"Mastering environmental and bio-psycho-social factors in the work environment. Towards an interactionist model of the risk factors associated with stress"

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Introduction

We have based the elaboration of this work on various studies showing that the most promising models of occupational stress are those based on "Fit-Misfit" interactionist models. These models are based on the idea that an optimal adequacy between the individual's personality and his work environment is required to prevent health problems connected with stress. This congruence concept implies the existence of a functional relation between psychosocial factors in professional life and health. This person-environment relation best conveys the occupational stress process.

To organize our research, we have structured it around the **S-O-R-C interactional model**, which induces that functional relations exist between environmental stimuli (S), the individual's predisposition or attitudinal variables (O), emotional, cognitive, and motor responses (R) and the outcomes of these responses in terms of health (C). The staff of the Psychology of Work Department (ULg) was entrusted with studying S while that of the Relational Psychiatry Department (KUL) analysed the biological aspect of R and C. Our own staff mainly focused on intermediate variables in relation to mental health consequences and on the specific responses (R) to occupational stressors.

Equipment and methods

We selected four sample populations and tested them at their work sites: teachers (n = 49), agricultural workers (n = 56), nurses (n = 60), and policeman (n = 78).

A number of socio-demographic and socio-professional variables such as age, sex, level of education, professional experience... were collected.

Two types of psychometric tools were used in this study, some drawn from the literature and some created for the needs of this particular research. The tests drawn from the literature are Bortner's questionnaire (1969), William's hostility scale (1980), the state and trait anxiety inventory of Spielberger (1970), Antonovsky's life orientation questionnaire (1987), Spielberger's Job Stress Survey (1991), the Standford sleepiness scale (Hoddes et al., 1973), the symptoms check list (SCL 90) of Derogatis (1977, 1981), Spielberger's state-trait anger scale (STAS, 1983), Spielberger's state-trait anger expression inventory (STAXi, 1996), the coping questionnaire of Vitaliano et al. (1985), Pomini's acquired resources questionnaire (1997), Miller's monitoring-blunting scale (1995, 1996), Beck's depression inventory (Beck and al., 1974) and Amiel-Lebigre's life events scale (in Cottraux et al., 1985). The questionnaires especially created for the purposes of this research are: the psychological symptoms questionnaire (Colucci, 1992), the psychological reactions to stress questionnaire (Colucci, 1993), the self-evaluating scale of pain (Fischler, 1995), the health questionnaire (Fischler, 1995), functional analysis of the most important stressor (Colucci, 1996), the "stress at work" questionnaire (Colucci and Fontaine, 1996), and finally, the somatic problems questionnaire (Meyer and Fontaine, 1997).

These tests were administered twice from 1995 to 1998 to subjects in each sample. One testing session lasted 1h30. In addition, a functional analysis of professional stressors was carried out for 10 days in the teachers group and a functional analysis of the most important stressor extracted from the occupational stress inventory (J.S.S.) was done on the agricultural workers sample.

Results

In our analysis of socio-demographic and socio-professional variables, we have shown that the four samples meet the expected requirements: normal distribution relative to age of subjects, a usual distribution between males and females on the basis of job occupation in comparison to the distribution of the sexes in the global population, and a normal distribution for the number of children.

A statistical analysis between samples could not be done because our samples were not randomised. Nevertheless, some essential results were obtained. First of all, each variable used in this study was normally distributed. Furthermore, we noted a higher level of hostility in the policemen population, a weaker trait anxiety score in our four target populations than in the global population, an absence of psychiatric symptoms, and a usual sense of coherence compared to the global population, slightly higher in the policemen population. Other results worth stressing are as follows: we found a normal occupational stress level in our samples compared to norms but slightly higher self-reported occupational stress in the nurses group. Finally, the three samples (teachers, workers, and nurses) studied with Bortner's questionnaire scored around 190 (A type). We also have to add that the A type does not correlate much with the other measures.

After these first observations, we did correlation analyses between metric variables. We found a significant positive correlation between anxiety (STRAIT) and psychiatric symptoms (SCL90) and between anxiety and occupational stress measured by the J.S.S. On the other hand, significant negative correlations were found between the SOC and the following variables: depression, occupational stress, psychiatric symptoms, trait anger, and trait anxiety.

Regression analyses were then done between psychiatric symptoms, measured with the SCL90, and some dependant variables: sense of coherence (SOC), trait anxiety (STRAIT), and hostility (HOST) among policemen and agricultural workers. These analyses showed that these three variables respectively account for 70 % (policemen) and 72% (workers) of the psychopathological problems displayed by individuals in our samples.

Conclusion

From our analyses we can draw several interesting conclusions. The samples we worked on belong to a normal population in terms of psychopathological troubles, since the quantity of psychopathological disorders (DSM IV) encountered in these samples is described as average. We can thus consider that our research is on a general population.

Among the numerous variables studied in the O and R tests, the O variables (attitudinal) particularly attracted our attention because of their predictive power as to the psychological health of the individuals subjected to occupational stressors. First of all, the hostility defined by Williams and measured with his questionnaire, reflecting the whole set of negative cognitions we carry about others; next, the trait anxiety; finally, the sense of coherence, which correlates negatively with trait anxiety, depression, trait anger, hostility, occupational stress (J.S.S.), and psychiatric symptoms (SCL90). This clearly confirms the salutary character of a high SOC.

These three variables extracted from the O estimate account for 70% of the psychopathological problems presented by the subjects of our study. This enables us to draft a high-risk profile as regards occupational stressors for people who score high on hostility and on trait anxiety associated with a low sense of coherence. A factorial analysis of the items resulting from these three variables could probably enable us put together a diagnostic tool with a very profitable predictive power. Such a tool would be easy and rapid to use. Furthermore, clinical analysis of these three variables now opens a way to preventive and curative interventions regarding the effects of the professional environment on the psychological health of workers.