



## Evaluating the effectiveness of a stress management training on teachers and physicians' stress related outcomes

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### ABSTRACT

This study investigated the immediate influence of a stress-management training on teachers and physicians' stress-related outcomes (emotional exhaustion, work distress and irrational beliefs), using meta-analytic techniques. In an action-research perspective, the stress-management training program was implemented in several groups of physicians and teachers in Portugal and in Brazil ( $n = 144$ ). It was found that in all the samples where this intervention was implemented a decrease on stress-related outcomes occurred; nevertheless not all results obtained were statistically significant. The largest impact of the implemented training program was on the irrational beliefs, with a medium effect size ( $d_s = 0.61$ ). These results suggest the short-term benefits of this intervention on teachers and physicians stress.

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### Evaluación de la eficacia de una intervención en manejo del estrés en indicadores de estrés en maestros y médicos

#### RESUMEN

Este estudio investiga la influencia a corto plazo de una intervención de manejo del estrés en algunas variables indicadoras de estrés (agotamiento emocional, *distress* en el trabajo y creencias irracionales), en maestros y médicos, utilizando procedimientos estadísticos de metaanálisis. En una perspectiva de investigación-acción, el programa de capacitación para el manejo del estrés se llevó a cabo en varios grupos de médicos y maestros en Portugal y Brasil ( $n = 144$ ). En todas las muestras en las que se aplicó esta intervención se observó un aumento en el bienestar positivo y una disminución en los indicadores de estrés, aunque no siempre se obtuvieron resultados estadísticamente significativos. El impacto más significativo del programa fue sobre las creencias irracionales, con un tamaño medio del efecto ( $d_s = 0.61$ ). Estos resultados sugieren los beneficios a corto plazo del programa de intervención en el estrés de los maestros y los médicos.

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#### Palabras clave:

Metaanálisis

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Intervención en el manejo del estrés

Maestros

Occupational stress is a significant problem throughout the modern world and a concern for many organizations (Flaxman & Bond, 2010). But it does not affect in the same manner the numerous existing occupations. Several studies have revealed that human services occupations, including teaching and health-care providing, are prone to high stress levels (Bermejo-Toro & Prieto-Ursúa, 2010; Camuñas et al., 2006; Gaspar, Jesus, & Cruz, 2011; Lens & Jesus, 1999; Lim, Bogossian, & Ahern, 2010; Moya-Albiol, Serrano, & Salvador, 2010; Pacheco & Jesus, 2009; Skaalvik & Skaalvik, 2011). Occupational stress has implications in terms of its negative consequences for

individuals (Mark & Smith, 2012; Merín, Cano, & Miguel-Tobal, 1995) and subsequently for organizations and societies in which they are embedded (Edwards & Burnard, 2003). Thus, it is preferable to prevent it (Moreno & Peñacoba, 1995).

One way to prevent and surpass its negative consequences is to design and implement stress management interventions targeting different levels, including person-focused interventions (Minguez, 1995; Semmer, 2010).

In another review of the occupational stress management programs (Jesus, 1996), it was found that previous programs had some limitations, such as their focus on using only one kind of intervention, such as relaxation techniques (e.g., Bamford, Grange, & Jones, 1990), mindfulness strategies (e.g., Kabat-Zinn, 1982) or coping strategies (e.g., Esteve & Fracchia, 1986).

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In general, the results of occupational stress management interventions in health care workers show a limited influence on psychological variables. The review of Van der Hek and Plomp (1997) about the published effect sizes of occupational stress management programs evidenced an urgent need of a better conceptualization and theoretical reflection on the analyzed interventions. In the review conducted by Routsalainen, Serra, Marine, and Verbeek (2008) on occupational stress management interventions in health care workers, limited evidence was found that person-directed intervention could reduce stress, emotional exhaustion, lack of personal accomplishment, and anxiety.

Concerning the need for a better conceptualization in this field, an integrative model of stress, motivation, and well-being was formulated to serve as a theoretical background to design and implement further stress management interventions (Jesus, 1996; Jesus, 2003; Jesus & Lens, 2002; Jesus & Lens, 2005).

To measure the variables considered in this model, a self-report instrument was developed (Jesus, 1996). It included several scales measuring some psychological stress indicators (work distress, emotional exhaustion, and irrational beliefs). Empirical studies have revealed that all its comprising scales had reliability higher than .70 (Jesus, 1996; Jesus & Conboy, 2001). These measures were also adapted in Brazil (Jesus et al., 2011).

This integrated model of stress, motivation, and well-being served as a foundation for the development of a stress management intervention training combining different person-focused interventions including relaxation, cognitive-behavioral skills training, and several specific approaches (Jesus, 1998). It emphasized the acquisition of coping skills to ensure a better decrease of stress related outcomes. Its sessions were organized during 30 hours and conducted around the following topics: (a) sharing of professional experiences; (b) management of professional stressors and symptoms; (c) coping strategies and resilience; (d) irrational beliefs management; (e) relaxation exercises; (f) time management; (g) team work; (h) assertiveness and conflict management; (i) healthy life styles and quality of life; and (j) perspectives for the

implementation of the taught strategies in their personal and professional life. The description of the sessions was presented in previous papers (e.g., Jesus, 2011) and in Table 1 is presented a descriptive synthesis of each program session.

This stress management training was empirically examined in several studies that have used a pre and post-measurement research design (Bjorn, Jesus, & Casado, 2013; Jesus, 2002; Jesus, 2006; Jesus & Conboy, 2001; Jesus & Costa, 2004; Jesus, Rus, & Tobal, 2013; Sampaio, Jesus, Stobaus, & Mosquera, 2008). To evaluate the effectiveness of this intervention, it is necessary to meta-analytically integrate the results of the empirical studies that have examined it. As suggested by Giga, Noblet, Faragher, and Cooper (2003), without having a greater clarity about the effectiveness of different types of job stress interventions, the "efforts to minimise the human and economic costs of stress will be limited by a lack of sound evidence on the effectiveness of stress management strategies" (p. 158). Thus, this study aims to collect and meta-analytically integrate the results of the studies that have empirically examined the influence of this intervention on employees' well-being related outcomes immediately after its implementation. It is expected that the stress management intervention training will decrease work distress, emotional exhaustion and irrational beliefs. The meta-analytic procedure is similar to that used in previous studies (e.g., Jesus, Rus, Lens, & Imaginário, 2013).

## Method

### Sample of Studies and Selection Criteria

The relevant studies for this meta-analysis were searched using two methods. First, the published and unpublished papers that have empirically examined this stress management training and that were known by the first author of the present study were considered. Second, a computerized search was performed in Web of Science® with Conference Proceedings and PsycInfo® databases. This search was conducted using the following keywords: (a) stress

**Table 1**  
Description of the motivational and stress management course sessions

<p style="text-align: center;">Session 1: Introduction to the program and sharing of professional experiences</p> <p>The course begins with an introduction to the program and with exercises to promote a good relational climate among the participants, favorable to the exchange of professional experiences, authenticity and teamwork.</p>
<p style="text-align: center;">Session 2: Symptoms and professional stressors</p> <p>Factors leading to professional stress and common symptoms associated with stress were analyzed. The development of stressful situations was analyzed and the concepts of <i>eustress</i> and <i>distress</i> were distinguished.</p>
<p style="text-align: center;">Session 3: Coping strategies</p> <p>Several coping strategies were analyzed, specifically confrontation strategies and symptoms management approaches. The participants then developed individual plans to introduce some of the coping strategies in their professional and personal lives in order to improve wellbeing and professional fulfillment.</p>
<p style="text-align: center;">Session 4: Management of irrational beliefs</p> <p>Participants first assessed their own irrational beliefs, and then, using Ellis's method of rational-emotive therapy, the attempt was made to alter patterns of negative thinking to more suitable cognition, that is, both positive and realistic patterns of thinking.</p>
<p style="text-align: center;">Session 5: Relaxation exercises</p> <p>Control techniques including breathing exercises, muscular relaxation, and relaxation by imagination were presented and practiced.</p>
<p style="text-align: center;">Session 6: Time management</p> <p>Participants did several exercises to learn how to organize agenda, how to change habits, and how to have more time for the priority tasks, and not only for the urgent ones.</p>
<p style="text-align: center;">Session 7: Team work</p> <p>Exercises focused on group creativity and brainstorming, problem solving and decision making, to improve better the opportunities of working together.</p>
<p style="text-align: center;">Session 8: Assertiveness and conflict management</p> <p>This session was focused at role-playing exercises of communication abilities, at verbal and non-verbal assertiveness skills, and at other possible strategies for conflict prevention.</p>
<p style="text-align: center;">Session 9: Healthy life styles and quality of life</p> <p>Was presented several aspects of healthy life styles, and the participants did exercises to help them to learn how to decide priorities and how to balance several life dimensions, for a better quality of life.</p>
<p style="text-align: center;">Session 10: Sharing of professional experiences</p> <p>In the last session, we continued exercises involving the sharing of professional experiences, focusing not only on the difficulties, but also on the positive experiences. Each participant shared with the others several perspectives for the implementation of the program strategies in his personal and professional life.</p>

management program and (b) motivational program. The search period was limited to studies published from 1996 until December 31st 2011.

To be included in the analysis, the studies had to meet the following criteria: (a) to be published in English, Spanish or Portuguese; (b) to examine the full version of this stress management program, in terms of sessions (10) and hours (30); (c) to collect data from employees working in the field of human services; (d) to include the measurement of at least one stress related variable (work distress, emotional exhaustion or irrational beliefs), before and shortly after the implementation of this intervention; and (e) to report an effect size or other statistics that could be transformed into a size effect. It was chosen to use the Cohen's *d* effect size in terms of the standard deviation of raw-scores (Cohen, 1988).

Considering these criteria, five studies were selected. These are marked with an asterisk (\*) in the references list. The number of the independent samples and participants extracted from these five studies varies for the outcome variables considered in the subsequent analysis.

### Coding of Characteristics

For each independent sample the following information was coded: (a) references of the study in terms of author(s) and year of publication; (b) sample size; (c) sample type (teachers, health professionals); and (d) means and standard deviations in the pre-test and post-test measurements and the value of the effect size. This coding was conducted for each outcome variable and independently by the authors. The inter-reliability between coders was 100%.

The results of this coding are presented in Table 2.

### Analysis of the Effect Sizes

The meta-analytical procedures using the fixed-effect models were applied giving that this paper aims to make inferences about the effect-size parameters in the set of studies that are observed

(Hedges & Vevea, 1998). First, the differences between pre-test and post-test measurements in each sample were expressed using Cohen's *d* standardized effect size. Based on the individual study of effect sizes, in the case of each outcome variable, the weighted average effect size (*d*) and weighted-mean effect size ( $d_w$ ) were computed. The weighting variable is the reciprocal number of the sampling variance for each effect size estimate. The values of the weighted-mean effect sizes were compared with the cut-off values proposed by Cohen (1988): (a) small (.20), (b) medium (.50), and (c) large (.80) effect size. For each weighted-mean effect size, the confidence interval, 95% CI, was computed.

Next, the effect sizes across the sample of studies were tested for homogeneity using: (a) Hunter and Schmidt's (1990) 75% rule in terms of the percentage of observed variance explained by the error sampling variance and (b) Q test (Morris & DeShon, 2002).

## Results

In the present study, five studies were considered in the subsequent analyses. Four of them have used teachers as participants of the stress management training and one has used physicians. All of these participants were included voluntarily in the training sessions without being selected on their level of outcome variables or on the base of a diagnostic of clinical occupational stress. The studies included in this meta-analysis used a single sample pre- and post-test measurement design.

It was found that a decrease of stress outcomes happened to all the samples where this intervention was implemented; nevertheless not all the results obtained were statistically significant. The studies found that this training decreased the intensity of the negative consequences of occupational stress. This influence seems to be higher on the decrease of irrational beliefs, but the results vary from almost no impact to a very large impact (from -0.03 to -1.51).

The results of the meta-analysis for each outcome variable are presented in Table 3.

**Table 2**

Descriptive statistics of the studies included in the meta-analysis that examined the short-term influence of the stress management program on teachers and physicians' stress related outcomes

Reference	Sample type	N	$M_1$	$SD_1$	$M_2$	$SD_2$	$M_2 - M_1$	ES ( <i>d</i> )
1. Work distress								
Jesus (2002)	Teachers	26	19.02	11.23	18.36	10.57	-.66	-0.06
Jesus (2006)	Teachers	28	19.68	9.73	19.02	10.10	-.66	-0.07
Jesus & Conboy (2001)	Teachers	25	19.09	12.73	17.66	11.05	-1.43*	-0.11
Sampaio et al. (2008)	Teachers	15	18.85	11.23	17.15	10.57	-1.70	-0.15
2. Emot. exhaust.								
Jesus (2002)	Teachers	26	23.00	20.14	19.11	17.76	-3.89*	-0.19
Jesus (2006)	Teachers	28	21.59	18.24	20.15	17.49	-1.44	-0.08
Jesus & Conboy (2001)	Teachers	25	24.43	22.05	23.54	18.03	-.89	-0.04
Jesus & Costa (2004)	Physicians	50	26.30	20.14	22.10	17.76	-4.20*	-0.21
Sampaio et al. (2008)	Teachers	15	20.97	20.14	16.90	17.76	-4.07*	-0.20
3. Irrational beliefs								
Jesus (2002)	Teachers	26	47.07	5.24	46.93	4.25	-.14	-0.03
Jesus (2006)	Teachers	28	42.22	4.28	41.96	4.34	-.26	-0.06
Jesus & Conboy (2001)	Teachers	25	45.20	6.20	40.53	4.16	-4.76*	-0.75
Jesus & Costa (2004)	Physicians	50	47.20	5.24	39.30	4.25	-7.90*	-1.51
Sampaio et al. (2008)	Teachers	15	47.08	5.24	42.83	4.25	-4.25*	-0.81

Note. N = sample size,  $M_1$  = mean of the pre-test measurement,  $SD_1$  = standard deviation of the pre-test measurement,  $M_2$  = mean of the post-test measurement,  $SD_2$  = standard deviation of the post-test measurement, ES (*d*) = *d* effect size.

\* $p < .05$ .

**Table 3**

Overall results of the meta-analysis that examined the short-term influence of the stress management training on teachers and physicians' stress related outcomes

Outcome variable	N	k	d	$d_+$	95% CI	% variance	Q	Fail safe N
1. Work distress	94	4	-0.10	-0.09	[-.40; .22]	88.63	0.05	0
2. Emotion exhaustion	144	5	-0.14	-0.14	[-.41; .13]	18.50	0.27	0
3. Irrational beliefs	144	5	-0.63	-0.61	[-.63; .05]	0.75	6.63	0

Note. N = the total number of the participants in the k samples, k = number of independent samples, d = average observed effect size,  $d_+$  = mean observed weighted effect size, 95% CI = 95% confidence interval of the  $d_+$  effect size, % variance = theoretical variance due to sampling error/ observed variance of the effect size, Q = value of the Q test; Fail-safe Ns = number of additional studies with null results needed to reduce mean size effect to a small effect of 0.20.

It was found that this training does not significantly reduce the teachers and physicians' work distress ( $d_+$  = -0.09, 95% CI = [-0.40, 0.22]), nor their emotional exhaustion ( $d_+$  = -0.14, 95% CI = [-0.41, 0.13]). Also, in the case of these stress-related outcomes, the results of the two heterogeneity tests indicate that the effect sizes are homogenous across the studies included in each set of the studies,  $88.83 > 0.75$ ,  $Q(3) = .05$ ,  $p > .05$  and  $18.50 > 0.75$ ,  $Q(4) = .27$ ,  $p > .05$ , respectively.

The largest impact of the implemented training program was on the irrational beliefs, with a medium effect size ( $d_+$  = -0.61, 95% CI = [-0.63, 0.05]), though it a significant decrease in three of the five studies took place. The percentage of the observed variance explained by the error sampling variance suggest some heterogeneity across the effect sizes of the studies included in the analysis (0.75).

## Discussion

This study aimed to collect and to meta-analytically integrate the results of the empirical studies that have examined the influence of stress-management training on teachers and physicians' positive and negative well-being related-outcomes immediately after its implementation.

The present meta-analysis provides the first quantitative summary of the effectiveness of this stress management training shortly after its implementation to the groups of teachers and physicians. Also, it contributes to the extension of the current knowledge of stress management interventions implemented with employees from the human services field, such as teachers and physicians. As shown, this intervention can be used in the worksites to improve employees' occupational health. From a practical point of view, the results can be useful for the specialists responsible for human resources management (HRM), particularly with occupational stress issues.

One limitation of the present study concerns the nature of the data included in the analysis. In the case of all outcomes examined, the effect sizes were computed based on data collected through one single sample pre- and post-measurement design. Given the weaker causality nature of this type of design (Montero & León, 2007), it is difficult to infer that there were no intrinsic or extrinsic factors to this intervention that might have influenced the employees' outcomes during its implementation. Nevertheless, at a previous study it was observed an increase on well-being at work in an experimental group of teachers, and any significant differences occurred at an equivalent control group (Jesus, 2010). Further studies are needed to evaluate the effectiveness of this multimodal stress management training in comparison to single techniques, in order to determine which is the most effective in different working settings. Qualitative data could also give additional information (Torsney, 2011). Furthermore, the inferences about the effectiveness of this stress management training are restricted to the employees' psychological outcomes; future studies that will investigate the effects of this intervention can also include different types of outcomes such as physiological (e.g., diastolic and systolic blood pressure) or organizational measures (e.g., absenteeism).

Considering that this study analyzed only the short-term effects of this stress management training on motivational and well-being related outcomes, it can be complemented by a meta-analysis of the studies that have examined the long-term impact of the training program. As suggested by Richardson and Rothstein (2008), little is known about the long-term effects of the stress management interventions and this limits the knowledge about how long their effects last.

Furthermore, the effectiveness of this stress management intervention can be examined in studies that can include larger samples from the same population of teachers and physicians and other specific professions from the human services, such as nurses or other health care providers.

## Conflict of Interest

The authors of this paper declare no conflict of interest.

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