



The role of experience in night work: Lessons from two ergonomic studies

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ABSTRACT

The purpose of this article is to analyze some connections between experience, health and work, especially in the field of night work. As a result of the baby boom, the proportion of elderly workers is steadily increasing, while at the same time many workers are reaching retirement age and being replaced by younger people. And, in the same time, there is an overall gradual increase in shift work and night work. To our knowledge, worker experience has not been extensively studied in this context. This was our focus in studying work activity in two very different situations, in a hospital and in a steel industry.

In these two studies we observed that the experienced workers endeavor to plan ahead, especially at night. They do this to limit fatigue and to avoid emergencies and ensure that work is stress-free and as far as possible under control. But experience not only brings workers to plan ahead, it also enables them to do so, thanks to the resources it confers: gaining familiarity with tasks and acquiring the ability to identify critical situations, gaining knowledge about themselves and awareness of situations that cause difficulty; and gaining a better overview of the collective aspects of their work and of ways to share tasks or obtain assistance.

They are able to undertake these strategies thanks to specific skills and capacities they have built along their professional career, which notably leads them to find the best trade-off between several goals, possibly contradictory.

Such experience is especially valuable at night, when the worker is tired, and when there are fewer supervisors present. This experience can only be gained, however, if the work environment fosters its acquisition and provides an opportunity to make use of it, especially during the night shift and especially with respect to planning tasks ahead of time.

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1. Introduction (aim and context)

Our purpose of this article is to analyze some connections between experience, health and work, especially in the field of night work. Actually, numerous researches already deal with regulation processes implying age and experience-related effects (Laville et al., 2004), but schedule issues are not often taken into account in their results. Conversely, studies about age-related effects of shift and night work (Costa, 1996; Touitou et al., 1997; Marquié et al., 1999) do not usually pay attention to the specificity of work activity at such a period; nor do they highlight how experience, in particular experience “in” night work, may allow to build efficient strategies in order to protect one’s health and safety.

Yet it is easy to bring out the social focus of research on the merged topics of irregular work schedules (especially night work) and experience. At this point it is important to delve into the

implications of two ongoing developments. The first is demographic change (Auer and Fortuny, 2000). As a result of the baby boom – the upturn in the birth rate in the 1950s and 1960s, followed by a decline, the proportion of elderly workers is steadily increasing, while at the same time many workers are reaching retirement age and being replaced by younger people. The second development involves the way in which work schedules are designed: there is an overall gradual increase in shift work and night work.

These changes in worker age and working hours predictably have two consequences.

One is an increase in night work among aging workers. Such a trend is already observable in France (Bué and Rougerie, 1999). Some of these workers just remain on these schedules because it is an intrinsic component of their job, for example in press companies (Lortie et al., 1979) or customs (Prunier-Poulmaire et al., 1998). Some others “discover” night work in the second part of their career, mainly among non-skilled workers for which this type of constraint appears presently as the only “solution” to get a job (Gadbois, 2002).

The other consequence is that in more and more frequent situations, workers of different generations work side by side,

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whatever the hour, and in particular at night. These encounters might help skills transmission and learning. It might on the contrary increase possible conflicts between generations, in particular when the most harmful tasks are being allocated to young employees; it might also tend to push away the elderly if they are seen as less hardy or less efficient in shift or night work.

To shed light on this topic, a vast body of knowledge is available – notably findings from ergonomic research. We are, for example, able to assess the effects of age on night-shift tolerance (Barbini et al., 2007), with the prevalence of sleep disturbances, accumulated fatigue and sometimes health issues increasing with age (Brugere et al., 1997). But to our knowledge, worker experience has been less extensively studied in this context. This was our focus in studying work activity in two very different situations, which we shall go back over in this article. We shall first present the general framework of this reflection. Then we shall describe separately some methods and results of each study, then get on to a common discussion.

2. A general framework for the relations between experience and night work

2.1. Work activity along lifetime: a specific and fruitful experience

As time goes by, the way individuals perform their activity does not remain the same, because they change age, and because their experience gets enriched. Experience itself is modified “on account of” increased age, because individuals build sort of a self-knowledge, a more or less conscious assessment of their own evolving capacities, faced to work situations (Gaudart and Laville, 1998). This experience helps them looking for the best trade-off between productive efficiency, protection of one’s own health, and participation to team work. One can shed light on this trade-off by analyzing the work strategies that employees implement, in order to avoid, as far as possible, the most harmful constraints, and to increase their efficiency. Adjusting gestures, developing specific skills (Gaudart, 2000), verifying information at the right moment in order to relieve one’s memory, stabilizing one’s work pace, anticipating on further actions (Volkoff and Pueyo, 2005), deciding relevant mutual aids, all these ways of doing have been brought to the fore by ergonomic researches in various sectors (Marqué et al., 1998): assembly lines in car industry, air-traffic control, catering, mail delivery, home-care, etc. But the opportunities of elaborating and undertaking these regulations depend on work environment: characteristics of tasks, workstations, work organization, and of course schedule management.

2.2. Work activity along hours

Actually, a major component of efficient trades-off in work activity is the variation of one’s own (and colleagues’) state, and of work environment (tasks to be performed, presence or absence of professionals and managers) at various moments of the day or night (Barthe et al., 2004).

On one hand, these variations directly reflect the degree of functional activation. For example, the number of on-foot movements, screens watching, oral communications, is low at night, at its highest level in the afternoon, and at intermediate level in the morning. Therefore adjustments have to be made in order to reach the main goals of activity whatever the moment. By night in particular, employees select their ways of doing, in that purpose: choosing the time when a movement is really necessary, watching a range of information at the right moment, etc.

Another concern is to avoid, if possible, performing complicated or dangerous tasks when one’s alertness is lessened, especially in

the middle of the night. Tasks are re-allocated, from one hour to another, or between employees, if work situation permits to do it: employees postpone or anticipate actions which are not bound to tight time constraints; they accumulate tasks at some moments in order to bring relief to a colleague, or to get ahead with their work and have better possibilities to relax later; they cooperate when necessary to increase the collective capacities to check, and avoid errors. Even more subtle strategies tend to share tasks, taking into account the number of nights already spent on the job by each employee, so as to reduce accumulated fatigue.

These two types of results call for further development, mainly about the question underpinning the present article: does experience (experience in general and experience in night work in particular) give workers resources that enable them to avoid or limit the problems linked to night work, and to cope with the special requirements of that period?

3. Methods, and a few results, of the first study, carried out among hospital nurses

The first study looked at a population of night-shift nurses, and the way in which experience enables them to better plan their shift, taking account of their own state of fatigue and the special context of the hospital at night (patients resting, colleagues few and far between, absence of doctors, etc.).

3.1. Methods

The study was carried out in two respiratory units in France, where most of the patients suffer from broncho-pulmonary cancers, or cancers of the pleura. 13 nurses were observed, all of them working only at night. Their ages ranged from 25 to 55 years. Their seniorities in night work (as a nurse) ranged from 2 months to 34 years (Table 1).

We systematically analyzed, through direct observations and “auto-confrontation” interviews (Mollo and Falzon, 2004) certain aspects of their activity, the tasks they perform and the way they communicate. These observations and interviews were focused on characterizing nurses’ tasks at night – compared to daytime, their specific goals at that period, and possible contradictions between these goals.

Besides we asked these nurses to rate (on scales from 0 to 10) various aspects of the patients’ conditions: levels of sickness, fatigue, pain, anxiety, and so on. We also asked them to assess (also on a scale from 0 to 10) from their own state of fatigue every other hour throughout their shift.

Table 1
Age and experience of nurses implied in this study.

	Age	Length of service in day schedules (as a nurse)	Length of service in night schedules (as a nurse)
IDE 1	25	–	1 year
IDE 2	26	1 year ½	10 months
IDE 3	28	1 year and 2 months	2 years ½
IDE 4	28	–	3 years ½
IDE 5	38	–	1 year and 4 months
IDE 6	39	3 years	15 years
IDE 7	45	–	13 years
IDE 8	26	2 months	2 months
IDE 9	32	–	6 years
IDE 10	46	–	23 years
IDE 11	49	6 years	22 years
IDE 12	55	3 months	34 years
IDE 13	55	?	5 years

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