

## The Square of Perceived Action Model as a Tool for Identification, Prevention and Treatment of Factors Deteriorating Mental Health at Work

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### Abstract

Studies and surveys undertaken by the European Agency for Safety and Health at Work indicate an “increasing number of workers exposed to psychosocial risks at work and affected by work-related stress” affecting mental health. Any innovative methods for psychosocial risk assessment at work are thus welcome. On the basis of the Square of Perceived Action model elaborated regarding competencies in action for work activities integrated in a psychodynamic approach, a protocol was developed and applied in a French company for psychosocial risk assessment regarding 35 professions and focusing on difficulties related to skill discretion. Four illustrating cases, the insight of the in-depth analysis for one profession and a macro-approach taking all the professions into account were considered. Beyond the characterization of the psychosocial risks and the orientation regarding remedial measures implemented, the method enabled analysts to objectify and quantify the risks and helped them to center the remedial measures on the right target or to better assess the degree of emergency for remedial measures. These results also showed that the method is exhaustive for psychosocial risk assessment provided that it is combined with other tools. Benefits and limits of this innovative method are discussed.

**Keywords:** Competencies; Mental health; Psychosocial risks; Risk assessment; Work activity

### Introduction

Studies and surveys undertaken by the European Agency for Safety and Health at Work indicate an “increasing number of workers exposed to psychosocial risks at work and affected by work-related stress” [1]. The possible consequences include “anxiety, fatigue, insomnia, boredom, relationship problems, emotional instability, depression, psychosomatic diseases, excessive smoking, cardiovascular problems, increased alcohol consumption, drug abuse, eating disorders or even suicide” [2] therefore affecting mental health.

Subjects’ mental health at work is intimately linked with their perception of well-being, itself associated to their perception of their competencies among other factors. Sheldon and Elliot [3] noted that “there are natural satisfactions to be found in the process of exercising one’s competencies to move toward desired outcomes” (see also [4]). For the authors, attainment-to-well-being effects are mediated by need satisfaction among which daily activity-based experiences of competence. All models aiming at describing mental health of workers include this aspect (see for example the reviews [5,6]).

Increasing a positive perception of competencies participates to improve mental health, or contribute to mental health promotion. Mann et al. [7], in their analysis of the contribution of self-esteem for mental health, supported how Sartorius [8], one of the former World Health Organization Directors, defined “mental health promotion”: a means by which subjects can enhance their competence, self-esteem and sense of well-being. Mann et al. [7] added how self-perceived competence could also contribute to enhance self-esteem, thus suggesting the contribution of perceived competencies to mental health promotion indirectly through self-esteem.

Several studies were carried out to define how perceived competence could be characterized at work (see for example: [3,7,9-15]). Four criteria have emerged (and have been adopted by a part of the scientific community) in terms of the level of skill, the possibility to learn new

things or to develop special abilities or to be creative, and the repetitive nature of tasks. This was based on the early work of Karasek [9] who designated these criteria under the concept of “skill discretion”. It was then widely applied as an indicator of the quality of mental health. For example, Sheldon and Elliot [3] showed that “the accumulation of activity-based experiences of competence, autonomy, and relatedness over a period of time predicts enhanced well-being” and that they were “the psychological nutriments necessary for enhanced well-being and psychological development”, matching previous works of Ryan [10]. Joensuu et al. [13] obtained quantified results showing that “skill discretion had a significant protective effect” (p.121) and “high skill discretion [were] associated with a reduced risk of depressive disorders and other mental disorders” (not including alcohol-related mental disorders) whereas “low skill discretion as well as high decision authority were associated with increased risk”. More recently, Bentley et al. [15] showed that when people’s level of decision authority and skill discretion increased, so did their mental health.

These considerations highlighted the direct and indirect contribution of perceived competencies to the subjective well-being at work and thus to the mental health. Consequently, any method permitting to identify what could make the subjects’ perception of competencies positive or negative might contribute to improve mental

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**Received** August 16, 2016; **Accepted** October 22, 2016; **Published** October 28, 2016

**Citation:** Fauquet-Alekhine PH, Rouillac L (2016) The Square of Perceived Action Model as a Tool for Identification, Prevention and Treatment of Factors Deteriorating Mental Health at Work. J Ment Disord Treat 2: 126. doi:10.4172/2471-271X.1000126

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health at work. Furthermore, beyond the strict question of health, correlative concerns contribute to its importance in terms of related financial cost (see for example: [1,16-18]) and liability [19].

The purpose of this article is to suggest an innovative model-based method that may help practitioners and researchers for identification of factors deteriorating mental health at work when factors are related to skill discretion. The Square of Perceived Action model (SPEAC model) recently elaborated regarding competencies in action for work activities [20] was used in this aim and applied to different situations in the frame of psychosocial risk assessment.

The present work does not claim to offer an exhaustive method for mental health analysis at work but presents an argued suggestion of a tool that provides a fast, objective and determinant identification of psychosocial risks and associated remedial measures when related to skill discretion. Such tools are needed especially for occupational physicians, work psychologists and social work professionals [21]. It must be considered as a possible but efficient contribution to mental health improvement at work. The argued suggestion is achieved through the presentation and description of the model illustrated by applications to concrete cases and discussion.

## Material and Method

We first describe the general protocol applied for psychosocial risks assessment in industrial companies, then we explain how the Square of Perceived Action model (SPEAC model) is integrated in the analysis of data and we describe the model and how it may contribute to the analysis then we present the context and subjects for psychosocial risks assessment [22-24].

### Protocol applied for psychosocial risk assessment at work

Psychosocial risk assessment at work is mandatory in France (this requirement is specified in the French ministerial circular from 18 April 2002 which complements article R4121-1 of the French Labor Code). In the present study, psychosocial risk assessment at work was undertaken by work analysts (Human Factors Consultants, Work Psychologists) in a French company emanating from a request by the head management, applying a protocol elaborated on the basis of the conclusions of a collective research study and a psychodynamic approach. The collective research study was carried out by a French national expert group led by Dr. Gollac [25] and the psychodynamic approach of work analysis was developed by Dejours [26,27]: “the psychodynamics of work is a clinical approach based on a theory of work that focuses particularly on the relationship between subjectivity, work and action” [27]. Gollac’s contribution structured the approach of the types of risks possibly encountered in the world of work. Dejours’s contribution structured the method for identifying psychosocial risks through collective discussions.

The protocol aimed at assessing psychosocial risks for a given profession from a collective standpoint exclusively. Individual problems were considered elsewhere, taken in charge by the work physicians. According to the psychodynamic approach [26]:

- Observation in the fields, individual interviews and use of questionnaires were left aside in favor of collective interviews.
- Work analysts undertook their analysis and shared it with peers favoring a reflexive work on the analysis carried out.
- The two previous points encouraged a collective deliberation at two levels: that of the analysis group (participants and work analysts) and that of the work analysts’ peers.

- Collective deliberations favored contradictory discussions about work with the help of work analysts. This helped to better understand the collected material.
- The reflexive analysis aimed at accessing the meaning of the subjective experience of work by the participants.
- During the discussions, the language had to be considered both as a means of interpersonal exchange and as a means to subjectively think past experiences; the latter was possible only if the former was effective: the use of language as a means to subjectively think past experiences is efficient provided that the word is addressed to others. The intersubjectivity condition was thus crucial.
- All collective interviews were maintained confidential until the final step of validation by the participants. All participants engaged themselves not to speak about what was said in these meetings before this final step.

The protocol first consisted in holding a meeting with the management of a given team in order to identify the different professions concerned within the team. Then a preliminary informative meeting was organized so that the work analysts could present the aim of the psychosocial risk assessment to the staff. Each profession identified gave rise to an assessment for which a representative collective of participants was constituted on a volunteer basis. Hence each profession was associated with one group of participants. Each group was met twice, during meetings lasting from one to two hours.

The first meeting undertook a collective analysis of the profession. The analysis of the work activities was undertaken regarding the six categories of psychosocial risks identified by Gollac [27]:

- Intensity and duration of the work  
e.g. work pace, schedules, planning, shift team.
- Emotional demands  
e.g. public relation, fear.
- Autonomy and latitude  
e.g. latitude for decision-making, predictability of work, ability to anticipate, development of skills, monotony and boredom.
- Social relationships at work and relationship to work  
e.g. recognition, relationships with the co-workers, relationships with hierarchy, relationships with outside the company, violence.
- Value conflicts  
e.g. ethical conflicts, prevented quality, unnecessary work.
- Insecurity of the organizational context  
e.g. employment security, changes.

The analysis sought to identify both difficulties and resources for workers.

This first meeting was ending by recommendations elaborated by the collective on the basis of difficulties and resources previously identified.

During this first meeting, the work analysts had to favor a reflexive work on the analysis carried out, encourage a collective deliberation, try to accessing the meaning of the subjective experience of work by the participants and ensure that all the six categories were discussed.

The second meeting aimed at presenting the final report of assessment to the group of participants for validation. Between the two meetings, the work analysts put in order all the collected raw material, categorized it per category, gathered and eventually added recommendations. This was the first stage of application of the SPEAC model. The written report was depersonalized and precautions were taken for no individual to be identified or stigmatized because of its content.

A last meeting was then planned with the management for the work analysts to present the resulting report of assessment in the aim to identify areas for improvement (AFI). This was the second stage of application of the SPEAC model. Then the management would discuss these AFI later within the whole team for possible application or adjustment.

The sections “Results” and “Discussion” illustrate the two stages of application of the SPEAC model.

### The square of perceived action model

The Square of Perceived Action model (SPEAC model) was first elaborated to describe competencies in action during work activities. This was a part of the answer to the research question: what makes competencies of experienced workers? A protocol for work activity analysis was developed on the basis of a static approach of the model and successfully applied to different occupational contexts [20]. Whilst undertaking these analyses, it appeared soon that the model could explain why, in certain occupational contexts, workers could experience psychological difficulties possibly or actually deteriorating their mental health. This led to a dynamic approach of the SPEAC model in order to better describe these psychological difficulties and their sources.

The following sections describe the SPEAC model according to the static and dynamic approaches. The protocol adopted to apply the model for contribution to psychosocial risk assessment at work is then presented, followed by a brief description of the occupational contexts of application of this protocol.

**The SPEAC model and the static approach:** The Square of Perceived Action model (SPEAC model) was elaborated on the basis of Le Boterf’s model [21] regarding competencies at work. Le Boterf’s model was developed in its French form. The SPEAC model depicts competencies in action at work; it defines what is needed to perform an activity when summoning competencies successfully in action; it involves action through the verb “to act” [20]. It extends Le Boterf’s model addressing competencies towards an enhanced structure which addresses action. According to this new model, performing an activity by putting competencies successfully in action is considered possible provided that four poles are effective: Having to act, Knowing to act, Wanting to act, Being able to act. The notions of “effective pole” and “putting competencies successfully in action” will be defined after describing the four poles.

The model defines thus competencies in action for work activities as an interacting system of four poles, drawing competencies in action as a square within which, according to Le Boterf’s model, competencies are structured by the three poles Knowing to act, Wanting to act, Being able to act (Figure 1).

Having to act refers to the motives and goals needed for the professional to be involved in action and legitimates responsibility and risk-taking of the professional during the work activity. If having to act changes significantly, then it designs another activity. Knowing to

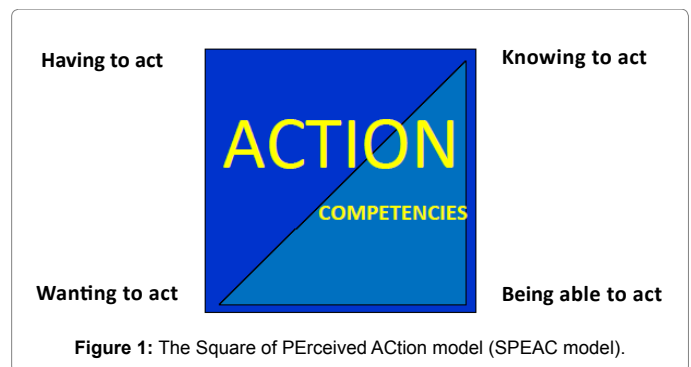


Figure 1: The Square of PErceived ACTION model (SPEAC model).

act is that the professional knows to implement in situation, whether planned or unexpected; this is the practical implementation of the know-how, knowledge, all personal endogenous professional resources which combine themselves in knowing to act in situation. Wanting to act refers to the desire, the willingness and the personal commitment of the professional. Being able to act reflects the context of the situation of work, the external, exogenous resources of the professional: material means and logistical resources, work organization and the social conditions (social support) that make it possible (or not). Being able to act also presents an endogenous side as it concerns internal means too: psychological as well as physical conditions of the subjects.

The poles must be considered both from the positive and the negative forms according to the new perspective of “negative goal” as suggested by Lahlou (quoted in [22]). This relates to the necessity to take into account actions as well as non-action: “Non-actions are potential or possible actions not done but which might have been done, and are usually not observed” [23]. Negative goals are related to the goals the subject does not want to reach. For example, when you want to start a fire in the fireplace with matches, you want to make a fire (positive goal) but you do not want to burn your fingers (negative goal). Accessing the motives and motivations of negative goals understanding them is as useful as understanding motives of positive goals.

Among the four poles, Having to act has a particular status. It usually defines the scale of performance and efficiency of the action since Having to act defines the goal(s) to be reached and sometimes the way(s) to reach the goal(s). In other words, Having to act usually contributes to define the criteria of “putting competencies successfully in action”. Usually, it is achieved when competencies are successfully put in action.

“Putting competencies successfully in action” is obtained when the four poles are all effective. “Effective” means that the poles are both “available” and “coherent”. “Available” means that the content of a pole is defined and actually exists for the subject to act. “Coherent” means that any part of a pole does not counteract another part of the same pole in its positive or negative form. To illustrate this type of possible incoherence, imagine that your manager asks a work of quality (part of having to act) and in parallel, he limits the time affected to this work (part of Having to act). If this time is too short to ensure the required quality of the work, these two parts of Having to act are not coherent, giving contradictory injunctions and thus competencies cannot be put successfully in action. Another example to illustrate this kind incoherence is when subjects have contradictory expectations making some parts of the pole Wanting to act in opposition; it is the case of the walker who wants to go from one point to another by the shorter way but also wants to respect the security requirements that prohibit the use of some paths which are part of this shorter way. This contradiction

makes incoherence within the pole Wanting to act the walker has to deal with. In this last example, we also have an insight of the interpolator dynamic as Wanting to act is related to Having to act through the security requirements. This will be discussed in the next section. A last example is necessary to completely illustrate the possible incoherence: imagine that your manager asks you to transport products by truck on roads from one town to another and requires the delivery of goods in two hours (part of Having to act) but you know that it is forbidden to drive over the speed limits (part of Not Having to act, negative form of Having to act) which makes two hours impossible to be respected. Again this incoherence of the pole Having to act makes it difficult to put competencies successfully in action. However, the properties "available" and "coherent" are not sufficient to put competencies successfully in action: this static approach of the efficiency must be complemented by the dynamic approach presented in the next section.

Obviously the content of each pole differs from one activity to another and from one subject to another. For example, in the world of work, if Having to act may be the same for a novice or an experienced professional (the motive and the goal of a work activity remains the same independently from the worker), it is clear that Knowing to act is respectively different mainly due to their respective professional experience. As a consequence, the content of the pole Knowing to act is different for a novice or an experienced professional regarding a given task: it is likely less improved for the former than for the latter. This remark leads to the following property: the four poles are predefined differently before performing the activity and their kinetic of change is different during the activity. Indeed, the poles Having to act and Knowing to act are mainly shaped by the organization: the former is driven by the order (client, manager, regulator, authority) and by the definition of the task, the latter is predefined by the professional training. Conversely the poles Wanting to act and Being able to act may be thought by or determined for the worker before performing the activity, but they may continuously and significantly be adjusted to the situation while performing the activity. For example, you know what you want to do before performing the activity but you will adjust it in real time; you know what means you will have for the activity before performing it but these means may change during the activity; in parallel, you may know what are your mental and physical states before performing the activity but these states may change at the moment of and during the activity. These poles are less predefined by the organization than the two others and are more affected by the progression of the activity.

These considerations lead to appreciate Having to act and Knowing to act as mainly driven by an exogenous source defined outside the subject. On the contrary, Wanting to act is mainly endogenous, decided by the subject, subjective, whereas Being able to act is both endogenous and exogenous because associated to the subject's capacities (psychological and physiological dimensions) and to the means allocated to the activity (organizational dimension). Here Being able to act must be thought devoid of the notion of "being able to act because we know" as Knowing to act addresses this point.

The last point that must be presented in this static approach of the SPEAC model is its "perceived" character. It is said "perceived" because the only way to obtain a refined description of each pole of the model is to question the subject concerned by performing the activity, by putting in action his/her competencies. Hence this description is subjective, given by the subject through the prism of the subject's perception of the situation and of him/herself in the situation.

**The dynamic approach of the SPEAC model and its relationship to mental health factors:** The dynamic approach of the model considers the interpolator relationships; there are six within the square: the side relationships and the diagonal relationships.

Each of them must give account for symmetrical adequacy between the poles. Any inadequacy between several poles may give rise to a conflict between these poles which may lead to difficulties for competencies to be successfully put in action. Hence this dynamic approach (and thus the property of "adequacy") comes in addition to the static approach (properties of "availability" and "coherence").

The poles Having to act and Knowing to act are in adequacy when the subject involved in the action is trained correctly according to the motives and when the motives take into account a right level of knowledge and training.

The poles Knowing to act and Being able to act are in adequacy when the means are adapted to the subject's training and reciprocally.

The poles Being able to act and Wanting to act are in adequacy when the means are adapted to the subject's willingness and reciprocally.

The poles Wanting to act and Having to act are in adequacy when the motives, mainly defined in the world of work by organizational factors, are accepted and recognized by the subject and thus in adequacy with the subject's motivation (intention, desire, willingness induced by motives). In parallel, subject's motivation needs to match the motives of the activity; this means that what the subject wants to do may be legitimated through the pole Having to act. However an individual may have other motivations than that associated to the considered activity (interfering with the pole Wanting to act); if some of these other motivations come into contradiction with the pole Having to act of the considered activity, it may lead to an interpolator conflict that may reduce the activity performance as it will be illustrated hereafter.

The poles Having to act and Being able to act are in adequacy when the motives are in accordance with the social, psychological and physical means.

The poles Knowing to act and Wanting to act are in adequacy when the subject's intention, desire and willingness are in accordance with the subject's knowledge and training. Nevertheless, subjects may intent to do more than what they know to do; "doing more" is possible provided that this misbalance between the poles Knowing to act and Wanting to act is counterbalanced by at least another pole. For example, in the frame of companionship, a novice subject may be helped by an experienced peer (part of the subject's pole Being able to act) to do more than what the subject knows. This illustrates a possible conflict between Knowing to act and Wanting to act and how this inadequate interpolator dynamic may be counterbalanced by another interpolator dynamic between Knowing to act and Being able to act.

Problems of interpolator adequacy are therefore associated with a problem of availability or of coherence of one pole compared to another.

To illustrate the interpolator dynamic, let us come back to the example presented in the previous section: a walker who wants to go from one point to another by the shorter way but also wants to respect the security requirements that prohibit the use of certain paths which are part of this shorter way. We saw that this contradiction reveals incoherence within the pole Wanting to act the walker has to deal with. At the same time, an interpolator relationship is highlighted as Wanting to act is related to Having to act through the security requirements (part

of Having to act). This means that, in this example, a part of Wanting to act is induced by a part of Having to act. This relationship contributes to make the pole Wanting to act lacking of coherence, and produces a problem of adequacy between Wanting to act and Having to act.

**Characterizing psychological problems at work:** To summarize what makes competencies successfully put in action according to the SPEAC model is:

- Availability of each of the four poles.
- Coherence of each of the four poles.
- Adequacy of each of the six interpolar relationships.

When one of these properties is not fulfilled, the conditions of success are not met and the action may fail.

Therefore the use of the SPEAC model for identification of psychological problems at work when an activity is considered as a set of (non) actions described in the light of the SPEAC model lies on two aspects: one addresses the availability and coherence of the poles, the other addresses the adequacy of the interpolar relationships. The analysis of the work activity consists in i) identifying a lack of availability and/or coherence of poles and ii) a lack of adequacy of interpolar relationships which a priori both may relate to interpolar conflicts. In case of lack of availability and/or coherence of poles or in case of actual interpolar conflicts, difficulties may be encountered by subjects whilst performing the activity and, in certain cases, psychological problems may follow.

To illustrate the first aspect, let us imagine an activity for which an important requirement is not mentioned in the Modus Operandi. The pole Having to act is thus not fully defined: a part of the pole Having to act is not available. This lack of availability may lead to difficulties whilst performing the activity.

To illustrate the second aspect, let us imagine an activity for which a conflict exists between Having to act and Not Wanting to act. Here, Not Wanting to act refers to the negative form of the pole Wanting to act, that is what subjects do not want to do whilst performing the activity. This may happen when your manager asks you to do something you do not want to do because it hurts your own values. This may be to refuse holidays to one of your subordinates while you know this is not necessary from the organizational standpoint and while this subordinate needs free days to take care of an ill daughter for example. Here the SPEAC model highlights an interpolar conflict through inadequacy between Having to act and Not Wanting to act. The psychological problem may be characterized by ethical suffering for you when your competencies are nevertheless put in action to refuse holidays. Ethical suffering is here defined as “a conflict between the implications in the work and personal implications, between the job satisfaction and satisfaction as a person, conflict that may hurt self-esteem. [...] The pent-up guilt associated with ethical suffering, with the inherent risk of a loss of self-esteem at work as well as out of work [...] can lead to behaviors not adapted to the environment, sometimes dangerous or even evolving towards pathologies which, beyond the strict psychological dimension, can express themselves through psychosomatic manifestations” [24].

### Contribution of the SPEAC model to psychosocial risk assessment

As mentioned in the previous section, the SPEAC model was used at two stages of the protocol. For each, this consisted in identifying

the difficulties which could be described by the model, identifying which criteria (availability, coherence, adequacy) and which poles could describe this difficulty and which kind of interpolar conflict was concerned (if any) through this difficulty. This approach helped the analysts to objectify one or several areas for improvement (AFI) associated with one or several remedial measures sought in order to recover or at least increase the effectiveness of the criteria identified to be worked on. Remedial measures were considered adapted depending on this effectiveness being recovered.

### Context and subjects

The protocol was applied for professions in a French industrial company (several hundreds of employees).

For each profession ( $N_{\text{prof}}=35$ ), the manager we met was in charge of a team made up of 8 to 60 professionals. During the preliminary informative meeting, the motive of the psychosocial risk assessment was reminded, a brief presentation of the protocol was made, and ethics were presented (the participation would have a voluntary character, collective interviews would be maintained confidential until the final step of validation by the participants (even the management would not have any information before the final step), all participants would engaged themselves not to speak about what was said in these meetings before this final step, and the final written report would be depersonalized and precautions would be taken for no individual to be identified or stigmatized in its content).

Each group gathered from 3 to 8 participants.

Reports written after psychosocial risk assessment are confidential. Therefore references cannot be quoted and no explicit detail is given; consequently neither the company nor the individuals can be identified.

## Results

### Outlines of results presentation

The protocol was applied for  $N_{\text{prof}}=35$  professions. Providing the analysis in details of all the difficulties identified for each profession would need several tens of pages even though it relates only to skill discretion. Therefore, we chose to present and discuss the results according to three approaches:

- Results regarding four illustrating cases (one difficulty, one profession): details are given regarding the purpose and the context of the professions and the section “Results” describes how the SPEAC model helped the work analysts to understand one of the difficulties encountered by the subjects.
- Results regarding one profession in order to present an insight of an in-depth analysis.
- Results regarding all professions together compared with results separating Operational professions (workers had direct contact with the industrial equipment during their work activities) and Tertiary and support professions (workers had no direct contact with the industrial equipment during their work activities but whose activities came to help operational professionals to perform their activities).

The four illustrating cases were selected because they allowed us to exemplify in a relevant and easily understandable manner the application of the SPEAC model to help psychosocial risk assessment when associated to skill discretion. They concerned the following professions:

- Industrial safety specialists. Their job consisted in ensuring and reinforcing the industrial safety in terms of equipment availability and prescription compliance.
- Technicians of a chemical laboratory. Their job consisted in carrying out chemical analyses of samples of products delivered in their laboratory.
- Documentalists. Their job consisted in editing all procedures, organizational documentation, requirements documentation, and make it sure these documents were updated in all the departments of the company.
- Analogical instrumentation specialists. Their job consisted in installing, testing and repairing electrical and electronic equipment needed to make the industrial process run.

The profession chosen in order to present an insight of an in-depth analysis was "Industrial safety specialist"; it was chosen for the same reasons than the four illustrating cases were selected.

### Illustrating cases

**Industrial safety specialist:** Among difficulties which were pointed out by the group of participants during the collective interview, it was said that it was difficult for them to request the implementation of certain safety requirements because they knew it would make the job harder for operators while the gain in terms of safety was perceived as zero.

In the light of the SPEAC model, this situation was associated to a conflict (problem of adequacy) between Having to act (what they were expected to do) and Wanting to act (what they accepted to do) leading to ethical suffering as described above: participants mentioned the associated guilt and the psychological discomfort induced by being forced to do what they did not want to do. The possible impact on self-esteem was identified.

Dealing with the inter-polar conflict consisted in transforming poles to reduce inadequacy. The suggestion for remedial measures to the situation was to transform the pole Having to act by negotiating an adjustment of the requirements with the providers or to transform the pole Wanting to act through a change of the engineers' perception of the concerned requirements. Surprisingly, the participants did not select any of these proposals. They explained that, according to them, this kind of difficulty was an intrinsic aspect of their profession and that they had to accept it.

**Technicians of a chemical laboratory:** Among difficulties which were pointed out by the group of participants during the collective interview, it was said that the level and the variety of the analyses they had to undertake in the laboratory were quite poor compared to what they had learned during their academic curriculum, generating a kind of frustration and boredom. For some of them leaving the company appeared the only solution.

In the light of the SPEAC model, this situation was associated to a conflict between Having to act and the three other poles: they knew more than what was given as Having to act, they wanted to do more and were able to do it, but Having to act restrained the scope of the work activities. Despite the fact that all poles were available and coherent, the inter-polar relationships between Having to act and the other poles were not in adequacy, giving account for a situation of underuse of their competencies and the related frustration. Conversely, the three poles Knowing to act, Being able to act and Wanting to act were in

adequacy. In parallel, participants told about their feeling of underuse of their competencies.

This led to the finding that the pole Having to act had to be adjusted and this helped the management to focus on the right target while, in a first approach, the management began to think how to change the expectations of the chemists (Wanting to act). Another reason that made the management seduced by this first approach was that the content of the pole Having to act could not be changed. It was thus suggested by the analysts not to think the pole Having to act only in terms of substance (content) but in terms of form too. Therefore, it was decided a new organization inside the laboratory with a frequent rotation from one workstation to another for the technicians to perceive a higher rate of diversity in their job. This solution had the advantage to reduce the inter-polar inadequacy by slightly increasing the expectations associated to the pole Having to act, not in terms of level of difficulties but in terms of frequency of activity changes: the chemists had thus to summon more frequently different parts of their knowledge and know-how. This also contributed to reduce the task monotony.

**Documentalists:** Among difficulties which were pointed out by the group of participants during the collective interview, it was said that the training periods in classrooms were not adapted to the job while the companionship was crucial to learn the profession. Nevertheless, an efficient companionship needed prerequisites expected during the classroom periods.

In the light of the SPEAC model, this situation was associated with a dearth in training making the pole Knowing to act not fully available and leading to an inadequacy with the pole Having to act. The pole Knowing to act showed two components: i) companionship to be maintained and ii) classroom periods to be improved. Furthermore, the way participants expressed this need proved their willingness to comply with the pole Having to act; this was related to the pole Wanting to act. In order not to deteriorate the latter, a solution had to be found quickly.

The suggestion for remedial measures to the situation was to adjust the content of the training periods in classrooms whilst maintaining the companionship as it was. This contributed to improve the pole Knowing to act and to reduce the inadequacy with the pole Having to act.

**Analogical instrumentation specialists:** Among difficulties which were pointed out by the group of participants during the collective interview, it was said that their job had drastically changed in the past years, with more and more paper work to do for any activities; this was supposed to improve the quality of the work with a clear traceability of what to do, what was done or not and the resulting state of the equipment after repairing; sometimes they even did not know what document they had to use and did not understand what they had to do with them. The workers were complaining because they wanted to work on engines, not on papers that they sometimes did not understand and for which they needed explanations. In parallel, the training sessions in the company had change too: a large part of the time was dedicated to the use of the documents. Again, the workers were complaining because even in training sessions it was becoming difficult to find time to work on engines rather than on papers. In parallel, participants told about their feeling of incompetency facing this world of papers.

A fact was undeniable: their job had changed and the need of traceability had grown. In the light of the SPEAC model, this situation was associated with a problem of coherence of the pole Wanting to act:

on one hand they wanted to better understand the use of documents and on the other hand they did not want to spend time to learn how to use them during the training sessions but preferred spending more time practicing electronics.

The suggestion for remedial measures to the situation was to ask the management to better accompany the changes of the traceability requirements in the teams, fostered by comparison with other professions and other companies concerned by the same needs. This would help the professionals to be less reluctant towards the management document part of the training sessions and thus would give more coherence to the pole Wanting to act. In parallel, the management was suggested by the analysts to plan longer training sessions in order to increase the time spent working on equipment.

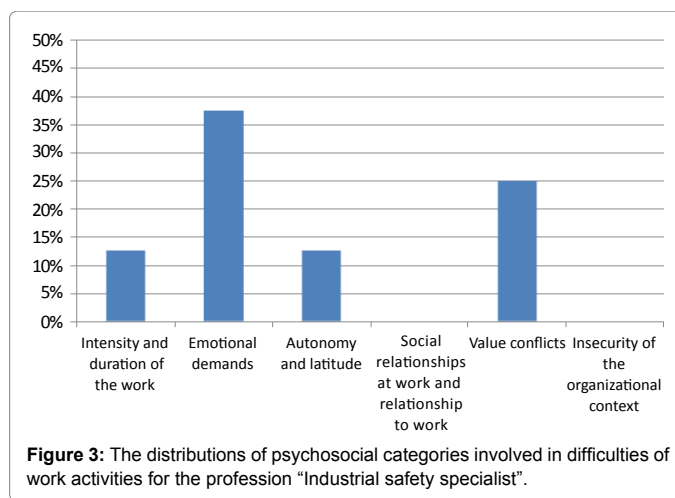
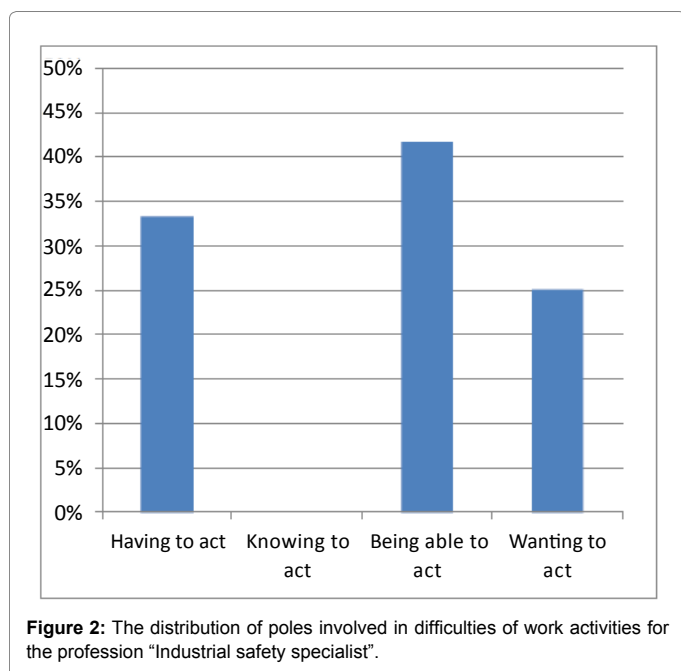
### Focus on a profession: Industrial safety specialist

The analysis pointed out seven difficulties associated to skill discretion, each of them being concerned by one or several poles of the SPEAC model and similarly included into one or several psychosocial categories. Figures 2 and 3 illustrate how each of them was concerned.

Figure 2 shows that the pole the most involved in difficulties is Being able to act whereas Knowing to act is not. The pole Having to act mainly concerned difficulties related to the category Value conflicts; the pole Being able to act mainly concerned difficulties related to the category Emotional demands; there was no main trend for the other poles.

Correlations calculated to assess the strength of the relationship between the poles of the model and the criteria (availability, coherence and adequacy) gave significant relationship only for:

- Having to act and Wanting to act, never concerned by availability.
- Being able to act, few concerned by coherence ( $r=-0.65$ ,  $p<0.085$ ).
- Having to act, significantly concerned by adequacy ( $r=0.75$ ,  $p<0.05$ ).



- Wanting to act, always concerned by adequacy.

In addition, interpolator correlations were calculated. This was undertaken assuming that the results could help to characterize problems of inadequacy. Only two relationships were found significant:

- An inverse correlation between Having to act and Being able to act ( $r=-0.55$ ,  $p<0.15$ ).
- A direct correlation between Having to act and Wanting to act ( $r=0.75$ ,  $p<0.05$ ).

These interpolator correlations were found in coherence with the aforementioned relationships between the poles of the model and the criteria: the significant positive interpolator correlation involved Having to act and Wanting to act which were the two poles significantly concerned by problems of adequacy.

Figure 3 shows that the profession was concerned mainly by Emotional demands and Value conflicts, significantly higher than other categories.

### Professions overall

The professions ( $N_{prof}=35$ ) were separated into operational professions ( $N_{op}=27$ ) and tertiary and support professions ( $N_{tert}=8$ ).

For all these professions, each collective interview gave cases of application of the SPEAC model to describe both resources and difficulties associated to their work activities. However, to adapt the length of the present analysis for a publication, we only treated the cases related to skill discretion giving rise to areas for improvement, i.e. we focused on difficulties only. This produced  $N_{cases}=213$  cases associated to skill discretion with possible application of the SPEAC model, 186 for operational professions and 27 for tertiary and support professions.

For the overall professions, correlations were calculated to assess the strength of the relationships between the poles of the model and the criteria possibly leading to interpersonal conflicts (availability, coherence and adequacy) usually leading to difficulties for the workers.

- Having to act showed being few concerned by a lack of availability ( $r=-0.76$ ,  $p<0.0001$ ) and often concerned by a problem of adequacy ( $r=0.67$ ,  $p<0.0001$ ). A refined analysis showed that this inadequacy could relate to several other poles at the same time and that the more concerned was Being able to act (62%), followed by Wanting to act (42%) and Knowing to act (22%).

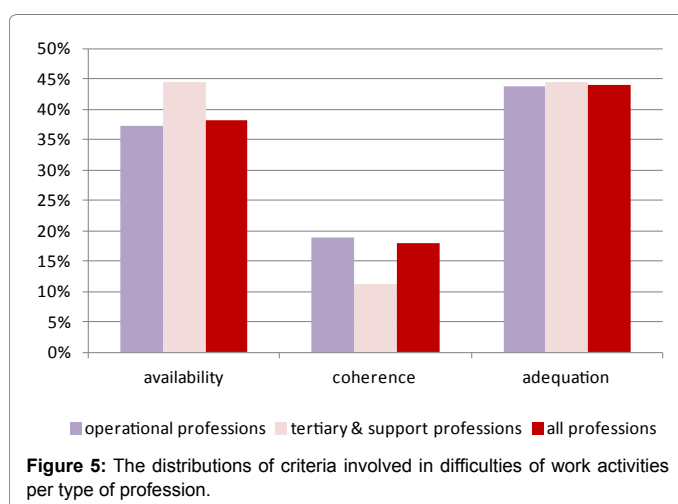
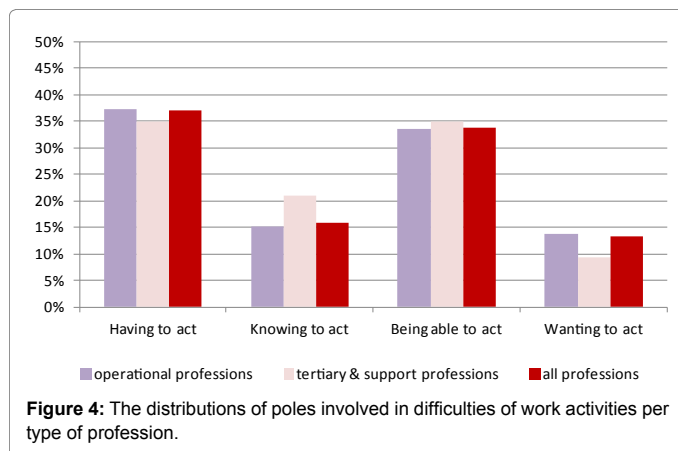
- Being able to act appeared to be few concerned by problems of coherence ( $r=-0.314$ ,  $p<0.002$ ).
- Wanting to act appeared to be few concerned by problems of availability ( $r=-0.37$ ,  $p<0.002$ ) and concerned by problems of adequacy ( $r=0.50$ ,  $p<0.0001$ ).
- Knowing to act appeared to be concerned by problems of availability ( $r=0.23$ ,  $p<0.02$ )
- The other correlations were not significant.

In a first approach, the distributions of poles and psychosocial categories concerned in difficulties were calculated for cases per type of profession (operational, tertiary and support). They are illustrated on Figures 4 and 5.

In a second approach, these distributions were calculated considering the averaged values for each profession, then calculated per type of profession. This second approach gave a shape of distributions so closed to that obtained by the first approach (coefficient  $\chi^2$  tending to zero) that only the results of the first methods are presented and discussed.

In addition, the distributions per type of profession were similar to the distribution for all profession, again with a coefficient  $\chi^2$  tending to zero (Figures 4 and 5).

For both approaches, the proportions of each distribution were



calculated in relation to the overall number of cases concerned by the distribution. For example, regarding the Operational professions, the proportion of cases concerned by Having to act was calculated considering the number of cases concerned by Having to act divided by the number of cases concerned by Having to act and Knowing to act and Being able to act and Wanting to act for this type of professions; similarly, the proportion of cases concerned by availability was calculated considering the number of cases concerned by availability divided by the number of cases concerned by availability and coherence and adequacy for this type of professions. This made the results comparable from one type of profession to another.

The poles the most involved in difficulties were Having to act and Being able to act. This suggested that most of the psychosocial risks could be identified through a refined analysis of cases concerned by these poles and their interactions. This last point was fully coherent with the analysis of correlation given just above.

The distribution of difficulties per criterion (availability, coherence, adequacy) showed (Figure 5) that distributions were similar for both types of professions and all professions with a coefficient  $\chi^2$  tending to zero.

The criterion with the higher proportion was “adequation” (40.0% of the distribution and 46.0% of  $N_{cases}$ ), involving 54.2% of the professions, suggesting that almost one case over two and one profession over two were concerned by an interpersonal conflict. Correlation calculations presented above highlighted significant interpersonal conflicts between Having to act and each of the other poles:

- Having to act and Being able to act: Among the cases concerned by an inadequacy between these two poles (27.2% of  $N_{cases}$ ), 53.4% were associated to organizational problems and 25.8% to the decision making of other professions.
- Having to act and Wanting to act: Among the cases concerned by an inadequacy between these two poles (18.3% of  $N_{cases}$ ), 41.0% were associated to organizational problems and 23.0% to the decision making of other professions.
- Having to act and Knowing to act: Among the cases concerned by an inadequacy between these two poles (9.8% of  $N_{cases}$ ), 47.6% were associated to organizational problems and 23.8% to the decision making of other professions and 19.0% associated to prescription or organizational requirements.

Having to act showed being often concerned by a problem of adequacy related mainly to Being able to act. When compared to the whole set of cases, these 53.4% represent 14.5% of  $N_{cases}$ ; these 14.5% includes 77.1% of the professions among which appear neither special case nor particular categories of professions. This gives account for a low level of inadequacy on the overall but suggests nevertheless that the major area for improvement for any professionals is to make/to help their management to reduce the gap between expectations and organizational means or rules. In terms of mental health, analysis of these cases emphasized a compensatory work or an occupational overload (41.3%) making subjects feeling overwhelmed, a feeling of incompetency (25.8%) associated with a lack of recognition and a frustration not to reach the goal (13.7%).

Having to act showed being often concerned by a problem of adequacy associated to Wanting to act (to a lesser extent compared with the previous interpersonal conflict). When compared to the whole set of cases, these 41.0% represent 7.5% of  $N_{cases}$ ; these 7.5% include 65.7% of the professions among which appear neither special cases nor



particular categories of professions. According to the percentage of cases, this seems to give account for a minor problem of inadequacy on the overall but this problem seems widespread when considering the proportion of professions concerned. Moreover, in terms of mental health, analysis of these cases emphasized 53.8% cases of ethical suffering, 7.7% cases associated with feeling of incompetency associated with a lack of recognition, 12.8% constrained and 10.2% for frustration not to reach the goal. Ethical suffering concerned almost one profession over two (42.8%).

Having to act showed being often concerned by a problem of adequacy associated to Knowing to act (to an even lesser extent compared with the previous interpersonal conflicts). When compared to the whole set of cases, these 47.6% represent 4.6% of  $N_{cases}$ ; these 4.6% includes 28.5% of the professions among which appear neither special case nor particular categories of professions. According to the percentage of cases and professions concerned, this seems to give account for a quite minor problem of inadequacy on the overall. Among the cases concerned by an inadequacy between these two poles, 38.0% were related to feeling of incompetency and 28.5% to frustration, 14.2% to a feeling of lack of training and 9.5% ethical suffering.

The criterion “availability”, when not associated with “adequacy”, represented 40.0% of the distribution (37.0% of  $N_{cases}$ ), with 55.7% were associated with the pole Being able to act, all of them concerned by organizational problems, and 37.9% were associated with the pole Knowing to act, 96.7% of them concerned by organizational problems, and only 6.3% (2.3% of  $N_{cases}$ ) were associated with the pole Having to act all related to organizational problems. The psychosocial categories mainly concerned were Intensity and duration of work (39.4%) and Autonomy and latitude (29.1%). Both types of profession and both managers and not managers were concerned. It exclusively referred to organizational problems and concerned 85.7% of the professions. Among the cases associated with the pole Being able to act, 31.8% (6% of  $N_{cases}$ ) were associated to the premises or the equipment not enough ergonomic, 22.7% (2% of  $N_{cases}$ ) were associated to an occupational overload making subjects feeling overwhelmed. Among the cases associated with the pole Knowing to act, 66.6% (9% of  $N_{cases}$ ) were associated to a feeling of being under-trained, 26.6% (3% of  $N_{cases}$ ) were associated to a feeling of incompetency.

The criterion “coherence”, when not associated with “adequacy”, represented 18.8% of the distribution (16.9% of  $N_{cases}$ ), with 75.0% associated with the pole Having to act, 74.0% of them concerned by organizational problems, and 25.9% concerned by prescription constraints. The psychosocial categories mainly concerned were Intensity and duration of work (38.8%) and Emotional demands (33.3%). Both types of professions and both managers and non-managerial personnel were concerned, distributed over 57.1% of the professions. This led to the perception of a context of contradictory injunctions (33.3%, 4% of  $N_{cases}$ ) and lack of meaning (14.8%, 2% of  $N_{cases}$ ) and a feeling of injustice (14.8%, 2% of  $N_{cases}$ ).

Again distributions (Figure 6) were similar for both types of profession and all professions with a coefficient  $\chi^2$  tending to zero. The category mainly concerned with difficulties was Intensity and duration of work followed by the category Emotional demands and the category Autonomy and latitude. A t-test of Student showed that the difference between on one hand Tertiary & support professions and on the other hand other professions regarding the category Insecurity of the organizational context was not significant due to high values of variance.

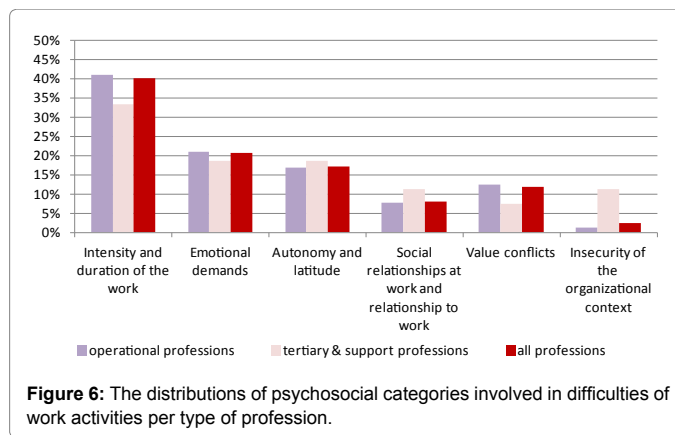


Figure 6: The distributions of psychosocial categories involved in difficulties of work activities per type of profession.

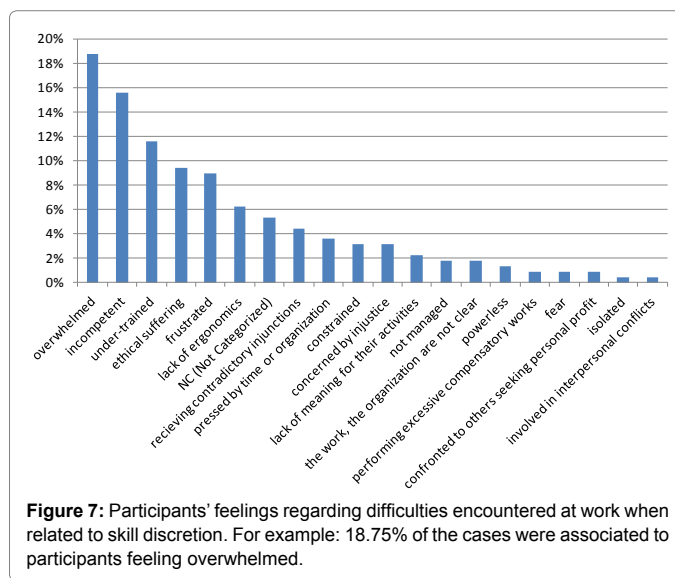


Figure 7: Participants' feelings regarding difficulties encountered at work when related to skill discretion. For example: 18.75% of the cases were associated to participants feeling overwhelmed.

In addition, for each of the  $N_{cases}=213$  cases, the associated main feeling of the participants was discussed during the collective interviews and collected. This data was gathered on a graph (Figure 6) regardless of the professions, poles, criteria, or categories of psychosocial risks (Figure 7).

This graph came to confirm the SPEAC-based analysis above: feeling incompetent, overwhelmed or concerned by ethical suffering, identified as main trends with the SPEAC approach, appeared in the top-5 of the list.

## Discussion

### Comments about the positive / negative forms of the poles

When presenting the SPEAC model in section “The SPEAC model and the static approach”, we illustrated the possible lack of coherence of a pole using general examples showing incoherence of parts of the pole Having to act and also of incoherence of parts of the pole Wanting to act versus Not Having to act. However, when considering the practical examples of the illustrating cases in the first section of “Results”, the difference between a positive form of a pole and its negative form is not trivial. For examples, among the illustrating cases, the industrial safety specialists wanted the job of their colleagues not to be harder (Wanting to act) but this may be described as they did not want the jobs of the colleagues to be harder (NOT Wanting to act);

Technicians of a chemical laboratory reported that the level and the variety of the analyses they had to undertake in the laboratory were quite poor, illustrating a level of Having to act perceived too low and thus in inadequacy with the other poles, but this could be thought as they had not to do the job at such a level, referring to NOT Having to act from this standpoint.

The question is then: is this fundamental to have a rational and indisputable identification of a difficulty according to the positive or the negative form of a pole? The aforementioned illustrating cases showed that difficulties may be described according to the positive as well as to the negative form of a pole without changing the analysis of the activity situation: both allow to highlight weaknesses of poles or of interpolar relationships and this is the main point of the method. In other words, associating a difficulty with the positive or negative form of a pole influence neither the understanding of the situation nor the identification of what make an obstacle to put competencies successfully in action.

### Comments about Illustrating cases

The example concerning the Industrial safety specialists reported that participants did not select any of the remedial proposals, therefore renouncing to deal with the interpolar conflict identified. This sort of renunciation usually relates to the fact that subjects feel not being able to control any of the ways things are done at work and is associated with powerlessness. The problem is that powerlessness is one of the main dimensions of alienation at work [28,29] which may affect subjects when combined with meaningless, i.e. when subjects feel that their work is worthwhile [30]. Hence the participants' decision made the analysts being especially careful regarding these two dimensions. In particular, the volume of difficulties combining the pole Being able to act and the category Autonomy & latitude (characterizing cases of powerlessness) were analyzed carefully for this profession: as show in the section "Results/Focus on a profession", no particular trend was observed.

Regarding Technicians of a chemical laboratory, it was found that the interpolar relationships between Having to act and the other poles were not in adequacy, giving account for a situation of underuse of their competencies and the related frustration. Such a case of underuse of competencies had to be managed carefully and addressed seriously because this could generate (or had already generated) psychological problems in terms of frustration and, especially, in terms of feeling of a progressive devaluation of their academic and occupational qualifications; this is usually painfully perceived by subjects as reported and described for other cases (see [31,32]).

The example regarding Documentalists emphasized an interpolar conflict between the pole Knowing to act and the pole Having to act with a derivative issue addressing the pole Wanting to act. This derivative issue concerned the participants' willingness to comply with the pole Having to act. Applying the SPEAC model helped the analysts to appreciate the whole importance of this derivative issue by highlighting the possible deterioration of the pole Wanting to act and made them urge the management to implement the remedial solution as fast as possible.

Among the remedial measures regarding the example of the Analogical instrumentation specialists, it was reported that the management was suggested by the analysts to plan longer training sessions in order to increase the time spent working on equipment. This solution was not accepted by the management because of the

related cost increase of the training sessions. This example recalls that some of the remedial measures elaborated during a psychosocial risk assessment may be rejected and that the analysts must be clever enough to detect, during this process, which solutions could be hardly implemented. Most of the time, impossibilities relate to matters of financial cost or human resource. The risk of elaborating solutions that would be rejected afterwards would be to generate new psychosocial risks by having created new expectations that are vain.

### Comments about the focus on a profession: Industrial safety specialist

The psychosocial risk assessment through the SPEAC-based analysis of this profession helped to objectify the main difficulties encountered by the workers through quantified data (correlations, proportions and distributions). In particular, this helped the analysts to demonstrate to the management that, despite the fact that participants claimed to accept interpolar conflicts leading to ethical suffering, this sort of problem was pregnant through the category Value conflicts, pregnant for three reasons: i) for this profession, this category proportion was at the second rank of the distribution per category while at the fourth rank for the overall professions, ii) compared to the overall professions, the Industrial safety specialists' proportion for this category was more than the double and iii) this related to a problem of adequacy between the poles Having to act and Wanting to act, with the proportion of the latter double than that of the overall professions. Therefore, the management was urged by the analysts to carefully check this aspect of the profession and to periodically put into discussion this point during individual interviews or collective meetings.

Furthermore, the difference between the data for this profession and the overall professions enhanced the necessity to apply the psychosocial risk assessment per profession (single-profession approach) and not only according to a macro-approach considering all the professions of a company together. This means that indeed psychosocial risks must be dealt with case by case to be efficient. The data presented here illustrates that the conclusions of the macro-approach would not cope with the Industrial safety specialists' difficulties. Yet, the macro-approach brings benefits and is useful for the head management of the company, but this macro-approach must be undertaken in parallel of the single-profession approach.

### Comments about results regarding professions overall

The fact that Having to act showed being few concerned by a lack of availability is not surprising as most of the time the content of the task is perceived defined, both because the order-giver (most of the time the management) specified it and/or because the organization provided documents and contexts for it.

Conversely, Having to act was highly concerned by a lack of adequacy with other poles, mainly with Being able to act with 14.5% of  $N_{cases}$  and 77.1% of the professions concerned. This was related to feeling of overwhelmed, of incompetency associated with a lack of recognition and a frustration not to reach the goal. It is worth to cope with these difficulties as these features are characteristics of burnout. According to the literature, three type of burnout may be identified [33,34]: frenetic, worn-out and under-challenged. Subjects concerned by the frenetic burnout are highly committed in their job (substantial amount of time and effort), ready to increase efforts when facing difficulties in association with a strong need for achievements; this is usually complemented by a feeling of being overwhelmed. Subjects concerned by the worn-out burnout are characterized by a

lack of concerns for their responsibilities, lack of involvement in the work and giving up when facing difficulties associated with a lack of control, and paradoxically feeling a lack of recognition for their efforts. Subjects concerned by the under-challenged burnout perform tasks superficially, experiencing work in a monotonous way, with boredom; they thus appear to be not motivated despite their interest in the job, the actual reason being that they lack challenges. If they are skillful, their talents remain unacknowledged; this is coupled with a lack of professional development.

Having to act was also concerned by a problem of adequacy associated to Wanting to act, representing 7.5% of  $N_{cases}$  and including 65.7% of the professions. This was mainly related to feeling of ethical suffering concerning almost one profession over two. This may be a valuable challenge for the management to deal with the related difficulties despite the fact that it requests time and investment: each case must be considered individually for an in-depth analysis as well as for the possible solutions. It is considered as a “valuable challenge” because reducing effects of ethical suffering may avoid consequent problems for employees’ mental health. As demonstrated by several studies, subjects experiencing ethical suffering elaborate unconsciously a system of defense mechanisms (see for example [35]) that helps subjects to evacuate and maintain the perceived threat out of their consciousness [36], but this process underpins a risk of decompensation if the system cannot be maintained, possibly resulting in psychological imbalance or personality disturbance [37]. Furthermore, defense mechanisms “are also likely to lead to a tolerance and a form of endurance regarding pathogenic constraints of the work” [36].

To a lesser extent compared with the previous inter-polar conflicts, Having to act showed a problem of adequacy associated to Knowing to act with 4.6% of  $N_{cases}$  and 28.5% of the professions. This was related to feeling of incompetency and frustration, to a feeling of lack of training and to ethical suffering. As already mentioned above, such feelings of incompetence and frustration could generate a progressive devaluation of their academic and occupational qualifications usually painfully perceived as reported and described for other cases (see [31,32]).

The criterion “availability”, when not associated with “adequacy”, was referring (not surprisingly) to organizational problems to a large extent: as described in section “Material & Method”, the poles Having to act and Knowing to act are mainly defined by the organization and the poles Being able to act and Wanting to act, when not linked to organizational problems, led to inter-polar conflicts with problems of adequacy. Despite the fact that almost 90% of the professions were concerned, no leading typology could be identified and the salient trends referred to the premises or the equipment not enough ergonomic (Being able to act) and a feeling of being under-trained (Knowing to act), others being less than 3%. According to us, this absence of main trend must not be interpreted as cases of minor importance which may be left apart. This must be considered as an overall problem for which the diverse nature advocates for the necessity to deal with each case per profession, as already suggested above in section “Focus on a profession: Industrial safety specialist”.

Similarly not surprisingly, the criterion “coherence”, when not associated with “adequacy”, was mainly referring to organizational problems for the same reasons and to prescriptions. The contribution of prescriptions in the industrial world being more and more constraining with time (see for example [38]) and prescriptions being periodically updated usually by a national or international regulator, they obviously come sometimes in contradiction with the current companies organization which must then be updated too; sometimes

this is not done fast enough, sometimes it is not done correctly. Despite the fact that this represented less than 4% of all cases, the associated feelings of contradictory injunctions and lack of meaning might produce alienation at work through its two major dimensions, powerlessness (which might be induced by contradictory injunctions) and meaninglessness [28-30].

### Discussing the benefits applying the SPEAC model

As any methods involving categories or criteria, applying the SPEAC model for psychosocial risk assessment facilitates the objectification of the results, adding a quantitative dimension to the usual qualitative dimension of psychosocial material. This contributes to make results easier understandable by industrial personnel (managers as well as engineers or technicians) who usually perceive and transcribe their work contexts in terms of numbers and graphs rather than in terms of descriptions and texts. This aspect also contributes to facilitate comparative analysis from one context to another, for example as it was carried out here when comparing a profession or types of profession to the overall professions. The illustrating cases have shown that this method could also help the analysts to center the remedial measures on the right target (see the case of technicians of a chemical laboratory) or to better assess the degree of emergency of remedial measures by considering a two-pole conflict in relation with other poles despite the fact they did not appear a priori involved in the difficulty (see the case of Documentalists).

Beyond the analysis, applying the SPEAC model for psychosocial risk assessment helps the analysts to evaluate the appropriateness of the remedial measures the management intends to implement: for example, if measures do not reduce an inter-polar conflict, or, on the opposite, create or increase an inter-polar conflict, the assumption that measures are not appropriate may be made.

Finally, the SPEAC-based method, when applied for psychosocial risk assessment, contributes inevitably to improve competencies of the teams: by reducing inter-polar conflicts and improving availability and coherence of the poles, conditions for putting successfully competencies in action are fulfilled and efficiency is enhanced.

### Limits

The main limit lies in the protocol itself rather than in applying the SPEAC-based method. This limit concerns the time left for the assessment. Experience has shown that psychosocial risk assessment is not a priority for a few members of the management in companies: first it is far from the core of their professions, then it blocks a part of the staff in “unproductive” meetings; in addition it favors “subversive” discussions among employees and produces conclusions and remedial suggestions that will cost money if implemented (or will cause employees’ anger if not) with a return on investment which is not so visible and not guaranteed. Even when the management is aware of what it may bring to the company and to people (workers as well as managers), the production constraints make it difficult to block parts of the teams in a room several times for several hours. This is why the protocol limits the participants’ meetings for analysis to two, each not exceeding two hours. Doing so, it is clear that all difficulties cannot be put into discussion, producing obviously an incomplete analysis of psychosocial risks for the considered profession. Anyway, spending more time would probably yield a set of remedial measures so huge that the teams would not be able to deal with all of them, putting aside a part of the work. Spending more time and avoiding this trap would probably help to go deeper in the analysis of some of the difficulties;

however this drawback may be counterbalanced by including an in-depth analysis of identified difficulties among the remedial measures.

Another important limit lies in the model essence: it describes competencies in action and therefore addresses only the field of skill discretion. As a consequence, certain other types of psychosocial risks cannot be identified; for example, it may not give access to psychosocial risks due to sexual harassment or physical violence.

The SPEAC model is thus an interesting tool for analyzing psychosocial risks but it must be combined with other tools when aiming at providing exhaustive psychosocial risk assessments.

## Conclusion

Results and discussion regarding application of the SPEAC-based method for psychosocial risk assessment at work presented in this article showed how this could be relevant to contribute both to identify psychosocial risks to which workers could be exposed and to find areas of improvement and remedial measures reducing psychosocial difficulties encountered by workers. As the SPEAC-based method relates to skill discretion domain, these areas of improvement also contribute to enhance workers' competencies. We also illustrated how the method could help analysts and management to assess the appropriateness of remedial measures with the help of the SPEAC model.

Furthermore, the results obtained fostered both single-profession approaches (psychosocial risk assessment per profession) and macro-approaches taking all the professions of a company into account. The outcomes may therefore contribute to health improvement of workers at several levels: at the workers' level, at the team management level and at the company head management level.

However to be fully efficient, as discussed above, despite the SPEAC-based method exceeds the single scope of competencies at work, it must be combined with other methods in order to guaranty an exhaustive approach of the psychosocial risks at work. It must be bear in mind that this method is only a contribution investigating psychosocial risks at work through the lens of skill discretion.

As a perspective, we plan now to apply the SPEAC-based method to compare the mental representation of work activities from the performer's standpoint and from the manager's standpoint. This will consist in selecting a work activity of a profession, help technicians to describe it using the SPEAC model and then undertake the same exercise with the technicians' management. The assumption is that the difference between the resulting representations may highlight sources of stressors and thus of possible psychosocial risks. If so, this may help analysts to cope with some of the psychosocial difficulties encountered in teams by putting these representations into a collective discussion (technicians, managers and analysts) in the aim to reduce the discrepancies within a perspective taking approach.

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