Job-related antecedents of team resilience and improved team performance

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Abstract

Purpose – It is increasingly important for organizations to respond effectively and promote positive outcomes under adverse and unstable conditions. Resilience is salient because reflects the dynamic process that enables successful results under stressful conditions. The purpose of this paper is to investigate the potential role of team resilience as the psychological mechanism that explains how job demands and job social resources are related to and enhance team performance.

Design/methodology/approach – Self-reported questionnaires were distributed to 1,633 employees, nested in 275 teams from 52 Spanish small and medium enterprises. Aggregated scores were employed for a team-level structural equation modeling analysis.

Findings – Results support a partial mediation model in which job social resources affect team resilience, and in turn impact team performance. No significant effects were found for job demands affecting team resilience. However, the demands × resources interaction influences team resilience, and thus the impact of resources on team resilience was attenuated by demands. In the same way, the demands × resources interaction influences team performance.

Research limitations/implications – Job social resources are related to team performance, but team resilience is a significant mediator. Further research should investigate the effects of different job demands on team resilience.

Practical implications – The results suggest that managers should focus on developing job social resources to augment team resilience and team performance.

Originality/value – Managers could benefit from understanding how team resilience could be developed, given that team resilience aids to achieve positive team outcomes.

Keywords Quantitative, Structural equation modelling, Team performance, Job demands, Job social resources, Team resilience

Paper type Research paper

The current organizational environment is frequently described as more unstable, complicated, and threatening than it has been in the past. Organizations, as well as the individuals and the teams that they are composed of, often have to face complex environments characterized by hyper-competition and rapid changes (Stephens *et al.*, 2013; Sutcliffe and Vogus, 2003). Thus, for organizations as well as their teams and members, it has become increasingly more important to develop the ability to effectively respond and promote positive adaptation to changes. Now then, why do some organizations survive by adapting while others fail? Recent calls have been addressed regarding the need to explore the potential role of variables that may have an impact on organizational performance in crisis scenarios, especially referring to resilience (Kaplan *et al.*, 2012; Linnenluecke and Griffiths, 2010). In this sense, previous

studies proposed that by developing employees' resilience the organization will become more adaptive and successful over time (Youssef and Luthans, 2005). In fact, the resilience approach recognizes this need for flexibility, adaptation, and improvisation in situations characterized by change and uncertainty, as well as the need to find inner strengths and resources in order to cope effectively (Ganor and Ben-Lavy, 2003; Youssef and Luthans, 2007). In the same way organizations are focussing increasingly more on the performance of their teams (Gully *et al.*, 2002), attention will be directed toward identifying the characteristics and processes that elicit the synergistic benefits assumed by team-based work structures (West *et al.*, 2009). However, despite teams' relevance in the lives of organizations, little research has been conducted on team-level resilience.

Although resilience is relative and emerging in transaction with specific circumstances (Staudinger *et al.*, 1993), resilience developed and displayed in a certain situation will lead to better preparation for upcoming events (Egeland *et al.*, 1993). Therefore, establishing which variables help the development of team resilience is essential to better prepare teams to respond to future adverse situations. Given that resilience development is characterized by contexts of significant adversity (Masten and Reed, 2002), a natural starting point for research is to establish criteria for ascertaining the presence of conditions that pose a threat (Sutcliffe and Vogus, 2003). In addition, research suggests that resilience is facilitated by the existence and quality of interpersonal relationships (e.g. Gittel *et al.*, 2006; Riolli and Savicki, 2003). For example, the interactive, relational processes among team members can facilitate (or hinder) the sharing of information, learning processes, and the development of adaptive solutions to problems (Stephens *et al.*, 2013). Based on these previous evidences, and using the Job Demands-Resource (JD-R) model (Demerouti *et al.*, 2001) as a guiding framework, in this study we investigated the predicting role of collective job demands (as adverse conditions) and collective job social resources (representing positive interpersonal relationships) on team resilience. Moreover, we examine whether the relationship between collective job demands and social resources with team resilience stimulated positive team outcomes, such as in- and extra-role performance. Overall the present study aims to understand more about how collective job antecedents drive the within-team experience to promote favorable reactions (i.e. resilience) among teams, in order to achieve better team performance.

The present study extends previous research in several ways. First, although earlier studies have already examined resilience in the work context, the focus was mainly at the individual level of analysis. Instead, we used aggregated scores for a team-level analysis (cf. Referent-Shift Consensus model; Chan, 1998). Second, although earlier studies have examined mainly psychological predictors of resilience (i.e. positive emotions, see Algoe and Fredrickson, 2011; Meneghel *et al.*, 2016), we also included job antecedents – specifically, demands and resources – as potential antecedents. Finally, we proposed team resilience as a significant psychological mechanism to link collective job demands and resources on the one hand, and team performance on the other, giving evidence about how stimulate positive outcomes for organizations based on team-level variables. Our results are aimed to suggest relevant guidelines for managers and HRM practitioners to achieve positive team performance under adverse situations, like the current crisis scenario.

Defining team resilience

In the domain of organizations and management, the concept of resilience has been used by researchers and practitioners to refer to relatively ordinary adaptive processes when encountering unexpected, adverse conditions that result either from large-scale disturbances or the accumulation of several minor disruptions (Sutcliffe and Vogus, 2003). Resilience may

be considered as much an individual characteristic as a social factor in teams or organizations. In this study, we extend understanding of resilience, as well its antecedents and consequences, at the team level. Consistent with social identity theory (Tajfel and Turner, 1985), individuals identify with their team and internalize its values and norms, which lead to homogeneity in attitudes and behavior. Evidence shows that, in a similar way to individuals acting alone, individuals performing as teams tend to display somewhat regular patterns of behavior and processes (Stewart, 2010). In order to provide a possible explanation for this, Totterdell (2000) stated that "team members could respond similarly to shared events and therefore end up feeling the same way" (p. 848) – in our case sharing the same level of team resilience. Thus, in our study we focus on team resilience, defined as "the capacity to bounce back from failure, setbacks, conflicts, or any other threat to wellbeing that they may experience" (West *et al.*, 2009, p. 253). It should be highlighted that team resilience differs from other similar constructs like team potency and team efficacy because these constructs may be considered antecedents or evocative of team resilience, because "the sense of confidence generated by high levels of efficacy and potency is believed to help teams persevere in the face of adversity" (Gully *et al.*, 2002, p. 819).

Collective antecedents of team resilience
To test the link between collective job antecedents and team resilience we used the JD-R model (Demerouti *et al.*, 2001) as a guiding framework. According to the JD-R model, the variety of psychosocial work characteristics can be classified into two broad groups, job demands and job resources, which incorporate different specific demands and resources depending on the context under study (detailed information can be found in Bakker and Demerouti, 2007; Demerouti *et al.*, 2001).

Following the propositions of the JD-R model, job demands lead to threatening and stressful situations. Intuitively, one might suspect that job demands should not be important in predicting team resilience. However, as noted earlier, resilience does not refer to invulnerability in the face of stress, but rather to the ability to recover from stressful conditions. As highlighted by different authors, implicit within the notion of resilience is the exposure to significant threat or adversity (e.g. Luthar *et al.*, 2000; Powley, 2009), and thus research on resilience needs to recognize and determine the stress or adversity encountered (Sutcliffe and Vogus, 2003). We suggest that collective job demands (i.e. quantitative overload, role conflict, and ambiguity) are linked to team resilience since, to a certain extent, they represent adverse conditions in the organizational setting. That is, given that stressful situations are a key condition for developing resilience (Masten and Reed, 2002), we posit that teams with higher job demands (i.e. quantitative overload, role conflict and ambiguity) will report higher resilience. In this case, because the sample held different jobs, we examine three kinds of demands that are present across various jobs and organizations (Gruman and Saks, 2011). Taken together, these theoretical linkages lead to the following hypothesis:

H1. Job demands are positive associated with team resilience.

This could be explained following the conservation of resources (COR) theory (Hobfoll, 1989, 2002, 2011), which suggests that employees and groups are motivated to obtain, retain, and protect resources. A central assumption in COR theory is that people use their resources to deal with stressful conditions and protect themselves from negative outcomes. Accordingly, people with greater resources (e.g. more social support from their colleagues) are less vulnerable to stress, whereas those with fewer resources (e.g. less supportive colleagues) are more vulnerable to stress (Bakker, 2010).

Moreover, COR theory postulates that individuals and groups strive to accumulate resources over time, and this accumulation creates "resource caravans." That is, resources tend not to exist in isolation, but rather they aggregate such that, for instance, employees working in a resourceful work environment are likely to reinforce their own resilience. In this sense, the presence of collective resources is crucial for the development of team resilience.

However, the exploration of how a team's collective resources can be used to positively adapt to adversity has been widely overlooked (Morgan *et al.*, 2013). Previous evidence about team and group resilience has suggested that the quality of relationships matters for resilience (Morgan *et al.*, 2013; Stephens *et al.*, 2013). In this study, we focus on two kinds of job social resources (i.e. social support climate, and team coordination) because they can be representative of high-quality relationships that are particularly valuable for resilience, since individuals and the teams they comprise are better able to collectively comprehend difficult situations and figure out the best way to deal with them (Carmeli *et al.*, 2013). Regardless of the specific underlying mechanisms, what is clear is that the role of relationships is clearly vital for a team's capacity to respond positively to adversity. Applying this logic to the study, we suggest that job social resources (i.e. social support climate and team coordination) develop team resilience. Therefore we propose the following:

H2. Job social resources are positively associated with team resilience.

In addition to the main effects of job demands and resources, the JD-R model proposes that the interaction between job demands and job resources is also significant for expected outcomes. Particularly, it suggests that job resources may buffer the negative impact of job demands and also that job resources gain their salience when job demands are high (Bakker and Demerouti, 2007). In this study, we based on this last assumption and suggest that job resources gain their positive potential on resilience particularly when teams are confronted with high job demands. In fact, is in stressful situation when resilience needs to be developed and a strengthened relationship between resources and resilience is expected. In line with this proposition, we argue that job demands could moderate the relation between job resources and resilience. Thus, we expect:

H3. Job demands moderate the positive relationship between job resources and resilience such that when demands are high, resources have a stronger relationship with resilience.

The mediation hypotheses on team performance
In order to investigate positive outcomes of team resilience, the following aim of this study is to determine how team resilience is related to team performance, measured as in-role and extra-role performance, or task and contextual performance, respectively (Goodman and Svyantek, 1999). We assumed that team resilience has a positive relationship with team performance because, in the same manner as individuals, highly resilient teams are likely to be creative, adaptive to change, and persistent in dealing with adversity (Luthans *et al.*, 2005), and additionally they tend to use setbacks as "springboards" or opportunities for growth (Tugade and Fredrickson, 2004). Furthermore, we assumed that team resilience has a positive relationship with team performance because teams with a high level of resilience are likely to come up with flexible and adaptive responses to adversity, and thus they will be less likely to experience the potentially

damaging effects of threatening situations. Previous evidence revealed that team resilience is positively related with team performance measured by the supervisor (Meneghel *et al.*, 2016; Salanova *et al.*, 2012). For these reasons, they improved their work performance. Hence, we expect:

H4. Team resilience is positively associated with team performance.

In addition we formulate two mediation hypotheses, taking into account team resilience as mediator between job demands and job social resources at one hand and team performance at the other. In the first of them, we postulate that the relationship of job demands to team performance is fully mediated by resilience. No direct effect is expected between job demands and performance, and this implies that the impact of job demands on performance is fully mediated by resilience. That is, collective job demands help to build team resilience, which in turn increases team performance. Hence, we expect:

H5. Team resilience fully mediates the relationship between job demands and team performance.

As pointed out in the JD-R model, the presence of job resources stimulates personal growth and development, thus facilitating the accomplishment of work goals. Accordingly also with COR theory proposed above, the process of accumulate resources moves with increased strength as groups obtain resources, so they can look for new challenges, thereby improving their performance in order to meet the organization's assignments. Applying this logic to the study, we suggest that job social resources (i.e. social support climate and team coordination) develop team resilience and that both are positively related with team performance. Therefore we propose the following:

H6. Team resilience partially mediates the relationship between job social resources and team performance.

Method
Sample and procedure
The sample consisted of 1,633 employees nested in 275 teams from 52 Spanish companies (small and medium enterprises). In total, 35 companies belonged to the service sector (66.3 percent of employees), 12 to industry (27.2 percent of employees), four to construction (4.3 percent of employees), and one to agriculture (2.3 percent of employees). The size of the teams ranged from 2 to 44 employees, with an average of 5.94 (SD = 5.74). Of the participants, 55.8 percent were male, and 83.6 percent of them had an open-ended employment contract. The average job tenure in the organization was 6.85 years (SD = 6.59).

In order to collect the data, we previously contacted the key stakeholders in each organization (i.e. CEOs, human resources managers, and risk-and-safety prevention managers) to explain the purpose and requirements of the study. Second, we explained that participation in this study was voluntary, that only aggregated data would be reported, and that all identifying information would be removed. Employees were considered to be members of a team when they had the same supervisor and interact frequently in order to achieve common goals or purposes, and besides they had interdependent tasks. In this sense, team supervisor can be a member of the team for practical purpose, but he/she is responsible for the productivity and actions of team. Such teams may be responsible for reception department within a hotel, a consulting on work and tax law, or one of the department in a large store. In order to recognize

membership of the team, we included a matched code number on the front page of the questionnaires. Finally, each employee who had been in the enterprise for at least six months was given a copy of the questionnaire, because it was found that team resilience is related to team outcomes only after teams have had extensive prior interaction (West *et al.*, 2009).

Measures

The variables were measured with previously validated scales and reworded using "teams" as a reference (Salanova *et al.*, 2012). Internal consistency (Cronbach's α) for the scales reached the cut-off point of 0.70 (Nunally and Bernstein, 1994). All items were scored on a seven-point scale ranging from 0 (never/completely disagree) to 6 (always/completely agree).

Job demands. Three job demands were measured, each composed of three items: quantitative overload (Beehr *et al.*, 1976; e.g. "In my team, we have more work than we can really do"), role ambiguity (Rizzo *et al.*, 1970; e.g. "In my team, we have disorganized tasks"), and role conflict (Rizzo *et al.*, 1970; e.g. "In my team, we do tasks which we do not agree on"). α's were 0.86, 0.83, and 0.82, respectively.

Job resources. Two job resources were measured, each composed of three items: social support climate (Van Muijen *et al.*, 1999; e.g. "In my team, our immediate supervisor attends our personal problems"), and team coordination (Salanova *et al.*, 2012; e.g. "My team is well-coordinated"). α's were 0.76 and 0.77, respectively.

Team resilience. Team resilience was measured with a scale composed of seven items, each of them based on one of Mallak's (1998) principles for implementing resilience in organizations, for example: perceive experiences constructively, perform positive adaptive behaviors, and develop tolerance for uncertainty. Conversely to previous measures of team resilience (see, e.g. West *et al.*, 2009), this scale was developed specifically referring to teams in an organizational context. A sample item is: "In difficult situations, my team tries to look for the positive side." The α value was 0.83.

Team performance. We use the three-item Goodman and Svyantek (1999) scales, reworded at the team level for both in-role (e.g. "My team performs all the functions and tasks demanded by the job"), and extra-role performance (e.g. "We perform roles that are not formally required but which improve the organizational reputation"). α's were 0.83 and 0.74, respectively.

Data aggregation

All measures used have the team as the referent and aggregated scores were employed for a team-level analysis. According to multilevel theory, these are defined as Referent-Shift Consensus Composition (Chan, 1998), meaning that there is a shift in the referent prior to consensus assessment. To statistically demonstrate within-team agreement and between-team differences, we conducted several tests: the Average Deviation Index ($AD_{M(J)}$) was used to assess within-group agreement; the intraclass correlation coefficient – $ICC(1)$ – was used to assess reliability; and one-way analyses of variance (ANOVA) were used to test for the existence of statistically significant differences between teams. Conventionally, an $AD_{M(J)}$ equal to or less than 1 is considered sufficient evidence of team agreement (Burke *et al.*, 1999), whereas values greater than 0.05 for $ICC(1)$ are considered sufficient evidence to justify aggregation (Bliese, 2000). Moreover, an ANOVA *F*-value that is statistically significant is a condition that justifies the aggregation of scores at the team level (Kenny and LaVoie, 1985). From our

measurements, the $AD_{M(J)}$ and $ICC(1)$ indices were found to range from 0.57 to 1.00 and from 0.10 to 0.25, respectively. One-way ANOVA F-values ranged from 1.66 to 2.96 ($p < 0.001$). Thus, we found empirical justification for aggregation.

Fit indices
In order to test the hypotheses, we used structural equation modeling (SEM) by AMOS 19.0 (Arbuckle, 2010). Maximum likelihood estimation methods were used by computing the absolute and relative indices of goodness-of-fit (Marsh *et al.*, 1996), i.e., the χ^2 goodness-of-fit statistic and the root mean square error of approximation (RMSEA), as well as the normed fit index (NFI), the incremental fit index (IFI), the Tucker-Lewis index (TLI), and the comparative fit index (CFI). Values below 0.06 for RMSEA indicate a good fit. For the remaining indices, values greater than 0.90 indicate a good fit, whereas values greater than 0.95 indicate superior fit (Hu and Bentler, 1999).

Results
Descriptive analyses
Table I shows means, standard deviations, aggregation statistics, and correlations of all the study variables. Most of the correlations are significant and in the expected direction. However, there was an unexpected result consisting in the negative correlations between job demands and resilience. We also include the team size, as control variable, in the descriptives and correlations showed. The correlation is mostly significant and negative with all study variables.

Because data were self-reported from one source, there are potential concerns that the results might be influenced by common method variance. Using AMOS 20.0, we conducted a Harman's one-factor test (Podsakoff *et al.*, 2003), which failed to demonstrate a single factor. The results revealed a poor fit of the one-factor model to the data: $\chi^2(350) = 2,014.492$; RMSEA $= 0.132$; NFI $= 0.483$; IFI $= 0.530$; TLI $= 0.446$; CFI $= 0.523$. To confirm these results, additional analyses were performed following the procedure recommended by Podsakoff *et al.* (2003). This approach involves adding to the researcher's theoretical model a first-order factor with all of the measures as indicators. The results revealed that the model fit improved, although none of the path coefficients corresponding to relationships between the indicators and the general method factor were significant. This finding suggested that while method bias may be present, it do not significantly affect results or conclusions (Conger *et al.*, 2000).

Hypothesis testing
According to Brown (2006), in cases in which it may be necessary to use single indicators in a SEM, measurement error can be readily incorporated into a dimensional indicator by fixing its unstandardized error to some non-zero value, calculated on the basis of the measure's sample variance estimate and known psychometric information. Thus, we fixed the unstandardized error of the indicator of resilience with the formula: variance $\times (1\text{-}\alpha)$.

To compute SEM, we used the aggregated database. First, two competitive models were tested. We tested our full mediation research model (M1). This model tested the fully mediating effects of team resilience between job demands – resources on one hand and performance on the other. The results of M1, as depicted in Table II, show that the fully mediating model fits the data well. The path from job resources to resilience was positive and statistically significant (*H2*), as was the path from resilience to team performance (*H4*). However, the path from job demands and resilience was not

	M (SD)	ICC(1)	$AD_{M(J)}$	1	2	3	4	5	6	7	8	9
1. Quantitative overload	3.04 (1.55)	0.24	0.94	(0.83)	0.46**	0.46**	−0.09	−0.17**	−0.16**	−0.28**	−0.18**	0.13**
2. Role ambiguity	1.44 (1.47)	0.25	0.83	0.47**	(0.82)	0.69**	−0.32**	−0.37**	−0.30**	−0.32**	−0.25**	0.09
3. Role conflict	2.06 (1.47)	0.21	0.93	0.45**	0.70**	(0.83)	−0.36**	−0.36**	−0.38**	−0.35**	−0.28**	0.13**
4. Social support climate	3.69 (1.58)	0.24	1	−0.13**	−0.34**	−0.35**	(0.77)	0.48**	0.39**	0.29*	0.36**	−0.16**
5. Coordination	4.63 (1.21)	0.11	0.80	−0.16**	−0.34**	−0.30**	0.46**	(0.76)	0.45**	0.38**	0.40**	−0.17**
6. Team resilience	4.41 (0.95)	0.15	0.75	−0.17**	−0.31**	−0.32**	0.37**	0.42**	(0.85)	0.52**	0.53**	−0.20**
7. In-role performance	4.89 (0.85)	0.10	0.57	−0.17**	−0.29**	−0.29**	0.22**	0.43**	0.49**	(0.81)	0.69**	−0.21**
8. Extra-role performance	4.84 (0.96)	0.16	0.69	−0.12**	−0.24**	−0.24**	0.35**	0.45**	0.52**	0.61**	(0.72)	−0.23**
9. Team size	5.94 (5.74)											

Notes: Correlations are presented at the individual level ($n = 1,633$, below the diagonal) and at the team level ($n = 275$, above the diagonal). Coefficient α are listed in the diagonal in parentheses. *$p < 0.05$; **$p < 0.01$

Table I.
Means, standard deviations, aggregation indices, and correlations for the study variables

statistically significant (*H1*). Then, we tested a competitive partial mediation model (M2) that allowed direct paths from job demands to performance (*H5*); and job resources to performance (*H6*). Model 2 had a statistically better fit than M1, $\Delta\chi^2_{M1-M2}$ (2) = 11.512, $p < 0.01$. Thus, Model 2, which is represented graphically in Figure 1, was the best-fitting model.

To assess the mediating paths, the Sobel (1988) test was used. Results from this test supported the mediating role of resilience between job resources and team performance, $z = 4.66$, $p < 0.001$. However, the mediating role of resilience between job demands and team performance was not supported, $z = 0.90$, $p = 0.37$. We also performed the four steps for testing for mediation proposed by Baron and Kenny (1986). According to these steps: first, the independent variables should be related to the dependent variable; second, the independent variables should be related to the mediator; third, the mediator should be related to the dependent variable, controlling for the independent variables; and fourth, for full mediation, the effect of the independent variables on the dependent variable is reduced to non-significance when the mediator's effect on the dependent variable is taken into account. If the fourth condition is not met, partial mediation is concluded. As previously noted, the Sobel test did not support the mediating role of resilience between job demands and team performance, and the paths from job

Model	χ^2	df	RMSEA	NFI	IFI	TLI	CFI	$\Delta\chi^2$
M1	38.005	17	0.067	0.953	0.973	0.955	0.973	
M2	26.493	15	0.053	0.967	0.985	0.972	0.985	M1−M2(2) = 11.512, $p < 0.01$
M3	63.152	24	0.077	0.924	0.952	0.926	0.951	
M4	45.500	22	0.062	0.945	0.971	0.952	0.971	M3−M4(2) = 17.652, $p < 0.001$
M5	30.518	19	0.047	0.963	0.986	0.973	0.986	M4−M5(3) = 14.982, $p < 0.005$

Notes: $n = 275$ teams. χ^2, Chi-square; df, degree of freedom; RMSEA, root mean square error of approximation; NFI, normed fit index; IFI, incremental fit index; TLI, Tucker-Lewis index; CFI, comparative fit index

Table II.
Results of mediated and moderated SEM analyses
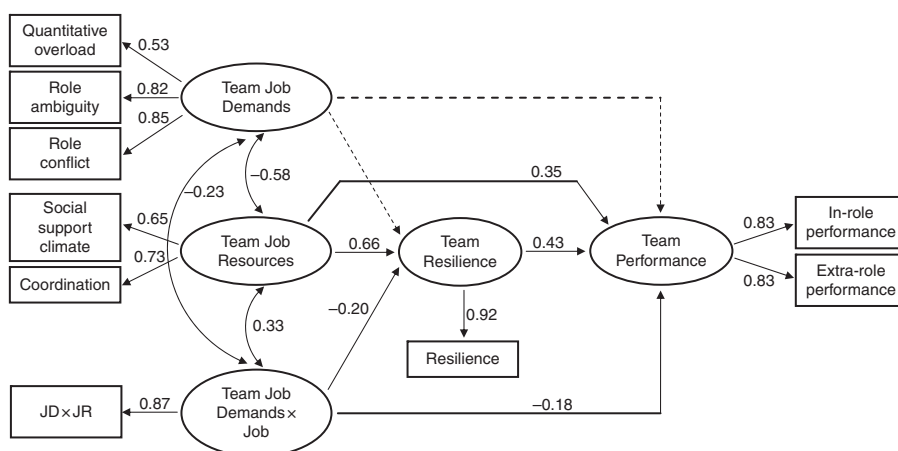
Notes: $n = 275$. Dotted lines show no significant paths

Figure 1.
The final model with standardized path coefficients

demands to team resilience/performance were not significant, so we do not report the results of Baron and Kenny's steps for the job demands paths, but only for job resources. There was a significant positive effect of job resources on performance, $\beta = 0.56$, $p < 0.001$, and on resilience, $\beta = 0.60$, $p < 0.001$. When both job resources and resilience were included as predictors in the regression equation, job resources still predicted performance, $\beta = 0.27$, $p < 0.05$, as did resilience, $\beta = 0.48$, $p < 0.001$. These results suggest that the effect of job resources on performance was partially mediated by resilience.

Finally, to explore the validity of the moderation hypothesis (*H3*), we conducted MSEM in order to test the first stage moderation model (Edwards and Lambert, 2007). The procedure outlined by Ping (1995), as reported in Cortina *et al.* (2001), was followed to conduct the analyses. A significant interaction effect is supported when the path coefficient from the latent interaction factor to the latent endogenous factor is significant. Our MSEM analysis included three exogenous latent factors (job demands, job resources, and their interaction), a mediating latent factor (team resilience), and an endogenous latent factor (team performance). Table II (M3) reports the results of this analysis. The interaction factor showed a weak but statistically significant path in the unexpected direction, $\gamma = -0.14$, $p < 0.05$. Overall, the fit of Model 3 was not really adequate. This misfit was mainly due to the substantial relationship between the interaction factor and its component factors, which were not eliminated by the preliminary centering operations (Cortina *et al.*, 2001). Thus, we freed all the covariance between the latent exogenous factors in Model 4 (M4). As a result, the fit of the model substantially improved and the path from the interaction factors to resilience showed a greater effect, $\gamma = -0.20$, $p < 0.01$.

Finally, we tested a direct effect and first stage moderation model (Edwards and Lambert, 2007), where job demands further moderated the direct relationship between job resources and team performance (Model 5). The procedure outlined by Ping (1995) was followed once again to conduct the analyses. Building upon the previous moderation analysis, we estimated all the covariance between the latent exogenous factors in this analysis. Table II (M5) reports the results of this analysis. The interaction factor showed a statistically significant path to performance, $\gamma = -0.18$ $p < 0.05$, as well as to resilience, $\gamma = -0.20$, $p < 0.001$. The results of M5, which is presented graphically in Figure 1, showed the double moderating effect of job demands: on both the job resources-resilience and the job resources-performance relationships. The simple-slope analysis showed the double moderating effect of job demands: on both the job resources-team resilience (Figure 2) and the job resources-team performance relationships (Figure 3). It is interesting to note that job demands, resources, and their interaction explain 47 percent of the variance of resilience ($R^2 = 0.47$), which in turn explains 56 percent of the variance of performance ($R^2 = 0.56$). Analyses were repeated controlling all the variables for team size, and all substantive significant effects remained significant (details available on request from the authors).

Discussion

The main purpose of the study was to recognize team resilience as a psychological mechanism that explains how teams deal with collective job demands and job resources, in order to achieve better performance. The results of SEM and MSEM analyses partially supported our hypotheses, indicating that job social resources were positive related with team resilience (supporting *H2*), whereas job demands were not (not supporting *H1*). However, it was shown that job demands operate as a significant moderator in the model tested, but not in the expected direction (not supporting *H3*). In
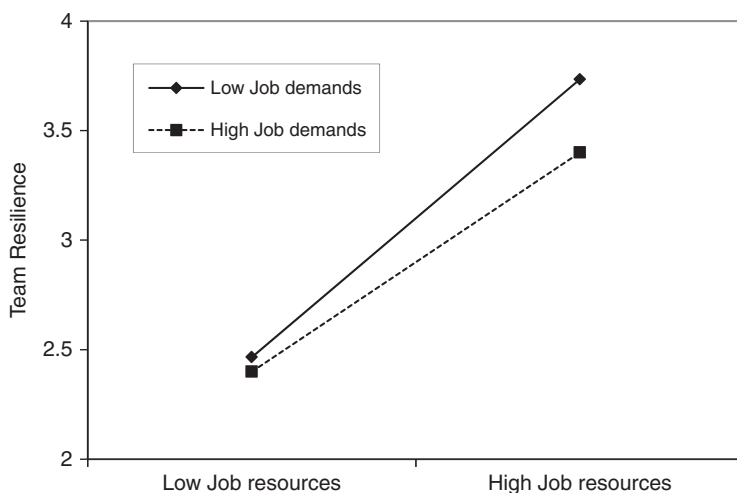
Figure 2.
Simple-slope analysis
of the effect of the
interaction between
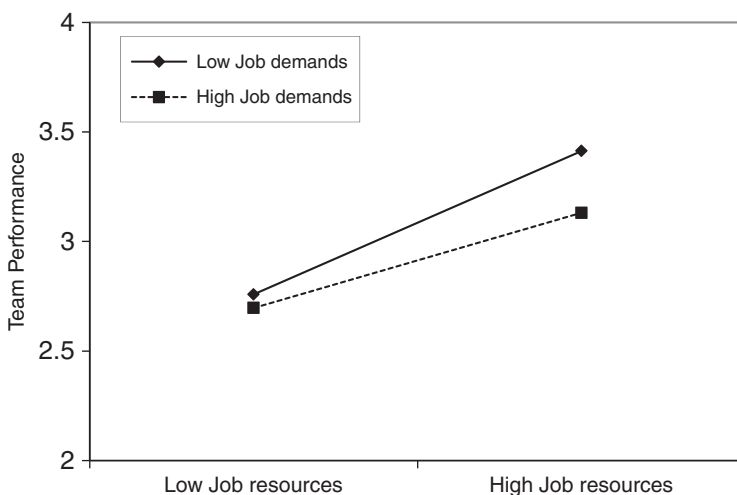job demands and
job resources on
team resilience

Figure 3.
Simple-slope analysis
of the effect of the
interaction between
job demands and
job resources on
team performance

fact, the impact of job resources on team resilience was attenuated when there are high job demands, while we expected that it was strengthened. Moreover, the results showed that team resilience was positive related with team resilience (supporting *H4*) and also partially mediates the effects of job resources on team performance (supporting *H6*), whereas it does not mediate the effects of job demands on team performance (not supporting *H5*).

Theoretical contribution
The findings of this study are important for research in several ways. First, our study contributes to the emerging field of research that has shifted away from individuals toward the study of groups and teams resilience. In fact, in recent times team resilience has emerged as an important concept in business and organizational psychology and

researchers have begun to study how groups and teams respond favorably to adverse events (Morgan *et al.*, 2013), mainly with the aim of investigate the processes that elicit team effectiveness (West *et al.*, 2009).

Second, we focus on studying job antecedents of team resilience in the organizational context, whereas usually research is focussed more on psychological antecedents, as collective positive emotions, collective efficacy and team learning (Meneghel *et al.*, 2016; Sutcliffe and Vogus, 2003). However, from HRM point of view, there is a need to determine also organizational related factors in order to act on them and our paper attends to this gap. In this sense, the results not only indicated that job social resources are related to team performance, but also added team resilience as a significant mediator. Thus, this study provides evidence that job social resources and team resilience are important in eliciting organizations' desirable outcomes such as team performance. This result is in accordance with previous studies carried out at the individual level, especially referring to the importance of positive relationship and support for resilience development (Gittel *et al.*, 2006). In accordance, HRM needs to focus both at the individual and team level in order to foster resilience in the work context and thus increase positive outcomes for the organizations (i.e. individual and team performance).

Then, the findings indicated that, in contrast to our expectations, job demands do not directly impact team resilience. This finding is surprising because in the process of resilience the experience of adversity is important in order to enhance resilience (Luthar *et al.*, 2000) and even the correlations were significant and moderate in magnitude. However it may suggest that, for work teams, high levels of job demands might create an opportunity for developing future levels of resilience while at the same time diminishing current levels of resilience. This result also might suggest that the relationship between job demands and team resilience may be curvilinear, as an inverted *U*-shape, and for this reason teams with low or high jobs demands were not able to develop resilience in face of adversity. In this sense, the teams with higher levels of resilience are those which have medium job demands. Both these possible explanations need to be further investigated and more research needs to be carried out in this sense. Finally, taking into account the distinction between challenges and hindrance demands (for a meta-analysis, see Crawford *et al.*, 2010), we used job demands belonging to both categories and for this reason the relationship could not be significant. We argue that only challenging demands might be related to resilience, because they are usually perceived as opportunities to learn, achieve, and demonstrate the type of competence that tends to get rewarded. Taking into account a greater number of job demands in both categories, future research should investigate the effects of these categories on resilience in order to understand how the results may differ.

Nevertheless, moderation analyses revealed a significant effect of job demands on the relationship between job resources and team resilience, as well as between job resources and team performance. Specifically, the impact of job resources on team resilience is attenuated when there are high job demands, suggesting that job demands do impact team resilience but the nature of their impact depends on other factors such as the amount of resources. These findings seem to call for more research, particularly because the JD-R model originally suggested that job resources gain their motivational potential particularly when employees are confronted with high job demands (Bakker and Demerouti, 2007). A possible explanation is given by models of effort and energy regulation, which suggest that high demands require a high degree of effort investment (Hockey, 1997) and subsequently drain energy resources. Consequently, job demands reduce a person's energy level over time, thus initiating a "loss spiral" (Hobfoll, 2001) that reduces personal resources.

Finally, we focussed on studying whether team resilience in response to adversity may contribute to the overall functioning of the team, as proposed by Stephens and colleagues (2013). The results showed that team resilience is related to team performance, underlining the fact that a high level of team resilience might lead to the best performance, in accordance with previous studies carried out at the individual (e.g. Luthans *et al.*, 2005; Youssef and Luthans, 2007) and the team level (Meneghel *et al.*, 2016). This finding is especially important because confirm that teams with a high level of resilience are likely to show high level of performance, reasonably because they come up with more flexible and adaptive responses to adversity, and additionally they tend to use setbacks as challenges or opportunities for growth (Carmeli *et al.*, 2013). Altogether, this finding seems to call for more research into team resilience, particularly because teams play a crucial role in achieving important organizational outcomes (Kaplan *et al.*, 2012; West *et al.*, 2009). These results can be employed by managers and HRM practitioners as relevant guidelines to achieve positive team performance under adverse situations.

Implications for practice
In terms of practical implications, our results present a number of potential applications and encourage initiatives to make managers and HRM practitioners pay closer attention to the well-being of their teams. First, they need facilitate and enhance positive relationships and coordination among team members. For example, it has been shown that face-to-face meetings can allows individuals and team members to feel more connected with their co-workers (Warkentin *et al.*, 1997). It could also be important to develop respectful interaction, defined as face-to-face, on-going dialogs rooted in trust, honesty, and self-respect (Weick, 1993) because they are a key factor enabling collaboration (Lengnick-Hall *et al.*, 2011). In addition, they can involve team members in finding solutions to work problems and challenges, encourage them to problem solve and stimulate suggestions from all employees.

Second, managers and HRM practitioners concerned with slowing down demanding aspects of work could assess teams' workloads to ensure that they match their skills and capacities. Moreover, they could be especially incisive in creating fluid team-based work and job design, and in generating broader job descriptions, while managers could also attempt to clarify team (and employee) roles and responsibilities. In addition, as an example, it was also shown that congruence between the values of employees and organizations might reduce role ambiguity and role conflict (Edwards and Cable, 2009). Thus, managers and HRM practitioners might invest energy and resources to assess value congruence when hiring job applicants, engage in socialization tactics to modify the values of new employees in the direction of the cultural values of the organization, and ensure that organizational communication is regular, open, and consistent (Cable and Judge, 1997; Cable and Parsons, 2001; Edwards and Cable, 2009).

Limitations and future research
Although our study findings pointed to some noteworthy conclusions, our methods suffered from limitations that should be addressed in future research. First, we use a cross-sectional design, whereas studies in a longitudinal way are necessary in order to establish causal relationships. Thus, future researches are strongly encouraged to examine the relationships between the study variables over time, in order to add validity to our findings. Second, our study is open to the typical criticisms of single-source, self-report data, especially for team performance measure. Although our tests fail in showing a

significant common method effect, this may introduce a bias so that in future studies it would be interesting to include another measurement source. For example, team performance may be collected from teams' supervisors or drawn from the performance appraisal system. Nevertheless, the high level of agreement among the workers in the same team – assessed by ICC(1), $AD_{M(J)}$, and one-way ANOVAS – is a strength in this sense, because it shows that there is agreement among the teammates' perceptions.

A final limitation of the present study is its lack of generalizability to the entire working population, because we used a convenience sample. Although, we believe that a sample of 275 teams from different business sectors is a good achievement, in the future the results need to be replicated in different and broader samples. In addition, it would be interesting to study the relationship proposed in more specific sample, for example attending to the economic sector or sub sector. In fact, such kind of demands and/or resources could be more or less relevant depending to the context under study and, for these reason, specific job antecedents could be deeper studied.

Finally, future studies need to address deeper attention at the relationship between job demands and resilience development. As discussed above, the lack of direct significant relationship may be due to different reason (i.e. time interval, no linear relationship, type of job demands analyzed), and in this sense more investigation is needed.

Conclusion
The main objective of resilience is to find unknown inner strengths and outer resources, thereby allowing workers to be more skilled so that problems can be overcome and the organization can thrive and flourish despite adversity. Our findings suggest that managers and HRM practitioners could benefit from understanding how team resilience could be developed given that team resilience aids to achieve positive team outcomes. Furthermore, we believe that this study makes an interesting contribution to the resilience literature by providing evidence for its applicability at the team level in the organizational context.

References

Algoe, S.B. and Fredrickson, B.L. (2011), "Emotional fitness and the movement of affective science from lab to field", *American Psychologist*, Vol. 66 No. 1, pp. 35-42.

Arbuckle, J.L. (2010), *IBM SPSS Amos 19 Users' Guide*, SPSS, Chicago, IL.

Bakker, A.B. (2010), "Engagement and 'job crafting': engaged employees create their own great place to work", in Albrecht, S.L. (Ed.), *Handbook of Employee Engagement Perspectives, Issues, Research and Practice*, New Horizons in Management, Edward Elgar, Glos, pp. 229-244.

Bakker, A.B. and Demerouti, E. (2007), "The job demands-resources model: state of the art", *Journal of Managerial Psychology*, Vol. 22 No. 3, pp. 309-328.

Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Beehr, T.A., Walsh, J.T. and Taber, T.D. (1976), "Relationship of stress to individually and organizationally valued states: higher order needs as a moderator", *Journal of Applied Psychology*, Vol. 61 No. 7, pp. 41-47.

Bliese, P.D. (2000), "Within-group agreement, non-independence, and reliability: implications for data aggregation and analysis", in Klein, K.J. and Kozlowski, S.J. (Eds), *Multilevel Theory, Research, and Methods in Organizations: Foundations, Extensions, and New Directions*, Jossey-Bass, San Francisco, CA, pp. 349-381.

Brown, T.A. (2006), *Confirmatory Factor Analysis for Applied Research*, Guilford Press, New York, NY.

Burke, N.J., Finkelstein, L.M. and Dusig, M.S. (1999), "On average deviation indices for estimating interrater agreement", *Organizational Research Methods*, Vol. 2 No. 1, pp. 49-68.

Cable, D. and Judge, T.A. (1997), "Interviewers' perceptions of person-organization fit and organizational selection decisions", *Journal of Applied Psychology*, Vol. 82 No. 4, pp. 546-561.

Cable, D.M. and Parsons, C. (2001), "Socialization tactics and person- organization fit", *Personnel Psychology*, Vol. 54 No. 1, pp. 1-22.

Carmeli, A., Friedman, Y. and Tishler, A. (2013), "Cultivating a resilient top management team: the importance of relational connections and strategic decision comprehensiveness", *Safety Science*, Vol. 51 No. 1, pp. 148-159.

Chan, D. (1998), "Functional relations among constructs in the same content domain at different levels of analysis: a typology of composition models", *Journal of Applied Psychology*, Vol. 83 No. 2, pp. 234-246.

Conger, J.A., Kanungo, R.N. and Menon, S.T. (2000), "Charismatic leadership and follower effects", *Journal of Organizational Behavior*, Vol. 21 No. 7, pp. 747-767.

Cortina, J.M., Chen, G. and Dunlap, W.P. (2001), "Testing interaction effects in LISREL: examination and illustration of available procedures", *Organizational Research Methods*, Vol. 4 No. 4, pp. 324-360.

Crawford, E.R., LePine, J.A. and Rich, B. (2010), "Linking job demands and resources to employee engagement and burnout: a theoretical extension and meta-analytic test", *Journal of Applied Psychology*, Vol. 95 No. 5, pp. 834-848.

Demerouti, E., Bakker, A.B., Nachreiner, F. and Schaufeli, W. (2001), "The job demands-resources model of burnout", *Journal of Applied Psychology*, Vol. 86 No. 3, pp. 499-512.

Edwards, J.R. and Cable, D.M. (2009), "The value of value congruence", *Journal of Applied Psychology*, Vol. 94 No. 3, pp. 654-677.

Edwards, J.R. and Lambert, L.S. (2007), "Methods for integrating moderation and mediation: a general analytical framework using moderated path analysis", *Psychological Methods*, Vol. 12 No. 1, pp. 1-22.

Egeland, B., Carlson, E. and Sroufe, L.A. (1993), "Resilience as process", *Development and Psychopathology*, Vol. 5 No. 4, pp. 517-528.

Ganor, M. and Ben-Lavy, Y. (2003), "Community resilience: lessons derived from Gilo under fire", *Journal of Jewish Communal Service*, Vol. 79 Nos 2/3, pp. 105-108.

Gittel, J.H., Cameron, K., Lim, S. and Rivas, V. (2006), "Relationship, layoff, and organizational resilience. Airline industry responses to September 11", *The Journal of Applied Behavioral Science*, Vol. 42 No. 3, pp. 300-329.

Goodman, S.A. and Svyantek, D. (1999), "Person-organization fit and contextual performance: do shared values matter", *Journal of Vocational Behavior*, Vol. 55 No. 2, pp. 254-275.

Gruman, J.A. and Saks, A.M. (2011), "Performance management and employee engagement", *Human Resource Management Review*, Vol. 21 No. 2, pp. 123-136.

Gully, S.M., Joshi, A., Incalcaterra, K.A. and Beaubien, J. (2002), "A meta-analysis of team-efficacy, potency, and performance: interdependence and level of analysis as moderators of observed relationships", *Journal of Applied Psychology*, Vol. 87 No. 5, pp. 819-832.

Hobfoll, S.E. (1989), "Conservation of resources: a new attempt at conceptualizing stress", *American Psychologist*, Vol. 44 No. 3, pp. 513-524.

Hobfoll, S.E. (2001), "The influence of culture, community, and the nested-self in the stress process: advancing conservation of resources theory", *Applied Psychology: An International Review*, Vol. 50 No. 3, pp. 337-370.

Hobfoll, S.E. (2002), "Social and psychological resources and adaptation", *Review of General Psychology*, Vol. 6 No. 4, pp. 307-324.

Hobfoll, S.E. (2011), "Conservation of resource caravans and engaged settings", *Journal of Occupational and Organizational Psychology*, Vol. 84 No. 1, pp. 116-122.

Hockey, G.R.J. (1997), "Compensatory control in the regulation of human performance under stress and high workload: a cognitive-energetical framework", *Biological Psychology*, Vol. 45 Nos 1-3, pp. 73-93.

Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling*, Vol. 6 No. 1, pp. 1-55.

Kaplan, S., LaPort, K. and Waller, M.J. (2012), "The role of positive affectivity in team effectiveness during crises", *Journal of Organizational Behavior*, Vol. 34 No. 4, pp. 473-491.

Kenny, D.A. and LaVoie, L. (1985), "Separating individual and group effects", *Journal of Personality and Social Psychology*, Vol. 48 No. 2, pp. 339-348.

Lengnick-Hall, C.A., Beck, T.E. and Lengnick-Hall, M.L. (2011), "Developing a capacity for organizational resilience through strategic human resource management", *Human Resource Management Review*, Vol. 21 No. 3, pp. 243-255.

Linnenluecke, M. and Griffiths, A. (2010), "Beyond adaptation: resilience for business in light of climate change and weather extremes", *Business and Society*, Vol. 49 No. 3, pp. 477-511.

Luthans, F., Avolio, B.J., Walumbwa, F.O. and Li, W. (2005), "The psychological capital of Chinese workers: exploring the relationship with performance", *Management and Organization Review*, Vol. 1 No. 2, pp. 247-269.

Luthar, S.S., Cicchetti, D. and Becker, B. (2000), "The construct of resilience: a critical evaluation and guidelines for future work", *Child Development*, Vol. 71 No. 3, pp. 543-562.

Mallak, L. (1998), "Putting organizational resilience process to work", *Industrial Management*, Vol. 40 No. 6, pp. 8-14.

Marsh, H.W., Balla, J.R. and Hau, K.T. (1996), "An evaluation of incremental fit indices: a clarification of mathematical and empirical properties", in Marcoulides, G.A. and Schumacker, R.E. (Eds), *Advanced Structural Equation Modeling, Issues and Techniques*, Lawrence Erlbaum Associates Publishers, Mahwah, NJ, pp. 315-353.

Masten, A.S. and Reed, M.J. (2002), "Resilience in development", in Snyder, C.R. and Lopez, S.J. (Eds), *Handbook of Positive Psychology*, Oxford University Press, New York, NY, pp. 74-88.

Meneghel, I, Salanova, M. and Martínez, I.M. (2016), "Feeling good makes us stronger: how team resilience mediates the effect of positive emotions on team performance", *Journal of Happiness Studies*, Vol. 17 No. 1, pp. 239-255.

Morgan, P.B.C., Fletcher, D. and Sarkar, M. (2013), "Defining and characterizing team resilience in elite sport", *Psychology of Sport and Exercise*, Vol. 14 No. 4, pp. 549-559.

Nunally, J.C. and Bernstein, I.H. (1994), *Psychometric Theory*, McGraw-Hill, New York, NY.

Ping, R.A. Jr (1995), "A parsimonious estimating technique for interaction and quadratic latent variables", *Journal of Marketing Research*, Vol. 32 No. 3, pp. 336-347.

Podsakoff, P.M., Mackenzie, S.M., Lee, J. and Podsakoff, N.P. (2003), "Common method variance in behavioral research: a critical review of the literature and recommended remedies", *Journal Applied of Psychology*, Vol. 88 No. 5, pp. 879-903.

Powley, E.H. (2009), "Reclaiming resilience and safety: resilience activation in the critical period of crisis", *Human Relations*, Vol. 62 No. 9, pp. 1289-1326.

Riolli, L. and Savicki, V. (2003), "Information system organizational resilience", *Omega*, Vol. 31 No. 3, pp. 227-233.

Rizzo, J., House, R.J. and Lirtzman, S.I. (1970), "Role conflict and ambiguity in complex organizations", *Administrative Science Quarterly*, Vol. 15 No. 2, pp. 150-163.

Salanova, M., Llorens, S., Cifre, E. and Martínez, I.M. (2012), "We need a hero! Towards a validation of the healthy and resilient organization (HERO) model", *Group and Organization Management*, Vol. 37 No. 6, pp. 785-822.

Sobel, M.E. (1988), "Direct and indirect effects in linear structural equation models", in Long, J.S. (Ed.), *Common Problems/Proper Solutions*, Sage, Beverly Hills, CA, pp. 46-64.

Staudinger, U.M., Marsiske, M. and Baltes, P.B. (1993), "Resilience and levels of reserve capacity in later adulthood: perspectives from life-span theory", *Development and Psychopathology*, Vol. 5 No. 4, pp. 541-566.

Stephens, J., Heaphy, E.D., Carmeli, A., Spreitzer, G.M. and Dutton, J.E. (2013), "Relationship quality and virtuousness: emotional carrying capacity as a source of individual and team resilience", *Journal of Applied Behavioral Science*, Vol. 49 No. 1, pp. 13-41.

Stewart, G. (2010), "The past twenty years: teams research is alive and well at the *Journal of Management*", *Journal of Management*, Vol. 36 No. 4, pp. 801-805.

Sutcliffe, K.M. and Vogus, T.J. (2003), "Organizing for resilience", in Cameron, K.S., Dutton, J.E. and Quinn, R.E. (Eds), *Positive Organizational Scholarship: Foundations of a New Discipline*, Berrett-Koehler, San Francisco, CA, pp. 94-110.

Tajfel, H. and Turner, J.C. (1985), "The social identity theory of intergroup behavior", in Worchel, S. and Austin, W.G. (Eds), *Psychology of Intergroup Relations*, Nelson-Hall, Chicago, IL, pp. 7-24.

Totterdell, P. (2000), "Catching moods and hitting runs: mood linkage and subjective performance in professional sport teams", *Journal of Applied Psychology*, Vol. 85 No. 6, pp. 848-859. doi:10.1037/0021-9010.85.6.848.

Tugade, M.M. and Fredrickson, B.L. (2004), "Resilient individuals use positive emotions to bounce back from negative emotional experiences", *Journal of Personality and Social Psychology*, Vol. 86 No. 2, pp. 320-333.

Van Muijen, J.J., Koopman, P., De Witte, K., De Cock, G., Susanj, Z., Lemoine, C. and Turnipseed, D. (1999), "Organizational culture: the FOCUS questionnaire", *European Journal of Work and Organizational Psychology*, Vol. 8 No. 4, pp. 551-568.

Warkentin, M.E., Sayeed, L. and Hightower, R. (1997), "Virtual teams versus face-to-face teams: an exploratory study of a web-based conference system", *Decision Sciences*, Vol. 28 No. 4, pp. 975-996.

Weick, K.E. (1993), "The collapse of sensemaking in organizations: the Mann Gulch disaster", *Administrative Science Quarterly*, Vol. 38 No. 4, pp. 628-652.

West, B.J., Patera, J.L. and Carsten, M.K. (2009), "Team level positivity: investigating positive psychological capacities and team level outcomes", *Journal of Organizational Behavior*, Vol. 30 No. 2, pp. 249-267.

Youssef, C.M. and Luthans, F. (2005), "Resiliency development of organizations, leaders and employees: multi-level theory building for sustained performance", in Gardner, W., Avolio, B.J. and Walumbwa, F.O. (Eds), *Authentic Leadership Theory and Practice. Origins, Effects, and Development*, Elsevier, Oxford, pp. 303-343.

Youssef, C.M. and Luthans, F. (2007), "Positive organizational behavior in the workplace. The impact of hope, optimism and resilience", *Journal of Management*, Vol. 33 No. 5, pp. 774-800.

Further reading

Mathieu, J.E., Maynard, M.T., Rapp, T. and Gilson, L. (2008), "Team effectiveness 1997-2007: a review of recent advancements and a glimpse into the future", *Journal of Management*, Vol. 34 No. 3, pp. 410-476.

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