures in this study. The workplace level supportive leadership climate quality and strength are disaggregated for the purposes of this table. It shows that the relative score is statistically independent from the organizational-level climate measures.

insert table 1 about here

The first part of our investigation assessed whether climate, climate strength and relative psychological climate are univariately related to job satisfaction and found that they are. Hypothesis 1 is thus supported. Workplace supportive leadership climate quality has a regression coefficient of 0.075 (standard error: 0.002). The associated *T*-value is 37.5, which is highly significant. This means that the higher the supportive leadership climate quality is in a workplace, the higher the job satisfaction. Workplace supportive leadership climate strength also has a strong impact: the regression coefficient is -0.238 (standard error: 0.002), which implies a *T*-value of -11.3. As expected, this effect is negative: low standard deviations are associated with high job satisfaction (this fits our expectations, because we know from above that more workplaces tend to have a positive type of consensus than a negative type). Finally,

the effect for the individual relative supportive leadership climate is also highly significant: the regression coefficient is 0.499 (standard error: 0.005), the *T*-value being 99.8, indicating that workers who perceive a better supportive leadership climate relative to their colleagues are more satisfied with their job. These results show that supportive leadership climate quality, supportive leadership climate strength and individual relative supportive leadership climate are each positively related to individual job satisfaction as we expected.

insert table 2 about here

The multivariate results can be found in table 2. We build a multilevel step-by-step here. In the first step the model simply contains the constant term. At the bottom of the table, the variance explained is shown. It stands at 13.7% for the workplace level, and 86.3% for the individual level, totalling 100% of variance to be explained. Next, explained variance is shown for a model that only includes the control variables. They explain 4.5% of the variance in total.

To test Hypothesis 2 we entered the supportive leadership climate variables into the model in three steps. The first step enters the relative score. The second step the climate quality and strength variables, and the third step includes the interaction between quality and strength. Including the relative individual psychological climate in the model shows a very significant *T*-test that stays the same in all three steps: a regression coefficient of 0.505 (standard error of 0.005), with a *T*-value of 101.0. In Model 1, because of entering this strong predictor, the variance explained at the individual level increases by 34.3%. At the same time,

at the workplace level, variance explained decreases by 3.6%. Such trade-offs in variance explained between levels are entirely to be expected in multilevel analyses (Snijders and Bosker, 1999). At the next step climate quality and strength are entered. For workplace leadership quality the effect is 0.076 (standard error: 0.002), with a *T*-value of 37.5. The effect of workplace supportive leadership climate strength has now nearly vanished, however: the effect is only 0.030 (standard error of 0.015). The associated *T*-value is 2.0, which is just significant. The effect of climate strength is no longer negative, as in the univariate analysis. When climate quality and strength are entered into the model, we find that the level of variance explained only changes at the workplace level: we add 9.6% to the explanation of variance. At the final step, the interaction between quality and strength is included in the model. The main effects for quality of strength change only slightly because of this, becoming slightly stronger. The interaction term has a regression coefficient of -0.22 (standard error of 0.071) and the *T*-value is thus -3.1, which is significant. There is no change in variance explained due to entering the interaction into the model.

Whereas all three derivatives from the individual supportive leadership climate scale scores have a strong univariate effect on job satisfaction, only the individual relative position and aggregate leadership quality are important in the multivariate case. The univariate effect of aggregate supportive leadership climate strength reflects the effect of supportive leadership climate quality, as was expected on the basis of literature about the relatedness of these two organizational-level constructs (Lindell and Brandt, 2000; Dickson *et al.*, 2006). Similarly, the interaction of quality and strength, that has been argued for by several authors, does show an effect but it is not substantial. These results support our argument that the individual relative score explains additional variance in job satisfaction over and above aggregate supportive

leadership climate quality, better than supportive leadership climate strength or the interaction of quality and strength explains it.

5. Conclusions

Climate research is currently attempting to integrate constructs and approaches at the individual and organizational levels of climate. Similarly, research into leadership, such as research on LMX, has followed similar calls for more research on the organizational context in which interactions between leaders and followers takes place (e.g. Cogliser *et al.*, in press). Our study has contributed to these two strands of research by comparing the association between job satisfaction and three climate concepts – supportive leadership climate, supportive leadership climate strength and individual relative leadership climate. Our findings confirm that supportive leadership climate and our new climate concept, individual relative leadership climate, are uniquely associated with job satisfaction. In contrast, supportive leadership climate strength does not add anything to the explanation of job satisfaction. Neither does the quality–strength interaction.

Our results imply that organizational climate influences job satisfaction in two ways: first as a situational factor and second as a personal factor. They suggest that focusing more on the latter through dispersion indices (Roberson *et al.*, 2007) will be more fruitful than following the climate strength route that uses an aggregate-level variance approach (Bliese and Halverson, 1998; González-Romá *et al.*, 2002). Further work on measures of well-being, organizational commitment and individual performance is required to confirm the generalizability of the findings across other employee outcome variables. It is important to emphasize that our approach captures the differences between perceptions of organization

members, not the organization members' perceptions of differences between themselves. Our individual relative score is thus different from an approach that asks employees to directly compare themselves to others, either inside or outside their organization. So another line of research could compare the relative individual climate approach with one adopting the direct comparison approach.

The practical implications of our results imply that managers need to aim their leadership initiatives at both the individual level and the group or organizational level. This means, amongst other things, that when leaders interact with followers individually they should be conscious of how they relate to others, and the negative consequences of variations in their degree of supportive leadership between individuals. This is consistent with Bolino and Turnley's (2009) theory that members with a low leader–member exchange quality with their leader can become frustrated, and that their relative deprivation will lead to stress, and withdrawal and counterproductive behaviours. It is important for leaders to aim for a universally perceived supportive leadership climate, and our results reinforce this. The finding also fits with Graen and Uhl-Bien's (1995) call for leaders to develop a good LMX relationship quality with all followers.

It may be that establishing and upholding a good relationship quality with all followers could overstretch a leader's resources (cf. Dansereau *et al.*, 1975; Schyns *et al.*, 2009). Given this possibility, some researchers have suggested that leaders could develop a good relationship with specific followers (Harmon and Van Dyne, 2008; Liden *et al.*, 1997; Maslyn and Uhl-Bien, 2005), so that these followers support the leader in establishing a good team–member exchange quality. They effectively act as substitute for the leader. Our results highlight the costs of this strategy if it is not successful. Ensuring all employees perceive the

leadership climate as supportive appears better, even if it means leaders require more resources and training.

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Table 1. Means, standard deviations and Pearson correlations for study variables.

Variable	M	Sd	Pearson correlations			
			1	2	3	4
Individual level						
1. Job satisfaction	3.47	0.78	-			
2. Relative psychological climate	0.00	0.78	.56	-		
Workplace level						
3. Supportive leadership climate quality (mean)	11.78	3.13	.34	0	-	
4. Supportive leadership climate strength (sd)	0.66	0.34	-0.12	0	-0.40	-

Note: Workplace-level variables disaggregated to the individual level; N=19,993; M=mean; Sd=standard deviation.

Table 2: Two-level analysis of job satisfaction in relation to individual and workplace-level supportive leadership climate variables.

Supportive leadership climate variables	Empty model with constant df=19,992/1,592	Model with constant and control variables df=19,989/1,589	Model 1 df=19,988/1,589			Model 2 df=19,988/1,587			Model 3 df=19,988/1,586		
			Est.	SE	T-value	Est.	SE	T-value	Est.	SE	T-value
Individual level											
1. Individual relative psychological climate			.505	.005	101***	.505	.005	101***	.505	.005	101***
Workplace level – main											
2. Workplace climate level (mean)						.076	.002	38***	.077	.002	38.5***
3. Workplace climate strength (sd)						.030	.015	2*	.035	.015	2.3*
Workplace level – interaction											
4. Interaction 2. x 3.									-0.218	.071	-3.1**
Residual variance											
- individual level	13.7%	9.9%			13.5%			3.9%			3.9%
- workplace level	86.3%	85.6%			51.3%			51.3%			51.3%
- total	100.0%	95.5%			64.8%			55.2%			55.2%

Note: Est.=estimate of regression coefficient; SE=standard error of estimate; df=degrees of freedom individual level/workplace level; *=p<0.05; **=p<0.01; ***=p<0.001.

Footnotes