

Health promotion, psychological distress, and disease prevention in the workplace: a cross-sectional study of Italian adults

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Background: Job insecurity resulting from new types of employment contracts, together with organizational dynamics such as restructuring and internationalization, is emerging as an important source of organizational and individual stress, often transforming the workplace into a hostile and, above all, extremely demanding context from a psychological point of view.

Materials and methods: The aim of this study was to identify the possible relationships between individual and organizational dimensions of work (such as engagement, autonomy, personal and collective efficacy at work, and satisfaction) and their impact on stress levels. The survey involved 120 Italian workers: 72 females (60%) and 48 males (40%), with a mean age of 41.8 years \pm 7.31 years. The groups of participants were selected on the basis of employment contract type (traditional or atypical) to emphasize potential differences. The study was conducted using a set of self-administered questionnaires, including the Psychological Stress Measure and Utrecht Work Engagement Scale.

Results: The data show that personal and collective efficacy at work correlates negatively with stress, which in turn correlates negatively with engagement and satisfaction. The results support the hypothesis that job insecurity could be considered a strong predictor of poor health.

Conclusion: The study should be considered as a preliminary assessment prior to studies of broader interventions to increase quality of life.

Keywords: well-being, workers, stress, efficacy, satisfaction, autonomy, organizational process

Introduction

The sociocultural transformations of the past decade have affected life and work contexts, prompting people to rethink life projects, values, and beliefs.^{1,2} Recent literature provides evidence that flexibility benefits a person and leads to healthier outcomes which include fulfillment, positive sensations, and autonomy.³⁻⁵ The literature also demonstrates a relationship between the perception of well-being in a work context and several benefits such as health improvement and reduced levels of stress.

Sometimes, however, the abuse of flexibility has inevitably led to the configuration of a workplace marked by insecure working and a precarious personal life. Flexibility, which characterizes new contractual forms, has helped to reshape the relationship between the individual's personal life and their working experience; changing the significance and centrality of work. Traditional and permanent work contracts are continually being replaced by boundless working experiences: in fact, while the "traditional" contract represents a kind of work rapport regulated by a stable full-time contract or permanent (typical) employment, the "atypical" type of employment is regulated by short-term contracts, impacting, for instance, on trainees, project workers,

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and occasional laborers.^{6,7} From this perspective, flexibility could become a negative experience because precariousness could adversely affect the employee's quality of life, increasing psychological stress.

A recent study shows that insecurity in the workplace, arising from organizational dynamics such as restructuring and internationalization, is often associated with contractual arrangements and flexibility.⁷ A report by the European Agency for Safety and Health at Work (EU-OSHA),⁵¹ which considers the relationship between stress and quality of life, highlights the psychosocial risk factors in the changing world of work. In addition, recent studies have introduced a distinction between objective and subjective psychosocial risk factors: the first, a concrete and objective type, is based on mobile work and characterized by flexible employment forms; the second, more intangible and subjective, arises from the worker's perception.^{5,7}

Several studies have investigated attitudes, business practices and working practices, and the relationships between certain health risks and workers' distress in the workplace.⁸⁻¹² In particular, research shows an inverse correlation between job flexibility and well-being.¹³⁻¹⁷ For example, a high job flexibility is deemed as a negative experience in terms of precariousness and organizational disadvantages,¹⁸ especially in minor groups (such as youth, women, and temporary workers) who experience, more than other workers, great difficulties in managing their careers¹⁹ and satisfying their professional ambitions.²⁰

The workplace is the context where individuals spend most of their time; hence, it represents a significant part of their life. For this reason, it is essential to understand the composition of a worker's psychological well-being because their perception of well-being influences the quality of work, relationships with others, and their performance, and also affects their attitudes and behaviors within the job context.²¹ Furthermore, understanding the determinants of psychological well-being is crucial to improving satisfaction and performance among employees. Studying the factors that influence the feelings and emotions of workers could also help to eliminate negative behaviors and encourage employees to have a more positive attitude at work.

In particular, studies of high reliability organizations,²² security,²³ and safety climates should be particularly relevant to the understanding and goal-setting that occurs in organizations.^{24,25} These researches, using an approach focused on both individual-level and organizational-level determinants, impact on a wide range of health, functioning, and quality-of-life outcomes. Based on these researches,

the aims of this study were the following: to determine the relationship between the perception of working conditions and psychological distress among workers in Southern Italy with different types of contract, and operating in different sectors (public and private), with an objective of improving health promotion and stress prevention, and to measure the possible predictive variables of psychological stress.

In accordance with the literature on the subject, the following were hypothesized: 1) the level of autonomy at work (measured by types of contract and classified under public or private categories) could influence psychological stress among participants; 2) the level of autonomy could influence work engagement and, in particular, the sense of vigor, dedication, and absorption; 3) the level of autonomy could influence the levels of satisfaction in organizational and relational contexts; 4) there would be a correlation between the individual and organizational indicators of psychological stress; and 5) the possible predictive variables of psychological stress are gender, perception of personal efficacy at work, and general level of engagement.

Materials and methods

A cross-sectional study was conducted from May to December 2016. All 120 participants in the study were administrative employees in the public or private sector. Participants were recruited in their workplace. They were informed about the study aims and procedures, and they provided written informed consent. After informed consent was obtained, questionnaires were distributed to the participants. The questionnaires were distributed by qualified researchers, and participants were given 30 minutes to complete them. The questionnaires were completed anonymously. A package of questionnaires was also distributed among managers for self-completion. It was stipulated to the respondents that the results would only be used to describe groups. Individual data would not be presented to the organizations' officials where respondents worked.

Convenience sampling was used to recruit the participants; in particular, the participants were selected consecutively in order of appearance according to their accessibility (also known as consecutive sampling). The sampling process was finished when the total number of participants (sample saturation) and/or the time limit (time saturation) were reached. Although randomization is a probabilistic process to obtain two comparable groups, the samples used in these studies are generally not representative of the target population. In fact, in the context of nonprobabilistic sampling, the likelihood of selecting some individuals from the target

population is null. This type of sampling does not render a representative sample; therefore, the observed results are usually not generalizable to the target population. Still, unrepresentative samples may be useful for specific research objectives and in finding answers to particular research questions and may contribute to the generation of new hypotheses.

The Internal Review Board of the Faculty of Human and Social Sciences at the Kore University of Enna approved the present research.

Measures

This study was conducted using a set of self-administered questionnaires. The instruments used were as follows: ad hoc questionnaire, Psychological Stress Measure, Utrecht Work Engagement Scale (UWES), Personal Efficacy Scale at work (EPOP), Collective Efficacy Scale at work (ECOP), and Job Satisfaction Subscale.

The ad hoc questionnaire was divided into two parts. The first included several sociodemographic variables such as age, gender, and school grade. The aim of the second part was to evaluate an individual's occupational history for possible associations with psychological stress and for the level of autonomy at work, measuring the following aspects: type of contract (such as typical or atypical); work position (managerial, employee, blue collar, and/or consultant, for example); sector (such as public administration, general government, or private institution); years of service; and the perception of autonomy with choices ranging from 1 ("no autonomy") to 6 ("autonomy").

The Psychological Stress Measure^{26,27} is an instrument designed to measure stress by evaluating subjective feelings of stress without referring to "stress" or "stressors." It is designed using 49 items drawn from descriptors generated by focus groups on stress, grouped in six clusters: Cluster I – Lost Control, Irritability; Cluster II – Psychopathological Sensations; Cluster III – Effort and Confusion; Cluster IV – Depressive Anxiety; Cluster V – Pain and Physical Problems; and Cluster VI – Hyperactivity. Respondents should mark the answer that best indicates the degree to which each statement applies to them in recent experience, using a range from 1 ("none at all") to 4 ("a lot"). Following is an example: "Recently, that is in the last 4 or 5 days, I feel irritable, my nerves are frayed. I am impatient with people and things." Coefficient α reliabilities for the scales have been calculated as 0.95.^{26,27}

The UWES is an instrument designed to measure work engagement by investigating psychological conditions associated with a positive and satisfactory job.^{28,29} The UWES is an instrument consisting of 17 items on a seven-point

scale, ranging from 0 ("never") to 6 ("each day"), which measures the three basic dimensions of work engagement: Vigor, Dedication, and Absorption. Examples are as follows: "How frequently do you feel at your work, 'I am bursting with energy'"; "I find the work that I do full of meaning and purpose"; "Time flies when I am working." Scores are obtained by averaging the responses of the participants, and the highest average scores reflect higher levels of engagement. Coefficient α reliabilities for the scale have been calculated as 0.94.^{28,29}

The EPOP and ECOP are two scales consisting of six items that measure, respectively, the perception of efficacy as an individual (EPOP) and as a team (ECOP).³⁰ The subjects are asked to indicate their level of agreement on a scale of 7 points, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). An example of an item from EPOP is as follows: "I am always able to handle emergencies and the inevitable unforeseen factors in my work." An example from ECOP is as follows: "Even during an emergency, the organization is able to provide customers with a high-quality service." Coefficient α reliabilities for the scales have been calculated as 0.75 (EPOP) and 0.89 (ECOP).³⁰

The Job Satisfaction Subscale is a test to detect a broad spectrum of psychosocial stress in an organization.³¹ It is formed of 22 items that measure job satisfaction and welfare at work. An example item is: "What do you think and how do you feel about your relationships with others at work?" Each item is rated on a 6-point response scale, using a range from 0 ("strong satisfaction") to 6 ("strong dissatisfaction"). Coefficient α reliabilities for the scale have been calculated as 0.96.³⁰

Statistical analysis

All datasets were analyzed using SPSS version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive analyses were performed using the percentages of frequencies. Scores were reported as a mean and standard deviation. For bivariate analysis independent, *t*-tests were performed to evaluate differences in quantitative variables. Gender and age differences were assessed at a preliminary stage by means of *t*-tests and analysis of variance (ANOVA) for different samples. Pearson's correlation and multiple linear regression analyses were used to assess the research hypotheses. The level of significance was set at $p \leq 0.05$.

Results

In total, 126 workers were selected to participate in the present study. All of them were asked to complete the questionnaires,

which were completed by 120 workers (95% response rate). Of this total population, 72 were females (60%) and 48 were males (40%). The ages ranged from 28 to 59 years ($M=41.8\pm 7.31$). As regards their working characteristics, only 10% of the participants came from managerial positions, and the whole group had a mean age of employment equal to 47.5 ± 5.12 . Table 1 shows the working characteristics of the participants.

The results of the questionnaires highlight a statistically significant difference in relation to psychological stress. As shown in Table 2, females showed a higher level of Psychopathological Sensations ($F=5.09$; $p<0.05$); Effort and Confusion ($F=7.84$; $p<0.01$); Depressive Anxiety ($F=25.22$; $p<0.001$); and Physical Problems ($F=24.39$; $p<0.001$).

As regards their Work Engagement (Table 3), males seemed to present a higher level of personal efficacy ($F=24.23$; $p<0.001$) and collective efficacy at work ($F=10.01$; $p<0.01$).

Table 1 Sample characteristics

Variable	Results
Schooling	
Secondary school	87 (72.5%)
Graduate	33 (27.5%)
Type of contract	
Typical	69 (57.5%)
Atypical	51 (42.5%)
Work position	
Managerial	11 (9.2%)
Employee	70 (58.3%)
Blue collar	15 (12.5%)
Consultant	24 (20%)
Years of service	13.7±7.92
Hours of service per day	6.50±1.51
Sector	
Public	86 (71.7%)
Private	34 (28.3%)
Professional area	
Defense	9 (7.5%)
Health and well-being	33 (27.5%)
Education	44 (36.7%)
Services	34 (28.3%)

There was a statistically significant gap between the public and the private employees in relation to one scale of UWES (Table 3), which is the Absorption dimension ($F=4.76$; $p<0.05$). The private employees (Table 2) showed a greater level of Effort and Confusion ($F=5.23$; $p<0.05$), Pain and Physical Problems ($F=5.10$; $p<0.05$), and Hyperactivity ($F=5.72$; $p<0.05$). As regards Job Satisfaction, the analysis shows the absence of significant differences ($p<0.05$).

Regarding the first hypothesis of this research, a univariate ANOVA showed the influence of the Level of Autonomy at work on Psychological Stress. In particular, the analysis shows that as autonomy increases, a progressive reduction of psychological stress was observed in all six clusters: Lost Control and Irritability ($F=8.27$; $p<0.001$); Psychopathological Sensations ($F=4.20$; $p<0.01$); Effort and Confusion ($F=8.04$; $p<0.001$); Depressive Anxiety ($F=4.65$; $p<0.01$); Pain and Physical Problems ($F=4.88$; $p<0.001$); and Hyperactivity ($F=3.97$; $p=0.01$).

Regarding the second hypothesis, a univariate ANOVA showed the influence of the Level of Autonomy on Work Engagement; in particular, the data showed that a higher level of autonomy seemed to determine an elevated sense of Vigor ($F=3.80$; $p<0.01$), Dedication ($F=2.4$; $p<0.05$), and Absorption ($F=4.3$; $p<0.001$).

Regarding the third hypothesis, a univariate ANOVA test showed that a higher Level of Autonomy seemed to determine lower scores of Satisfaction for organizational processes ($F=3.39$; $p<0.05$), but a higher level of Satisfaction for relational ones ($F=3.55$; $p<0.01$). Additionally, regarding perceptions of efficacy, a Pearson's ρ correlation analysis underlined the absence of a relationship between the measures of the perception of efficacy as an individual (EPOP) and as a team (ECOP); that is, efficacy to successfully master the critical demands of work situations ($p>0.05$).

Another correlation analysis was conducted to investigate a possible relationship between individual and

Table 2 Discrimination scores in reference to Psychological Stress

Variable	Discrimination scores		Discrimination scores		Discrimination scores	
	Gender		Type of contract		sector	
	Male	Female	Typical	Atypical	Public	Private
	M±SD	M±SD	M±SD	M±SD	M±SD	M±SD
Cluster I	1.48±0.505	1.67±0.683	1.48±0.609	1.67±0.622	1.55±0.587	1.59±0.701
Cluster II	1.27±0.449	1.51±0.650*	1.36±0.593	1.49±0.579	1.38±0.617	1.50±0.508
Cluster III	1.23±0.495	1.54±0.691*	1.36±0.542	1.49±0.703	1.34±0.566	1.62±0.697*
Cluster IV	1.17±0.379	1.71±0.680*	1.49±0.505	1.49±0.701	1.44±0.606	1.62±0.657
Cluster V	1.13±0.334	1.81±0.914*	1.48±0.699	1.61±0.940	1.43±0.695	1.79±1.008*
Cluster VI	1.88±0.703	1.81±0.781	1.67±0.700	2.06±0.759*	1.73±0.742	2.09±0.712*

Notes: * $p<0.01$. Cluster I = Lost control, Irritability; Cluster II = Psychopathological Sensations; Cluster III = Effort and Confusion; Cluster IV = Depressive Anxiety; Cluster V = Pain and Physical problems; Cluster VI = Hyperactivity.

organizational indicators of psychological stress (the fourth hypothesis). Analysis of the data showed that Effort and Confusion (Cluster III), Depressive Anxiety (Cluster IV), and Pain and Physical problems (Cluster V) were negatively correlated with two of the three dimensions of Work Engagement: Vigor and Dedication. In addition, Psychopathological Sensations (Cluster II) and Effort and Confusion (Cluster III) were positively correlated with Job Satisfaction. Finally, Hyperactivity seemed to correlate positively with four of the five dimensions of Satisfaction: Satisfaction for Job, Structure, Process, and Relationships (Table 4).

Regarding the fifth hypothesis (possible predictors of psychological stress), regression analysis showed that the only

predictor of Lost Control and Irritability (Cluster I) was the perception of personal efficacy at work ($\beta=-0.37$), explaining 23.5% of the total variance. As regards Psychopathological Sensations (Cluster II), regression analysis showed the following variables to be the predictors: gender ($\beta=0.25$) and the total level of engagement ($\beta=-0.26$), explaining 18.1% of the total variance. With regard to Effort and Confusion (Cluster III), personal efficacy at work and the total level of engagement were among the predictive variables (Table 5), explaining 36.3% of the total variance.

As Table 6 shows, the predictors for Depressive Anxiety (Cluster IV) were the following variables: gender, age, and the total level of engagement, explaining 36.4% of the total variance.

Table 3 Discrimination scores in reference to Work Engagement

Variable	Discrimination scores		Discrimination scores		Discrimination scores	
	Gender		Type of contract		Sector	
	Male	Female	Typical	Atypical	Public	Private
	M \pm SD	M \pm SD	M \pm SD	M \pm SD	M \pm SD	M \pm SD
Vigor	4.45 \pm 1.02	4.29 \pm 1.08	4.45 \pm 0.592	4.22 \pm 1.19	4.35 \pm 0.94	4.36 \pm 1.30
Dedication	4.53 \pm 1.24	4.23 \pm 1.35	4.26 \pm 1.26	4.47 \pm 1.37	4.31 \pm 1.23	4.46 \pm 1.49
Absorption	4.03 \pm 1.19	24.22 \pm 6.48	3.90 \pm 3.78	4.22 \pm 1.27	3.90 \pm 0.93	4.38 \pm 1.45
Personal Efficacy at work	5.95 \pm 0.53	5.43 \pm 0.57	5.69 \pm 0.63	5.58 \pm 0.57	5.68 \pm 0.61	5.55 \pm 0.58
Collective Efficacy at work	5.60 \pm 0.62	4.90 \pm 1.45	5.20 \pm 1.39	5.14 \pm 1.01	5.27 \pm 1.28	4.94 \pm 1.1
Autonomy at work	4.02 \pm 1.37	3.89 \pm 1.51	4.01 \pm 1.48	3.83 \pm 1.43	3.92 \pm 1.46	4.00 \pm 1.45

Table 4 Correlation between the individual/organizational indicators of Psychological Stress

Psychological Stress (MSP)	SC	SJ	SS	SP	SR	VI	DE	AB	EPOP	ECOP
Cluster I	-0.17	0.08	-0.18	-0.10	-0.04	-0.37*	-0.01	0.05	-0.40*	0.01
Cluster II	0.05	0.20**	0.14	0.03	0.02	-0.35*	-0.32*	-0.11	-0.09	0.09
Cluster III	-0.02	0.22**	-0.05	0.11	0.02	-0.32*	-0.19**	0.08	-0.51*	-0.23**
Cluster IV	0.01	0.12	-0.09	0.09	-0.17	-0.33*	-0.39*	-0.18	-0.35*	-0.19**
Cluster V	-0.10	0.08	-0.16	-0.06	-0.18**	-0.29*	-0.24*	-0.04	-0.32*	-0.18**
Cluster VI	0.12	0.36*	0.23**	0.18**	0.19**	-0.05	-0.09	0.14	0.01	-0.07

Notes: * $p<0.01$; ** $p<0.05$. Cluster I = Lost control; Cluster II = Psychopathological Sensations; Cluster III = Effort and Confusion; Cluster IV = Depressive Anxiety; Cluster V = Pain and Physical problems; Cluster VI = Hyperactivity.

Abbreviations: MSP, Psychological Stress Measure; SC, Satisfaction for Career; SJ, Satisfaction for Job; SS, Satisfaction for Structure; SP, Satisfaction for Process; SR, Satisfaction for Relationships; VI, Vigor; DE, Dedication; AB, Absorption; EPOP, Personal Efficacy at work; ECOP, Collective Efficacy at work.

Table 5 Model summary of regression analysis that predicts Effort and Confusion

Variable	R ²	Adjusted R ²	β not adjusted	SE	β	t	p
Gender	0.60	0.36	0.08	0.12	0.06	0.66	0.51
Age			0.008	0.01	0.09	0.92	0.36
Typical/atypical contract			-0.035	0.17	-0.03	-0.21	0.84
Public/private sector			0.337	0.18	0.25	1.93	0.06
Years of services			0.1	0.10	0.10	0.99	0.32
General Satisfaction			0.002	0.00	0.06	0.71	0.48
Personal Efficacy			-0.065	0.02	-0.39	-3.98	0.00
Collective Efficacy			-0.005	0.01	-0.06	-0.66	0.51
Engagement			-0.006	0.00	-0.18	-2.18	0.03

Abbreviations: SE, standard error; β , beta standardized coefficients.

Table 6 Model summary of regression analysis that predicts Depressive Anxiety

Variable	R ²	Adjusted R ²	β not adjusted	SE	β	t	p
Gender	0.60	0.36	0.36	0.13	0.28	2.88	0.01
Age			0.02	0.01	0.23	2.27	0.03
Typical/atypical contract			-0.14	0.18	-0.11	-0.77	0.44
Public/private sector			0.35	0.18	0.25	1.91	0.06
Years of services			0.00	0.10	0.00	0.01	0.99
General Satisfaction			0.00	0.00	-0.07	-0.90	0.37
Personal Efficacy			-0.02	0.02	-0.13	-1.28	0.20
Collective Efficacy			-0.01	0.01	-0.05	-0.58	0.56
Engagement			-0.01	0.00	-0.37	-4.45	0.00

Abbreviations: SE, standard error; β, beta standardized coefficients.

Table 7 Model summary of regression analysis that predicts Pain and Physical problems

Variable	R ²	Adjusted R ²	β not adjusted	SE	β	t	p
Gender	0.56	0.31	0.58	0.17	0.35	3.45	0.00
Age			0.01	0.01	0.10	0.98	0.33
Typical/atypical contract			0.09	0.24	0.06	0.38	0.70
Public/private sector			0.34	0.24	0.19	1.41	0.16
Years of services			0.14	0.14	0.11	1.05	0.30
General satisfaction			-0.01	0.00	-0.16	-1.87	0.07
Personal efficacy			-0.01	0.02	-0.06	-0.55	0.58
Collective efficacy			-0.01	0.01	-0.07	-0.68	0.50
Engagement			-0.01	0.00	-0.25	-2.88	0.01

Abbreviations: SE, standard error; β, beta standardized coefficients.

Similarly, the predictors of Pain and Physical Problems (Cluster V) were the gender variable and the total level of engagement (Table 7), explaining 31% of the total variance.

The last regression analysis showed that the general level of job satisfaction ($\beta=0.23$) can be considered the only predictor of Hyperactivity (Cluster VI), explaining 14.8% of the total variance.

Discussion

The results of this study are consistent with the indications in the literature about the interaction between an individual and the organization in ensuring well-being in the workplace.^{32–35} The assumption in this study is that well-being in the workplace is related to job satisfaction and this, in turn, is stimulated by the subjective skills needed to find a positive personal equilibrium within organizational contexts.³⁶

This study shows significant differences in the measurement of job satisfaction, work engagement, and personal and collective efficacy needed to successfully master the critical demands of job situations. In particular, and in accordance with the first research hypothesis, the data show the influence of a lower level of autonomy at work on the perception of lost control, on psychopathological sensations such as effort and depressive anxiety, on irritability and consequently hyperactivity, and, above all, on the perception of physical problems.

These results are consistent with other surveys that show that a worker's energy, enthusiasm, and pride strongly influence the level of distress they may be experiencing.³⁹

However, as amply described in the literature, it is important to examine not only job characteristics but also other variables that have an influence on stress levels, such as personal,⁴⁵ family,⁴⁶ and relational contexts.⁴⁷ In this context, our data highlight the finding that males manifest higher levels of self-efficacy than females. This is in accordance with the literature which indicates the presence of a complex interplay between job stress and a wide range of possible approaches to mental health promotion in the workplace, including flexible working arrangements, career progression opportunities, ergonomics and the workplace environment, and an improved recognition of risk factors for poor mental health.^{48,49}

The findings of the present study, as suggested by the second hypothesis, show that a high level of autonomy seems to influence work engagement and, in particular, to be strongly related to an elevated perception of energy and mental resilience (or vigor), a sense of significance, enthusiasm and inspiration (or dedication), and high levels of concentration and commitment in the working context (or absorption). However, the data also show that a low level of autonomy seems to reduce a sense of satisfaction in the organizational context, as suggested by the third hypothesis.

This finding is in accordance with the model of Cotton and Hart,³⁹ who studied the direct effects of stress arising from work characteristics and found that autonomy was related to organizational stress.

According to the literature, individuals who manifest well-being develop satisfying relationships, and there is a significant correlation between measures of psychological distress and scores related to personal, relational, and job satisfaction.^{37,38} The findings of the present study, as suggested by the fourth hypothesis, are in agreement here. The data show that the perception of confusion, depressive anxiety, and physical problems are negatively correlated with vigor and dedication in the working context. Conversely, the perception of hyperactivity seems to correlate positively with satisfaction for job type, structure, process, and relationships. Britt et al⁴⁰ found that job satisfaction was much more strongly associated with psychological problems than with physical complaints and very closely allied with engagement. Other research have found job satisfaction to be related to good health, positive work outcomes, perceptions of self-efficacy,⁴¹ lower work stress,⁴² and well-being.⁴³ Furthermore, the literature shows that job satisfaction is correlated slightly less with depression, anxiety, self-esteem, and general mental health issues.⁴⁴

On the last research hypothesis, the data show that the perception of personal efficacy at work is predictive of the tendency to lose control and be irritable. In contrast to this, being a female and having a low level of engagement seem to predict a higher level of psychopathological sensations, the presence of pain and physical problems, and the presence of depressive anxiety. A low level of engagement and personal efficacy at work can be considered as predictors of the presence of effort and confusion in job contexts. The only predictive variable of hyperactivity is a lower level of job satisfaction.

The results confirm the validity of Karasek's⁵⁰ model of job decision latitude, defined as the working individual's potential control over their tasks and conduct during the working day. According to this model, workers might even thrive under low-level stress conditions if they have autonomy, such as a high level of control over their goals. From this perspective, the demands act as a source of challenge rather than as a source of mental and physical stress. In this context, one must find ways to augment the autonomy or control of the workers while leaving productivity demands unaltered, because workers might even thrive under conditions of higher productivity goals if they possess the required level of control.

While the present study provides general support for the research hypotheses, some limitations need to be noted and addressed in future research. One limitation of the present study was the use of convenience sampling methods for data collection. Second, the small sample size makes it difficult to gather a representative sample and prevents generalizations that can be externally validated. Third, the data may not reflect attitudes and concerns in other regions and sectors in Italy. For these reasons, therefore, even though the results are comparable to those observed in the literature, they should be interpreted with caution due to the nature of the participants involved.

A further limitation is the use of a cross-sectional survey method. A cross-sectional survey is not sufficient to establish causal relationships, which makes it difficult to determine if psychological stress is antecedent to, linked to, or a consequence of work engagement (such as low vigor, dedication, and absorption), or if efficacy at work is antecedent or a consequence of job satisfaction. To counter the drawbacks of the cross-sectional design, and in the context of health promotion and disease prevention in the workplace, future research should be conducted in other organizational contexts with the aim of enriching the database and facilitating the identification of further individual and organizational dimensions that contribute to positive outcomes at work.

Conclusion

Health and well-being in the workplace is an increasing concern for organizations. This preoccupation is mainly attributable to the positive links that have been found between the health and well-being of employees and their productivity and performance. Because of this relationship, there are incentives for employers to intervene to support and promote the health and well-being of their employees. Depending on the intervention, there is great potential gains to outweigh the costs. In addition to raising productivity, interventions to support health promotion in the workplace can reduce the cost of health care for employees, which is particularly important in countries such as the USA where health insurance is paid directly by employers. Such interventions can also be part of a strategy to respond to duties and regulations regarding responsible employment. However, the most cited rationale for intervention in the workplace is to improve the quality of life and the productivity of workers and to reduce economic losses through absence, sickness, and disability. Examples of the kinds of interventions that have been implemented to promote health and well-being include counseling for issues such

as personal, behavioral, or family problems; educational or behavioral interventions directed at stress management; and health information and assistance.

The results of this study provide feedback as to how stressors are perceived by the individual and provide a useful resource for creating health and well-being in the workplace. The content of this paper is closely aligned with case studies^{52–55} that document the relationship between psychological stress reduction and high levels of engagement, job satisfaction, and job control. The data show that well-being in the workplace is related to people's mental health because those who are psychologically healthy tend to have better attitudes at work and can manage their time and handle stress more effectively. The evidence suggests that individual and environmental factors are not independent of one another and, while there are numerous interventions available, a multicomponent approach is likely to be more effective in alleviating stress and increasing efficacy at work.

Disclosure

The authors declare that the present research has not had commercial or financial relationships that could be represented as a potential conflict of interest. The authors report no other conflicts of interest in this work.

References

1. Chu C, Driscoll T, Dwyer S. The health-promoting workplace: an integrative perspective. *Aust N Z J Public Health*. 1997;21:377–385.
2. Kirk AK, Brown DF. Employee assistance programs: a review of the management of stress and wellbeing through workplace counselling and consulting. *Aust Psychol*. 2003;38:138–143.
3. Soler RE, Leeks KD, Razi S, et al; Task Force on Community Preventive Services. A systematic review of selected interventions for worksite health promotion. The assessment of health risks with feedback. *Am J Prev Med*. 2010;38:237–262.
4. Baicker K, Cutler D, Song Z. Workplace wellness programs can generate savings. *Health Aff*. 2010;29(2):304–311.
5. Sears LE, Shi Y, Coberly CR, Pope JE. Overall well-being as a predictor of health care, productivity, and retention outcomes in a large employer. *Popul Health Manag*. 2013;16(6):397–405.
6. Parks KM, Steelman LA. Organizational wellness programs: a meta-analysis. *J Occup Health Psychol*. 2008;13(1):58–68.
7. Ramaci T, Pellerone M, Iacolino, C. Stress-related diseases: significant influence on the quality of life at workplaces. *Eur Proc Soc Behav Sci*. 2016;8:29–38.
8. Specchia A, Attinà AN, Maria GD, et al. Pilot study on the role of psychosocial aggression in a sample of cops and robbers. *Acta Medica Mediterr*. 2013;29(3):407–410.
9. Barling J, Weber T, Kelloway EK. Effects of transformational leadership training on attitudinal and financial outcomes: a field experiment. *J Appl Psychol*. 1996;81(6):827–832.
10. Gowing MK, Kraft JD, Quick JC, editors. *The New Organizational Reality: Downsizing, Restructuring, and Revitalization*. Washington, DC: American Psychological Association; 1998.
11. Hesselink DJK, Van Vuuren T. Job flexibility and job insecurity: the Dutch case. *Eur J Work Org Psychol*. 1999;8(2):273–293.
12. Kinnunen U, Mauno S, Nanetti J, Happonen M. Perceived job insecurity: a longitudinal study among Finnish employees. *Eur J Work Org Psychol*. 1999;8(2):243–260.
13. Mohr G. The changing significance of different stressors after the announcement of bankruptcy: a longitudinal investigation with special emphasis on job insecurity. *J Organ Behav*. 2000;21:337–359.
14. Sverke M, Hellgren J. The nature of job insecurity: understanding employment uncertainty on the brink of the new millennium. *Appl Psychol*. 2002;51(1):23–42.
15. Danna K, Griffin RW. Health and well-being in the workplace: a review and synthesis. *J Manag*. 1999;25(3):357–384.
16. Ilies R, Schwind K, Heller D. Employee well-being: a multi-level model linking work and non work domains. *Eur J Work Org Psychol*. 2007;16:326–341.
17. Pellerone M, Ramaci T, Herrera Lopez M, Craparo G. The role of identity development and decision making process on adult attachment: a cross-national study in Sicilian and Andalusian adolescents. *Clin Neuropsychiatry*. 2017;14(2):141–150.
18. Ramaci T, Pellerone M, Ledda C, et al. Gender stereotypes in occupational choice: a cross sectional study on group of Italian adolescents. *Psychol Res Behav Manag*. 2017;10:109.
19. Hill EJ, Hawkins AJ, Ferris M, Weitzman M. Finding an extra day a week: the positive influence of perceived job flexibility on work and family life balance. *Fam Relat*. 2001;50(1):49–58.
20. Magnano P, Santisi G, Ramaci T. Does the metacognitive attitude predict work motivation in Italian teachers? *JSS*. 2014;2:95–105.
21. Winefield AH, Gillespie N, Stough C, Dua J, Hapuarachchi J, Boyd C. Occupational stress in Australian university staff: results from a National Survey. *Int J Stress Manag*. 2003;10(1):51–63.
22. Magnano P, Platania S, Ramaci T, Santisi G, Di Nuovo S. Validation of the Italian version of the Mindfulness Organizing Scale (MOS) in organizational contexts. *TPM Test Psychom Methodol Appl Psychol*. 2017;24:45–64.
23. Butler BS, Gray PH. Reliability, mindfulness, and information systems. *MIS Q*. 2006;30(6):211–224.
24. Weick K, Sutcliffe KM, Obstfeld D. Organizing for high reliability: processes of collective mindfulness. *Res Organ Behav*. 1999;1:81–123.
25. Santisi, G, Magnano P, Hichy Z, Ramaci T. Metacognitive strategies and work motivation in teachers: an empirical study. *Procedia Soc Behav Sci*. 2014;116:1227–1231.
26. Lemyre L, Tessier R. Mesure de stress psychologique (MSP): se sentir stressé (e). *Can J Behav Sci*. 1988;20:302–321.
27. Di Nuovo S, Rispoli L, Genta E. *Misurare lo stress. Il test M.S.P e altri strumenti per una valutazione integrata*. [The M.S.P Tests and Other Tools for an Integrated Assessment]. Milano, Italy: FrancoAngeli; 2000.
28. Schaufeli WB, Salanova M, González-Romá V, Bakker AB. The measurement of engagement and burnout: a confirmative analytic approach. *J Happiness Stud*. 2002;3:71–92.
29. Balducci C, Fraccaroli F, Schaufeli WB. Psychometric properties of the Italian version of the Utrecht work engagement scale (UWES-9): a cross-cultural analysis. *Eur J Psychol Assess*. 2010;26:143–149.
30. Caprara G. La valutazione dell'autoefficacia. Costrutti e strumenti. [The self-efficacy Assessment. Constructs and Tools]. Firenze, Italy: Erikson; 2002.
31. Cooper CL, Sloan SJ, Williams S. *Occupational Stress Indicator Manual: Management Guide*. Windsor: ASE (NFER-Nelson); 1988.
32. Harris C, Daniels K, Briner RB. A daily diary study of goals and affective well-being at work. *J Occup Organ Psychol*. 2003;76:401–410.
33. Judge TA, Heller D, Klinger R. The dispositional sources of job satisfaction: a comparative test. *App Psychol*. 2008;57(3):361–372.
34. Ter Doest L, Maes S, Gebhardt WA, Koelewijn H. Personal goal facilitation through work: relationships with employee satisfaction and wellbeing. *App Psychol*. 2006;55(2):192–219.
35. Harter JK, Schmidt FL, Keyes C. Well-being in the workplace and its relationship to business outcomes: a review of the Gallup studies. In: Keyes C, Haidt J, Seligman M, editors. *Flourishing: Positive Psychology and the Life Well-Lived*. Washington, DC: APA; 2003:205–224.

36. Iacolino C, Pellerone M, Pace U, et al. Family functioning and disability: a study on Italian parents of disabled children. *Eur Proc Soc Behav Sci.* 2016;8:39–52.
37. Craparo G, Gori A, Mazzola E, Petruccelli I, Pellerone M, Rotondo G. Posttraumatic stress symptoms, dissociation, and alexithymia in an Italian sample of flood victims. *Neuropsychiatr Dis Treat.* 2014;10:2281–2284.
38. Pellerone M. Influence of identity, congruence of interest and coping strategy on decision making process. *Proc Soc Behav Sci.* 2015;191:1344–1348.
39. Cotton P, Hart PM. Occupational wellbeing and performance: a review of organisational health research. *Aust Psychol.* 2003;38:118–127.
40. Britt TW, Castro CA, Adler AB. Self-engagement, stressors, and health: a longitudinal study. *Pers Soc Psychol B.* 2005;31:1475–1486.
41. Saks AM. Antecedents and consequences of employee engagement. *J Manag Psychol.* 2006;21:600–619.
42. Pellerone M, Passanisi A, Bellomo MFP. Identity development, intelligence structure, and interests: a cross-sectional study in a group of Italian adolescents during the decision-making process. *Psychol Res Behav Manag.* 2015;8:239–249.
43. Ledda C, Cicciù F, Puglisi B, Ramaci T, Giuseppe Nunnari G, Rapisarda V. Attitude of health care workers (HCWs) to patients affected by HIV/AIDS and drug addicts: a cross-sectional study. *Int J Environ Res Public Health.* 2017;14(3):284.
44. Pellerone M, Tolini G, Polopoli C. Parenting, identity development, internalizing symptoms and alcohol use: a cross-sectional study in a group of Italian adolescents. *Neuropsychiatr Dis Treat.* 2016;12:1769–1778.
45. Pellerone M, Iacolino C, Mannino G, Formica I, Zabbara S. The influence of parenting on maladaptive cognitive schema: a cross-sectional research on a group of adults. *Psychol Res Behav Manag.* 2017;10:47–58.
46. Pellerone M, Ramaci T, Parrello S, Guariglia P, Giaimo F. Psychometric properties and validation of the Italian version of the Family Assessment Measure – short version – third edition in a nonclinical sample. *Psychol Res Behav Manag.* 2017;10:69–77.
47. Pellerone M, Tomasello G, Migliorisi S. Relationship between parenting, alexithymia and adult attachment styles: a cross-sectional study on a group of adolescents and young adults. *Clin Neuropsychiatry.* 2017;14(2):125–134.
48. Knapp M, McDaid D, Parsonage M. Mental health promotion and mental illness prevention: the economic case; 2011. Personal Social Services Research Unit (PSSRU). Available from: <http://www.pssru.ac.uk/>. Accessed August 22, 2014.
49. Magnano P, Ramaci T, Platania S. Self-efficacy in learning and scholastic success: implications for vocational guidance. *Procedia Soc Behav Sci.* 2014;116:1232–1236.
50. Karasek R. Job demands, job decision latitude, and mental strain: Implications for job redesign. *Adm Sci Q.* 1979;24(2):285–306.
51. European Agency for Safety and Health at Work (EU-OSHA). Annual Report 2016. 2017. Luxembourg, Publications Office of the European Union. Available from: <https://osha.europa.eu/en/tools-and-publications/publications/annual-report-2016>. Accessed July 28, 2017.
52. Van den Broeck A, Vansteenkiste M, De Witte H, Lens W. Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work Stress.* 2008; 22(3): 277–294.
53. Baardi P, Deci EL, Ryan RM. Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *J Community Appl Soc Psycho.* 2004; 34: 2045–2068.
54. De Jonge J, Dormann C. Stressors, resources and strain at work: A longitudinal test of the triple match principle. *J Appl Psychol.* 2006;91: 1359–1379.
55. De Lange AH, De Witte H, Notelaers G. Should I stay or should I go? Examining longitudinal relations among job resources and work engagement for stayers versus movers. *Work Stress.* 2008; 22:201–223.

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