Eustress and Distress Climates in Teams: Patterns and Outcomes

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The present study analyzes stress climates at work and individual outcomes over time for team members working in different types of climate. Stress climate emerges when the members of a particular group share perceptions about certain events and contexts as a source of distress and/or eustress. By applying cluster analysis to 535 social service employees working in 78 teams in service organizations, 3 types of climate were identified: distressed (predominance of distress appraisal), eustressed (predominance of eustress appraisal), and balanced (similar level of distress and eustress appraisals). Clusters were validated in a new related sample (431 employees working in 43 teams). The levels of exhaustion differed significantly between the distressed and eustressed climates, whereas the levels of vigor and dedication differed significantly between the balanced and distressed climates. Over time, exhaustion significantly decreased in teams where the climate changed over time from distressed to eustressed. In the teams where the stress climate changed from balanced to distressed, there was a significant increase in the level of inefficacy and a significant decrease in the level of vigor. There was also a significant increase in cynicism and a significant decrease in vigor in

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teams where the climate remained eustressed. The importance of the shared appraisal of stress and the implications of the results for effective interventions are discussed.

Keywords: cluster analysis, collective stress, eustress, stress climate, well-being

Work in teams has become necessary for many organizations (DeChurch & Mesmer-Magnus, 2010). One frequently studied team characteristic is work climate (Schneider & Hall, 1972), a multidimensional construct that emerges as a shared perception by team members (Rousseau, 1988; Reicher & Schneider, 1990) and may affect their well-being (Ntoumanis, Taylor, & Thøgersen-Ntoumani, 2012). Team members' shared appraisals of demands as stressful can produce a climate of stress (Lansisalmi, Peiró, & Kivimaki, 2000) and possible negative consequences for individuals. This interpretation, however, does not consider the positive approach to stress, which contemplates its potential positive results (Lazarus & Folkman, 1984) depending on the appraisal of the stressors.

Stress can be defined as the whole process from stressor to strain, with strain being an individual response to the stressor (Griffin & Clarke, 2010). Although the transactional approach to stress (Lazarus & Folkman, 1984) has been widely studied in occupational stress, individual appraisals of stressors have rarely been explicitly studied. Lazarus (1993) describes *distress* as the appraisal of stressors as (potential) sources of harm or threat, and *eustress* as the appraisal of stressors as opportunities or challenges that the individual feels confident about overcoming by effectively mobilizing and using coping resources (Simmons & Nelson, 2007). Similarly, Selye (1974) differentiated between distress associated with negative feelings and disturbed bodily states and eustress related to positive feelings and healthy bodily states.

The appraisal of a situation is essential to the stress experience and its outcomes (Peiró, 2001). Moreover, appraisals of eustress and distress can coexist and occur simultaneously in response to the same stressor (e.g., McGowan, Gardner, & Fletcher, 2006), yielding different profiles of individual distress and eustress appraisal (Escamilla, Rodríguez, & González-Morales, 2009). When these individual-level appraisals of distress and eustress are shared, their collective-level equivalents should emerge, and similar configurations of eustress and distress climate profiles would be identified at the team level (Chan, 1998; Kozlowski & Klein, 2000). Therefore, different types of stress climates could in turn have different outcomes over time for the well-being of the team members (e.g., Grandey, Foo, Groth, & Goodwin, 2012). In this context, the purpose of the present study is to determine, though a cross-level analysis, the effects of team stress climate on team members' individual well-being.

THE CONCEPT OF STRESS CLIMATE

Team climate is understood as team members' shared appraisals (Reicher & Schneider, 1990; Rousseau, 1988) that form "distinctive patterns of collective feelings and beliefs" (Katz & Kahn, 1978, p. 50). Over time, the construct of climate has developed from an all-inclusive to a facet-specific concept (Zohar & Luria, 2005), with more specific focuses (Carr, Schmidt, Ford, & DeShon, 2003) referring to particular types of "climates for *something*" (Schneider & Reichers, 1983). From this perspective, "any and all organizational processes might be usefully studied and understood through a climate lens" (Schneider, Ehrhart, & Macey, 2013, pp. 366–367), such as, for example, *stress climate* (Lansisalmi et al., 2000; Peiró & González-Romá, 2013), which emerges when the members of a group in the organization perceive the events and context as stressful. This alternative collective perspective emphasizes the role of social groups, contexts, and intersubjective experiences of stress in understanding its process (Peiró, 2008), expanding the focus of stress research, which had predominantly taken an individual perspective (e.g., Peiró, 2008). Literature on stress climate emphasized distress appraisal, reflecting the tendency to focus on negative appraisals of stress and work pressure (D'Alleo & Santangelo, 2011; Lansisalmi et al., 2000), and failing to recognize its complementary positive side. However, through a process of "valuation," employees may interpret their organizational environments as challenging, that is, creating a climate of challenge at work (Brown & Leigh, 1996). The possible coexistence of positive and negative interpretations of the same stressors (e.g., McGowan et al., 2006) in organizational environments may lead to different configurations of shared distress/eustress appraisals that may be captured by typologies (Meyer, Tsui, & Hinings, 1993), yielding different types of stress climate.

Stress climate in teams can be understood as specific configurations of both distress and eustress appraisals shared by the members of a particular team. For the sake of simplicity, and taking into account the possible configurations of high/low (and medium) levels of eustress and distress appraisals, we could expect its five different patterns (see Figure 1). At the individual level, three different stress appraisal configurations have been found among Spanish social services professionals when considering both eustress and distress appraisal (Escamilla et al., 2009): (a) medium levels of distress and eustress, (b) low levels of distress and eustress, and (c) high levels of distress and low levels of eustress (Escamilla et al., 2009). We believe that these stress appraisal configurations, conceptualized and operationalized at the individual level, when shared through members' interaction, leadership influence or other psychosocial processes, will have their functionally isomorphic constructs at

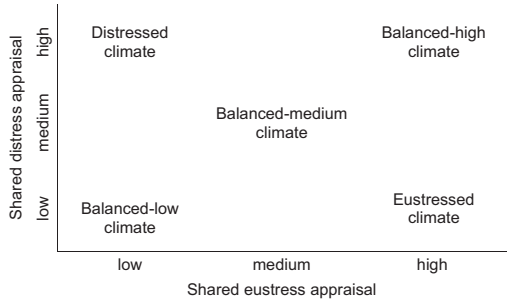

Figure 1. Hypothesized types of stress climate in teams.

the group level (Chan, 1998), yielding analogous types of stress climate (see Figure 1). Accordingly, we formulate the following research question:

Research Question 1: What types of stress climate exist in teams and to what extent do they fit the possible five configuration types?

Given the possible outcomes of shared perceptions for individuals (e.g., Parker et al., 2003) and the simultaneous nature of distress and eustress appraisals (McGowan et al., 2006), we expect stress climate to have complex consequences for the teams' members.

INDIVIDUAL-LEVEL OUTCOMES OF TEAM STRESS CLIMATE

Organizational or team climates have often been considered important factors in explaining individual responses (e.g., Joyce & Slocum, 1979), where cognitive evaluations shared by employees can impact their individual well-being and health (Tucker, Sinclair, & Thomas, 2005), especially burnout, engagement, and job satisfaction (Parker et al., 2003; Rothmann, 2008). In the work context, burnout is understood as "a prolonged response to chronic emotional and interpersonal stressors on the job, and it is defined by the three dimensions of exhaustion, cynicism, and inefficacy" (Maslach, Schaufeli, & Leiter, 2001, p. 397). Burnout stems from a long-term imbalance between demands and resources, induced by perceptions about working conditions (e.g., Schaufeli & Buunk, 2003). Work engagement means being "enthusiastically implicated and nicely occupied with the work demands" (Nelson & Simmons, 2003, p. 103). It is a persistent, pervasive, positive, and fulfilling work-related affective-cognitive state characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Job

satisfaction can be defined as a "positive evaluative judgment one makes about one's job or job situation" (Weiss, 2002, p. 175), with an affective component that is "the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs" (Spector, 1997, p. 2).

The stress–outcome relationships have usually been studied at the individual level, with studies revealing that its nature is determined by the individual's appraisal of a stressful event; appraisals of hindrance (distress) are related to increased burnout and decreased engagement, satisfaction, and psychological well-being (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Crawford, LePine, & Rich, 2010), whereas appraisals of challenge can have a positive impact on individual well-being (Scheck, Kinicki, & Davy, 1997), engagement (Crawford et al., 2010), and satisfaction (Cavanaugh et al., 2000), and a negative impact on burnout (Ben-Zur & Michael, 2007).

Stress climate can be an important concept to understand individual stress experiences, as well as individual behavior and consequences deriving from these experiences (Peiró & González-Romá, 2013). Some studies have approached the issue from a cross-level perspective, showing that stress climate in teams can have an impact on individual-level stress outcomes (e.g., D'Alleo & Santangelo, 2011), supporting the idea that similar relationships between phenomena may exist and be equivalent at the individual- and team-level (Kozlowski & Klein, 2000; Parker et al., 2003). For example, a negative work climate (i.e., climate of workload and pressure in performing tasks) can increase individual burnout in call-center operators (D'Alleo & Santangelo, 2011), and individual experiences of burnout can be reduced by a positive social climate at work (Peterson, Demerouti, Bergström, Asberg, & Nygren, 2008). Some studies emphasize the positive effects of eustress appraisal in addition to the negative effects of distress appraisal, diminishing the negative research bias in the mainstream research on occupational stress (e.g., Kozusznik, Rodríguez, & Peiró, 2012). They suggest positive consequences of a positive climate at work for individual well-being, pointing out that it can impact job satisfaction and commitment (e.g., Carr et al., 2003; Hershberger, Lichtenstein, & Knox, 1994), and that a climate of challenge can be a source of job involvement (Brown & Leigh, 1996). In consideration of the research reviewed above, the present study explores the possible associations between stress climate in teams (i.e., team eustress and distress profiles) and individual burnout, engagement, and satisfaction. Its contribution consists of exploring the collective character of stress in addition to its individual aspects. It goes beyond the common practice in research on relationships between work environment characteristics and individual outcomes to examine all variables at the same level by the individual-level variables' aggregation to the team level or by the team-level variables' disaggregation to the individual level (Glisson & James, 2002; Klein & Kozlowski, 2000). This may contribute to improving knowledge on cross-level climate relationships

in an organization that, so far, have been poorly specified (Zohar & Luria, 2005). Accordingly, we formulate the following research question:

> *Research Question 2:* How can differences in team climates manifest in the level of individual burnout (exhaustion, cynicism and inefficacy), engagement (vigor, dedication, and absorption), and satisfaction?

Finally, the time factor should be given greater consideration in organizational research (Wright, 1997), because it is crucial for studying the dynamic nature (McGrath & Rotchford, 1983) of phenomena such as burnout, which are often triggered by prolonged exposure to social and organizational distress experiences (Peiró, González-Romá, Tordera, & Mañas, 2001). At the individual level, the stress process depends on a constant transaction between the individual and the environment, where primary and secondary appraisals are continuously interacting and, depending on the change in demands and available resources to help cope with the stressor, determine the final categorization of an event with regard to the person's well-being (Lazarus & Folkman, 1984). At the team level, following the isomorphic consensus model (Chan, 1998), stress climate in teams would be expected to have the same dynamic properties. For example, team members' increased awareness of their teammates' helpful resources in difficult situations (Ellis & Pearsall, 2011) should yield more accurate team mental models, capturing members' contributions to the whole (Kozlowski & Klein, 2000), impacting the way they appraise job stressors. Therefore, even small changes at the individual level (i.e., in stress appraisal) can cause big changes in the nature of the bottom-up emergent phenomena (i.e., stress climate) (Kozlowski & Klein, 2000).

Given the novelty of this topic, current research allows us only to speculate about the possible implications of change in teams' stress climate types over time for individual well-being. Accordingly, we formulate the following research question:

> *Research Question 3:* How will the change in team stress climate over time impact individual levels of burnout, engagement, and satisfaction in the members of the teams?

METHOD

Participants and Procedure

For the purposes of this study, a self-report questionnaire was completed by 603 social services professionals working in teams in the Valencian

Community in Spain at Time 1 (T1) and 431 at Time 2 (T2). Study participants were from different occupations (e.g., psychologists, educators, social workers, administrative workers, and sociologists) and job categories (including managers, technicians, administrative personnel, and auxiliary personnel). Spanish social service professionals are often highly qualified workers who provide primary care to homeless people, immigrants, people with disabilities, women, families, children, adolescents, and older people. Although they are generally satisfied with their work and their salaries are around the average in Spain (INE, 2009), Spanish social services employees perceive their work as stressful (Cuesta, 2008; INE, 2005), which makes them a convenience sample of special interest for our study.

There were two data collection points: the first in 2007 and the second around six months later. We employed a 6-month time lag in response to the suggestion of De Lange, Taris, Kompier, Houtman, and Bongers (2004) who argued that carrying out more longitudinal research using shorter time lags than one year is necessary. A shorter time lag (i.e., 6 months, Frone, Russell, & Cooper, 1997; Grant-Vallone & Donaldson, 2001) can be more adequate especially to assess the impact of work-related stress on health outcomes and give more insight into the shorter term consequences of work characteristics on well-being (Rodríguez-Muñoz et al., 2009). Taking into account the characteristics of the variables, is recommended for an adequately planned time lag in panel data (e.g., Finkel, 1995).

All participants from T1 were invited to participate in the study at T2. The T1 sample was matched to the T2 sample by having participants compose a self-generated code based on responses to a series of questions (e.g., *What are the first two letters of your mother's name?*) only known to the respondent. In T2, the same questions were posed to create the same self-generated code, allowing for matching the questionnaires at both time points for the same individual. Identification to which team belonged each individual was possible by obtaining a list of units in the organization prior to administering the questionnaire. Each work unit was assigned a code that each participant was asked to provide on the questionnaire sheet. To ensure that there were enough individuals per team to provide reliable estimates of climate (Hofmann, Morgeson, & Gerras, 2003) and a variety of perspectives (Hill et al., 2005), the teams that did not have at least 3 members were eliminated from further analyses. In the final sample, we retained 535 participants, grouped in 78 work teams, each team ranging in size from 3 to 14 members in T1, and 243 subjects grouped in 43 work teams, each team ranging in size from 3 to 12 members in T2. The sample dropout rate was 29%. All the employees forming part of the sample in T2 were working in teams and none of them changed their teams between T1 and T2. So, all the teams in T2 were composed only of the same individuals as in T1 (no one new, but some individuals who opted not to complete the survey or who have

left). The average age was 37.06 (SD = 8.25) in T1 and 38.19 (SD = 8.45) in T2. The sample composition (81% in T1 and 79% in T2 were women) reflects the real sex distribution in the social services sector in the Valencian Community, where, according to regional statistics, women make up 87.9% of the employees (IVE, 2010). There were no significant differences in the percentages of sex distribution, levels of education, and types of job levels (all ps were between .62 and 1.00) between T1 and T2. As expected, there were significant increases in age, average seniority in the organization, and average seniority in the current position (all ps $< .001$), because these are repeated measures. To study change, we only took into account the matching subjects between T1 and T2 that at both time points worked in teams composed of a three member minimum.

The two samples in the present study used the following three steps: (a) to identify the profiles of stress climate we used the sample from T1 composed of 535 employees (78 teams); (b) to confirm the stress climate profiles found at T1 we used the new related sample from T2 composed of 243 employees (43 teams); (c) finally, to study change over time in the outcomes of stress climate change, we matched the same individuals from T1 with T2 and filtered out from the analyses any respondent from whom we did not have data at both time points (43 teams).

Once the social services centers had been contacted by phone and agreed to participate, at both time points members of the research team administered a self-completion questionnaire to the employees, mostly during the coordination meetings. When answering the questionnaires on-site was not possible, we distributed the questionnaires to the participants and collected them individually in a sealed envelope about four days later. We guaranteed the anonymity of the data by using the self-generated code to label surveys.

Variables and Their Operationalization

Team Stress Climate

Based on the consensus model (Chan, 1998), we obtained team stress climate scores by aggregating individual data (Ostroff, 1993) from the Spanish version of the Valencia Eustress-Distress Appraisal Scale (VEDAS, Rodríguez, Kozusznik, & Peiró, 2013), producing group averages (Bliese & Jex, 1999) of individual workers' scores for distress and eustress appraisals. The statistical justification for aggregation will be presented in the data analysis section. The VEDAS is composed of 20 items representing demanding situations that can be appraised as both distress and eustress. The VEDAS captures the majority of the different demanding situations at work that may

reflect ongoing organizational practices, procedures, and policies involving employees. Each respondent was asked to rate each stressor (e.g., *Having to take risks*) on the amount of perceived pressure and opportunity/challenge these situations represented for him or her, using two 6-point response scales: one for threat and one for challenge/opportunity, The response scales range from 1 (*clearly, it is not a source of threat*) to 6 (*clearly, it is a source of threat*) for distress appraisal, and from 1 (*clearly, it is not a source of challenge/opportunity*) to 6 (*clearly, it is a source of challenge/opportunity*) for eustress appraisal. The scales have good psychometric properties ($\alpha = .90$ for distress and $\alpha = .86$ for eustress).

Burnout

To measure burnout, we used the Spanish version (Salanova & Schaufeli, 2000) of the Maslach Burnout Inventory – General Survey (MBI-GS, Schaufeli, Leiter, Maslach, & Jackson, 1996). The scale has 16 items, with a response scale from 0 (*never*) to 6 (*every day*), and it measures three Burnout factors: emotional exhaustion (5 items, $\alpha = .89$, sample item: *I feel emotionally drained by my work*), cynicism (5 items, $\alpha = .72$, *I have become less enthusiastic about my work*), and inefficacy (6 items, $\alpha = .82$, *I can effectively solve the problems that arise in my work*, reverse item), revealing good internal consistency.

Work Engagement

Work Engagement was assessed with the shorter version of the Utrecht Work Engagement Scale (UWES-9), reduced to nine items by the authors (Schaufeli, Arnold, Bakker, & Salanova, 2006). The response scale ranges from 0 (*never*) to 6 (*every day*). The scale distinguishes three factors of Engagement: vigor (3 items, $\alpha = .82$, *When I get up in the morning, I feel like going to work*), dedication (3 items, $\alpha = .87$, *I'm enthusiastic about my job*), and absorption (3 items, $\alpha = .70$, *When I'm working, I forget everything around me*), showing satisfactory internal consistency.

Satisfaction

Satisfaction was measured with a 5-item instrument adapted by Bravo, García, Peiró, and Prieto (1993), with a response scale ranging from 1 (*not satisfied*) to 5 (*extremely satisfied*), and $\alpha = .57$ (sample item: *The amount of pay I receive for the work I do*).

Demographic Variables

Demographic variables included age, sex, marital status (single; married or living as a couple, widower, and divorced), highest grade of regular education completed (primary or secondary school, graduated, university or college degree (bachelor's, doctorate, and other), job level (management, superior technician, technician's assistant, administrative personnel, and auxiliary personnel), seniority in the organization, and seniority in the current position (in months).

Data Analysis

Missing data are unavoidable and a potentially significant problem, especially when the amount of missing data exceeds 5% (e.g., Graham & Hofer, 2000). In our study however, the percentage of missing data was small (0.9% in T1 and 3% in T2) and it was unlikely to be a severe problem. For the subjects with missing data, the data from cases with more than 50% missing values in T1 and T2 were deleted (e.g., Haenlein, 2004). This criterion was chosen as commonly used in research (e.g., Fitzgerald, Drasgow, Hulin, Gelfand, & Magley, 1997; Hipp, Hawellek, Corbetta, Siegel, & Engel, 2012; Simon, Friedman, Hastie, & Tibshirani, 2013; Wasti, Bergman, Glomb, & Drasgow, 2000). For the remaining respondents, missing values were imputed using the information from the item mean.

In addition, observations on each clustering variable (distress and eustress appraisal) that exceeded 3.00 *SD*s from the mean were eliminated. Finally, the variables used to form the clusters were standardized to *Z*-scores ($M = 0$, $SD = 1$) to equalize the contribution of each variable in the cluster analysis (Hair & Black, 2000).

To address Research Question 1 and identify the stress climate types in teams and the extent to which they reproduce the types found at the individual level, cluster analysis was conducted separately for the two related samples of 78 (T1) and 43 (T2) work teams. To search for differences in individual outcome variables (burnout, engagement, and satisfaction) in different climate types in the teams in which the employees worked, we created a variable for each individual that represented the type of climate to which his or her team belonged. Because the intervals between the ordinal scale values cannot be assumed equal (Jamieson, 2004), the sample of 535 employees (T1) was analyzed using the nonparametric one-way ANOVA on ranks with post hoc analyses. To study the change in stress climate over time, we classified *stress climate change* into 9 different types, consistent with the climate type the teams represented in T1 and in T2 that are presented in

Table 1. There were 23 teams with the same stress climate type in T1 and T2 and 20 teams in which the stress climate type changed over time.

To check for any significant change in the individual outcome variables over time, we created a new variable for each individual that represented the type of team stress climate change in their team, and we ran a Wilcoxon signed-ranks test for related samples on 243 employees (T1 and T2). Longitudinal designs make it more reasonable to consider the unidirectionality of causal effects, they reduce the risk of common-method variance when using self-report measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), and they make it possible to analyze change.

Data Aggregation

The conceptual rationale for using an aggregated measure of team stress climate was described in the introduction. However, according to Klein, Dansereau, and Hall (1994), aggregation must also be justified statistically. To this end, the Average Deviation Index (ADI) (Burke & Dunlap, 2002) coefficients, the Intraclass Correlation Coefficient (ICC1; James, 1982), and one-way ANOVA on ranks were calculated for both the distress and eustress appraisal subscales of the VEDAS (Rodríguez et al., 2013). The mean of the ADIs was 1.02 ($SD = .21$) for the distress scale, and 0.94 ($SD = .20$) for the eustress scale. Following the interpretative standard of Burke and Dunlap (2002, p. 162), the maximum acceptable limit for the mean ADIs in our case was 1. The ICC(1) were equal to .06 for distress and to .09 for eustress appraisal, providing support for aggregating the perceptions to provide a descriptor of climate (James, 1982), as they both fall into the acceptable range of .00 to .50 (James, 1982). The one-way ANOVA on ranks revealed the existence of significant differences among the teams in the level of eustress appraisal, $H(81) = 122.800$, $p = .002$ and the existence of a

Table 1. Types of Stress Climate Change Across Two Times and the Number of Teams and Individuals Represented in the Database

Type of stress climate change	Cluster		Number of teams	Number of persons
	T1	T2		
1	distressed	distressed	8	47
2	distressed	balanced	2	14
3	distressed	eustressed	2	10
4	balanced	distressed	4	19
5	balanced	balanced	2	9
6	balanced	eustressed	4	27
7	eustressed	distressed	2	7
8	eustressed	balanced	6	39
9	eustressed	eustressed	13	71

marginally significant difference among the teams in the level of distress appraisal $H(81) = 101.627$, $p = .060$. We found sufficient empirical support in our statistics to aggregate scores on our variables at the team level.

RESULTS

Team Stress Climate Classification

Teams were clustered on the basis of the aggregated score for each team on distress and eustress appraisal, measured by the VEDAS (Rodríguez et al., 2013). To this end, we followed a two-step procedure, as recommended by Blashfield and Aldenderfer (1988) and Hair and Black (2000). First, agglomerative hierarchical cluster analysis was conducted for the 78 teams in T1 to obtain the initial cluster groupings and the cluster means for each of the clusters. Squared Euclidean distance was used to measure the distance between the shared appraisal of distress and eustress in the work teams, and Ward's (1963) minimum variance method, efficient and deriving more equally sized groups (Ward, 1963), was used to form the clusters. A 3-cluster solution was selected based on the rescaled distances in the hierarchical cluster dendrogram, the percentage change in agglomeration coefficients in each step of the cluster analysis, and conceptual considerations (Hair & Black, 2000), which produced 3 distinct pattern profiles. In the second step of the cluster analysis, the cluster means (centroids) from the hierarchical 3-cluster solution were submitted to a nonhierarchical, k-means cluster analysis in T1 to refine the initial cluster solution and reduce the risk of cluster mis-assignment, which is common with hierarchical cluster methods (Blashfield & Aldenderfer, 1988).

Figure 2 shows the final k-means cluster profiles expressed in standardized scores that are easy to interpret, as they eliminate raw score means reflecting arbitrary units of scaling (Nunnaly & Bernstein, 1994). Cluster names reflect the predominant appraisal (eustress or distress) in teams or their similar levels.

Cluster 1, "distressed," reported distress appraisal levels about 0.46 *SD*s above the sample mean and eustress appraisals about 1.28 *SD*s below the sample mean, and it comprised 27% of the sample (21 teams). Cluster 2, "balanced," reported distress appraisal levels about .78 *SD*s above the sample mean and eustress appraisals about 0.91 *SD*s above the sample mean, and it comprised 29% of the sample (23 teams). Cluster 3, "eustressed," reported distress appraisal levels about 0.74 *SD*s below the sample mean and eustress appraisal about 0.20 *SD*s above the sample mean, and it comprised 44% of the sample (35 teams).

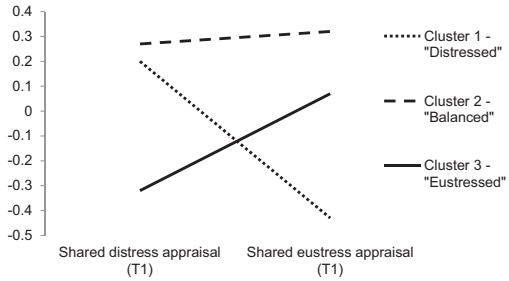

Figure 2. Three-cluster solution, k-means nonhierarchical cluster analysis. Standardized.

McIntyre and Blashfield's (1980) nearest-centroid cross-validation technique was used to test the replicability of the k-means cluster solution. The nonhierarchical, k-means cluster analysis was repeated for the second related sample (T2, 43 teams), and a 3-cluster solution was supported. The cross-validation procedure involved finding the minimal distance from each work team in T1 to the cluster centers of the related sample in T2, and assigning each work team to the nearest cluster center.

Demographic Characteristics of Clusters

Chi-square tests were run to examine possible differences in the composition depending on the different types of climate in teams. No statistically significant differences were found in the case of sex, marital status, highest education level reached, or job level (*ps* $>$ .05). The ANOVA and post hoc analyses showed no significant differences in age or seniority in the current position between the three types of climate (Tukey *HSD* $>$ .05 in both cases). However, significant differences were found for seniority in the organization; in the distressed climate, seniority in the organization was significantly higher than in the balanced climate, $M = 107.32$ months (8.94 years) and 81.63 months (6.80 years), respectively, $F = 3.08$, $p = .047$, Tukey's *HSD* = .039, Cohen's $d = .30$ (medium effect size).

Cluster Profiles

To address Research Question 2 and determine whether there were differences in the levels of individual outcome variables between employees pertaining to different stress climate types in teams, we ran the one-way ANOVA on ranks. Pairwise comparisons were performed using Dunn's (1964) procedure, with a Bonferroni correction for multiple comparisons.

The results of these comparisons provide an answer to Research Question 2 regarding the levels of individual burnout, engagement, and satisfaction in different stress climates, and they are presented in Table 2. The individual levels of exhaustion, vigor, and dedication were statistically different between different types of stress climate, $\chi^2(2) = 8.885$, $p = .012$; $\chi^2(2) = 6.358$, $p = .042$; and $\chi^2(2) = 6.669$, $p = .036$, respectively. Regarding the dimensions of burnout, post hoc analyses revealed statistically significant differences in exhaustion scores between distressed and eustressed climates ($p = .009$, $r = .16$, small effect size). Regarding the three dimensions of engagement, there were statistically significant differences in the levels of vigor between balanced and eustressed climates ($p = .047$, $r = .14$), and in the levels of dedication between balanced and distressed climates ($p = .029$, $r = .15$), both with small effect sizes.

The Impact of Team Stress Climate Evolution on the Change in Outcome Variables

To answer Research Question 3 about the impact of the change in team stress climate over time on the outcome variables (individual levels of burnout, engagement, and satisfaction of the members of the teams), the nine different types of stress climate change were subjected to a Wilcoxon Signed-Rank Test for ordinal variables. The results show that in the climate that evolved from distressed to eustressed, there was a statistically significant decrease in exhaustion levels ($M = 2.86$ in T1 and 2.3 in T2), $z = -2.203$, $p = .028$, $r = .49$ (medium effect size). In the climate that changed from

Table 2. Means, Standard Deviations, and Differences in the Means of the Variables Between the Employees Assigned to a Different Type of Cluster

	Cluster 1 – distressed $n \geq 137$		Cluster 2 – balanced $n \geq 133$		Cluster 3 – eustressed $n \geq 198$			
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	χ^2	Sig.
Satisfaction	3.03	.54	3.07	.58	3.11	.57	2.129	.345
Exhaustion[b]	2.83**	1.28	2.57	1.38	2.37**	1.24	8.885	.012
Inefficacy	1.58	.94	1.36	.85	1.43	.91	3.986	.136
Cynicism[c]	1.76†	1.11	1.64	1.05	1.48†	1.03	4.894	.087
Vigor[a]	3.81*	1.12	4.12*	1.09	4.05	1.19	6.358	.042
Dedication[a]	3.60*	1.34	4.00*	1.27	3.82	1.30	6.669	.036
Absorption	3.81	1.11	3.96	1.14	3.89	1.07	.830	.660

Note. Because of missing data, *n* sizes ranged: distressed = 137–146; balanced = 133–148; eustressed = 198–229.
[a] Significant difference between Cluster 1 and Cluster 2. [b] Significant difference between Cluster 1 and Cluster 3. [c] Marginally significant difference between Cluster 1 and Cluster 3.
† $p < .10$. * $p < .05$. ** $p < .01$.

balanced to distressed, there was a significant increase in inefficacy (M = 1.51 in T1 and 1.84 in T2), $z = -2.101$, $p = .036$, $r = .34$, and a significant decrease in vigor (M = 3.93 in T1 and 3.29 in T2), $z = -2.157$, $p = .031$, $r = .35$ (both with medium effect sizes). In the climate that remained eustressed over time, there was a significant increase in cynicism (M = 1.46 in T1 and 1.80 in T2), $z = -2.497$, $p = .013$, $r = .26$, and a significant decrease in vigor (M = 3.95 in T1 and 3.65 in T2), $z = -2.169$, $p = .030$, $r = .18$ (both with small effect sizes). The remaining six types of team stress climate change did not present significant results.

DISCUSSION

The present study aimed to analyze the profiles of team stress climate, as well as their evolution in relation to outcomes at the individual level. Stress climate was defined as a specific configuration of distress and eustress appraisal shared by the members of a particular group in the organization.

Three types of stress climate were found: distressed, eustressed, and balanced, and the same profiles were replicated in T2, fitting into three of five proposed types of stress climate depicted in Figure 1. Levels of exhaustion and cynicism were significantly higher in members of the distressed climate teams compared with the eustressed climate teams. Levels of vigor and dedication were significantly higher in members of the balanced climate teams compared with the distressed climate teams. Additionally, a significant difference was found in the composition of the climate profiles; in the distressed climate teams, seniority in the organization was significantly higher than in the balanced climate teams. Over time, the level of exhaustion decreased in the teams whose climate changed from distressed to eustressed. In the climate that changed from balanced to distressed, members' inefficacy increased and their vigor decreased. In the climate that remained eustressed over time, the members' cynicism increased and their vigor decreased.

The appearance of the three clusters shows the existence of different types of team stress climate at work formed by differences in shared appraisals of distress and eustress in each team, as in previous research (Escamilla et al., 2009) that also identified three stress appraisal clusters at the individual level; however, the types found in the present study differed to some extent from those found at the individual level (Escamilla et al., 2009): the distressed and balanced clusters coincided with the previous findings; however, the balanced climate found in our case had higher levels of distress and eustress appraisal than the balanced cluster found in previous research. Also, the third, "eustressed," climate was where eustress appraisal did not coincide with the third type of individual-level appraisal characterized by a lower level of both distress and eustress appraisal.

This difference may be explained by some contextual factors exclusively present in teams, such as context and the type of services teams provide, or other factors that may influence the stress appraisal, such as the role of the leader, who may transmit vision and inspiration (Bass, 1999), impacting climate at work (Pirola-Merlo, Hartel, Mann, & Hirst, 2002).

The fact that the distressed climate was composed of employees with a significantly higher seniority level than the balanced climate may mean that people who had more time to experience negative events in this organization (e.g., failures) may tend to see work as a greater source of distress. Of course, the same people may also have had more time to experience positive events, but the results of one study suggest that negative information is more salient than positive or neutral input (Denburg, Buchanan, Tranel, & Adolphs, 2003).

The results show that the same work demands can be appraised by individuals as threatening or as opportunities/challenges (Lazarus & Folkman, 1984; McGowan et al., 2006). The study addresses recent interest in the impact of group processes on individual behavior (e.g., Bliese & Britt, 2001), and it shows that perceptions can be shared and produce climate in teams (Rousseau, 1988). Moreover, our study shows that stress climate is an emergent phenomenon (Kozlowski & Klein, 2000) that may change over time, and this change is fundamental to the individual outcomes of stress appraisal (e.g., Peiró, 2001; Schaufeli & Buunk, 2003). Also, by showing that stress climate can impact individual outcomes, this study demonstrates that including cross-level (Bliese & Jex, 1999) and social context approaches to stress (Länsisalmi et al., 2000) can be beneficial for a more comprehensive understanding of stress experiences.

The present study highlights the importance of studying positive aspects of occupational stress, in addition to its negative side (Peiró, 2008). Significantly higher levels of exhaustion in the distressed climate than in the eustressed climate and significantly lower levels of vigor and dedication in the distressed climate than in the balanced climate support previously found positive relationships between the appraisal of distress and burnout (Cavanaugh et al., 2000; Crawford et al., 2010) and negative relationships between hindrance demands (distress) and engagement (Crawford et al., 2010). Surprisingly, significantly higher levels of vigor and dedication were found in the balanced climate compared with the remaining two types of climate, which we can interpret as an *optimal* appraisal of stress for a person's engagement at work, simultaneously appraising the challenges and possible threats of a demanding situation. Recognizing threats in stressful events could serve as a warning that something adverse is happening, given that exaggerated positive perceptions of work threats may not always be desirable, as they might be related to workaholism and threaten health (Kofta, 2003).

Furthermore, the results of this study suggest that stress climate in teams may change over time. In teams that evolved from a distressed to a eustressed climate, the members' exhaustion decreased over time. These results agree with previous findings at the individual level showing that individuals' burnout can be reduced by appraising the job as challenging (Ben-Zur & Michael, 2007), by a positive social climate at work (Peterson et al., 2008), and by a decrease in distress appraisal (e.g., Cavanaugh et al., 2000). Our study indicates that the appraisal at the team level can also contribute to a decrease in burnout. Interestingly, in the teams whose climate remained eustressed over time, cynicism increased and vigor decreased. Although counterintuitive at first glance and opposed to gain spiral theory (Llorens, Schaufeli, Bakker, & Salanova, 2007) that suggests that there should be reciprocal causation between positive outcomes at work (Salanova, Breso, & Schaufeli, 2005), these results can be interpreted using the theoretical framework of the coping process. In the eustressed climate, the predominant appraisal of stressors as challenges and opportunities can make individuals ignore threats and fail to engage in coping to handle the effects of stressors. This lack of protection from the effects of threat may, in the long run, cause an increased level of inefficacy and a decreased level of vigor. Once again, these results suggest that there might be an optimum ratio between distress and eustress appraisals that is necessary for the well-being of team members.

Contributions

The present study makes some important contributions. First, it adds information to the scarce literature examining contextual factors that can ameliorate or reduce the negative impact of stressors (Bliese & Britt, 2001), analyzing stress and its outcomes from a cross-level perspective that, to the best of our knowledge, has not received sufficient attention. Second, it emphasizes both positive (i.e., satisfaction, work engagement) and negative (burnout) effects of eustress and distress, progressively diminishing the negative research bias in the study of occupational stress (Peiró, 2008). Finally, it addresses a suggestion to investigate the effects of shared stressors (i.e., stress climate) on the relationships between other individual-level variables (Tucker et al., 2005) and emphasizes the change in team climates over time and subsequent individual changes in stress outcomes (Wright, 1997).

Limitations

Some limitations warrant a cautious interpretation of the results of this study. First, in our study we used a convenience sample, and future research

should study stress climate using broader samples. Furthermore, contextual factors that could impact stress climate types (i.e., leadership) and other variables that could influence the level of the outcome variables (i.e., coping) should be considered in future research. Finally, the internal consistency for job satisfaction was low. Because Cronbach's alpha is a function of the number of items in a scale and of item intercorrelation (Cortina, 1993), a lower alpha for satisfaction might be attributable to the small number of items, whereas the mean correlation among its items ($r = .26$) is comparable with that of the other scales in this study.

Conclusions

In general terms, the results of the present study show that stress climate in teams, a social contextual variable, has an impact on individual-level stress outcomes of their members (Grandey et al., 2012), and they evolve over time as the teams' climates change. These findings reveal various possibilities for psychological interventions, such as training for teams to identify resources and strategies to cope with stressors and develop climates at work that provide protection from adverse effects of stressors and increase employee well-being. The role of the team leader in improving team climate should then receive more attention.

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