

ASSESSMENT OF PSYCHOSOCIAL RISKS AND PREVENTION STRATEGIES: THE AMIGO MODEL AS THE BASIS OF THE PREVENLAB/PSYCHOSOCIAL METHODOLOGY

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This article presents the main features of the "Prevenlab-Psicosocial" methodology, developed for carrying out risk analysis and designing risk-prevention interventions in the ergonomic and psychosocial fields of work organisations. This methodology is based on the AMIGO model, developed for organisational analysis and planned change, which provides the theoretical framework for identifying the main facets of organisations and the guidelines for their analysis and change. The article also analyses the current socio-economic and work context and the important changes that are making psychosocial factors at work increasingly important. Data on the current situation in Spain with regard to psychosocial risks at work are also presented, and the role of these phenomena in the Spanish legislation on risk prevention and health at work is analysed. Recent developments in professional practice and research in the areas of psychosocial risk assessment and prevention are reviewed. All of this provides a framework for the presentation of the theoretical model and methodology and their contribution to research and professional practice in the field of occupational health in Spain.

Este trabajo tiene como objetivo presentar las principales características de la metodología "Prevenlab-Psicosocial" dirigida al análisis y evaluación de riesgos y a la elaboración de planes de prevención en los ámbitos ergonómicos y psicosociales de las organizaciones de trabajo. Esta metodología se fundamenta en el modelo de Análisis Multifacético para la Intervención y Gestión Organizacional (AMIGO) que le proporciona el marco conceptual. Se analiza el contexto socioeconómico y laboral actual y sus transformaciones que conceden cada vez más relevancia a los riesgos y factores Psicosociales del trabajo. Se ofrecen, además, datos acerca de la situación española en cuanto a ciertos riesgos de carácter psicosocial y se analiza el papel de esos fenómenos en la legislación española sobre prevención de riesgos. Se presenta una revisión de la investigación y de la práctica profesional tanto en lo que se refiere al análisis y evaluación de riesgos como a las intervenciones de prevención. Todo ello, contextualiza la presentación del modelo AMIGO y la metodología "Prevenlab-Psicosocial" y sus aportaciones.

TRANSFORMATIONS IN THE WORLD OF WORK. PSYCHOSOCIAL RISK FACTORS AND THEIR PREVENTION

Over the last few decades, work and organisations have undergone important changes in advanced societies. These changes are reducing certain risks as work systems and the activities of workers and teams change and new ones emerge. Certain physical risks tend to decrease, while mental and psychosocial risks increase. It is foreseeable that in the future, when part of a job is hard, it will be so more in terms of mental and social than in physical or material aspects. Let us briefly analyse these

work transformations and their implications for occupational risks.

Many of these transformations in labour activities and conditions have their origin in more global changes of a socio-economic, cultural and technological nature. On the one hand, the *globalisation* of the economy and markets, and on the other, the *internationalisation* of companies, of economic-financial activity, of production, of commercialisation and of the labour force, have led to an increase in *competitiveness*. This increase has put strong pressure on businesses to increase productivity and quality and reduce costs. *Technological innovations*, ever greater in number, more frequent and with a shorter cycle of change, also contribute to this competitiveness, at the same time as introducing new transformations and changes that constitute challenges to businesses. Changes in *labour markets* are also important, not only in terms of their demographic characteristics (older labour force, incorporation of women, higher qualifications, greater ethnic diversity, etc.), but also in terms of

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changes in values. *Cultural changes in modern societies* are having repercussions on companies and work. All of this leads to considerable *industrial mutations* that involve a reappraisal of forms of organising work, the structure of companies and work activity. The emphasis placed on these aspects by the European Union, in making one of the objectives of the European Social Fund (Objective 4) to promote the anticipation of industrial mutations as a strategy for companies and workers to deal with them effectively, is a sign of the importance and magnitude of these changes.

As a result of these transformations, companies themselves undergo changes in their structure and functioning, some of them deliberate and planned and others induced by the situation itself. As against the bureaucratic structure, considered by Weber as the ideal type of organisation, there emerge *new structural forms* (e.g., as networks, adhocracies, etc.) that seek greater flexibility. More importance is being given to *strategic management* that permits anticipation and adaptation in the face of change, thus affording competitive advantages. The emphasis on *flexibility* (of all types: occupational, temporal, geographical, functional, etc.), organisational "slimming down" and new types of relationship with suppliers and clients makes *organisational limits more and more diffuse*, and co-operation among diverse organisations more complex and necessary. Moreover, efforts to develop more effective and efficient *work systems* (Just in Time, Total Quality Management, etc.) have led to a reappraisal of the role of human resources in companies and of *management policy and practice*. Changes affect processes and practices of selection, training, career plans, compensation systems, labour relations, etc. In this context, Cascio (1995) opportunely points out the need to develop new technologies for the management of human resources, given that those currently available are insufficient for the new organisational demands. However, transformations in human resources practices and policies often imply a *reappraisal of the psychological contract* between company and workers. It is becoming more and more necessary, but also more difficult, to develop a psychological contract based on trust when excessive demands for flexibility tend to create situations of tension. Human resources management in companies is faced with a paradox that it will have to confront and resolve.

Transformations of the environment and of companies lead, in turn to changes in work activity in terms of its context and its meaning. On the one hand, new technologies and work systems more frequently make *telework* a possibility. Furthermore, work is moving from

being centred on motor activity (physical effort) to being based on *mental activity* –problem-solving, ability to manage uncertainty and knowledge management. Mental workload becomes one of the serious threats to psychological wellbeing and health. As already pointed out some years ago in the EU Green Book, we find ourselves in a cognitive society in which work activity is most commonly mental activity. On the other hand, the frequent industrial transformations and mutations result in a demand for greater capacity for adaptation and *flexibility*. *Continuoun training*, the continual updating of qualifications and competence and the anticipation of mutations in order to maintain employability are other important elements. Moreover, the increase in complexity of activities that are not executed by means of the new technologies is transferring the work unit from single post to work team. This makes more necessary the development of teamwork skills. Also, *diversity* in work units and in companies is increasing (as a function of sex, age, ethnic group, qualifications, values, etc.). Other important transformations derive from the growth of the *service sector*. The peculiarities of services, compared to products, and the importance of the relationship with the client in their production and delivery is introducing important transformations in work activities and contexts. One of the changes is known as *emotional work*. This refers to situations in which the firm guarantees cordial, refined and caring treatment, advertising this as an element of the quality of the service. This may constitute an additional source of stress and strain for workers, who not only have to contribute their problem-solving ability and cognitive activity, but also their emotions as part of the job. Nevertheless, taking note of all of these transformations should not lead us to forget that we can still frequently find work situations in which monotony, repetitiveness, bad posture, lack of autonomy, lack of control over pace, sequence, etc., and exposure to unhealthy conditions and other environmental risks have a negative effect on workers' health and wellbeing. Moreover, violence at work, sexual harassment and poor or degrading interpersonal and social relationships also give rise to unhealthy situations.

All of these changes and their significance lead us to affirm that in the coming decades work activity and contexts will continue to evolve, with every probability of improved control and prevention of physical risks. Nevertheless, physical risks will become more relevant. The work characteristics we have described show that multiple health risks will emerge from the general and loosely defined area of psychosocial factors. Moreover, the psychosocial and somatic consequences of these

risks may represent a large proportion of work-related illnesses. Indeed, they already require greater attention than they have up to now been afforded.

PSYCHOSOCIAL FACTORS AND WORK CONDITIONS IN SPAIN

There are no reliable estimates in Spain of the amount of sick leave taken as a consequence of psychosocial factors, nor of the costs incurred by disability or absenteeism due to these factors. Schaufeli's work on the situation in Holland provides data that demonstrate the magnitude of the problem in that country. Nevertheless, it is possible to gain an idea of the Spanish situation by analysing the results of the III National Survey on Work Conditions carried out by the National Institute for Occupational Health and Safety (*Instituto Nacional sobre Seguridad e Higiene en el Trabajo*, 1997). This survey was administered to a sample of 3,804 workers and 3,445 companies in the last months of 1997. Let us consider the most significant data with regard to the subject of this article.

As regards *content of the work*, 34.6% of workers surveyed carry out *very repetitive* and short-duration tasks, and 9.4% report fairly or very frequently doing *monotonous work*. As far as *autonomy or control* is concerned, around a quarter of the workers have no potential for autonomy. In any case, the majority (89.6%) may leave their post when they need to, though 35.2% must be substituted by a colleague. 10.7% work *shifts*, either day/evening (5.5%) or day/evening/night (5.2%), with 6% always working nights, either in teams on a rota system or on a regular basis.

Workload had been high or very high over the previous three months for more than a third of those interviewed (36.5%); as regards *mental workload*, 62% report that their work requires a high level of concentration and attention. Moreover, 24.7% consider that an error by them will have serious consequences, while around a third (39.4%) consider that the consequences will be mild. These consequences, serious or mild, have effects on the quality of the product or service (66.1%) and in lesser measure, though still with significant percentages, on people's health and safety (26.1%), or on installations, equipment or materials (23%).

As for *pace of work*, 37.6% consider it high (10% more than in 1993), and almost half indicate that it depends on external factors (clients, public, technology, etc.) which, obviously, vary from sector to sector.

In relation to *job status* and *career development* opportunities, a high percentage of workers –around half– hold posts that require no specialised knowledge.

However, there is also a considerable number that can apply their knowledge and abilities in their job (65% of them claim to have a high or fairly high possibility). Furthermore, for 66% their job is considered within the company as important, or as one of the most important. As for promotion, almost half of those surveyed say that they have never had promotion. The rest report having had some (33.1%) or a lot (14.6%) of promotion.

On asking workers for their subjective assessment of the seriousness of the problems caused to them by each one of the fourteen variables related to organisational aspects of the company, psychosocial aspects, ergonomic aspects, environmental aspects, exposure to contamination and risk of accidents, the aspect defined as most problematic was "the instability of the work" (12.3% perceive it as "fairly" or "very" problematic or unpleasant), followed by "the temperature and humidity", "working hours", "posture" and "monotony".

Finally, the percentage of workers that require medical attention for a health problem attributable to their work is 11.7% (14% of women and 10.4% of men). This figure varies significantly if we analyse categories of activity separately, with the chemical, metallurgical, clerical/bank and services categories being those presenting the highest percentages. As it can be seen, there are some sectors (clerical/bank and services) for which we would suppose that the health problems are of a psychosocial nature. The survey also provides data on the reasons for seeking medical help in relation to the job done. In total, 501 reasons were identified, of which 255 were of a psychosocial nature, such as stress, depression, headaches or neck/backache. Other problems reported may also be at least partly psychosocial in origin.

The survey offers a cluster analysis in which it groups workers according to their similarities in terms of the way they rate the problems attributable to their work. In this analysis three groups are identified: 1) that which refers to the best work conditions (70% of the sample); 2) that which refers to the worst work conditions (10.4% of the sample); and 3) that which refers predominantly to problems related to psychosocial factors, mental workload and work posture (19.6% of the sample). It is of interest here to give a breakdown of the aspects that characterise this third group: greater representation of women (42.5%); mean age of 34 years; high proportion with university education (32.9%); clerical/bank (32.9%), social services (26.1%) and other services (23%) most represented categories; clerical workers most represented occupation (33.6%); companies with over 249 employees most represented type (27.7%); computer groups and typing pools most represented type

of work teams (31.4%), followed by those processing information on paper or similar (29.6%).

PSYCHOSOCIAL FACTORS OF RISK AND THEIR PREVENTION IN SPANISH LAW

Although the Law for the Prevention of Risks at Work (*Ley de Prevención de Riesgos Laborales* – Ley 31 de 8/11/1995: BOE 31/1/97) makes no explicit reference to workers' mental health, it does refer on various occasions to psychological and social aspects as relevant elements in the prevention of risks or as potential sources of risk. In a more explicit way, the Decree "Regulations of the Preventive Services" (*Reglamento de los Servicios de Prevención* – 17/1/1997: BOE 31/1/97) recognises the relevance of ergonomics and applied psychosociology as one of the specialities of high-level experts, and in Appendix VI establishes the minimum training content for their work, both in general and in relation to their speciality. As regards ergonomics and applied psychosociology, the following headings are referred to: a) Ergonomics: concepts and objectives; b) Environmental conditions in ergonomics; c) Conception and design of jobs; d) Physical workload; e) Mental workload; f) Psychosocial factors; g) Structure of the organisation; h) Characteristics of the company, the job and individuals; j) Stress and other psychosocial problems; j) Consequences of harmful psychosocial factors and their assessment; k) Psychosocial intervention. In its introductory section, the Decree establishes that "in relation to the capacities and aptitudes necessary for carrying out preventive work, the present legislation recognises the need for correspondence between the training required and the functions to be fulfilled". It sets down minimum training levels for the exercise of preventive work, grouped in three levels: basic, intermediate and higher, the last of which includes the preventive specialities and disciplines of Occupational Medicine, Safety at Work, Industrial Hygiene, and Ergonomics and Applied Psychosociology. The current lack of academic or professional qualifications corresponding to the training requirements mentioned, except in the Occupational Medicine speciality, is noted in the Decree, which considers the possible provisional solution of "alternative accreditation of the required training until such time as the corresponding official qualifications are determined by the competent educational authorities".

This Decree, then, recognises the importance of experts in ergonomics and applied psychosociology in preventive work, and sets down the minimum requirements, in terms of knowledge areas, skills and aptitudes, that

constitute the qualifications for carrying out work in this field.

As regards the structuring of this knowledge, two criteria can be identified: the first refers to psychosocial and ergonomic phenomena, taking into account the different levels at which these can present themselves –job, person and organisation (group is only referred to indirectly under the heading of psychosocial factors); the second criterion refers to the process-related characteristics of the phenomena and, in accordance with them, identifies the psychosocial problems and their consequences and the intervention possibilities available.

As far as the first criterion is concerned, the Decree proposes minimum training for experts in ergonomics and psychosociology in the following aspects (letters in parentheses refer to the headings presented above):

- 1) Environmental conditions in ergonomics (b)
- 2) Job (conception and design (c); physical workload (d) and mental workload (e) involved). Also, characteristics (by implication, psychosocial) of the job (h).
- 3) Worker: individual characteristics (h).
- 4) Organisation: structure (g); characteristics of the company (h).

As regards the second criterion, the Decree refers to the following areas:

- 1) Stress and other psychosocial problems (i).
- 2) Consequences of harmful psychosocial factors and their assessment (j).
- 3) Psychosocial intervention (k).

The Decree also makes provision for training in "other work related to the prevention of occupational risks", which would include psychosocial phenomena: training, techniques of communication, information and negotiation, and "occupational risk prevention management".

It can be inferred from the above, then, that the functions of specialists in ergonomics and psychosociology would be determined by their capacity for *assessing harmful psychosocial factors* and carrying out *psychosocial intervention* (including design of jobs) on *ergonomic and psychosocial* problems (among which physical workload, mental workload and stress are mentioned explicitly) and the *consequences* of the harmful psychosocial factors. If, in addition, we take into account the complementary training, it is clear that psychosocial factors (such as training, information, etc.) are considered as *resources that can facilitate prevention*.

A detailed analysis of official references to phenomena of an ergonomic or psychosocial nature permits us to distinguish at least four types:

- 1) *Ergonomic or psychosocial factors as sources of*

risk and elements that can affect health and safety at work. For example, on defining "job conditions", explicit reference is made to "all those characteristics of the job, including those relevant to its organisation and structure, that influence the magnitude of risks to which the worker is exposed" (Art. 4.7.d). On referring to principles of preventive action explicit mention is made of the need to "Adapt the job to the person... with a view, in particular, to relieving monotony and repetitiveness and reducing their effects on health" (Art.15.1.d).

- 2) *Psychosocial factors that make certain workers more sensitive or vulnerable to work risks.* The law recognises that certain psychosocial characteristics –permanent or transitory– of workers may make them especially "sensitive" or vulnerable in the face of certain risks, so that it is necessary to take additional preventive measures. For example, Art. 15.4 establishes that "effective preventive measures should foresee distractions or imprudent (not reckless) behaviours that the worker may carry out". Furthermore, Art. 25 is devoted to the protection of workers that are especially sensitive to certain risks, and mentions "the recognised conditions of the person or his/her biological state, including those that involve physical, mental or sensorial disability". Art. 27 offers another reference to particular sensitivity due to psychosocial factors: "The assessment (of jobs) will take special note of the specific risks to the health, safety and development of young people deriving from their lack of experience, their immaturity for evaluating existing or potential risks and their still incomplete development". The legislative texts list various psychosocial characteristics identified as factors of vulnerability; nevertheless, the training content established and referred to earlier is scarce in this respect, it merely being indicated that it is necessary to provide training on "individual characteristics" (Point h).
- 3) *Psychosocial resources that may contribute to the prevention of risks and health and safety improvements.* It is also necessary to consider those (such as resistance to change, etc.) that hinder it. In this area, the legislation considers a large number of psychosocial phenomena. In Chapter III, on referring to rights and obligations, it mentions those of the employer with regard to information, consultation and workers' participation (Art. 18: see also Chapter V) and those related to training (Art. 19). For the proper planning and management of all

these processes, and for them to be effective, it is necessary to take into account their psychosocial nature.

- 4) *Effects and consequences of a psychosocial nature,* resulting from a lack of prevention of risks (ergonomic and psychosocial or of any other kind). In this area the law makes no explicit mention of workers' mental health. However, the WHO's conception of health leaves us in no doubt as to its integrated bio-psycho-social definition, while according to the International Labour Organisation, the objectives of occupational health are "the promotion and maintenance of the highest level of physical, mental and social well-being of workers in all occupations through the prevention of any reduction in health levels and the control of risks". In line with this perspective, the Decree on prevention services mentioned above makes explicit reference to "the consequences of harmful psychosocial factors and their assessment".

Figure 1 shows a possible schematic representation of the conceptualisation of the ergonomic and psychosocial factors as discussed above. Their systematic consideration allows us to broaden, enrich and make more explicit the content of the training that should be received by experts in the field of ergonomics and psychosociology, content for which the time proposed in the Decree would be insufficient (see Peiró and Bravo, 1999).

This model places special emphasis on the multi-level nature of psychosocial phenomena in the prevention of risks. These cannot be approached solely (and indeed the law does not do so) at an individual or job (post) level. While this is an important level, many crucial aspects of risk prevention and general safety would be excluded if we failed to consider the organisational level, which undoubtedly involves rejecting individualistic conceptions. The health and safety of people at work demands safe and healthy organisations. Therefore, risk prevention must extend to the entire company, and should constitute an integral part of its systemic character. In sum, what is involved is a broad programme of research and professional intervention.

ACHIEVEMENTS AND LIMITATIONS OF PROFESSIONAL PRACTICE AND R & D IN THE ASSESSMENT AND PREVENTION OF PSYCHOSOCIAL WORK RISKS

The law establishes the need to attend to psychosocial factors in all aspects related to the analysis and prevention of risks at work. Nevertheless, turning this into reality implies considerable changes in the culture of busi-

nesses, in the very activity of the professionals that deal with these matters, and in the administrative bodies that must determine the criteria and procedures for applying the legislation and must carry out the necessary functions of audit, supervision and control. In this section we present an overview of the current state of professional intervention and of research with regard to these issues. Progress in both aspects is essential if the legislation is to be translated into responsible practice.

Situation of professional practice in the assessment of psychosocial risks

The assessment of psychosocial risks should form part of the general risk-assessment work carried out by companies in accordance with the law. According to the Spanish legislation different types of assessment should be distinguished: initial assessment and specific studies of risks. The III National Survey on Work Conditions (1997) provides data on the level of use of these practices in Spanish companies. As regards initial assessment, and despite its obligatory character, less than half (46.6%) of all companies claim to have implemented it. If we consider the data from the sample of workers, we find that only 13% report that any study of the health and safety risks of their post has been carried out in the previous year. Aspects most frequently studied, according to workers, were noise (18.8%), safety of installations (15.8%), general review (14.2%), ergonomic and posture-related aspects (13.5%) and review of machinery and materials (13.4%). These results show that ergonomic aspects are considered in assessments, but that they are not presented accompanied by the relevant percentages of psychosocial factors.

Multiple reasons can be adduced for this low level of assessment of psychosocial risks, but it is clear that the fundamental explanations are related to its difficulty and the lack of suitable methodology. As Castejón (1995) points out “the assessment of psychosocial risks presents enormous difficulties and, in consequence, the methodologies for such assessment are still in a basically embr-

onic state” (p. 9). This author lists the following problems in relation to these methodologies: 1) the difficulty of establishing a cause-effect relationship between psychosocial risk and harm at an individual level; 2) the difficulty of isolating, at the level of the individual’s health, occupational psychosocial risk as a cause separate from others that are not work-related. Nevertheless, important progress has been made insofar as it is accepted (though it is difficult to determine at the individual level) that certain psychosocial factors constitute occupational risks.

In any case, and with the aim of facilitating the assessment task, the National Institute for Occupational Health and Safety has published a series of guides that provide tools and orientation for carrying out these analyses of risks. In the Guide for the Assessment of Working Conditions in Small Businesses, the following psychosocial risk factors are mentioned and explained: mental workload, shift work and organisational factors (task content, autonomy, role in the organisation and personal relationships). Moreover, the Institute has published a Computerised Prevention Programme (*Aplicación Informática para la Prevención, AIP*) under the title “Psychosocial factors. Assessment methodology”. The AIP starts out from the essential need to consider, within the framework of the company, psychosocial factors, which have important repercussions on both the health and wellbeing of employees and on the performance or general functioning of the organisation. In this method, the following psychosocial factors are studied: 1) mental workload; 2) temporal autonomy; 3) job content; 4) supervision-participation, definition of role; 5) interest in the employee; and 6) interpersonal relationships. The manual provides basic psychometric reliability and validity data obtained from a sample of 439 workers.

Also, some companies that work as prevention services are developing procedures for the assessment of risks in general and, in some cases, for the assessment of psychosocial risks. These guidelines, methodologies and procedural proposals constitute important practical aids, and represent a contribution to the elaboration of a model and protocols for the assessment of risks. However, they do not generally present in an explicit way the theoretical model on which they are based, the properties of the measurement instrument(s) used or the studies that justify their design and use. Efforts should be made to publish these results with the aim of revealing to the scientific and professional community the scientific and technical bases of the methodologies and the reach and limitations of the instruments they employ.

Figure 1
Schematic representation of the significance of Psychosocial Factors in Spanish legislation on the Prevention of Occupational Risks

PSYCHOSOCIAL FACTORS - LEVELS	SOURCES OF RISK	VULNERABILITY FACTORS	RESOURCES FOR PREVENTION	HEALTH CONSEQUENCES
JOB				
WORKER				
WORK GROUP OR UNIT				
ORGANISATION				

Professional intervention in the prevention of psychosocial risks

The information provided by the III National Survey on Work Conditions is also of interest in this aspect. According to this survey, in over half the cases in which assessments were carried out, corrective measures were taken (54.4%), and these were aimed, on 6 out of 10 occasions, at the modification of the risk source (facilities, machinery, equipment or materials). It is naturally of great interest to know what type of psychosocial measures were taken, first with regard to risks in general, and second, with regard to psychosocial risks.

Psychosocial measures aimed at preventing risks are determined by law, and focus on information, training and participation. As far as *participation in the prevention of risks* is concerned, the survey data indicate that "the area in which the right to participate, in companies in which it exists, is least exercised is that of activities related to the prevention of occupational risks (11.9%)". On being asked whether they have at any time made suggestions for improving health and safety, the percentage of workers answering "no" (55.8%) is slightly higher than that of those responding "yes" (43.2%). Of those responding in the affirmative, they report that their suggestions have been taken into account sometimes (34.8%), always (32.5%), and frequently (21.1%).

As regards *training for the prevention of occupational risks*, in half of the workplaces the person speaking for the company claims that all workers receive training in health and safety issues specific to their job. The most frequent situation is that this training takes place at the beginning of the contract. By sectors (company questionnaire), 60% of Industrial and Construction employers provide specific training for their workers, but in Services this type of training is offered in only 42.4% of workplaces. In any case, provision of such training is clearly not a widespread practice. Of the total of workers, only 11.5% had received, over the last 12 months, some type of preventive training. This data coincides in a general way with that of Boix et al. (1998).

As for *specific preventive activities on psychosocial risks*, the survey identifies two basic types of approach: 1) work organisation measures (breaks, rotation of jobs, etc.), which have been adopted in 29.8% of the companies (42% of those that have appointed a Safety Representative and have a Health and Safety Committee); and 2) the modification of jobs to improve their ergonomic aspects (20.6% of companies, 37% of those with Safety Representative and Committee).

For its part, the National Institute for Occupational Health and Safety (1996), in its Computerised

Prevention Programme (AIP) on "Psychosocial factors. Assessment methodology", offers a series of proposals for improving psychosocial factors in organisations, dealing with each one of the factors to be assessed. In the same document it is pointed out that "the recommendations should serve as a general guide to important aspects to be considered in each sector [...], though they should not be understood as universally valid and applicable". Examples of such recommendations are: "Avoid transmitting a sense of urgency or time pressure to the worker", "Promote the participation of workers in the different aspects involved in the work –from the organisation, distribution and planning of tasks to aspects such as the distribution of space, furnishings, etc.". As it can be seen, they are useful suggestions, but in no case can they –nor do they pretend to– substitute the work of professionals that must establish the bases of and determine the changes for achieving the appropriate preventive effects in a company.

If we analyse this professional work we discover, first of all, its scarcity and limited coverage. The work usually provided by prevention organisations and consultants commonly deals with the problem of stress. Interventions are generally training-based (training in stress control, management of time, Neurolinguistic Programming, etc.); this training is sometimes offered through self-help materials (ABANSELF, 1994). In some cases programmes of psychological assistance and consultancy are carried out with employees, provided by professionals from the company or by private operators contracted by the company. In very few cases are data published on the effectiveness of the intervention programme (see Marquínez et al., 1997). Another type of prevention work in this area is that whereby epidemiological monitoring studies of stress are implemented; some interesting results with diverse occupational samples have been presented in this field (Manchón, 1997; Moncada et al., 1997).

In sum, prevention work in this area is just beginning, works in a fairly restricted area (stress) and is based on a predominantly individual approach; intervention strategies at the level of organisations do not appear to have been developed (for a classification of possible interventions, see: Peiró and Salvador, 1993 and Peiró, Ramos and González-Romá, 1994). This situation is not very different in its tendencies from those found by Koompier et al. (1994) in a review of interventions on occupational stress in Holland, Sweden, the United Kingdom, Germany and France. In any case, the level of development is lower in Spain. Koompier et al. (1994) attempt to identify and describe the rules, policies and

practices related to occupational stress in these five countries, taking into account that on 1st January 1993 the European Framework Directive on occupational health and safety (89/391/EEC) came into force. These authors confirm the existence of differences between these countries with regard to the level of attention paid to the prevention of stress. They point out, furthermore, that this type of intervention is not given a high priority by comparison with those on chemical or physical risks. Nor is there reliable documentation on examples of good practice. Finally, the interventions are characterised by: 1) concentrating on individuals, more than on the organisation; 2) attending above all to the reduction of the effects of stress, rather than attempting to reduce the presence of stressors in the work; and 3) being oriented mainly towards "stress management". These authors add that one of the factors that may contribute to explaining this situation is the dominant paradigm that inspires research on stress. As pointed out elsewhere (Peiró, 1999b), there is a need for critical analysis of this paradigm and a reformulation of it in which more attention is paid to collective, contextual, cultural and historic aspects, both in the analysis of the phenomena related to occupational stress and in the development of strategies for dealing with them.

Research on the assessment of psychosocial factors in work and organisations and its (limited) influence on the analysis and evaluation of psychosocial risks

In the last two decades, research on work and organisational psychology in Spain has undergone considerable development, and has become consolidated (see detailed reviews on these advances in Peiró and Munduate, 1994, 1997, 1998 and 1999). One of the areas in which this activity has made significant progress is that of the construction or adaptation of instruments (generally questionnaires) for assessing constructs and estimating relationships between them on the basis of a variety of theoretical models. The great majority of these constructs are relevant to the field of psychosocial factors of risk prevention, so that the preparation of instruments for their assessment represents a potential contribution to the fulfilment of the demands of professionals. It is not possible here to review in any detail the studies in which these instruments have been refined and the results obtained (see the reviews already mentioned: Peiró and Munduate, 1994 and 1999). However, and with a view to providing an idea of the diversity of constructs and instruments, we offer a brief overview of the topic. To this end, we have used the scheme shown in Figure 2, based on the criteria employed by Hurrell

et al. (1998) in their review on the measurement of sources of stress (stressors) and responses to stress (strains). These authors organise their review according to two criteria: 1) type of measures used (self-report –comprehensive vs. specific–, observation and physiological), and 2) type of constructs assessed (sources of risk or stressors, moderating and/or mediating variables and responses to stress –strain). The combination of these two criteria provides a useful scheme for summarising the research carried out up to now. The development of instruments in terms of the different categories (the cells in the scheme) is markedly unequal. There are various instruments of a comprehensive nature that can be classified in cells 1, 2 and 3, and there are a relatively large number of those that can be assigned to cells 4, 5 and 6. In contrast, we have found no sufficiently developed and validated observation instruments that can be included in cells 7, 8 and 9. Finally, there are physiological measures (cardiovascular and hormonal) that are used in some studies as biological markers of stress (cell 10).

Let us examine first the *comprehensive instruments* (cells 1, 2 and 3), which assess sources of stress, diverse mediating variables and the responses to stress of individuals or groups. Karasek's (1979) questionnaires on *Job Content-Demand*, subsequently extended with the social (support) variable (Johnson and Hall, 1988), have been widely adapted and used in our country (Moncada et al., 1997). Cooper, Sloan and Williams' (1988) *Organizational Stress Indicator* is being adapted by Peiró and cols with a sample of bank employees and another of employees in civil service departments. Their battery assesses different types of occupational stressors (intrinsic to the job, management role, relationships with others, career development and achievements, organisational climate and structure, and home-work interface), different moderating/mediating variables (Type A behaviours, locus of control) and various responses to stress (coping strategies, state of health and job satisfaction). Another questionnaire in the process of adaptation (González, 1995) is Spielberger's (1994) *Job Stress Survey*, which assesses the seriousness and frequency of occurrence of various work conditions that may adversely affect workers' psychological wellbeing, as well as work pressure and social support from the organisation. Other questionnaires that assess variables relevant to this context are the WES and the JDS, despite their having been designed with other objectives. Moos' (191) *Work Environment Scale* (WES), developed for the assessment of work climate, measures ten dimensions (e.g., work pressure, control,

orientation towards the task, supervisor support, cohesion between workmates, etc.). This questionnaire has been adapted by Seisdedos (1986). The *Job Diagnostic Survey* (JDS) (Hackman and Oldham, 1980) was constructed for the evaluation of job characteristics (task variety, task identity, autonomy, task significance, feedback from the task itself). It also assesses different moderating variables (need for higher-level development, etc.) and results of the experience of work (job satisfaction and other results of work) (see the adaptations of González, 1997 and Fortea et al., 1994). Finally, we should mention the ASH (Audit of the Human System in organisations, *Auditoría del Sistema Humano*) assessment method, developed by Quijano and Navarro (1999), which deals with the following fields: Human Resources management systems, results/processes in people or quality of Human Resources at different levels of the organisation, psychosocial processes (culture, development of formal groups, participation, leadership, and factors facilitating the process of change), organisational effectiveness and the contribution of the HR department to this effectiveness.

A large number of studies have examined and assessed various *constructs relating to sources of stress (stressors) and to people's stress experiences (cell 4)*. As regards the assessment of stress, diverse measures have been developed for evaluating its various facets. Role stress has received considerable attention, with multifactorial measures of conflict and ambiguity being developed for its assessment (Peiró et al., 1987a, 1987b; Fernández-Ríos et al., 1990). Rizzo, House and Lirtman's (1970) questionnaire has also been widely adapted (e.g., Bravo et al., 1994; Martínez et al., 1999). Various authors have studied the relationships of these constructs to job satisfaction and psychological well-being, in a variety of samples and situations (Merino and Forteza, 1993; Osca, Alcazar and Otero, 1995). Moreover, González-Romá and Peiró (1994), Peiró et al. (1992) and Peiró (1993) offer a synthesis of the studies on occupational stress carried out in the UIPOT (*Unidad de Investigación de Psicología de las Organizaciones y del Trabajo*) Work and Organisational Psychology Research Unit at the University of Valencia, while Rubio et al. (1995) analyse the differences between mental workload and stress.

Attention has also been focused on problems related to *the incorporation of young people into the labour market*. Diverse environmental variables affect the degree to which this experience is stressful. Aspects studied include the perception of opportunities for career develop-

ment, role stress associated with labour market entry, discrepancies between expectations and reality of position within the organisation, socialisation tactics used by the organisation and quality of the organisation joined by the young person. Peiró et al. (1993) and Prieto et al. (1994) present the instruments on these variables used in research on socialisation and development of the work role in young people (WOSY).

Other constructs of interest for determining the psychosocial environment and conditions of work and companies relate to the *organisational climate and conditions*. While it is impossible here to refer to all the research on this issue, it is worth mentioning the contributions of the teams from the University of Barcelona (Quijano and Silva), from the UNED (Alonso, Palací and Osca) and from Valencia (for a review, see González-Romá and Peiró, 1999)

The study of *leadership and person-management* has been widely researched, and represents an important psychosocial factor in the context of the analysis and prevention of risks at work. Three models and their respective measurement instruments have received most attention: the classic one that distinguishes task-centred and person-centred leadership (studies on leadership in work teams mediated by new technologies; Peiró, Prieto and Zornoza, 1993), transformational leadership (studied in depth by Morales and cols.), and Graen's dyadic vertical relationship model (studied by González-Romá, Peiró and cols.). Furthermore, Gil and cols. (Gil and García, 1993) carried out extensive research on management skills and abilities (see specific references in Peiró and Munduate, 1999), while Quintanilla and Bonavía (1993) have dealt with the question of participatory management.

Also of relevance in this context are the *studies on work teams and groups*. There are many variables and contexts

Figure 2
Scheme for structuring assessment constructs and measures of psychosocial factors of occupational risks and their prevention

Methodology Constructs	Comprehensive self-report measures	Specific self-report measures	Observational measures	Physiological measures
SOURCES OF STRESS (RISK)	1	4	7	
MEDIATORY AND MODERATING VARIABLES	2	5	8	
RESPONSES TO STRESS, STRAIN	3	6	9	10

to be taken into account in this area: contextual variables of the group (composition, structure, task, and technology used); group processes (communication, co-ordination, decision-making, solution of conflicts, etc.) and consequences (for the suprasystem, for the group as a system and for the subsystems) (Ayestarán, 1996; Alcover de la Hera, 1998; Gil and García, 1996; González, 1997; Huici, 1996; Peiró, Prieto and Zornoza, 1993).

The *policies and practice of Human Resources management* are an important element in the context of work and organisations, and may constitute a psychosocial occupational risk factor. Assessment of performance (Quijano, 1992), conflict and its management, and negotiation have been the topics most commonly studied, with important contributions to Spanish research by teams from Santiago in collaboration with Oviedo (Serrano and cols.), Sevilla (Munduate and cols.) and Madrid Autónoma University (Fernández-Ríos and cols.).

The issue of *the design, incorporation and management of new technologies* and their implications for the quality of work and working conditions has also received attention from researchers in Spain (Prieto, Zornoza and Peiró, 1997; Torre and Conde, 1998). Specific issues studied have included the effects of information technology on team work and the impact of technological innovations on job structures and worker qualifications (Agut et al., 1995)

In a context of job scarcity and *labour flexibility, unemployment or its possibility and forms of work contract, as well as new forms of working*, constitute another area of psychosocial relevance for the analysis and prevention of occupational risk. Studies on unemployment are numerous (Alvaro, 1992; Blanch, 1990), while attention has also been focused on precarious employment situations (Alvaro et al., 1993). Furthermore, the characteristics of work offered by temporary agencies has been the object of some studies (Prieto, 1990), as have the new forms of work (e.g., remote work, see Ortiz, 1996).

Thus, it is clear that there has been a wealth of research interest in psychosocial constructs with considerable relevance for occupational risk and its prevention. Nevertheless, these studies do not appear to have had significant repercussions with regard to professional practice. In any case, before evaluating this situation, let us consider the research corresponding to the remaining cells.

Some constructs considered as *mediator or moderating variables with regard to stressors and responses to them* have also received attention (cell 5). Research in Spain has analysed the variables that are normally considered

as Type A Behaviour, locus of control (Buendía and Riquelme, 1995) or social support. Other work in this area has included studies on worker motivation (Muñoz, Munduate, Fuertes and Luque, 1993), involvement, commitment and career aspirations (González and Antón, 1995; Hernández and Ferreres, 1994; Marco and Espejo, 1994; Tomás and Espejo, 1994; Tous and Boada, 1993). We might also include here a reference to work on coping strategies (Merín, Cano and Miguel-Tobal 1995; Rodríguez-Marín et al., 1992).

The study and assessment of *constructs related to responses to stress (strain)* is also widespread (cell 6). Particular attention has been paid to the study of *job satisfaction*, on which many questionnaires have been developed. Peiró et al. (1995) drew up a classification according to focus of analysis (general, "composite" and by facets) and occupational focus (general, and specific to a given occupation or group of occupations). Bravo, Peiró and Rodríguez (1996) review the main instruments for the assessment of job satisfaction developed in the UIPOT research unit.

Another widely used construct is that of *burnout*, based particularly on Maslach's MBI (for a review of studies carried out, see Gil-Monte and Peiró, 1997) or the questionnaire by Pines, Aronson and Kafry, used by Fernández-Castro et al. (1994). Nevertheless, "home-grown" instruments have also been developed, such as the CBB (Moreno-Jiménez, Bustos, Matallana and Miralles, 1997) or the EPB (García-Izquierdo, 1995).

Other issues studied include *psychological wellbeing* (measured above all by means of Goldberg's GHQ) (Lloret and Tomás, 1994; González-Romá et al., 1991), *occupational tension and anxiety* (Espejo and Ferreres, 1994; Lloret and González-Romá, 1994), *mental overload* (Rubio, 1993), *occupational competence* (Ferreres and Espejo, 1994), *quality of work conditions* (Fernández-Ríos et al., 1985; Ferrer, 1988) and *the propensity to leave the organisation or job* (González-Romá et al., 1992). In addition to the personal consequences, there are others for the organisation. The concept of *organisational effectiveness* has been studied by Fernández-Ríos and cols. (Fernández-Ríos and Sánchez, 1997).

We have found no studies that use behavioural assessment instruments in any of the aspects of the process under review (*cells 7, 8 and 9*). This fact suggests a need for more research on this type of measure, even though they may be difficult to apply. This constitutes a potential challenge for the assessment and analysis of occupational risk.

Measures of a physiological nature have been used in various studies (*cell 10*). Mejías (1994) has reviewed studies that offer data on the prevalence and characteristics of high blood pressure as a factor implying risk of cardiovascular disorders. Borrás (1995) reviewed the principal methods of assessment of the human immune function for determining how it is affected by psychological stress, while Salvador and Bono (1995) analysed the relationships between stress and the main neuroendocrinal responses. Other studies have examined the relationships between assessments of stress by means of questionnaires and the simple physiological and biochemical indicators identified by Steffy and Jones (1988). González-Romá et al. (1995) reviewed the results obtained in studies of these relationships carried out in Spain. The monographic issue of *Ansiedad y Estrés* ("Anxiety and Stress") on the topic of Physiological Reactivity to Stress (Fernández-Abascal and Martínez-Sánchez, 1998) presents various studies that deal with these types of measure, though the research is not focused on occupational stress.

In summary, there is a wide range of studies that may be useful for developing instruments and "know-how" in relation to the practice of the assessment of psychosocial risk factors. However, results in this direction have been quite scarce. This situation requires reflection and certain measures for change, but before considering this, we shall review the contributions of research in the field of intervention in the prevention of risks.

Studies on psychosocial intervention for the prevention of occupational risks

Activity in research on psychosocial intervention for the prevention of risks has been less intense than that on aspects related to the conceptual analysis and evaluation of constructs. In any case, we can identify different lines of research. Firstly, we should mention some reviews on the *prevention and control of occupational stress* (Moreno-Jiménez and Peñacoba, 1995; Peiró and Salvador, 1993; Peiró, Ramos and González-Romá, 1994; Mínguez, 1995). Intervention programmes have also been carried out for the improvement of subjects' resources in the face of certain stressors, with assessment of treatment effectiveness through specific studies (Montorio et al., 1996). Other authors have studied the *design of the work environment, offering guidelines for intervention* (Pereda, 1993b), or certain elements of the ergonomic redesign of the *man-machine interface* (Llaneza et al., 1993, 1995; Valero and Sanmartín, 1994). Researchers at La Laguna University (Spain) have carried out a wide-ranging programme for the

study and *assessment of interventions for promoting safety in airports* (Díaz et al., 1993). Last but not least, we should mention a large-scale research project on the *psychological climate of safety and the assessment of interventions* based on psychosocial factors for the prevention of accidents at work. For a systematic overview of the results of this project, see Meliá (1999).

Brief general assessment of the situation

We have identified and described two perspectives, that of research and that of professional practice, largely cut off from one another, and each of which presents strengths and weaknesses, one of the latter being the lack of fluid interchange between them.

If we analyse the panorama presented by research, we find a considerable number of constructs and instruments that are relevant to the professional field. However, very few instruments are sufficiently or appropriately developed for reliable use by professionals. As mentioned elsewhere, an analysis of the situation of research in work and organisational psychology in Spain reveals that the lack of adequate instruments is one of the main hindrances to its progress. The case analysed here is a clear example of this (Peiró and Munduate, 1998). Another factor that may contribute to this state of affairs is the scant interest shown by researchers in the practical demands faced by professionals and in the social changes—in this case legislative ones—that regulate these demands. Greater attention to these matters would have given more impetus to research on intervention strategies and methodologies.

On the other hand, if we analyse the field of professional activity, we see that the pace of change of the demands it faces leads to the improvisation or development of methodologies with insufficient research foundations. As we understand it, both the demands made and the confidence of society, workers and business in professional ergonomic and psychological intervention in occupational risk prevention will depend on the capacity of professionals to solve problems and provide creative and rigorous solutions that contribute to effective and efficient improvement of the situation. To this end, there is a need not only for well-designed, properly developed and scientifically sound instruments, but also for their continual revision and their adaptation to each occupational sector and group. As Hurrell et al. (1988) point out, it is necessary to review the existing constructs and assessment instruments of occupational risk (especially those designed in the 1970s and 80s) because work demands are changing. Economic, social, technological and commercial transformations lead to the

emergence of new demands and new risks that were not contemplated (given their inexistence or irrelevance) when the currently available instruments were designed. It is necessary to stimulate research in order to develop or adapt instruments that respond more appropriately to the new demands.

Furthermore, intervention on risk factors must be founded on the most precise possible knowledge of the links between these factors and their consequences. It is important to shed light on the temporal dynamic in the cause-effect relationship as well as the process of unfolding and manifestation of these effects. Thus, it is necessary to develop a wide-ranging programme that permits the identification of the main consequences of psychosocial occupational risks, their patterns of evolution over time (see diverse models in Frese and Zapf, 1988) and the methodological implications for longitudinal research on stress (Zapf et al., 1996).

There are many unanswered questions in this field that make it difficult to design effective interventions. Nevertheless, progress has to be made, and it is therefore essential to design intervention programmes that are based on scientific knowledge already available and that can be assessed in terms of their effectiveness and efficiency. The assessment of programmes may provide the methodology and logic for this type of research.

In order to strengthen the relationship between research and professional practice there is a need for close collaboration between the two. It is also necessary to develop comprehensive models that offer a global perspective of the field of research-intervention. The AMIGO model presented here aims to contribute in some measure to the achievement of these objectives.

THE AMIGO MODEL: CONCEPTUAL BASIS FOR THE DEVELOPMENT OF A METHODOLOGY OF ANALYSIS-ASSESSMENT OF OCCUPATIONAL RISKS

In order to make an organisational diagnosis that facilitates the assessment of risks deriving from psychosocial factors in the workplace, an essential prerequisite is a theoretical model that enables a systematic and comprehensive consideration of organisational phenomena at all levels, and that facilitates the identification of the most effective psychosocial interventions in each case.

Elsewhere (Peiró, 1999a), we have presented the AMIGO model (*Análisis Multifacético para la Intervención y Gestión Organizacional* – Multi-facet analysis for organisational intervention and management), which may serve as a foundation for the development of a methodology of risk assessment and help to

organise the different strategies and techniques of organisational intervention. It may also facilitate the selection of the most effective approaches in each case and the identification of areas in which the development of new techniques is required.

The AMIGO model describes the components of the organisation as *facets*, with the aim of highlighting their “gestaltic” nature and avoiding their “reification”. These facets can only be understood properly in relation to the system to which they belong. Figure 3 offers a diagrammatic representation of the model.

The model starts out from the concept of *mission* that is central to every organisation and gives meaning to its existence. The fulfilment of this mission demands a system that is open to its environment and capable of interacting with it.

The mission is supported by the *organisational culture* that gives the organisation its identity. This culture is an essential component that represents the set of beliefs shared by its members, the “paradigms” that inspire it and the values in which these manifest themselves. We understand culture as a constituent element of the organisation, and not as something it possesses (Peiró, 1990; 1996a).

The *environment* in which this system functions and operates is an element that is central to its understanding, its design and its management. Organisations are open systems of a social nature in constant transaction with their environment. This environment can be defined as the set of elements external to the organisation with which it maintains or may maintain relations and which are relevant for it. It can be described in terms of its level of complexity, its level of dynamism, its predictability, its degree of uncertainty and its greater or lesser hostility towards the organisation. Vision is a relevant facet to anticipate and gain competitive advantage from environmental

The *strategy* of the organisation is another relevant facet, and consists in the formulation of the general lines of the relationship between mission and environment. It refers, according to Chandler (1962), to “the explicitation of the long-term objectives and goals [...], the adoption of courses of action and the distribution of resources necessary for achieving these goals”. As Mintzberg (1988) points out, strategy “may be seen as a mediating force between the organisation and the environment, so that its formulation requires the interpretation of the environment and the development of coherent approaches in the flow of organisational decisions (strategies) for dealing with it” (p. 51). Strategic management involves a series of decisions aimed at identifying and taking

advantage of the basic opportunities deriving from interaction with the environment, from a medium-term future perspective.

A fundamental element of strategy, which conditions other facets of the organisation and is partly conditioned by them, is the determination of the *products or services* through which the organisation will develop its mission. The strategic option of providing products or services (sometimes both) will influence the configuration of the organisation. The differences between organisations that provide services and those that provide products are increasingly clear, and these differences are crucial with regard to their functioning, management, results and effectiveness.

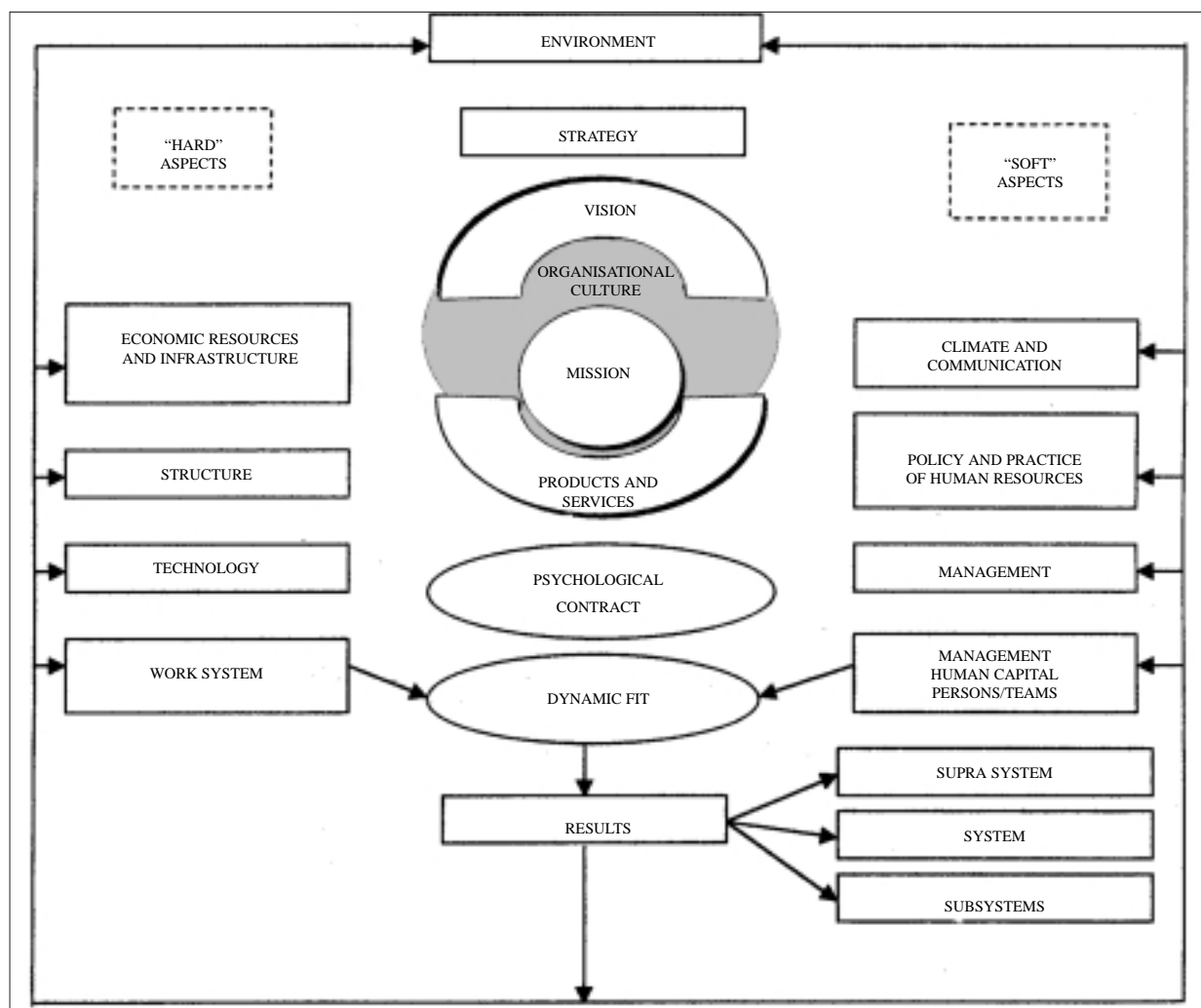
Economic resources and infrastructure are elements that condition the functioning of an organisation, the achievement of its mission and the interactions with its

environment. Psychosocial theories of organisations have scarcely taken into account this facet; however, it is necessary to do so, since the characteristics of resources and infrastructure will affect the remaining components of the model.

The *structure* of an organisation is considered as the support for the working norms and administrative mechanisms that allow organisations to guide, control and co-ordinate their activities. Clarifying the concept of structure involves identifying the units making up the organisation and the relationships between them, particularly those established through the rules and regulations of the organisation.

Technology refers to “the techniques used (by organisations) in their work activities for transforming inputs into outputs, including not only tools and equipment, but also technical know-how. We have discussed elsewhere

Figure 3
The AMIGO Model



the implications of technology in general (Peiró, 1983-84) and the new technologies in particular (Peiró, 1990) for work, for the design of work systems and for the organisation itself, both in terms of structure and functioning. We have also analysed the implications of the use of new technologies for occupational stress in those using them (Peiró, 1993), and we have offered guidelines for improving the effectiveness and efficiency of these technologies in terms of their design, incorporation, management and assessment (Prieto, Zornoza and Peiró, 1996).

The *work system* refers to a specific combination of tasks, technology, expert knowledge, management styles and work procedures. These elements are considered as direct determinants of the way in which work is organised and managed, and of the way employees will experience their work situation and carry out their job (Beer et al., 1989, p. 464). The central component is constituted by the work procedures and processes and the conditions demanded by the job as a consequence of the task organisation. It is becoming increasingly important to consider the relationships between individual jobs and the work team. The different forms of organising the work system (e.g., production lines, semi-autonomous teams, etc.) and strategies of co-ordination and control have important implications for other facets of the organisation.

Organizational Climate and communication. These are both strongly influenced by the organisation's culture. We can describe the climate as the set of perceptions that configure the description and representation shared by the members of the organisation (González-Romá and Peiró, 1999). This is a variable of a basically cognitive nature, though emotional and affective dimensions are becoming increasingly relevant, and hence the consideration of emotional climate (DeRivera, 1992; Páez, 1997, Peiró, 1999b). Communication is an essential subsystem of the organisation that facilitates the transmission and processing of information and the interaction between various agents, individuals and groups within the organisation and outside it.

The *policies and practices of personnel management* refer to the set of approaches and actions that regulate the relationships of the organisation with its members. These include flows of personnel (joining the organisation, assignment of jobs, promotions, retirements, sackings, etc.) and the dynamic of contributions and compensations between employees and the organisation (rating of jobs held, assessment of performance, bonus and incentive systems, quality of working life, etc.). Also included within this category are the system and

conditions of labour relations, procedures for solving disputes (disciplinary measures, etc.) and mechanisms related to the growing influence of employees for confronting the organisation over possible abuse or lack of sensitivity. Organisations differ considerably in their overall conception of personnel policies and in their approach to specific personnel matters in practice (Guest, 1994).

Functions of management. Managing of any organisation involves a suitable combination of functions described as "management", which are related to internal organisation and the company's response to its environment. Various authors have made proposals with regard to the most significant of these functions. All of them consider, in one way or another, the need for a balance between flexibility and control, and between internal and external orientation in the management of the organisation. Thus, management involves achieving for the organisation a capacity for adaptation to its immediate environment through innovation and a capacity for making an impact on it. It is also necessary to maintain a degree of order that permits the effective achievement of objectives. Thirdly, the above functions must be made to be compatible with the co-ordination and integration of personnel and the establishment of a positive social climate. Finally, there is a need to strike a balance between authority, order, rationality and internal co-ordination, and this means creating and maintaining appropriate structures (see Peiró, 1996a).

People and teams constitute another essential facet of the organisation. From the organisation's perspective, they can be considered as human capital or resources (abilities, knowledge, aptitudes, skills, energy, etc.) contributed to the organisation so that it can fulfil its mission. Organisations attempt to involve people capable of contributing in a significant way to the achievement of their objectives. The human capital available to the organisation is a fundamental element for the organisation, and its composition is an important variable (more or less professionalised, level of involvement in and commitment to the organisation, demographic characteristics, etc.). With regard to groups or teams, these shape a collective reality within the framework of the organisation that represents more than the sum of the individuals, and that introduces new processes of a psychosocial nature (Salanova, Prieto and Peiró, 1996; Zornoza, Salanova and Peiró, 1996).

Traditionally, work and organisational psychology has placed emphasis on the *degree of fit between the person and the job* or, in a more general way, between persons/teams and the work system. However, in view of

the frequent transformations in jobs and in people, this level of fit has had to be reconceptualised, with more emphasis being placed on the dynamic character of this relationship (Hontangas and Peiró, 1996). Moreover, other aspects of this relationship need to be taken into account in order to obtain a comprehensive view of the relations between people and organisations. Of especial relevance is the *psychological contract*, which in its collective dimension is described as a *psychosocial contract*, and which refers to the set of compensations that individuals (or groups) expect from the organisation in exchange for their contributions, and vice-versa. These interchanges affect aspects related to the culture, structure, technology, etc. of the organisation, and only insofar as a reasonable congruence or equilibrium is achieved can the integration of the person in the organisation be considered to be satisfactory for both parties. A third dimension of this fit is the requirement of coherence in terms of all the different facets of the system. From a *theory of congruence through multiple contingencies* there is no room, in principle, for different possibilities in different facets. It makes no sense to state law that an adhocratic structure is more appropriate than a bureaucratic one. Its appropriateness will depend on its congruence with the other components and on that of all of them with the organisation's mission. The most effective organisations are those that achieve congruence between the different components and of these with their mission. On this basis we can reject a "one best way" approach, according to which a given culture or a particular structure is always the most appropriate.

In any case, the fit referred to above cannot be considered as an absolute concept, but rather as a question of a reasonable degree of harmony between the forms adopted by the different components. Neither can it be understood from a static perspective, given its dynamic character. Transformations and changes in any part of the system, produced by internal or external factors, in order to maintain or improve their functionality and effectiveness, require changes and adaptations in other components. Finally, this relationship should be considered from a conception of equality of objectives. Frequently, more than one option of satisfactory fit is available between two or more components, so that the relationship between the different facets, rather than being deterministic, is a question of a "choice" of one of the possibilities over the other within a certain range.

The *results of the organisation* tend to be related to and assessed in terms of the mission that gives meaning to the organisation, but it should not be forgotten that they

are diverse in nature. A system must produce results for the suprasystem, for the system in itself, and for the subsystems of which it is made up. In the case of the organisation this means that it must be capable of responding to the demands of the environment (suprasystem), and that it must do so while achieving its own development and continuity as a system. Moreover, it must provide results for the subsystems and their various constituent parts. Thus, the conception of results involves far more than simply considering as a sole indicator production or profit and the distribution of profits among the owners of the organisation. Additional complexity results from the question of the time criterion on which the assessment of these results is based: a "good result" in the short term may not be as good in the medium or long term.

By way of summary, we can identify the main characteristics of the AMIGO model: it distinguishes "hard" and "soft" facets of the organisation, it employs a dynamic perspective of fit and of organisational coherence, it analyses the harmony between person (or group) and organisation not only in issues related to the work system but also in the organisation as a whole, through the consideration of the psychological contract concept. Finally, it offers a comprehensive view of the results that takes into account the demands of the suprasystem, of the system itself and of the subsystems of which it is made up.

This final matter leads us to highlight the model's *multilevel* approach. Indeed, practically all of the facets considered can be analysed from an individual perspective (how they are perceived by, affect and are modified by each member of the organisation), but they can also be considered at the level of the organisation, in which the unit of analysis is the organisation itself. An intermediate –group or departmental– level can also be identified. Thus, the analysis of the whole spectrum of organisational behaviour (antecedents, behaviours and consequences) should be understood as the behaviour of persons and/or groups in organisations and the behaviour of the organisation itself as a system within its environment (Peiró, 1990, 1997).

Finally, we understand *the dynamic of organisational change* to be another essential element of the organisation's reality. The organisation is a system that develops and is shaped through a dynamic process of change which, though beginning in one facet, will influence others in a process with successive states of imbalance and regaining of equilibrium. Through these processes, organisations pursue in a more or less effective way the goal of adapting to their environment and of the adap-

tation of their own internal elements. Nevertheless, the way in which these changes are produced and managed will, in turn, have repercussions for the evolution and development of the organisation and its components. Chambel, Peiró and Pina (1999) made an analysis of eight ceramics companies that demonstrates the utility of the AMIGO model for the systematic analysis of the complex dynamic of change occurring in organisations when they attempt to adapt themselves, in a context of competition, to the environment in which they operate, through the transformation, more or less intentional or imposed, of certain facets, leading to developments over time and their greater or lesser re-structuring.

THE “PREVENLAB-PSICOSOCIAL” METHODOLOGY FOR THE ANALYSIS OF PSYCHOSOCIAL RISKS

The “Prevenlab-Psicosocial” methodology is a system of analysis, assessment, management and intervention with regard to psychosocial factors relevant to the prevention of occupational risks. It is based on the theoretical conception of the AMIGO model, and aims to provide a system of professional practice that permits the analysis and assessment of risks for specialised intervention by professionals. It is not a questionnaire or battery of tests that can be applied by people without specific qualifications. It is a methodology that takes into account: 1) the complexity of psychosocial factors involved in risk prevention; 2) the multiplicity of constructs necessary for this assessment to be sufficiently precise, and to prepare effective and efficient interventions; 3) the diversity of contexts and activities in which the different risks and factors may present themselves, in whatever form; 4) the characteristics of the people that may be exposed to these risks, which affect the way the risks are defined and the way they can be prevented; 5) the importance of achieving a description of the risks that is not limited to a consideration of the information provided by reports from those in the particular job; 6) the importance of establishing a calibration of the risk that permits the determination of levels harmful to the person, and to what extent; and 7) the link between the results of the analysis and potential intervention strategies for the prevention (primary, secondary and tertiary) of risks.

In this section we present the main characteristics of this methodology, whose specifications and design requirements basically derive from three sources: a) the theoretical model that provides its foundation; b) the objectives pursued and the function it is intended to fulfil; and c) various practical restrictions to be taken into account in its use.

Characteristics of the Prevenlab-Psicosocial” methodology deriving from the AMIGO model

There are three qualities of the AMIGO model that affect the way the “Prevenlab-Psicosocial” methodology is articulated: its multi-faceted nature, its multi-level approach and its special emphasis on change. Moreover, in the elaboration of this model for the analysis of psychosocial risk factors there are two other defining aspects: the process-based approach that “unfolds” psychosocial factors in the roles they may fulfil, and the conceptualisation of the entire process from an occupational stress model. Let us examine each of these.

Analytical model structured in facets. The “Prevenlab-Psicosocial” methodology starts out from an analysis of the multiple facets of occupational and organisational reality based on those considered in the AMIGO model itself: Culture, Mission, Organisational Environment, Strategy, etc. Each facet “unfolds” into several components, until an appropriate representation of the relevant constructs is obtained. For example, the facet “work system” unfolds into various components, including the main characteristics of the job and its context (autonomy, variety, meaning, etc.), the characteristics of work teams, the principal aspects of the work process, the use of management practices (TQM, JIT, etc.), and so on.

Multi-level and cross-level approach. The analysis and assessment of the different facets of the organisation may be made at the level of the organisation as whole, of the work unit or team, or of the individual. For example, the analysis of organisational climate may be carried out in terms of the shared perception of it by the organisation’s members (organisational climate), of the perception of climate in the team by team members (team level), or of the perception of climate by one employee (individual level). The consideration of these different levels is important in order to avoid individual biases that can lead to analyses of phenomena from only one person’s point of view, which ignore the global level and therefore fail to take into account aspects of the organisation’s reality that may suggest new approaches –sometimes complementary and sometimes alternative– to intervention. For example, analysis of the level of participation of each member in suggestions for improving ergonomic aspects of jobs should be complemented by an analysis at the organisational level that permits identification of the existing system for the collection of suggestions (or its non-existence) and the implications of this for stimulating individuals to make suggestions or from dissuading them from doing so. Elsewhere (Peiró, 1999b), we have pointed out the importance of analysing sources of stress, evaluating them and identifying

intervention strategies at both the individual and collective level, as a way of avoiding the excessive bias resulting from a purely individual approach that focuses on dysfunctions related to the person and ignores those related to the system, which may also require improvement. We should be looking not to modify personal situations, but rather to introduce structural changes that deal with risk factors at the root (see Peiró and Salvador, 1993). In sum, the present model aims not only to identify those psychosocial factors that may contribute to improving the health and safety of individuals in the company, but also to take into account phenomena that contribute to the achievement of *safe and healthy companies*, considered as a whole. The concept of organisational health (Cox and Howard, 1990) is an important component of this methodology. It frequently occurs that organisational levels affect individual levels, and vice-versa. In these cases, a cross-level analysis permits the identification of new predictive or interpretative relationships among variables from the different levels. A review of the methodological implications of all of these issues can be found in González-Romá and Peiró (1991).

Emphasis on processes of change (deliberate or not) in organisations. The AMIGO model considers the organisation as a system in a state of continual change (planned or otherwise) –even though the pace and intensity of this process of change may vary from one period in its development to another. Moreover, given the more and more frequent changes in their environment, changes in organisations increase in intensity, extent and frequency, with one novelty being replaced by the next in ever shorter cycles. Furthermore, this model indicates how change in one or several facets tends to trigger a process of change in others, resulting in a coherent and “stable” dynamic among them. In such conditions, change itself becomes an element that strongly affects risk and employees’ health, and the management of this change is one of the elements that can influence risk prevention and safety. In the different facets analysed, attention is paid not only to the relevant components and their changes, but also to the politics, introduction processes and management of changes, and to the social dynamics resulting from their announcement and implementation.

Process-based and multifunctional consideration of psychosocial factors. As we have already indicated, the legislation considers psychosocial factors in the prevention of occupational risk from at least four perspectives: 1) they are potential sources of risk; 2) they may make certain workers or groups of workers more vulnerable; 3) they may constitute resources that facilitate (or elements that hinder) processes to improve prevention; and

4) they may be components of psychological health and wellbeing in the workplace. Thus, on analysing and assessing risks in the various facets and their components it is necessary to pay attention to the different functions these components may fulfil: risks, increase in vulnerability, resources or consequences. A single component does not always fulfil all four functions, but its systematic exploration permits a more comprehensive identification and assessment of risks, and provides relevant information for intervention in prevention. For example, if we analyse the facet “Management”, we may find in a given organisation that for a particular job the component “immediate supervision” is a source of stress because of the way the supervisor manages his or her staff. Nevertheless, in another department this same component may represent a resource that allows the reduction of the impact of other stressors deriving from, say, components of the facet “work system”.

Approach based on models of occupational stress. In the analysis of psychosocial factors of occupational risk in terms of their different functions, it is useful to base ourselves on models of occupational stress. Specifically, Peiró (1993) and Peiró and Salvador (1993), after reviewing the principal models, have drawn up a comprehensive model that considers stress sources, stress appraisal considered as primary or secondary according to how they interpret stressful experiences or situations and/or coping strategies available. In turn, this experience of stress tends to produce emotional and affective responses and coping strategies. Also, all of these phenomena may generate short-term effects that in certain conditions have more lasting consequences or effects. Moreover, the different relationships between variables may be affected by other variables of an environmental or personal nature, moderating or mediating those relationships.

As regards stressors, a taxonomic approach can be used that attempts to identify all the situations (personal or environmental) that are potential causes of stress (see Peiró, 1993), but it is also possible to determine what converts a personal or environmental phenomenon into a source of stress. Karasek (1979) refers to imbalance between demands and control, the Michigan model considers lack of fit between demands and resources, Edwards (1988) points to discrepancies between reality and personal values and expectations, and Warr (1987) stresses the extent to which certain environmental elements or characteristics are present in a job. In our opinion, the imbalance between demands (be they external or internal) and available resources (internal or external) is the basic element in stress. However, we should not

ignore the personal costs involved in making available and using resources to attend to demands. For example, faced with the demands of carrying out a complex and difficult project in a short space of time, a person is capable of mobilising the necessary personal and material resources, but this may involve mental overload and costs related to loss of free time. Thus, in analysing stress we must assess the costs, and not restrict ourselves to a simple consideration of equilibrium or disequilibrium between resources and demands. The person weighs up these costs against the compensations s/he receives, in a process that has been analysed by the theories of interchange, of equilibrium and of equity. These theories have shown their usefulness for clarifying the phenomena of burnout and stress (Buunk and Schaufeli, 1998), and should be more fully incorporated into general models of stress.

It is also necessary to take into account people's experience of these situations. Thus, following Lazarus and Folkman (1984), we can distinguish between primary and secondary levels of analysis of the processes through which the person looks at the situation and perceives it as threatening and "costly". The third element refers to the affective and emotional responses to this situation. Lazarus (1993) insists on the importance of considering stress from the theory of emotion, since knowledge of people's emotional responses can help us to understand (and predict) their reactions. In the face of highly autocratic and arbitrary behaviour by a supervisor, one person may feel anger, while another may feel disappointment. Their emotional responses are quite different, and their reactions will also probably differ. As far as coping responses are concerned, it is necessary to take into account not only the different types, but also the existence of a hierarchy in their appearance, and the possibility that this hierarchy becomes modified in accordance with the lack of effectiveness of responses in the highest positions for satisfactorily resolving the situation. Strategies may be more or less functional for the person according to the effects they produce. Some are pathological (e.g., burnout), and aggravate the situation instead of improving it. Finally, the effects and consequences may be quite varied, and it is necessary to determine the criteria that define them, their importance and their seriousness. In any case, they tend to be related to the person's health and well-being.

Recently, Peiró, (1999b) has stressed the usefulness of this type of model, but has also pointed out its limitations. In general, the dominant paradigm of research on occupational stress has been characterised by being individualist, decontextualised, acultural and ahistoric, and

appears to assume more or less explicitly that the responsibility for managing and overcoming stress lies with the individual and not with the organisation, which tends to have more control over the situation, especially in the work environment. There is a need for a rethink of the model, employing a collective perspective to complement the individual one. The research it would inspire would identify sources and causes of stress and intervention strategies for preventing or improving stressful situations that go unnoticed if the analysis is carried out solely from approaches that take the individual as the unit of analysis.

In sum, research on stress, if it incorporates collective and critical perspectives (Newton, 1995) and takes into account the role of the emotions, can offer a conceptual model that is useful for analysing psychosocial phenomena in the world of work and organisations related to occupational risks and their prevention.

Characteristics of the "Prevenlab-Psicosocial" methodology deriving from its own objectives and functions

Apart from the theoretical-conceptual aspects that inspire the "Prevenlab-Psicosocial" methodology, there are others that derive from its own objectives and from the functions it aims to fulfil in the scientific and professional context of the prevention and management of occupational risks. Worthy of mention among these are the following: 1) level of generality of the focus of analysis; 2) objectivity of the assessments; 3) orientation towards setting thresholds above which risks may be harmful; and 4) reliability and validity of specific instruments and norms for different occupational groups or sectors.

Level of occupational generality-specificity of the focus of analysis. In general, instruments for the analysis and assessment of psychosocial risks tend to be self-report questionnaires with items applicable to any type of work, company, occupation or sector. These instruments examine risks at a quite general level, and this generality permits them to cover a wide variety of aspects while keeping the questionnaire to reasonable proportions. However, the diagnosis provided by this approach is so general that it is not very useful for determining specific intervention strategies. The "Prevenlab-Psicosocial" methodology sets a more specific focus of analysis that allows greater precision and provides more specific knowledge of the different sectors, subsectors and occupational groups. This analysis permits the identification of commonalities and differences in terms of psychosocial risks, resources, vulnerability factors and consequences among occupational groups and sectors.

This has a series of implications. First, it is necessary to consider the specific aspects of each occupation and general features covering various of them. Moreover, validation criteria of the measures must be specific when this is required by the occupational sector or group. Finally, the assessment instruments, though common to diverse occupations, must offer statistical norms and standards specific to each occupational group and, where applicable, sector or subsector. Thus, the level of specificity must be sufficient to achieve the greatest possible precision in the analysis and implementation of the intervention.

“Triangulation” of informants and methods. The data obtained within the framework of the “Prevenlab-Psicosocial” methodology come from various sources, with the aim of providing a high degree of objectivity. It is difficult to guarantee the objectivity of data that attempt to measure psychosocial phenomena. Different informants may introduce their own biases. Subjects may incorporate biases deriving from the contamination between their experience and the consequences of that experience. External observers, though well qualified, may fail to take into account relevant phenomena if these do not appear during the observation period. Other informants may introduce other types of biases. In view of this situation, the “Prevenlab” methodology opts for “triangulation” of informants as a way of achieving more adequate levels of objectivity. Thus, it normally considers as a source of information the of the job holder (or those making up a unit). Insofar as there are often several people holding of the same job, information from some or all of them helps to neutralise biases. Furthermore, other relevant informants are the immediate supervisor and an expert that analyses the job in its context. In certain cases, it is also possible to use information from the safety representative or the company’s health and safety department. In addition to the triangulation approach, it is possible to consider, using self-report or observer-report measures, data from secondary sources. The analysis of discrepancies between the information collected from the various sources would not, in principle, be treated as an error of variance; rather, it should be the object of more detailed analysis, with the aim of revealing to what extent these discrepancies contribute to aiding an understanding of the phenomenon.

Orientation towards the determination of risk thresholds. One of the commonest problems facing methodologies for the analysis and assessment of psychosocial risks concerns the difficulty –indeed, in most cases, the impossibility– of determining the levels above which the presence of these risks is harmful to the worker.

Castejón (1995), shortly after the introduction of legislation, pointed out the difficulties involved in the adequate assessment of psychosocial risk. Given the characteristics of these phenomena and the variability between people, it is difficult to achieve a level of information that permits the calibration of risk thresholds and the probability of harmful levels. The “Prevenlab-Psicosocial” methodology sets out to determine various criteria and indicators of harmfulness (absenteeism, consumption of drugs due to work, need for and use of specialised help, psychosomatic disorders, etc.), with the aim of establishing thresholds above which there is a significant probability of risks being harmful. To this end, it is necessary to analyse and assess the intensity and frequency of occurrence of the risk, and to determine to what extent the combination of these measures corresponds to different levels of intensity of harmfulness. An additional element, which makes this problem more complex, is the fact that some data appear only sporadically, at intervals that vary depending on the particular risk or its consequences. Longitudinal analysis can be of considerable use in the solution of many of these problems.

Reliability and validity of the measures and norms for each occupational group. Rigour is an essential feature of measurement instruments. The different scales and instruments making up the “Prevenlab-Psicosocial” assessment methodology (as well as those that may be added, given its modular structure) must possess the psychometric properties (reliability and validity) required. The systematic measurement of a set of criteria must permit the identification of a nomological network of relationships that allows the periodical analysis of an instrument’s validity. Moreover, the possibility of carrying out a follow-up, over a given period, of the same employees, will make possible the analysis of the predictive validity of the measured variables. The performance of these analyses for the different occupational groups ensures greater precision and suitability of the instruments for each group, in those cases where these are essential requirements.

Relationship between analysis and assessment of risks and intervention strategies. To some extent, measurement itself provides a first stimulus for change. Nevertheless, if there is no subsequent feedback of results, or if no initiatives are taken, the only change that occurs is the appearance of disappointment, and the process becomes counterproductive. In the “Prevenlab-Psicosocial” methodology assessments are always accompanied by some type of intervention, since this at least implies feedback of results for the relevant agents,

in appropriate form and conditions for stimulating risk prevention and health (see Lindström and Kivimäki, 1999). In the following section we shall identify some requirements to be considered. Furthermore, our aim is that the assessment of the different facets, in terms of results, will facilitate the identification of possible intervention strategies available in terms of the “know-how” of the professionals familiar with the methodology. In the final section of this article we shall refer to a directory of intervention strategies classified by facets, and which may be of use in the prevention and management of psychosocial risks.

Characteristics of the “Prevenlab-Psychosocial” methodology deriving from the practical restrictions to be taken into account in its application

The development of a professional intervention that is suitable, efficient (use of minimum resources necessary for achieving certain results), “user-friendly”, non-invasive for the organisation, and with feedback processes that contribute to improving the methodology itself and its instruments, involves a series of design specifications and restrictions. These are related to its multi-stage character, its modular structure, its protocols, requirements related to informants, forms and procedures for the presentation of results, and mechanisms for improving the methodology on the basis of the information obtained through its use.

Multi-stage character. This methodology is applied in several stages. In the first stage a screening analysis is carried out, the aim of which is to identify the main facets and components that constitute sources of stress with harmful effects. This exploration, which can be carried out by means of the “triangulation of informants” method, is made from two approaches, one with spontaneous response and another involving the systematic analysis of facets and components. Its complementary aims are to identify the facets that may represent resources in the intervention and the principal consequences of stress.

In the second phase a detailed analysis and assessment is made of those facets and components that have been identified as significant sources of risk. This assessment is also made by means of triangulation of informants and, where applicable, of methods. It may be necessary to make an analysis of risks on the basis of some of their indicators (satisfaction, climate, etc.), in the case that it is not possible or opportune to make a direct assessment of sources. This stage would also include an analysis of possible sensitising factors that increase vulnerability to a given risk for certain people or groups.

In a third stage, an analysis is carried out of significant sources of risk at a collective level (by units or for the organisation as a whole). The appropriate development of this analysis requires its planning before the second stage, and taking into account the screening analysis. Sometimes, data are obtained in the second phase that are relevant for this third phase, even though the statistical analysis –through aggregation– is carried out at group level.

The fourth stage involves a study of the facets and components of the organisation as a system in their function as resources that may contribute to neutralising or preventing the risks identified. The analysis starts out from the organisational or developmental level and is completed at the individual level, in those cases where this is necessary.

The order of the stages outlined need not be strictly adhered to; nor is it necessary to carry out each one in its entirety. The schedule described is an orientative one, and its application must be flexible in order to respond to the needs that the expert considers priority in each case.

Modular structure. In the stages of detailed analysis and assessment of stress sources, sensitisation factors and individual/group responses, the number and diversity of facets and components and the detail in which each one should be assessed mean that a modular approach is necessary. Therefore, this methodology requires a set of instruments that covers the different components of the facets considered by the AMIGO model, at both the individual and collective levels. In the UIPOT Research Unit, instruments have been developed or adapted to deal with a wide range of components of practically all the facets of the model. A Directory of these measures is currently being developed, which will include a description of each instrument, its psychometric properties, its application protocol, the analysis and interpretation of data, and the form of presentation of results.

This modular structure allows a flexible design of each plan of analysis and assessment according to the needs, characteristics and restrictions of the client-system. For example, a given company may consider an analysis and assessment of risk sources to be inopportune, but may accept an assessment of certain responses to these risks at a collective level (e.g., lack of satisfaction, climate, etc.). This approach would permit the identification of those sections or groups in the organisation whose climates are most affected or with the poorest satisfaction levels in certain facets. These results would also offer relevant information for planning interventions at a

group, departmental or organisational level for improving the situation.

Protocols for its use by professionals. The characteristics of the "Prevenlab-Psicosocial" methodology require its use by professionals who must define the conditions of use and its specific configuration in terms of stages, levels, modules to employ, format for reporting data, etc. There is no standardised form of application as such, so that decisions are required according to the demands of the client and other relevant elements for defining a quality service that is effective and efficient.

Because of this flexibility, it is necessary to determine the principal elements of the protocol of use. In order for the professional to use the method in an effective way, it is important to make a detailed description of the relevant factors in each phase for its definition and application and the analysis and reporting of its results. Thus, in the determination of the demands to which the analysis must respond and the conditions in which it must be developed, it is important to identify clients, users and audiences, clarifying their demands and expectations. It is necessary to identify the resources available, the relevant agents, elements that must consider the contract, etc. Moreover, it is useful to identify the different criteria and conditions that will help the professional to define the plan of action and the specific configuration of the application to be used, the determination of the individual and collective units that will form the object of analysis, the conditions of the pilot application, the type of data that will be collected, the phases and schedule of implementation, the addressees of the different reports, the activities to be carried out during feedback of results and the assessment of the intervention itself as a whole and in each of its phases. Thus, the development of all of these aspects, structured in stages, with the conceptual, methodological and technical information relevant for the effective use of each assessment module, and of the analysis methods, are important elements to be considered in the protocols for the use of the methodology.

Information and guarantees for "reporters" and participants in the study. The application of a methodology for the assessment of psychosocial occupational risks that aims to obtain significant data at an individual, group and organisational level requires explicit determination of the guarantees that facilitate participation of the agents involved in suitable conditions.

At a *collective level*, a necessary condition is the commitment of the management of the company and of those in charge of the hierarchical lines of all levels and departments. It is important to ensure and to define their collaboration in all of those aspects that will affect the

correct and effective application of the methodology. Also important is the involvement and participation of the company's Health and Safety Committee and the safety representative(s). It is advantageous to clarify their role and ensure their support, while the support of the company's Board of Directors is also an important factor. Finally, the employees in those departments or groups that are to participate in the study should be informed.

At an *individual level*, especially if a specific analysis of the different jobs is to be developed, workers should be provided with all the necessary information so that they are fully aware of the nature of the study and the implications of their participation. Thus, each participant should receive information on the objectives of the study, and especially on the part that relates to their job; they should also be informed about the different phases of the process, with an approximate schedule for their implementation. It should be made clear that participation is voluntary, though employees may be asked to submit their refusal to participate in writing. Adequate information should be provided on the way data will be treated and used, pointing out the guarantees of confidentiality. Likewise, employees should be reassured of the type of information (aggregated) that will be provided to the company, and that in cases in which it is necessary to provide information on specific aspects of the job, this will focus on objective matters related to the situation and the changes to be made, and not on the characteristics of the worker, unless s/he specifically authorises this. It is important for professionals to be fully aware of the relevant regulations concerning treatment of personal data, deontological aspects and good professional practice, so that they can offer a satisfactory service to both workers and company whilst respecting the rights of all.

Forms and procedures of presentation of results and use of feedback processes as an improvement strategy. The methodology itself makes provision for the development of diverse presentation formats, according to stage, modules employed, specific addressees of the report, and function of the report. Some of these formats may present a computerised version that also considers various output alternatives, according to the most common types of need.

In any case, an important element in the process of reporting the results is the possibility, recommended by the method, of using the process of feedback of results as a first intervention strategy for initiating processes of change that improve the situation and, above all, increase the participation, involvement and commitment of all

relevant agents in the subsequent actions implied in the implementation of preventive programmes. The *Survey or Interview Feedback* methodology, developed in team meetings or in individual or group interviews, and as far as possible implemented with natural groups or teams by the immediate supervisor of the unit (especially trained for this purpose), is a useful strategy for initiating attitude change processes and for obtaining suggestions for improvements and the participation of workers.

Mechanisms for improving the effectiveness of the methodology on the basis of the information obtained during its use. The use and application of the methodology may represent an important source of its improvement and of improving its power and "robustness". The mechanisms for this are incorporated in its very design and programme. The idea is to promote collaboration between the professionals and institutions that use it and the UIPOT research team. Through this collaboration, its procedures and application are improved as a result of the experiences acquired in each application and their assessment. Furthermore, the methodology makes provision for the integration of the data obtained in each application in general databases that permit analysis based on diverse criteria (sectors, occupations, etc.) and the establishment of specific norms and analyses for each of the relevant sectors or groups. Also, the analysis of these data for research purposes allows the development of knowledge on causal relationships between risks and consequences and on the moderating role of certain variables, as well as the longitudinal analysis of relevant phenomena. Periodically-repeated applications will permit the analysis of the dynamic of change and the unfolding of the different phenomena that contribute to understanding the genesis of those phenomena and assessing the effectiveness of the different interventions carried out for improving the situation. The author is firmly convinced that the constant and systematic improvement of the methodologies and tools used by professionals is the responsibility of all, and that co-operation between researchers and professionals is more likely to be achieved if it is proposed explicitly, as part of the process of development, transfer and application of the technology.

PREVENTION OF RISKS USING THE "PREVENLAB-AMIGO" METHODOLOGY

The *Prevenlab-Psicosocial* methodology places particular emphasis on the relationship between the analysis/assessment of risks and interventions for their prevention. The fact of its being based on the AMIGO

model provides it with a criterion of classification of interventions according to the facets of the organisation with which it is concerned, a common interpretative model for the analysis-diagnosis and the intervention, and a dialectic model of progressive adjustments of the different facets in the face of organisational change. The changes produced in one facet have repercussions in terms of change in others (see Chambel, Peiró and Pina, 1999), and one way of confronting and managing these changes is to plan and introduce others in other facets.

Thus, the model is useful as a guide for orienting the planning and scheduling of intervention strategies in risk prevention, facilitating coherence and articulation between risks detected and strategies for preventing them.

In a study carried out with a group of safety officers from twenty Colombian companies (medium and large-sized, public and private), information was obtained with regard to *interventions carried out* in these companies for the prevention of risks, and to *interventions that it would be advisable to carry out*. We have arranged the information according to the AMIGO model, with the aim of demonstrating its utility in the organisation of interventions on prevention. The results can be seen in Table 1.

The data analysis allows us to make certain observations on the situation. First, the highest number of strategies is found within the category of persons or work groups. This confirms the hypothesis that in situations of psychosocial risk there is a tendency to intervene by offering help to people in order to protect them or to buffer the effects of risks. There is also a tendency to implement interventions designed to improve work systems and management capacities. Nevertheless, even in this category there is a predominance of proposals for strategies that should be carried out over those that are actually being applied, while in the rest of the categories there are few proposals, with a predominance of suggestions.

Thus, the AMIGO model is useful for the identification and classification of possible preventive interventions to be carried out in an organisation and the facets on which they concentrate. It also facilitates intervention on providing a common scheme for diagnosis and interventions.

Nevertheless, in using the model it should be borne in mind that the facets are not in watertight compartments, and that their most important feature is their relationship with one another. This point is especially relevant to the planning of the intervention, since one of its fundamental elements must be the prior analysis

Table 1
Interventions in prevention of occupational risks carried out or that should be carried out (in italics) in 20 Colombian companies. Classification according to the facets included in the AMIGO model

ORGANISATIONAL ENVIRONMENT

- Transmission of messages by the company (radio, television and press) about prevention.

MISSION

STRATEGY

INFRASTRUCTURE AND RESOURCES

ORGANISATIONAL STRUCTURE

- *Increase in contacts between head office and branches*

TECHNOLOGY

WORK SYSTEM

- Design of technical procedures for the control of occupational accident rates, considering aspects of control of unsafe behaviours.
- Intervention on working hours (reduction of working day, modification of shift system, etc.).
- O.I.M.S. Programme. Operational integrity based on 19 systems, integrating people, material, environment and equipment.
- Analysis of safe work (using ATS method).
- Enrichment of tasks, intervention on work content (redesign of tasks) with the aim of reducing monotony and repetitiveness.
- *Organisation of timetables for operations and deadlines. Days off and long distance to workers' homes, so that beds available in workplace.*

CLIMATE AND COMMUNICATION

- Improvement of communication levels in all contexts.
- *Involvement of management level in order to improve organisational climate.*
- *Emphasis on improvement of interpersonal relationships.*

HUMAN RESOURCES POLICY AND PRACTICES

MANAGEMENT

- Leadership seminars
- Participatory process in safety: Leadership through management. Participation of safety officers and workers.
- Involvement of Management Level
- *Focus on autocratic leadership style as a measure of intervention and control of the effects produced in workers as a result of inappropriate leadership behaviour by their superiors.*
- *Greater participation of workers in safety (design of risk-analysis procedure).*
- *Effective communication between workers and supervisors and fulfilment of needs/solution of problems.*
- *Supervisors should increase informal relationships with workers; currently communication is limited to technical issues and matters related to production.*

PEOPLE AND TEAMS

- Occupational Health instruction and training courses.
- Seminars on human development.
- Promotion of self-esteem.
- Promotion of self-healthcare.
- Psychological consultancy for offices considered as special.
- Training in various work-related and human development fields.
- Welfare activities that include the family.
- Permanent consultancy from psychologists in strategies for managing and controlling psychosocial risk.
- Improvement of interpersonal relationships.
- Reduction of stress levels in administrative staff.
- PPABC Programme (programme for accident prevention based on behaviour).
- Courses on physical and mental health (personal growth).
- After 7 months experience of the occupational health programme in the District Welfare Department, no risk-prevention strategy was implemented. Due to the fact that the administrative staff had no knowledge of procedures for reporting accidents at work, and were practically unaware of the meaning of an ARP, what was put into practice was a process of information on rights obtained through the legislation for intervening in relation to chemical, physical and psychosocial risks. Up to now there have been obtained: more reports of accidents at work; application of a test for detecting levels of anxiety and depression in administrative staff; detection of a considerable percentage of administrative staff receiving psychiatric treatment; and extremely poor organisational climate with a tendency to deteriorate. The strategy was to identify and make known to all administrative staff the type of risk –psychosocial– that affects us as an organisation.
- *Sensitisation of workers towards a positive view of life.*
- *In each branch, a day and time is set aside for workers to be together outside the work context (e.g., breakfast).*

FIT BETWEEN PEOPLE AND WORK SYSTEMS

- *Adapt shifts and rotas to the needs of workers and make them compatible with their life outside work.*

PSYCHOLOGICAL CONTRACT

RESULTS

of the effects that a change proposed for one facet will have on the others, and the changes that must be made in them in order to re-establish equilibrium in the system. As already pointed out elsewhere (Peiro, 1999a), there are three principal approaches to change, according to whether they focus mainly on "hard" facets (organisational redesign) or "soft" facets (organisational development), or whether they adopt a comprehensive and dialectic perspective that takes both kinds of facet into account, in a process in which changes in some facets require changes in others (organisational transformation).

As part of the Prevenlab-Psicosocial methodology, a Directory of intervention techniques and tools is being developed, aimed at the prevention of risks in each of the facets considered by the AMIGO model. These techniques are classified according to the level at which their use is programmed (individual, group and organisational) and their preventive orientation (primary, secondary and tertiary). The techniques included are focused mainly on psychosocial and organisational aspects, and can be incorporated within a plan of action for the prevention of psychosocial risks in an organisation. In any case, the design of the specific plan is the responsibility of the professionals involved.

SUMMARY AND CONCLUSIONS

In the present work, we have reviewed recent developments in Spain with regard to the analysis and assessment of and interventions on psychosocial aspects of occupational risks. In order to do so, we have considered, first, the transformations and tendencies that are occurring in the world of work and organisations. These transformations are lending a progressively relevant role to psychosocial factors of work. In addition, we have described the current situation of psychosocial work conditions in Spain, on the basis of the data provided by the III National Survey on Work Conditions from the National Institute for Occupational Health and Safety, and we have analysed the role of psychosocial factors within the framework of the legislation on occupational health and risk prevention.

All of this has allowed us to contextualise the presentation of the "Prevenlab-Psicosocial" methodology, which is based on the AMIGO model, which in turn permits a Multi-facet Analysis for Organisational Intervention and Management. In the two final sections we have described the main characteristics of the risk analysis and assessment methodology and analysed its relationship to potential strategies of intervention for the prevention of risks.

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