

CLINICAL PSYCHOLOGICAL ASSESSMENT OF STRESS: A NARRATIVE REVIEW OF THE LAST 5 YEARS

Fabio Frisone, Federica Sicari, Salvatore Settineri, Emanuele Maria Merlo

Abstract

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Objective: Work-related stress typically occurs due to particularly challenging dynamics, risks and pressure. Prolonged exposure to stress may cause serious consequences on psychophysical well-being. The current study was conducted to re-examine the clinical instruments useful for evaluating the risk factors and to examine two closely linked dimensions, which may constitute protective factors such as coping strategies and satisfaction.

Method: Through a narrative review of the scientific literature of the last 5 years, carried out through the PubMed, Web of Science and Scopus databases, the most relevant clinical instruments used in the evaluation of stress, job satisfaction and coping strategies were examined.

Results: Based on the considered inclusion criteria, 142 articles were selected, and 10 of the most used psycho-diagnostic instruments were identified for the evaluation of the three dimensions. The selected assessment instruments were deeply discussed in order to highlight strengths and limitations.

Conclusions: A variety of studies used a range of psycho-diagnostic tools in order to measure stress, coping strategies and job satisfaction. However, their integration is necessary to guarantee a complete evaluation protocol.

Key words: assessment, clinical health psychology, coping strategies, job satisfaction, work-related stress

Citation: Frisone, F., Sicari, F., Settineri, S., Merlo, E. M. (2021). Clinical psychological assessment of stress: a narrative review of the last 5 years. *Clinical Neuropsychiatry*, 18(2), 91-100.

[doi.org/10.36131/
cnforitieditore20210203](https://doi.org/10.36131/cnforitieditore20210203)

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Funding: none.

Competing interests: none.

Corresponding author

Emanuele Maria Merlo
E-mail: emerlo@unime.it

Fabio Frisone^{1,2}, Federica Sicari¹, Salvatore Settineri³, Emanuele Maria Merlo^{2,4}

¹ Department of Cognitive Sciences, Psychology, Educational and Cultural Studies (COSPECS), University of Messina, Italy

² CRISCAT (International Research Center for Theoretical and Applied Cognitive Sciences), University of Messina and University Consortium of Eastern Mediterranean, Noto (CUMO), Italy

³ Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Italy

⁴ Department of Adult and Childhood Human Pathology "Gaetano Barresi", University of Messina, Italy

1. Introduction

Over the last few decades, the work sector has been characterized by changes in roles and greater flexibility. This fact, associated with changes related to new information technologies and globalization, pointed out new challenges to companies and individual workers (Ardito, D'Errico & Leombruni, 2014; Boreham, Povey & Tomaszewski, 2016). Considering these changes, well-being and quality of life have become extremely relevant, influencing the international regulatory framework (Emanuel et al., 2016; Harari, Waehler & Rogers, 2005).

Based on the European Framework Agreement on Work-related Stress of October 8, 2004, which was incorporated in Italy into Legislative Decree 81/08 (Monks, de Buck, Benassi & Plassmann, 2008), companies are required to conduct a psychosocial, managerial and organizational risk analyses in order to protect workers' safety and health. From the entry

into force of this decree, a broad methodological and epistemological debate has been created around the clinical assessment of the risks associated with stress, which is the focus of our research.

Although the heterogeneity of significance, (Blaug et al., 2007; Furnham, 2012; Michie, 2002; Stranks, 2005) research studies proposed specific terms such as eustress and distress or negative stress (Anderson & Arnoult, 1989; Fevre et al., 2003; Selye, 1976). The last terms indicate the lack of psychic and physical resources characterizing an individual, who copes with challenges (Dewe et al., 1993).

Due to the differences related to activities, it is difficult to use similar clinical assessment tools to evaluate stress-related phenomena (Cavanaugh et al., 2000; Dagget et al., 2016; Johnson et al., 2005; Merlo et al., 2020a; Peter et al., 1998; Settineri et al., 2019a; Sullivan & Bhagat, 1992). Relevant research contributions highlighted a low number of scales useful to measure workers' stress (Spector & Jex, 1998).

Stress is a phenomenon recalling several aspects, changing according to the effort's duration (Siegrist et al., 2004). Chandola et al. (2006), for example, highlighted stress as a risk factor for metabolic syndrome. In addition, Peter and Siegrist (1999) found that sustained efforts could represent a significant risk factor for the onset of coronary diseases, hypertension, atherosclerosis and thrombosis.

In line with these results, other studies showed that age, due to a prolonged effort over the years, could have a greater impact (Aldwin et al., 1996; Folkman et al., 1987; Martin et al., 2001).

Gender variables appeared to have the same weight of temporal variables, showing both a great impact on the subject's life and adaptation. (Antoniou et al., 2006; Arnten et al., 2008; Heinisch & Jex, 1997; Settineri et al., 2019b). Sliskovic & Sersic (2011) observed that women tend to be more stressed than men. Repetti & Wood (1997) showed that mothers of preschool children tend to show higher levels of stress, than other samples. The signs of stress can emerge not only through physical figures, (Chandola et al., 2006; Lin et al., 2007; Peter & Siegrist, 1999; Smith, 2000), but also through emotional, behavioral, and cognitive maladjustment (Baker, 1985; Merlo et al., 2020c; White, 2011). Concerning feelings, it should be noted that stress at work may generate various disorders such as fatigue, anxiety, irritability, as well as withdrawal behaviors and turnover intentions (Cropanzano et al., 1997; Lu et al., 2017). Concentration and problem-solving difficulties reflect possible cognitive difficulties, so that more studies are required in order to better understand the subsequent phenomena.

Referring to risk and stress protection factors, some studies proposed discordant results, highlighting the complexity of the theme. Ganster et al. (1986), for example, noted that social support does not attenuate the negative effects of stress, in contrast with Michie's (2002) contribution.

Beyond the contrasting aspects, various research contributions (Applebaum et al., 2010; Bun, 2002; Cotton et al., 2002; Gershon et al., 2009; Hayes et al., 2015; Koeske et al., 1993; Li et al., 2014; Locke & Taylor, 1990; Michie, 2002; Neubauer, 1992; Pearson & Moomaw, 2005; Shader et al., 2001) suggested the proper use of coping strategies as useful to perceive work environment satisfaction and reduce stress. Considering what has emerged, this review aims to record the main psycho-diagnostic instruments useful for the clinical assessment of work-related stress maladjustment. Due to evident difficulties in the delimitation of stress phenomena, a review aimed at detecting the main psychometric tools, may serve as a strong basis useful to explain the generally observed and detected factors. Identifying the mainly observed and measured factors through certain instruments, can contribute to improve the knowledge about quality of life and psychological well-being.

2. Method

2.1 Search strategy

Through a literature review, this study explored tools useful for the assessment of work-related stress and related dimensions. Original articles written in English with available full text were selected. PubMed, Web of Science and Scopus databases were searched for available literature from 2016 to 2020. The considered keywords were "Stress" AND "Job Satisfaction" AND

"Coping strategies". The search process and its results in different phases are depicted as a flow chart in accordance with the PRISMA method (Fig. 1).

2.2 Eligibility and exclusion criteria

Based on the keywords, 1251 articles were found, and 142 were finally selected. Original articles written in English were included according to their validity and relevance with the selected criteria, referring to 1) work-related stress 2) job satisfaction 3) coping strategies. Articles that only focused on specific dimensions such as personality factors or emotional components associated with stress were excluded.

3. Results

3.1 Study Selection

The literature search reported a total of 1251 records. After the removal of 262 duplicates, 989 records were evaluated considering title and abstract, 810 excluded. The remaining 179 full-text articles were examined and after excluding 37 not compliant records, 142 were finally considered.

Based on the inclusion criteria, the 10 most cited tools were identified in the selected records: 5 referred to work-related stress, 3 to coping strategies and 2 to job satisfaction.

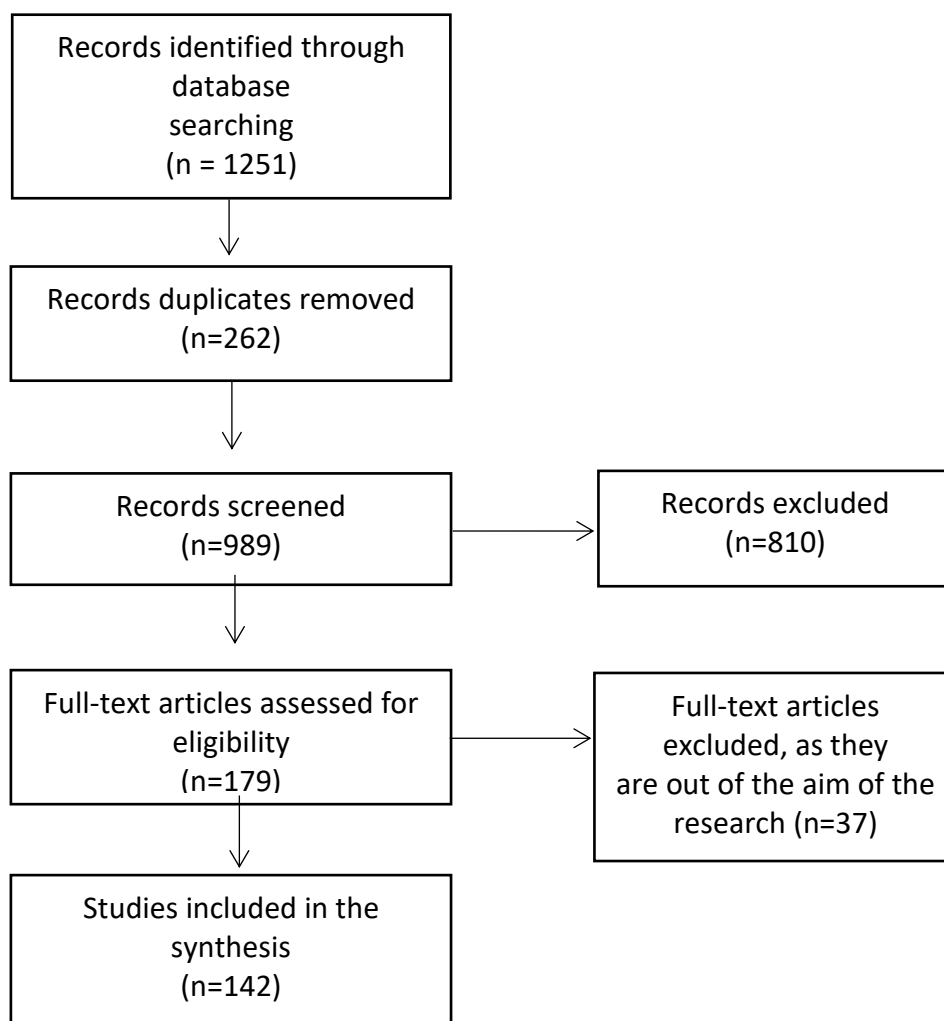
The results included in the main table (Table 1), were ordered following: Reference and Publication Year, Scale name, Items, and Research theme.

The results generally showed a variety of studies that used a range of tools in order to measure work-related stress, coping strategies and job satisfaction. Their integration appears always necessary for the purpose of a complete evaluation protocol.

3.2 Instruments

- *Job Content Questionnaire (JCQ)*, developed by Karasek et al. (1998), is one of the most frequently used measures to assess job stress. The instrument consists of 49 items and three factors: decision latitude (work overload, time pressure, unexpected tasks), control (skill discretion and decision authority) and support (given by management, supervisors, colleagues, or subordinates). Other aspects of work demands are as well assessed: physical demands and job insecurity. The JCQ is designed to measure the social and psychological characteristics of jobs and to identify the individual stress level within the various specialist-functional systems (overall average Cronbach alpha .73 for women and .74 for men).
- *The Effort-Reward Imbalance (ERI)* developed by Siegrist & Peter (1996), useful to evaluate job stress through 23 items and three scales: extrinsic effort (work load), reward (money, esteem, career opportunities, and security) and overcommitment (tendency to excessive involvement in work). The ERI model emphasizes the role played by the presence of an imbalance between tasks to be performed and obtained rewards, whereby the lack of reciprocity between efforts and rewards, combined with the tendency to overcommitment, causes significant stress responses. The psychometric properties of the Effort-Reward Imbalance (Cronbach's alpha of 0.74 for "effort", 0.79 for "reward", 0.79 for

Figure 1. Prisma checklist



- “overcommitment”, according to Siegrist et al., 2009).
- *The Job Stress Survey (JSS)* (Spielberger, 1991) was used to assess generic sources of occupational stress, whereby respondents rate both the severity and frequency of events occurring. The tool consists of 30 items, evaluating three dimensions through: Job Stress Severity (JS-S), Job Stress Frequency (JS-F), and Job Stress Index (JS-X), overall alpha levels between .84 and .95. Thus, ratings of the individual JSS items provide useful information regarding the perceived severity of each of the JSS stressor situations, and how often a particular person or group experienced each stressor event, in a wide variety of different work settings.
- *The Perceived Stress Scale (PSS-10)* developed by Cohen, Kamarck & Mermelstein (1983) is the most used psychological tool to measure the perception of stress. It is a measure of the degree to which life situations are rated as stressful. The scale also contains 10 questions on current levels of perceived stress, through an analysis of thoughts relating to the last month: six items of the PSS-10 measure stress and 4 items measure coping strategy to stress (Cronbach alpha=.78, according to Klein et al., 2016, who compared the original version and the results in different samples referred to the two versions based on 14 and 10 items).
- *The HSE Indicator Tool* (Cousins et al., 2004) was designed by the UK Health and Safety Executive (HSE) and includes 35 items with 7 subscales: 1. Demand (includes topics such as workload, characteristics, and work environment), 2. Control (the extent to which a person is on the path to perform her duties), 3. Officials’ support (the amount of support that a person receives from the management and social service), 4. Colleagues’ support (the amount of support that a person receives from her own colleagues), 5. Relationships (practice and positive features to increase interpersonal communication and reduce conflict in the workplace), 6. Role (staff’s correct understanding about work roles in the organization), 7. Changes (change factors in the organization). This questionnaire results particularly useful for measuring stressors in work environments, especially in clinical and therapeutic settings. Cronbach’s alpha reliability value for the Demand scale was found to be .89, .78 for Control, .87 for Officials’ support, .81 for Colleagues’ support, .78 for Relationship, .83 for Role, .83 for Changes.
- *The Coping Strategy Indicator (CSI)* (Amirkhan, 1990) is a questionnaire composed of 33 items grouped into three different scales. Each scale measures one of the three fundamental coping strategies: Problem Solving (involves an

instrumental, problem-oriented approach to active management of stressors), Seeking Social Support (a process of actively turning to others for comfort, help and advice) and Avoidance (escape responses involving physical and/or psychological withdrawal as distraction or fantasy). The CSI has been used with a wide variety of populations to assess coping strategies in different working contexts. Cronbach's alpha coefficients showed good internal consistency for the subscales, ranging 0.86 - 0.98 for Problem Solving, 0.89-0.98 for Seeking Social Support and 0.77-0.96 for Avoidance.

- *Stress and Coping Process Questionnaire (SCPQ)* (Pope et al., 1992; Reicherts & Perrez, 1994) measures the coping strategies within various hypothetical interactions of a stressful nature by exploring the subject's cognitive, emotional, and attributive responses. The instrument consists of the description of 18 episodes belonging to two stress classes: ambiguous or subversive situations and situations of loss or failure. The subject is asked to describe a hypothetical way to respond in line with his personal prerogatives. The SCPQ is a tool that differs from other questionnaires since it focuses on the intentional and dynamic aspect of coping in response to the stressful events.
- *The Coping Inventory for Stressful Situations (CISS)* (Endler & Parker, 1990) derives from both theoretical and empirical bases and has been used in different research and applied settings. The multi-dimensional approach to the assessment of coping with stressful situations provides great precision in predicting preferred coping strategies. The tool consists of 48 items and three coping dimensions: Task (purposeful task-oriented efforts aimed at solving the problem), Emotion (emotional reactions and responses, self-preoccupation and fantasizing), Avoidance (activities and cognitive changes aimed at avoiding the stressful situation). Internal consistency scores (Cronbach's alphas) appeared to be good, ranging from .75 to .88. There are two subscales for the Avoidance-Oriented scale: Distraction and Social Diversion. The CISS is useful for evaluating a wide variety of subjects from different backgrounds. It is a reliable and valid tool for testing the interaction pattern of stress, anxiety, and coping.
- *The Copenhagen Psychosocial Questionnaire* (Kristensen et al., 2005) was developed to assess psychosocial factors related to workplace, stress and employee well-being. The COPSOQ I and II came in short, middle, and long versions. Before the development of the COPSOQ III (Burr et al., 2019), the instrument had been translated into 18 different languages and used in 40 countries worldwide. The COPSOQ instrument covers a broad range of domains including Demands at Work, Work Organization and Job Contents, Interpersonal Relations and Leadership, Work-Individual Interface, Social Capital, Offensive Behaviors, Health and Well-being. The COPSOQ is a valid and reliable tool for workplace surveys, analytical research, interventions, and international comparisons.
- *The Job Satisfaction Survey (JSS)* (Spector, 1985) consists of 36 items to assess employee attitudes about their job and its different aspects. The nine facets are Pay, Promotion, Supervision, Fringe Benefits, Contingent Rewards (performance-based rewards), Operating Procedures (required rules and procedures), Coworkers, Nature of Work, and

Communication. Although the JSS was originally developed for use in human service organizations, it is applicable to all organizations. The overall alpha score was .91 (internal consistency), respectively .75 for Pay, .73 for Promotion, .82 for Supervision, .73 for Fringe Benefits, .76 for Contingent Rewards, .62 for Operating Procedures, .60 for Coworkers, .78 for Nature of Work, and .71 for Communication.

4. Discussion

Associated stress can undermine psychophysical well-being, affecting the individual's quality of life. As proven by scientific literature, the link between psychological figures and medical conditions is increasingly important, so that it is possible to identify psychic figures as directly responsible for the onset of physic pathologies (Dimsdale, 2008; Kivimäki & Kawachi, 2015; Martino et al., 2019, 2020; Peter & Siegrist, 1999; Rosa et al., 2019; Puttonen et al., 2010; Steptoe & Kivimäki, 2012).

Some assessment instruments allow us to effectively identify the sources of stress, using specific indicators such as overload, time pressure and effort.

Job satisfaction and coping strategies are closely associated with the concept of stress, as protective factors capable of mitigating its effects. Griffin et al. (2010) observed that job satisfaction is inversely correlated with a sense of reduced accomplishment and emotional exhaustion.

Koeske et al. (1993) found that the coping strategies oriented to control, and not avoidance, can reduce the possibility of experiencing stress in a professional setting.

A complete assessment protocol should be based not only on the assessment of risk factors associated with stress, but also on those components that allow the individual to pursue a good adaptation.

In general, the tools we considered were mainly aimed at investigating stress considering psychological, physical and chronic factors.

In particular, the JCQ, focusing on aspects related to demand, control, and support, highlighted the importance of understanding whether the efforts made at work are excessive, concerning the condition of the worker.

However, it is difficult to conceptualize and make some concepts measurable such as "job control", which seems to refer to indefinite aspects concerning autonomy. Furthermore, control is not the only resource available to meet the demands of the environment. Social support can also act as a moderator of environmental job demands. In particular, the presence of friendly colleagues would be a positive element for the psychological well-being of workers: as shown in the literature, social support protects against the development of psychological disorders and promotes well-being (Foy, Dwyer, Nafarrete, Hammoud & Rockett, 2019; Orgambidez-Ramos & de Almeida, 2017; Van der Heijden, Mulder, König & Anselmann, 2017).

The importance of social support is also emphasized with the HSE, an instrument close to the hospital and therapeutic fields, as it is an area in which high levels of stress are often experienced. The studies reviewed showed that this tool is useful in evaluation of different dimensions of the organization, in order to identify the factors that contribute to stress. It can also be used in two phases: in the preliminary phase of analysis to obtain information on some factors associated with content

Table 1. Instruments for measuring job stress, coping strategies and job satisfaction

Reference and Year	Scale Name	Items/Format	Research Object
Amirkhan, 1990	Coping Strategy Indicator (CSI)	33 items Three Scales: - problem solving - seeking social support - avoidance	Coping Strategies
Cohen et al., 1983	Perceived Stress Scale (PSS-10)	Ten items Two Scales: - stress - coping strategies	Coping Strategies
Cousins et al., 2004	HSE Indicator Tool	35 items Seven Scales: - Demand - Control - Officials' support - Colleagues' support - Relationships - Role - Changes	Job Stress
Endler & Parker, 1990	Coping Inventory for Stressful Situations (CISS)	48 items Three Scales: - Task - Emotion - Avoidance	Coping Strategies
Karasek et al., 1998	Job Content Questionnaire (JCQ)	49 items Five scales: - decision latitude - control - support - physical demands - job insecurity	Job Stress
Kristensen et al., 2005	Copenhagen Psychosocial Questionnaire	Short, middle, and long versions with different items	Job Satisfaction
Burr et al., 2019	Copenhagen Psychosocial Questionnaire Version III	Seven scales: - Demands at Work - Work Organization and Job Contents - Interpersonal Relations and Leadership - Work-Individual Interface - Social Capital - Offensive Behaviors - Health and Well-being	Job Satisfaction
Pope et al., 1992	Stress and Coping Process Questionnaire (SCPQ)	18 items Two stress classes: - ambiguous or subversive situations - situations of loss or failure	Coping Strategies
Siegrist & Peter (1996)	Effort-Reward Imbalance (ERI)	23 items Three scales: - extrinsic effort - reward - overcommitment	Job Stress
Spector, 1985	Job Satisfaction Survey (JSS)	36 items Nine scales: - Pay - Promotion - Supervision - Fringe Benefits - Contingent Rewards - Operating Procedures - Coworkers - Nature of Work - Communication	Job Satisfaction
Spielberger, 1991	Job Stress Survey (JSS)	30 items Three scales: - Job Stress Severity - Job Stress Frequency - Job Stress Index	Job Stress

(e.g. physical environment) and context (e.g. role in organization, control) and in the assessment phase of workers' subjective perception of stress-related factors (Applebaum et al., 2010; Dagget et al., 2016; Hayes et al., 2015; Lin et al., 2007; Neubauer, 1992; Shader et al., 2001).

ERI, on the other hand, detects imbalances between the effort and the reward of the worker. It focuses on the role of reward both in its internal meaning linked to motivation and in its external components relating to economic gain. The model is based on the notion of social reciprocity and asserts that stress occurs if employees feel a mismatch between high cost spent at work and low gain received in turn. Recurrent experience of failed reciprocity elicits frustration and psychobiological stress responses.

Regarding the factor associated with overcommitment, there are conflicting positions. Some studies have indeed found a moderating effect of excessive engagement between ERI and pressure responses such as anger, anxiety, depression and job satisfaction (Hoggan and Dollard, 2007; Kinman and Jones, 2008; Zurlo et al., 2010), while others do not (Preckel et al., 2007).

The Job Stress Survey investigates generic sources of stress that take into account the frequency and severity of perceived stress, in line with the studies (Peter & Siegrist, 1999; Siegrist et al., 2004) that highlight how the temporal aspect can be a significant variable for the professional environment. According to the literature, the JSS provides valuable information about the stress experienced by workers employed at different occupational levels. It provides objective measures of occupational stress that can have substantial impact on the health and productivity of individual workers, groups of employees, or the entire workforce of a large organization (McVicar, 2016; Puteri & Syaebani, 2018; Ray, Tat'Yana & Pana-Cryan, 2017).

In the case of PSS-10, perception is evaluated but in this case the focus is more on thoughts and feelings than on thematic areas that concern the development of specific coping skills. This tool, according to our research, has been found to be one of the most used to measure the perception of stress, especially among medical students, trainees and qualified doctors. PSS-10 appears to be very useful especially for the impact that stress in the workplace can have on health care delivery. In this sense, the ability to reliably measure stress is useful for further characterizing the link between stress and health (Andreou et al., 2011; Ramírez & Hernández, 2007; Stucky et al., 2009).

With reference to the coping strategies implemented to deal with stress at work, our considered studies showed that the most used tools were: CSI, which focuses on problem solving, seeking social support and avoidance; the SCPQ, which takes into consideration the sphere of behavior and intentions, as well as the sphere of emotion and thought. The CISS is also focused on these last two domains.

All these tools are used for the evaluation of coping strategies, even if the SCPQ stands out for its diversity. It focuses on the intentional and dynamic use of coping within different phases. However, it is a tool that evokes a hypothetical scenario, which changes over time in an arbitrary way and does not verify coping in real situations (Gratch & Marsella, 2004).

The COPSOQ and the Job Satisfaction Survey, instead, give a greater emphasis on psychosocial factors and interpersonal relationships. International studies have shown that exposure to psychosocial risks are important features of work. There is evidence that

aspects and levels of work strain vary across countries and professions. These two well-proven tools ensure the collection of valid and reliable information on the main risk factors associated with work stress (Fernandes & Pereira, 2016; Galletta et al., 2016; Roney & Aciri, 2018; Useche, Montoro, Alonso & Pastor, 2019).

The results offered by the literature indicated that a successful assessment of stress needs to consider several questionnaires (Amick III & Smith, 1992; Dewe & Guest, 1990; Fried et al., 1984; Quick, 1998). Given the heterogeneity linked to gender and age, it would be advisable to always consider these variables.

Furthermore, the dimension linked to desire should be further investigated. It would be always necessary to investigate the subjects' desires with reference to their activities, also because the satisfaction can mask some components related to the effort, improving risks (Frisone et al., 2020a; Frisone, 2019; Pandey & Singh, 2016; Pugliesi, 1999). Practicing desiderate activities can provide for both positive and negative aspects, especially in the lack of physical limits recognition due to pleasure.

Many variables related to stress also depend on personality characteristics (Deary et al., 1996; Hough & Ones, 2002; Merlo et al., 2020b; Settineri et al., 2018). However, to obtain useful results for large samples it is necessary to try to limit individual variables. The goal of many reviews consists precisely in the attempt to point out mainstream data, mostly related to evidence due to methodological choices, even in the case of severe behavioral outcomes and consequences (D'Aguanno et al., 2017; Edwards & Burnard, 2003; Frisone et al., 2020b; Peruzzo et al., 2007; Sicari, 2018, 2019). Although the survey on work-stress has been considered as relevant for a long time, even in the last five years, there is still a difficulty in finding tools capable of investigating the many areas related to stress. Currently, however, advances in technology also favor the field of research (Bhaskar et al., 2015; Frisone & Micali, 2020; Settineri & Femminò, 2019; Tummers et al., 2019), and this can certainly help to find more material to investigate stress, improving health.

5. Limitations and conclusions

This study, detecting the main assessment measures for stress, presents several limitations, some of which are intrinsic. As highlighted by research (Cohen, 1987; Cox & Ferguson, 1991; Dewe & Guest, 1990; Fleming et al., 1984), some methodological and conceptual difficulties tend to emerge with reference coping strategies related to stress. The scales used for measuring coping strategies do not maintain uniformity concerning the differences between coping style and coping behavior. The same occurs with reference to the differences between acute and ongoing coping, not always easy to report (Day & Livingstone, 2001; Mathias et al., 2020; Newton, 1989). Furthermore, if the most used assessment tools can offer the advantage of a generic comparison with other work situations, there's always the risk to neglect the associations emerging from peculiar situations. A further intrinsic limitation refers to the discrepancy between the "potentially stressful event" and the subject attributional process. In this regard, some studies (Crum et al., 2017; Dewe, 1989; Duckworth, 1985, 1986; Newton, 1989; Payne et al., 1988) have shown that the evaluation of events' stressing properties tend to be more related to individuals' perspective rather than on environmental conditions.

In this sense, the "inherent bias" (Glowinkowski

& Cooper, 1985; Holyroyd & Lazarus, 1982) explains how the significance of events is considerably influenced from the subjects' perspective, both referred to examined and examiners. The possibility of reducing these biases lies in combining the assessment measuring individual factors together with organizational domain.

This review highlighted the most cited assessment instruments referred to work-related stress, coping strategies and job satisfaction. Further research is needed in order to consider longitudinal and qualitative data for the evaluation of assessment instruments' effectiveness.

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