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Original Article

Do I Just Look Stressed or am I Stressed? Work-related Stress in a Sample of Italian Employees

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Abstract: Work-related stress is becoming a significant problem in Italy and it is therefore essential to advance the theory and methodology required to detect this phenomenon at work. Thus, the aim of this paper is to propose a new method for evaluating stress at work by measuring the discrepancies between employees' perceptions of stress and their leaders' evaluation of the stress of their subordinates. In addition, a positive impression scale was added to determine whether workers might give socially desirable responses in organizational diagnosis. Over 1,100 employees and 200 leaders within several Italian organizations were involved in this study. Structural equation modeling was used to test such new method for evaluating stress in a model of stress at work that incorporates relationships among individual (positive impression), interpersonal (workplace bullying) and organizational factors (working conditions, welfare culture, training). Results showed that the leaders' capacity to understand subordinates' stress is associated with subordinates' psychological well-being since higher disagreement between self and leaders' ratings was related to lower well-being. We discuss the implications of healthy leadership for the development of healthy organizations.

Key words: Work-related stress, Workplace bullying, psychological well-being, Healthy organizations, Healthy leadership

Introduction

In the past several years, workplace stress has attracted the attention of researchers, organizations and public opinion alike. A considerable amount of data has been accumulated which confirms that stress is a serious problem of organizational life[1, 2]. Empirical investigations in many different countries have provided data that point to the negative consequences of stress for employees' health and well-being (e.g., anxiety, depression or compulsive behavior)[2–5] as well as for the organization and its working environment (e.g., absenteeism, turnover, loss of creativity and decreased productivity)[5–7]. Furthermore, meta-analytic techniques and longitudinal studies have shown that organizational environmental factors are associated with stress and its subsequent negative consequences[2, 3, 6, 7].

Similarly, there has been a marked increase in the interest in issues involving work-related stress in Italy in the last 5 yr. This is due primarily to the promulgation of the new law for the protection of health and safety in the workplace (Legislative Decree no. 81/2008 and subsequent amendments) which enshrined the obligation

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of all employers in every area of employment to assess the risks associated to work-related stress. Moreover, given the decline in traditional occupational diseases (i.e., noise-induced hearing loss, silicosis, lead poisoning), occupational physicians have examined work-related stress more carefully and it has become one of the new frontiers of occupational health[8].

Despite the abundance of data and coherent theories that have been developed on work stress, there is a growing consensus that the accumulative empirical evidence on work stress comes mainly from studies that rely on self-reported measures (i.e., questionnaires)[9, 10], which is considered one of the most common limitations in the field[11–13]. Accordingly, some authors have proposed using alternative measures to assess employees' experience of stress at work (e.g., observational check-lists, focus groups), underlining the importance of stress evaluations by key people of the organization, such as leaders[12, 13].

In response, this study tries to overcome these previous limitations by suggesting a model to better evaluate and explore stress at work based on multiple sources of data (i.e., self and supervisors' ratings). This innovative perspective not only highlights the problem of stress across a sample of Italian employees but also provides useful insights for the development of suitable organizational strategies to detect and counteract job stress.

Measuring job stress: the use of multiple sources

As mentioned above, there is an over reliance on self-report data in the stress literature. Using only self-report data might affect results through the introduction of self-bias errors (i.e., social desirability bias or impression management: employees tendency to report in a way that makes them or their organizations look more favorable)[14]. Indeed, when research relies only on one source of data, it is possible that the strength of the correlations between variables is inflated as a result of common method variance. Thus, variance that is attributed to the measurement method rather than the constructs of interest may cause systematic measurement error and bias[15].

In light of these possible methodological drawbacks of using solely self-report measures, in this section we emphasize the benefits of combining the perceptions of employees and their leaders when assessing job stress. First, multiple measures have been examined in studies of competencies, performance appraisal and leader-member exchange relationships[16]. Moreover, as noted by Offermann and Hellmann[17], the use of multiple perspectives enables the mapping of similarities and differences in perceptions, which can provide powerful tools for individual and organizational application, particularly in the case of work stress.

Second, the use of diverse perspectives when assessing job stress may help to reduce self-bias, from both employees and their leaders. On one hand, employees may introduce some bias if they give socially desirable responses to questions on stress so that they transmit a more favorable impression to their employers. On the other hand, leaders might make fundamental errors[18] as observers of subordinates by attributing stress responses to their subordinates' personal characteristics rather than to their working environment[19, 20]. Thus, the leaders' perception of stress experienced by their subordinates might overestimate the gaps in subordinates' competencies or the weakness of their personalities rather than organizational factors such as the level of conflicts, poor team atmosphere or the bad design of the tasks[21]. As a result of these incorrect evaluations, subordinates may feel unable to cope effectively and constructively with stress and managers may take ineffective organizational measures against job stress. Moreover, research has shown that leaders might have the tendency to report higher levels of stress tolerance than the general work population[22]. For this reason, it is possible that managers are not only less likely than their less stress-tolerant employees to recognize work stress accurately, but are also unaware of many of their subordinates' stress-related problems.

In addition, the tendency not to acknowledge their subordinates' stress may increase in difficult financial circumstances when leaders tend to focus on short-term productivity and the company's viability and sometimes ignore employees' welfare[23]. On the other hand, employees may feel it is in their best economic interest to hide their experiences of stress from their managers in situations of financial crisis, especially when competition is high and organizational resources are limited[24]. However, the suppression and avoidance of the stress problem can be particularly dangerous from a medium to long-term perspective[25]. Thus, measuring job stress by comparing the evaluation of both employees and their leaders on work-related stressors is of particular interest in the current context of financial crisis in many countries.

Finally, research has shown that high supervisor support in the workplace has a positive impact on several indicators of employee well-being[17, 21]. However, given that non-supportive leaders can negatively affect their followers' health and well-being[26], we argue that discrepancies between leaders' and followers' stress ratings may have

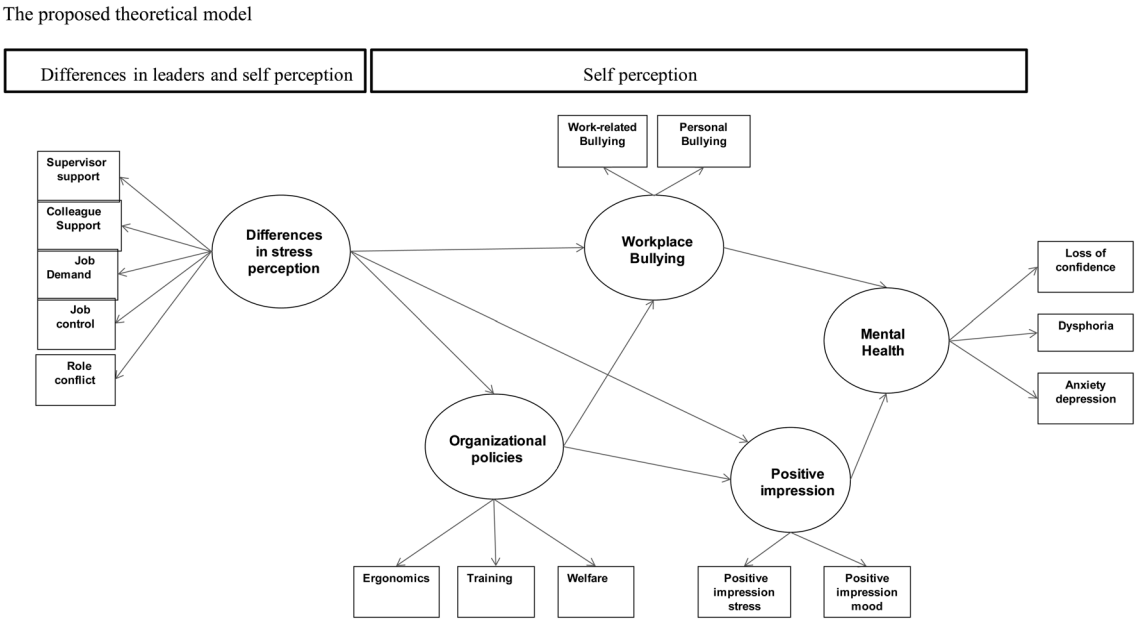

Fig. 1. The proposed theoretical model.

a negative impact for the followers' health. Leaders who do not recognize their subordinates' stress will not be able to determine the causes or provide supportive feedback, which would lead to lower levels of well-being among subordinates[27]. Therefore, work stress assessment needs to consider different sources of information in order to capture this phenomenon better so that organizational measures can be introduced to prevent possible detrimental consequences on employee well-being and organizational performance.

Hypotheses and proposed model

According to the above mentioned recent trends in the work stress literature, and assuming that leaders play a key role in their followers' health and well-being, we propose a model in which the analysis of work-related stress and its impact on employees' psychological well-being is based on the discrepancy between how employees perceive their stress and how this is perceived by their leaders -rather than relying exclusively on employees' perception of stress-. Furthermore, we expect that the proposed model will predict employee health and well-being better than a model than only considers employee self-assessment. Thus, we evaluate the fit to data of these two competing models (leader-employee discrepancies *vs*. employee self-assessment) by using structural equation modeling techniques to empirically support our model.

Moreover, the proposed model tries to integrate previous experimental and theoretical research in stress at work. Thus, we test the possible mediating role of several work-related stress factors − at individual (positive impression), interpersonal (workplace bullying), and organizational (welfare culture, training opportunities, and ergonomic conditions) levels − on the relationship between leader-subordinate divergence in stress perceptions and employees' health (Fig. 1).

Regarding individual factors, it is assumed that some employees tend to report stress in a way that makes them look more favorable to their colleagues and superiors[14]. Employees may believe it to be in their best economic interest to hide their experiences of stress from their managers, thereby avoiding potential negative repercussions of showing vulnerability to stressful environments in which leaders' views of stress are different and organizational resources (such as welfare and training) are limited[20–24]. Thus, employees might modify or adapt answers to stress questionnaires to fit their leaders' perceptions of their stress and give their leaders a positive impression[28].

Likewise, discrepancies on stress perceptions among employees and their leaders might stimulate the perception of a negative work-environment and experiences of bullying. Workplace bullying is considered an acute organizational stressor derived from being exposed to repeated health-harming mistreatment exerted mainly by leaders but also by other colleagues[29–31]. Leaders that are not aware about the stress their subordinates are experiencing from exposure to bullying behaviors at work will not offer them enough feedback and will fail to provide the neces-

Table 1. General description of the sample across participating organizations (n=1,113)

Type of company[a]	Participants	Response rate	No. of leaders
1. Insurance company	31	71%	6
2. Engineering company	10	100%	1
3. Manufacturing company (luxury and leather)	100	71%	25
4. Manufacturing company (luxury and leather)	161	72%	34
5. Shop (luxury and leather)	10	90%	1
6. Manufacturing company (furniture)	78	78%	5
7. Textile company	76	85%	7
8. Public administration	152	88%	36
9. Private company (fashion)	15	100%	1
10. Private company (gas and energy)	208	73%	28
11. Private company (gas and energy)	111	76%	26
12. Private company (gas and energy)	37	82%	6
13. Manufacturing company (leather)	29	70%	5
14. Manufacturing company (construction)	95	75%	19
Total/Mean	1,113	80%	200

[a] Numbers indicate the order in which the organization collected data.

sary support to deal with such a situation[32]. Moreover, workplace bullying has been strongly linked to subsequent psychological disorders and poor mental health[29–32]. Thus, it seems plausible to think that bullying will be positively associated with divergence in stress perception and less psychological well-being.

Finally, the non-recognition of subordinates' stress by leaders might also be associated with the organizational culture and the policies adopted to counteract organizational factors considered to be precursors of stress at work. Thus, if organizational policies and culture neglect employee welfare, they might suppress and even fake the perception of stress during organizational diagnosis. Stress might be to some extent tolerated and considered part of the job by employees if stress is largely widespread, and therefore attributed to broader aspects of the environment such as the culture of the work group, the entire organization or external causes[30–33]. As a consequence, lack of welfare and training opportunities as well as exposure to bad ergonomic conditions might be viewed as more negative when leaders do not recognize subordinates' stress. In this regard, the lack of organizational policies will be positively associated with divergence in stress perception and less psychological well-being.

In conclusion, this study aims to propose a model that better evaluates stress at work and its association with employee psychological well-being. In particular, we propose that (1) divergence in stress perception (leaders-subordinate) will be negatively associated with employee psychological well-being. This relationship will be mediated by diverse processes and factors at different levels: (2) at an individual level, a positive impression will be negatively associated with divergence in stress perception and less psychological well-being; (3) at an interpersonal level, bullying will be positively associated with divergence in stress perception and less psychological well-being; and (4) at an organizational level, the lack of organizational policies on welfare, training and ergonomic conditions will be positively associated with divergence in stress perception and less psychological well-being.

Subjects and Methods

Participants

We contacted human resource and occupational health and safety managers of several medium/large size Italian companies and invited them to participate in a stress assessment not only for research purposes but also to help them fulfill work-related stress obligations imposed by Italian regulations on occupational health and safety (Legislative Decree no. 81/2008 and subsequent amendments). Thus, 14 out 52 companies (26.9%) agreed to participate in the research and gave their employees some time during working hours to complete the questionnaires. In return, each organization received a report to be included in their "Risk Assessment Document" (*Documento di Valutazione dei Rischi*). The participating companies represented a convenient sample that also reflected a multitude of work environments, thus conferring the results with greater validity (Table 1). The protocol of the research project

was approved by the "Ethics Committee on Psychological Research" established at the Department of Psychology of the European University of Rome.

Moreover, to ensure anonymity and confidentiality in the responses, the questionnaires were administered to the employees in rooms provided by the organizations by experienced research assistants with knowledge of and respect for the privacy law. The participants were informed that the survey was intended to fulfill legal obligations regarding the assessment of work-related stress, with the opportunity to use the findings to make improvements in the work organization in the companies where they were employed. In this context, the compilation of the survey was very thorough and nearly all of the questionnaires were collected with complete data or a few missing elements that were replaced with the scales' means. Consequently, the response rate in the 14 organizations was very high, ranging from 72% to more than 90%.

In total, 1,113 Italian workers took part in the study: 59.3% were males (40.7% females) and 39.9% had worked up to 7 yr in their current company (60.1% had worked 8 yr or longer). Jobs in the administrative (40.5%) and technical area (43.9%) were more heavily weighted in our sample than those in sales and services (7.9%) or in general areas (7.7%). In addition, there were 200 leaders who rated the subordinates' stress in this study (Table 1): 35.4% of them were coordinating fewer than 5 employees, 32.5% 5–10 employees, and 32.1% more than 10 employees.

We defined "leaders" as those workers who managed and/or coordinated a team within each organization.

Measures

Work-related stress was measured with the *Stress Questionnaire* (SQ)[34], that assess five stress-related factors on a Likert scale ranging from 1 (absolutely agree) to 5 (absolutely disagree): a) *role conflict*, which appears when employees have no awareness of their roles and responsibilities (5 items; e.g., "I have a clear idea about what is expected of me at work"); b) *colleagues'support* or collaboration and support among employees (5 items; e.g., "I get the support I need from colleagues"); c) *supervisors' support* or the extent to which employees experience support and understanding from their supervisors/leaders (5 items; e.g., "My supervisor energizes me at work"); d) *job demands*, which refers to quantitative, demanding aspects of the job (6 items; e.g., "I have unrealistic deadlines"); and e) *job control* or job resources that pertain to the task (5 items; e.g., "I can plan my work"). After recoding responses to positively worded items, the questionnaire gives a total score in which a higher score indicates a greater degree of work-related stress. It is important to note that leaders responded to a different version of this questionnaire, in which "I" was changed to "My subordinates" in all the items.

Positive impression was measured with a 4-item specific scale for stress which is included in the above mentioned SQ (e.g., "I never had a stressful day in my working life").

Organizational policies were measured with a specific scale focusing on facilitating stress factors that is included in the above mentioned SQ. Three scales of organizational policies were used for this study: 1) *welfare* (4 items), the extent to which the organization values and cares for employees, 2) *training* (3 items), the concern for developing employee skills, and 3) *ergonomics* (5 items), the organization designs equipment and devices that fit the human body, its movements and its cognitive abilities.

Workplace bullying was assessed by the shortened Italian version of the *Negative Acts Questionnaire Revised* (NAQ-R)[35]. This questionnaire measures the frequency of exposition to 17 specific negative acts (bullying behaviors) at work (response categories were 1: Never, 2: Now and then, 3: Monthly, 4: Weekly, and 5: Daily) within the last six months. Items are divided into personal bullying (12 items described as exposure to behaviors such as gossip, insulting remarks, excessive teasing, and persistent criticism) and work-related bullying (5 items, such as unreasonable deadlines, unmanageable workloads, excessive monitoring, and experiencing that crucial information is being withheld). The questionnaire provides a total score (ranging from 17 to 85) in which a higher score means greater exposure to negative acts (bullying behaviors).

Psychological well-being was assessed with the *General Health Questionnaire (GHQ-12)* in its 12-item Italian version[36]. This scale measures subjective mental health by asking whether the respondent has recently experienced a symptom or behavior of psychiatric disturbance. As physical health is not investigated in the scale, it is also considered a measure of psychological well-being or subjective mental health. After recoding responses to positively worded items, each item is rated on a 4-point Likert-type scale (0–1–2–3) for scoring the responses (less than usual = 0, no more than usual = 1, rather more than usual = 2, or much more than usual = 3). Thus, the questionnaire gives a total score ranging from 0 to 36, in which a higher score indicates a greater degree of psychological distress (less psychological well-being).

Table 2. Means, Standard Deviations, Alpha and correlations among variables (n=913)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1 Job demands	2.7	.72	(.73)[a]	.35**	.35**	.35**	.20**	.40**	.44**	–.27**	.33**	.26**	.30**
2 Job control	2.4	.71		(.75)	.41**	.38**	.50**	.35**	.40**	–.21**	.42**	.34**	.35**
3 Supervisors' support	2.5	.94			(.80)	.44**	.46**	.34**	.41**	–.20**	.55**	.35**	.44**
4 Colleagues' support	2.4	.74				(.76)	.32**	.33**	.50**	–.20**	.44**	.32**	.34**
5 Role conflict	2.0	.68					(.75)	.35**	.37**	–.18**	.45**	.32**	.43**
6 Psychological well-being	10.6	5.23						(.85)	.51**	–.35**	.36**	.26**	.28**
7 Workplace Bullying	25.0	7.60							(.87)	–.24**	.45**	.29**	.32**
8 Positive impression	2.3	.72								(.62)	–.30**	–.21**	–.21**
9 Welfare	3.0	.92									(.84)	.46**	.66**
10 Ergonomics	2.7	.85										(.70)	.40**
11 Training	2.8	.91											(.75)

[a]Cronbach's alpha is reported in the diagonal between parentheses. **Correlation is significant at the 0.01 level (2-tailed).

Statistical analysis

We used the methodology proposed by Assor, Tzelgov, Thein, Ilardi and Connell[37] to examine potential effects of over-rating, agreement, and under-rating when ratings from different informants are compared (i.e., ratings of students and their teachers about students' academic competence). The same methodology was used to assess work stress by Offermann and Hellmann[17], who considered "subordinate stress perceptions as "actual" ratings and leader stress perceptions as "perceived" ratings (p. 387)". Similarly, we did not consider the dyadic leader-follower agreement in this study, but rather the discrepancies between the subordinate ("actual ratings") and the leaders of his/her specific unit/department in the organization ("perceived ratings") about work stress. Consequently, we subtracted the subordinate's rating from the mean of the leaders' ratings. Thus, we examined whether the data collected through the self-report stress questionnaire were discrepant with the rating data collected through the leaders because both recent studies[12, 13] and the Italian regulation (Legislative Decree no 81/2008) suggest the integration of measures from different informants in stress diagnosis. On the other hand, the other constructs were considered at the self-report level (only subordinates) in line with previous literature.

We then performed structural equation modeling (SEM) analyses to empirically examine the validity of our proposed model (leader-subordinate work stress ratings) in relation to more traditional models (in our case, a model that considers only subordinates' work stress ratings). SEM is a statistical technique for testing and estimating causal relations among constructs in which a theoretical model is tested against the obtained measurement data to determine how well the model fits the data. Thus, χ^2 difference tests for nested models[38] and multiple indices were used to evaluate the fit of the competing models: the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), the incremental fit index (IFI). According to several authors[39–41], a model needs to meet the following criteria to fit the data: GFI $\geq$ 0.90, AGFI $\geq$ 0.90, CFI $\geq$ 0.90, RMSEA<0.08, IFI $\geq$ 0.90.

Results

Table 2 presents the descriptive statistics and intercorrelations of the research variables. All variables were correlated. In addition, the reliability of each variable is shown in the diagonal between parentheses by means of their Cronbach's alpha value.

The variables were then tested for normality. Although all variables had skewness and kurtosis values below 1, the Kolmogorov-Smirnov normality test for samples higher than 200 cases revealed that variables did not follow a normal distribution (p values<0.05). Therefore, we used a non parametric rank test (Mann-Whitney test) to examine differences the between leaders' and subordinates' responses on job stressor variables. Results indicated that leaders perceived higher supervisor support (Mdn=2.50; U=80.46, p=0.01, r=0.08), job control (Mdn=2.40; U=71.47, p=0.01, r=0.14), colleagues' support (Mdn=2.40; U=80.93, p=0.01, r=0.07), role conflict (Mdn=2.00; U=73.56, p=0.01, r=0.13), welfare policies (Mdn=3.00; U=63.01, p=0.01, r=0.21), training policies (Mdn=3.00; U=67.11, p=0.01, r=0.17), and ergonomic policies (Mdn=2.75; U=74.67, p=0.01, r=0.12) than their subordinates (Mdn=2.25, Mdn=2.20, Mdn=2.20, Mdn=2.00, Mdn=2.50, Mdn=2.67, and Mdn=2.50, respectively); on the other hand, non-

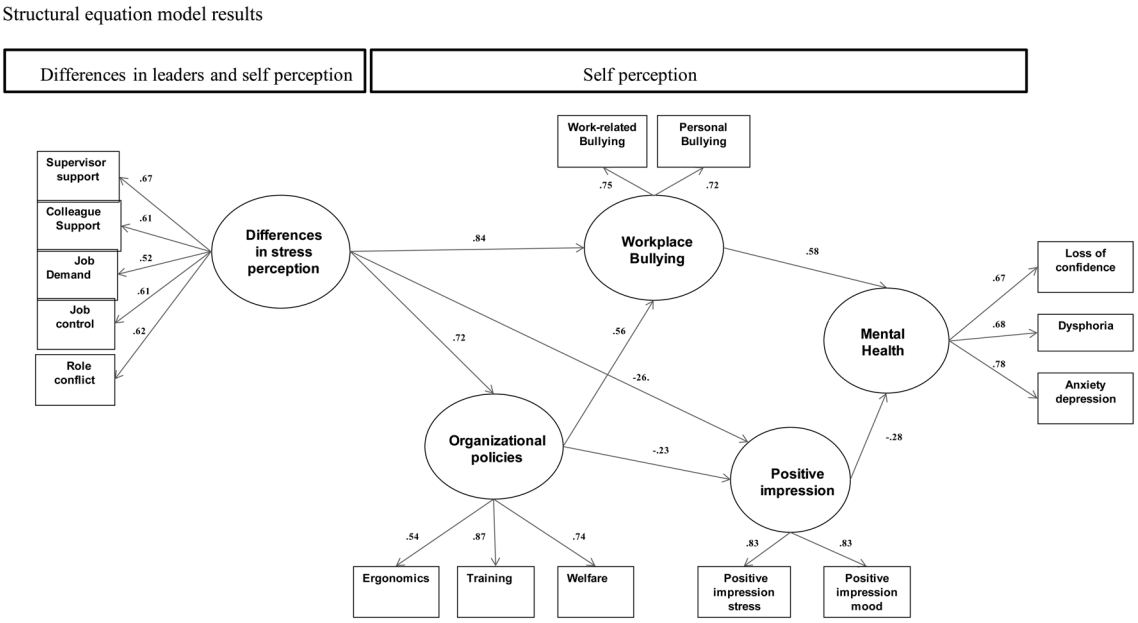

Fig. 2. Structural equation model results (n=1,113)

significant differences were found for neither job demands nor for positive impression.

Considering the expected discrepancies in stress perceptions, we tested our theoretical model and an alternative model that includes only self-report measures (without including discrepancies between workers and leaders). The results from structural equation modeling supported the proposed theoretical model. Chi-square difference tests for nested models indicated that the model combining self-report and leader-report measures fitted the data significantly better than the alternative model including only self-report measures (χ^2=41.6, p<0.001). Moreover, an inspection of the fit indices considered in the present study showed that they met the recommended criteria: GFI=0.945, AGFI=0.921, CFI=0.928, RMSEA=0.064, IFI=0.929. In combination, these fit indices indicated a sufficient fit to the data.

Finally, the path coefficients, representing the latent indicator for the structural equation model, indicated that the values were significant, with standardized estimates ranging from 0.87 to 0.23 (Fig. 2). Thus, the SEM model shows that disagreements in leader-employee stress perception are significantly and indirectly associated with subordinates' psychological well-being, supporting our hypotheses. As can be seen in Fig. 2, differences in stress perception are associated with negative acts (β=0.84) and, in turn, negative acts are associated with psychological well-being (β=0.87). Positive impression mediated the relationship between differences in stress perception and psychological well-being (β=−0.28). Finally, differences in stress perception is associated with the organizational polices (β=0.72) and, in turn, organizational polices are associated with both negative acts (β=0.56) and positive impression (β=−0.23).

Discussion

Over the last decade, researchers have become more aware of occupational aetiology for work related stress[8, 42]. This has led to the need for innovative research methods for the assessment of work-related stress, particularly multiple sources for evaluating stress at work that overcome bias from using solely self-report measures[11–13]. The aim of this study was therefore to measure stress among a sample of Italian employees with an innovative approach that combines the stress ratings of both workers and their leaders. Recent Italian studies have also highlighted the importance of work-related stress[8, 12, 13], which is the subject of mandatory control under the Legislative Decree no. 81/2008 and subsequent amendments.

In this regard, our results indicated that disagreements in stress ratings appeared to be highly associated with employee psychological well-being, suggesting that the leader's inability to understand subordinates' stress is negatively associated with the follower's health. Specifically, stronger disagreement between self and leader ratings was related to lower levels of subordinates' health. Furthermore, this research finds leaders' accuracy in

perceiving stress to be low. These data imply that leaders' evaluations of aspects related to subordinate stress may not always coincide with the factors that subordinates themselves perceive as enhancing or reducing stress. In particular, we find that leaders reported less stress than subordinates and this might be associated to the underestimation of subordinates stress. Leaders may underrate their subordinates' stress either they have an inflated self-view or a self-enhancement bias. For example, leaders may not perceive greater subordinate stress because they enjoy resources and a high level of control, which, in turn, makes leaders perceive the organization more positively and their employee as more healthy.

Thus, the organizational level influences rating discrepancies because groups on different hierarchical levels might have different ideas of what stress actually is[43]. Following this line of thinking, it would appear that consensus and agreement on stress perceptions is something organizations should value and support. Consequently, our results reveal that using leader-follower discrepancies on stress fits better with data and explains the consequences of stress more fully than solely the subordinates' self-reports. In other words, our results confirm that the consequences of stress do not depend on the employees' own perception but are associated with leaders' understanding of their subordinates' stress. It seems that some followers may need their leaders to be able to fully understand their stress; their incapacity to do so leads to a higher risk of followers developing mental health problems.

In addition, our results also reveal that the relationship of disagreement between self and leaders' stress ratings and employee psychological well-being seems to be mediated by different factors. Two divergent pathways are of particular interest due to their practical implications. First, subordinates might avoid stress by suppressing it. A positive impression scale was added in the survey to determine whether workers might give fake responses in organizational diagnosis. However, workers who tolerate too much stress and hide their emotions might not cope effectively with health problems, triggering a negative cycle of deteriorating long term effects. For example, researchers have suggested that the suppression of emotions may cause anxiety or depression[8, 25]. This might be especially applicable in emotional cultures like Italy and other South European countries[44–47], which encourage the expression of emotions in social interactions. The European Agency for Safety and Health at Work (EU-OSHA) observed − among other aspects − that not only is there a high level of work-related emotional demands rated as an emerging risk, but also that workers may try to hide their difficulties in coping with this high level of emotional demands, which is seen by the respondents as a reaction to the fear of losing their job[44–46]. The strong link between emotions and work-related stress among Italians has also been noted by the European Foundation for the Improvements and Working Living Condition (EUROFOUND) in the European Quality of Life Survey (EQLS) 2012, particularly in terms of lower optimism and happiness and their negative effects on work performance[47]. Nevertheless, cultural issues should be investigated further since cultural variables are not measured in this study.

In addition, employees might even feel particularly discriminated by the leaders that are not acknowledging their difficulties and consequently develop perceptions of being bullied. Similarly, a nationwide study on psychosocial risks at work conducted in Great Britain revealed that the absence of adequate leadership emerged as the strongest predictor of perceiving exposure to bullying behaviors[32]. Indeed, "the absence of adequate leadership may be experienced by subordinates as an intended and systematic neglect and ignorance, even to the extent that they feel socially excluded and ostracized", which are key aspects of bullying situations (p. 457). Moreover, negative emotions and low psychological well-being are associated with subordinates' perceptions of leaders' insensitivity and a poor leader–subordinate relationship[48].

Finally, positive impressions and bullying as mediators of the relationship between stress and health both seem to be affected by the existing organizational policies on welfare, training and ergonomics within the company. Therefore, organizational cultures that offer little welfare, a low level of training and poor ergonomics might disapprove of, or strongly discourage, individual reporting of stress as well as stimulate bullying perceptions[29–32].

Limitations and further research

This study is not free from limitations that should be addressed in future studies. First, although our sample involved a large number of companies and employees, it cannot be considered representative of the entire Italian workforce and the generalizability of the results are consequently limited. Indeed, sampling bias due to a non-random sample might be present (e.g., results can be erroneously attributed to the phenomenon under study rather than to the method of sampling). Thus, it is possible that participating companies are more sensitive to work-related stress than the average medium and large Italian companies, and therefore are also more careful to provide

workers with practical answers to their questions about occupational safety and health[49].

Second, it would be useful to evaluate the impact of our variables at the group level by using a multilevel approach; this was not possible in our study because data collection did not allow us to establish correspondence between leaders and workers at a group level.

Finally, the cross-sectional nature of our data limits causal interpretations and further longitudinal studies are required to fully understand the relationship between divergence in stress ratings and psychological well-being. Furthermore, future research should make an in-depth study of how discrepancies between leaders and their subordinates develop over time. The possible spill-over hypothesis between stress and bullying should also be explored since subordinates who do not see their stress recognized might easily develop conflicts or act negatively at work as a way of dealing with their frustration (in the case of perpetrators of bullying), while recipients of such negative acts will also experience stress as they perceive bullying behaviors as a job stressor (in the case of bullying victims).

Conclusion

Despite the above mentioned limitations, our results suggest that a stress assessment method that includes ratings from different informants (i.e., leader-subordinate discrepancies) attenuates the effects of self-report bias and other potential distortions common to stress. Thus, measures of stress should incorporate various information sources in order to have a more accurate organizational diagnosis of this widespread and severe problem. Indeed, by extending the body of previous research that focused predominantly on the individual, we found that discrepancies between employees and their leaders provide important additional information when looking at organizational health. Moreover, the use of a specific positive impression scale is recommended in the diagnosis of organizations and stress, notably in countries (like Italy) where the legislation provides a mandatory assessment of work-related stress.

In conclusion, the supervisors' reports can make an important contribution to the constructs under study both for organizational diagnosis and intervention purposes. Healthy leadership, which is an important predictor of employee well-being[50, 51], should be developed by training the leaders to better understand their employees' stress and provide appropriate feedback. Similarly, organizations can reduce stress by creating healthy environments that encourage cooperation between leaders and followers.

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References

1) Gilboa S, Shirom A, Fried Y, Cooper CL (2008) A meta-analysis of work demand stressors and job performance: examining main and moderating effects. Person Psychol **61**, 227–71. [CrossRef]
2) Stansfeld S, Candy B (2006) Psychosocial work environment and mental health –a meta-analytic review. Scand J Work Environ Health **32**, 443–62. [Medline] [CrossRef]
3) Godin I, Kittel F, Coppieters Y, Siegrist J (2005) A prospective study of cumulative job stress in relation to mental health. BMC Public Health **5**, 67–76. [Medline] [CrossRef]
4) Burke R (2010) Workplace stress and well-being across cultures: research and practice. Cross Cul Manage An Int J **17**, 5–9. [CrossRef]
5) Bhagat RS, Krishnan B, Nelson TA, Leonard KM, Ford DL, Billin TK (2010) Organizational stress, psychological strain, and work outcomes in six national contexts: a closer look at the moderating influences of coping styles and decision latitude. Cross Cul Manage An Int J **17**, 10–29. [CrossRef]
6) Edwards JA, Guppy A, Cockerton T (2007) A longitudinal study exploring the relationships between occupational stressors, non-work stressors, and work performance. Work Stress **21**, 99–116. [CrossRef]
7) Podsakoff NP, LePine JA, LePine MA (2007) Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: a meta-analysis. J Appl Psychol **92**, 438–54. [Medline] [CrossRef]
8) Gagliardi D, Marinaccio A, Valenti A, Iavicoli S (2012) Occupational safety and health in Europe: Lessons from the past, challenges and opportunities for the future. Ind Health **50**, 7–11. [Medline] [CrossRef]
9) Edwards JA, Webster S, Van Laar D, Easton S (2008) Psychometric analysis of the UK Health and Safety Executive's Management Standards work-related stress Indicator Tool. Work Stress **22**, 96–107. [CrossRef]
10) Toderi S, Balducci C, Edwards JA, Sarchielli G, Broccoli M, Mancini G (2013) Psychometric properties of the UK and Italian versions of the HSE Stress Indicator Tool: a cross-cultural investigation. Eur J Psychol Assess **29**, 72–9. [CrossRef]
11) Spector PE (1994) Using self-report questionnaires in OB

research: a comment on the use of a controversial method. J Organ Behav **15**, 385–92. [CrossRef]
12) Panari C, Guglielmi D, Ricci A, Tabanelli MC, Violante FS (2012) Assessing and improving health in the workplace: an integration of subjective and objective measures with the STress Assessment and Research Toolkit (St.A.R.T.) method. J Occup Med Toxicol **7**, 18. [Medline] [CrossRef]
13) Guglielmi D, Simbula S, Vignoli M, Bruni I, Depolo M, Bonfiglioli R, Tabanelli MC, Violante FS (2013) Solving a methodological challenge in work stress evaluation with the STress Assessment and Research Toolkit (St.A.R.T.): A study protocol. J Occup Med Toxicol **8**, 18. [Medline] [CrossRef]
14) Donaldson SI, Grant-Vallone EJ (2002) Understanding self-report bias in organizational behavior research. J Bus Psychol **17**, 245–60. [CrossRef]
15) Podsakoff PM, MacKenzie SB, Lee JY, Podsakoff NP (2003) Common method biases in behavioral research: a critical review of the literature and recommended remedies. J Appl Psychol **88**, 879–903. [Medline] [CrossRef]
16) Lance CE, Baxter D, Mahan RP (2006) Multi-source performance measurement: A reconceptualization. In: Performance measurement: Current perspectives and future challenges, Bennett Jr. W, Lance CE and Woehr DJ (Eds.), 49–76, Lawrence Erlbaum, New Jersey.
17) Offermann LR, Hellmann PS (1996) Leadership behavior and subordinate stress: a 360 degrees view. J Occup Health Psychol **1**, 382–90. [Medline] [CrossRef]
18) Fiske ST, Taylor SE (1984) Social cognition, Addison Wesley, Reading.
19) Gioia DA, Sims HP Jr (1985) Self-serving bias and actor-observer differences in organizations: an empirical analysis. J Appl Soc Psychol **15**, 547–63. [CrossRef]
20) Malle BF (2006) The actor-observer asymmetry in attribution: a (surprising) meta-analysis. Psychol Bull **132**, 895–919. [Medline] [CrossRef]
21) Corrigan PW, Diwan S, Campion J, Rashid F (2002) Transformational leadership and the mental health team. Adm Policy Ment Health **30**, 97–108. [Medline] [CrossRef]
22) Batinic B, Selenko E, Stiglbauer B, Paul KI (2010) Are workers in high status jobs healthier than others? Assessing Jahoda's latent benefits of employment in two working populations. Work Stress **24**, 73–87. [CrossRef]
23) European Commission (EU Employment and Social Situation Quarterly Review June 2012). http://ec.europa.eu/social/BlobServlet?docId=7830&langId=en. Accessed October 16, 2013.
24) Giorgi G (2009) Workplace bullying risk assessment in 12 Italian organizations. Int J Work Health Manage **2**, 34–47. [CrossRef]
25) Semmer NK (2003) Individual differences, work stress and health. In: The handbook of work and health psychology, 2nd Ed., Schabracq MJ, Winnubst JAM and Cooper CL (Eds.), 83–120, John Wiley & Sons, Chichester.
26) Einarsen S, Aasland MS, Skogstad A (2007) Destructive leadership behavior: a definition and conceptual model. Lead Q **18**, 207–16. [CrossRef]
27) Sosik JJ, Godshalk VM (2000) Leadership styles, mentoring functions received, and job-related stress: a conceptual model and preliminary study. J Organ Behav **21**, 365–90. [CrossRef]
28) Levashina J, Campion MA (2007) Measuring faking in the employment interview: development and validation of an interview faking behavior scale. J Appl Psychol **92**, 1638–56. [Medline] [CrossRef]
29) Nolfe G, Petrella C, Blasi F, Zontini G, Nolfe G (2008) Psychopathological dimension of harassment in the workplace (mobbing). Int J Ment Health **36**, 70–88.
30) Giorgi G (2010) Workplace bullying partially mediates the climate-health relationship. J Manag Psychol **25**, 727–40. [CrossRef]
31) Giorgi G (2012) Workplace bullying in academia creates a negative work environment: an Italian study. Employee Responsib Rights J **24**, 261–275. [CrossRef]
32) Hoel H, Glaso L, Hetland J, Cooper CL, Einarsen S (2010) Leadership styles as predictors of self-reported and observed workplace bullying. Br J Manage **21**, 453–68.
33) Segovis JC, Bhagat RS, Coelho GV (1985) The mediating role of cognitive appraisal in the experience of stressful life events: A reconceptualization. In: Human stress and cognition in organizations: An integrated perspective, Beehr TA and Bhagat RS (Eds.), John Wiley, New York.
34) Giorgi G, Arcangeli G, Cupelli V (2012) Stress lavoro correlato. Leader e collaboratori a confronto, Edises, Naples.
35) Giorgi G, Arenas A, Leon-Perez JM (2011) An operative measure of workplace bullying: the negative acts questionnaire across Italian companies. Ind Health **49**, 686–95. [Medline] [CrossRef]
36) Fraccaroli F, Depolo M, Sarchielli G (1991) L'uso del General Health Questionnaire di Goldberg in una ricerca su giovani disoccupati. Boll Psicol Appl **197**, 13–9.
37) Assor A, Tzelgov J, Thein R, Ilardi BC, Connell JP (1990) Assessing the correlates of over- and underrating of academic competence: a conceptual clarification and a methodological proposal. Child Dev **61**, 2085–97. [CrossRef]
38) Satorra A, Bentler PM (2001) A scaled difference chi square test statistic for moment structure analysis. Psychometrika **66**, 507–14. [CrossRef]
39) Bollen KA (1989) Structural equations with latent variables, Wiley, New York.
40) Tabachnick BG, Fidell LS (1996) Using multivariate statistics, Harper and Collins, New York.
41) Schumacher RE, Lomax RG (1996) A beginner's guide to structural equation modeling. Lawrence Erlbaum, New Jersey.
42) EUROSTAT (2010) Health and safety at work in Europe (1999–2007): A statistical portrait. EUROSTAT Statistical books. Publications Office of the European Union,

Luxembourg.
43) Gentry LA, Chung JJ, Aung N, Keller S, Heinrich KM, Maddock JE (2007) Gender differences in stress and coping among adults living in Hawaii. Calif J Health Prom **5**, 89–102.
44) European agency for safety and health at work (EU-OSHA) (2007) Expert forecast on emerging psychosocial risks related to occupational safety and health, Publications Office of the European Union, Luxembourg.
45) European agency for safety and health at work (EU-OSHA) (2013) Mental health promotion in the workplace—A good practice report, Publications Office of the European Union, Luxembourg.
46) European agency for safety and health at work (EU-OSHA) (2013) Diverse cultures at work: Ensuring safety and health through leadership and participation, Publications Office of the European Union, Luxembourg.
47) European foundation for the improvements and working living condition (EUROFOUND) (2012) Third European quality of life survey—quality of life in Europe: Impacts of the crisis, Publications Office of the European Union, Luxembourg.
48) Glaso L, Ekerholt K, Barman S, Einarsen S (2006) The instrumentality of emotion in leader-subordinate relationships. Int J Work Organ Emotion **1**, 255–76. [CrossRef]
49) Rhebergen M, Van Dijk F, Hulshof C (2012) Can workers answer their questions about occupational safety and health: challenges and solutions. Ind Health **50**, 239–49. [Medline] [CrossRef]
50) Nielsen K, Munir F (2009) How do transformational leaders influence followers' affective well-being? Exploring the mediating role of self-efficacy. Work Stress **23**, 313–29. [CrossRef]
51) Macik-Frey M, Quick JC, Cooper CL (2009) Authentic leadership as a pathway to positive health. J Organ Behav **30**, 453–8. [CrossRef]