

Symptoms of stress related to the characteristics of customer service in warehouse superstores

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Abstract

A study was carried out in a large chain of warehouse superstores specialized in office supplies. The stress symptoms of 91 sales clerks and 28 managers in six warehouse superstores were documented with the Karasek and Maslach questionnaires. The results show different stress symptoms in the two populations. In managers, stress could result from an overinvestment in the work, whereas for sales clerks, stress could lead to passive behavior and a reduction in self-esteem. Stress in sales clerks is related to customer service characteristics, which were studied through work observation, interviews and a daily journal. Results show that there are many customers to serve and that the time that can be allotted to each of these interventions is less than one minute. In more than a third of such interventions, sales clerks must serve more than one customer at a time. The sales clerks' work is constantly interrupted. On average, they cannot work continuously on the same task more than 1.5 min. Sales clerks are also stressed by difficult customers and pressured to sell extended warranties. Solutions are proposed mainly to reduce interruptions which are thought to lead to mistakes, stress, degraded performance, and increased workload.

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1. Introduction

The retail industry in Canada is the country's largest industrial sub-sector in terms of number of workers. In the province of Québec alone, this industry directly employs 400,000 workers and most jobs are in large businesses, including superstores (Guay, 2004). Very few ergonomic studies were carried out in superstores. In a previous study, the authors studied manual materials handling work in a population of stockers (St-Vincent et al., 2005). For a generalized perspective, the analysis had to be extended to the population of sales clerks whose main task, besides manual materials handling, is customer service. Indeed, one third of all employees in the retail sector are assigned to customer service.

Results from interviews and questionnaire surveys among sales clerks suggest that customer service is a major source of stress in this population of workers. For example, studies that have investigated the risks involved in customer service show that time pressure, mainly arising from insufficient staffing levels, are one of the main sources of stress or dissatisfaction for sales personnel in retail stores. They are rushed to perform their job tasks, and they lack time and/or are frequently interrupted. Serving difficult customers ("nasty", hostile, restless, demanding) is another source of stress and dissatisfaction for sales people (Broadbridge et al., 2000; Guignon and Cholet, 2003; Mahiou, 2002; Zackos et al., 1998). Such stress and dissatisfaction would be related with reporting of shoulder and neck pain, just as mental demands (Holte and Rolf, 2002). However, according to Broadbridge et al. (2000), workers do enjoy contact with customers when they are regular customers, "nice" or appreciative of the help they are receiving: then, they are considered as a source of

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satisfaction. These authors also state that the employer's attitude towards the employees affects their stress level. Many suffer their superior's lack of recognition, appreciation and support. Younger employees are afraid to approach their managers with problems, and instead try to find solutions by themselves. Some younger workers are even afraid of being reprimanded or fired if they do not comply with their managers' requests (Zackos et al., 1998). High psychological demands (Karasek's model) have the strongest relationship to burnout (emotional exhaustion from the Maslach Burnout Inventory) in the retail sector, followed by interpersonal conflicts with co-workers or superiors, and low job control (Tuuli and Karisalmi, 1999). Finally, Narayanan et al. (1999) have shown that besides interpersonal conflicts between co-workers, time/effort wasters and work overload are two other major sources of stress for sales personnel.

Although several questionnaires-based studies have investigated the conditions leading to stress in the retail sector, a search of the literature could not yield any field study analyzing the work of sales clerk personnel. The aim of this study was thus to describe stress symptoms in warehouse superstores and to analyze customer service activities causing the stress symptoms. At the request of the company where this study took place, stress symptoms were described in a population of sales clerks as well as in a population of managers. In fact, upper management of this company was concerned about the psychological health of its sales clerks, as well as of its managers who also have to deal with difficult working conditions. The first part of this paper presents a comparison of the stress symptoms felt by the sales clerks and managers of six warehouse superstores of a large North American banner specializing in office supplies. The second part of the article summarizes a field study conducted in two of these six stores and deals with the characteristics of customer service causing stress in sales clerks.

2. Methods

2.1. Description of the retail company and the work done

The ergonomic study was conducted in two Québec warehouse superstores that are part of a North American banner specializing in the sale of office supplies. The customers are offered more than 7000 products, divided among three departments: office supplies, computers, and furniture. A small sales volume store and a large one were chosen for the study: these stores can be distinguished by their warehouses and sales floor surface areas. Moreover, the large sales volume store has a night shift where workers take charge of manual materials handling (MMH) activities in order to decrease the workload of sales clerks during the day.

The sales clerk's job includes customer service and MMH activities. Customer service entails many tasks. The sales clerk greets the customers, helps them with what they

are looking for, offers them an extended warranty when it is relevant, helps them carry their purchases to their vehicles, takes special orders, fills out delivery forms, and answers the phone. Manual materials handling activities include two principal tasks: stocking and filling operations. Stocking operations consist of filling the display shelves with new arrivals; above these shelves, excess merchandise is stored on steel shelving called overheads. Filling operations consist of using products already in the sales area to fill the empty display shelves; this generally requires getting products from the overheads. Sales clerks working in the large sales volume store have less MMH to do, since most of the products are placed at night by stockers. In the small sales volume store, this MMH work is done throughout the day by sales clerks, alternating with customer service. In both stores, filling operations are mostly done between 8 and 11 a.m., before the noon peak period when a large number of customers must be served.

There are different manager positions each involving a different set of tasks. All managers share a common responsibility, that is, to intervene on the sales floor to manage various situations. Among these, they have to deal with dissatisfied customers, manage conflict situations between customers and sales clerks, serve customers during busy periods, and assist workers when they need help. Although the managers spend most of their time in the sales area, they have several administrative tasks to perform that differentiate the different positions. Depending on their position, they must take part in the personnel recruitment, training, and evaluation process, establish schedules, pass on relevant information to employees, and control labor expenses. They must also comply with the company's procedures, policies and standards regarding merchandise layouts, the store's business hours, the safety of goods, and price changes. Lastly, they have to meet sales objectives, transmit required information to the head office, control stocks, and be in charge of bank deposits.

2.2. Analysis methods

The methodology followed in this study involves three steps. First, two questionnaires were used to describe the stress symptoms in six stores. Then, an ergonomic analysis was conducted in two of these six stores to describe the work conditions causing stress. Finally, a daily journal and in-depth interviews were used to investigate the relationships between work and stress symptoms.

2.2.1. Questionnaire survey

The job content questionnaire (Karasek et al., 1985) and the Maslach burnout inventory (Maslach and Jackson, 1986) were distributed to 91 sales clerks working 15 h or more per week, and to 28 managers: six stores were involved in this data gathering to have a larger population group (Table 1). The sales clerks and managers were individually given enough time during their work shift to fill out the questionnaires, and an ergonomist was available

Table 1
Description of the methodology

Methods	Population	Stores		Objectives
		A ^a	C ^b	
Questionnaires Maslach Karasek	91 Sales clerks (working > 15 h/week) 28 Managers	3	3	Evaluation of the sales clerks and managers' symptoms of stress
Observations ^c and interviews	5 Sales clerks 13 Sales clerks	1	1	Identification of the working conditions related to symptoms of stress
Daily journals and interviews	11 Sales clerks in 48 Work shifts	1	1	Stress evaluation by the sales clerks in relation to the working conditions

^aLarge sales volume.

^bSmall sales volume.

^cSee Table 2.

Table 2
Observation variables

Variables	Classes	Comments
Work activity	Customer service stocking operations filling operations	This variable is used to determine the time that the sales clerk spends doing a task continuously.
Number of customers served	N-customers	
Time spent with the customers	< than 1 min 1–5 min > than 5 min	
Customers served simultaneously	Yes No	The sales clerk serves more than one customer at the same time.
Customer(s) waiting to be served	Yes No	There are one or more customers waiting to be served near a sales clerk while this one is serving someone else.
Location	Office supplies (aisles) Computer (Sections 1 and 2) Furniture (Sections 1 and 2) Warehouse Cash register Outside	This variable is used to determine the number of times that the sales clerk changes location. Each aisle of the office supplies department is considered a different location.

to answer their questions. The two questionnaires were used to evaluate the psychosocial working conditions and the symptoms of burnout of both populations. The sales clerks' and managers' results (both stores combined) were then compared using the Chi-square test (for independent samples). Karasek's model states that to evaluate the physical and mental health risk due to stress, two parameters need to be coupled: psychological demands, and decision latitude in meeting those demands. The greatest risk is to workers facing high psychological demands and with low decision latitude (Karasek and Theorell, 1990). Job demands are defined by questions such as "working very fast", "working very hard", and "not enough time to get the job done". Job decision latitude is defined as both the ability to use skills on the job and the decision-making authority available to the worker. The Maslach Burnout Inventory defines burnout as a three-

dimensional syndrome that occurs among individuals who work with people: emotional exhaustion (feeling emotionally drained by one's work), depersonalization (negative feelings and cynical attitudes toward customers), and reduced personal accomplishment (a tendency to evaluate negatively one's own work).

2.2.2. Ergonomic work analysis

The work analysis of the sales clerk's job was conducted in the office supply and computer departments of two stores. It started with preliminary observations and interviews of 13 sales clerks (Table 1) so that the researchers could determine the working conditions that could possibly be related to symptoms of stress. Five sales clerks were then videotaped during the busiest period of the day (between 12 noon and 3 p.m.) and of the year (August—back-to-school period); two of them were filmed more than once for a total

of seven video sequences. Close to 14 h of video recordings were collected and analyzed with an event recording software tool (The ObserverTM software, version 5.0, www.Noldus.com). The following variables were documented for each sales clerk: the work activity done, the number of customers served and the time spent with them, the number of customers served simultaneously by the same sales clerk and/or while others were waiting to be served, and the sales clerk's location in the store (Table 2).

2.2.3. Daily journal and interviews

Two months after the observations for the ergonomic work analysis (in October), 11 sales clerks filled out a daily journal at the end of each work shift for one week to express their level of stress in relation to the various working conditions identified through the observations. Forty-eight daily journals, the equivalent to 48 work shifts, were collected. The results are expressed in proportion to the 48 work shifts assessed by the 11 sales clerks. Once a sales clerk had completed all of his daily journals, a semi-structured interview was conducted with him to gather more information on the sources of stress.

3. Results

To present the results, the stores' sales volumes are distinguished by the letters A (large sales volume) and C (small sales volume). These letters are assigned by the company to every store to identify their sales volume.

3.1. Symptoms of stress

At the time of the study 64% of the sales clerks of the six stores were between 15 and 24 years of age, 69% were working part time (≤ 35 h per week), and 43% had less than one year of seniority in the company. The majority of the sales clerks were men (91%). The job content questionnaire's results show statistically significant differences between the sales clerks and the managers. Indeed, 71% of the sales clerks had low decision latitude, compared to 39% of the managers (Table 3). On the other hand, 71% of the managers had high psychological demands, compared to 39% of the sales clerks. When both parameters are coupled (PD+, DL-) to evaluate the physical and mental health risk level, we note that 32% of the managers were at high risk, compared to 26% of the sales clerks, which is not statistically significant. The combination of low psychological demands and low decision latitude, which represents an average risk for workers, is what distinguishes both populations the most (45% of sales clerks vs 7% of managers). This average risk has been associated in the scientific literature with a very unmotivating job setting leading to negative job learning or gradual loss of previously acquired skills (Karasek et al., 1998).

The Maslach burnout inventory's results for emotional exhaustion among sales clerks and managers are very similar, with one person in five being at high risk, but that proportion reaches one person in three among managers working in large sales volume stores (Table 4). The biggest difference between the two populations, which is almost statistically significant, concerns depersonalization, with

Table 3
Decision latitude and psychological demand exposure level

	Sales clerks			Managers			n%	n%
	Sales volume			Sales volume				
	A	C	Total	A	C	Total		
	n = 51	n = 40	n = 91	n = 15	n = 13	n = 28		
Decision latitude (DL) ^a								
Low	40	25	65	5	6	11	71.4	39.3
High	11	15	26	10	7	17	28.6	60.7
Psychological demands (PD) ^b								
Low	30	23	53	3	5	8	61.5	28.6
High	21	17	38	12	8	20	38.5	71.4
Risk level ^c								
Low	PD-, DL+	5	7	12	3	3	13.2	21.4
Average	PD+, DL+	6	8	14	7	4	15.4	39.3
	PD-, DL-	25	16	41	0	2	45	7.2
High	PD+, DL-	15	9	24	5	4	26.4	32.1

Statistical comparison between managers and sales clerks using Chi square test, *p*. The sales clerks' and managers' results (in bold) were compared to each other for each variables (decision latitude, psychological demands and, risk level). + : High - : Low.

^a*p* = 0.002,

^b*p* = 0.006,

^c*p* = 0.376.

Table 4
Risk level regarding emotional exhaustion, depersonalization and personal accomplishment

	Emotional exhaustion ^a				Depersonalization ^b				Reduced personal accomplishment ^c			
	Sales volume				Sales volume				Sales volume			
	A	C	Total	n%	A	C	Total	n%	A	C	Total	n%
Sales clerks												
Low	30	25	55	60.4	20	27	47	51.6	18	25	43	47.2
Average	10	7	17	18.7	16	7	23	25.3	22	5	27	29.7
High	11	8	19	20.9	15	6	21	23.1	11	10	21	23.1
Managers												
Low	7	9	16	57.2	11	8	19	67.8	9	10	19	67.8
Average	3	3	6	21.4	3	5	8	28.6	3	1	4	14.3
High	5	1	6	21.4	1	0	1	3.6	3	2	5	17.9

Statistical comparison between managers and sales clerks using Chi square test, *p*. The sales clerks' and managers results (in bold) were compared to each other for each variables (emotional exhaustion, depersonalization, and reduced personal accomplishment).

Sales clerks: A: *n* = 51 C: *n* = 40 Total: *n* = 91; managers: A: *n* = 15 C: *n* = 13 Total: *n* = 28.

^a*p* = 0.939,

^b*p* = 0.064,

^c*p* = 0.138.

close to one quarter of the sales clerks having a high risk level, while only one manager is exposed to this symptom of burnout. The result in relation to personal accomplishment is also different, but not statistically significant, with 20% more managers than sales clerks being at low risk (68% vs 47%).

3.2. Characteristics of customer service and the associated stress

The event recording observations performed in the two stores reveal that during busy periods (12 noon–3 p.m.), customer service in the office supplies department accounted for 42% (A) and 36% (C) of the work time (Table 5). The sales clerks working in the office supplies department of the small sales volume store served fewer customers (83 vs 127), but spent more time with them, although the average time per customer was only about one minute (62s vs 48s). When both departments are compared, sales clerks in the small sales volume store served fewer customers in the computer department (47 vs 83), but devoted more time to customer service during their work shifts (76% vs 36%): the average time per customer was four times longer (242s vs 62s). Indeed, nearly 30% of the customers in that department were served for more than five minutes, compared to 2% of the customers in the office supplies department. The products purchased in the computer department are generally more complex and expensive, which explains why customers need to spend more time with the sales clerks. Finally, the average time per customer in the computer department was significantly shorter in the large sales volume store (134s vs 242s) because the sales clerk also served customers in the office supplies department to help his co-workers.

Table 5
Characteristics of the sales clerk's work during busy hours

	Office supplies		Computer	
	Sales volume		Sales volume	
	A	C	A	C
Total duration of the observations:	3 h59 ^a	3 h55 ^a	1 h42 ^b	4 h11 ^a
Total time devoted to customer service (%)	42.1	36.4	55.1	75.9
Number of customers served	127	83	25	47
Average time spent with the customers (s)	48	62	134	242
% of customers served during:				
< than 1 min	77.9	73.5	73.5	44.7
1–5 min	20.5	24.1	24.1	27.7
> than 5 min	1.6	2.1	2.4	27.6
% of customers served simultaneously and/or while at least one customer was waiting to be served	28.3	31.3	36	44.7
Number of times moving from one location to another	166	161	43	149
Average time spent in one location (s)	86	88	142	101
Average time spent doing a task continuously (s)	92	115	186	345

^aTwo sales clerks were filmed.

^bOnly one sales clerk was filmed instead of two.

In addition to serving many customers, sales clerks working in the computer and office supplies departments of both stores frequently have to serve more than one customer at a time and/or have to make others wait (Fig. 1). During busy periods, depending on the department and the store, between 28% and 45% of the

customers were served at the same time as another customer was being served by the same sales clerk and/or while at least one customer was waiting to be served. This situation can be explained by the large clientele, but also by a lack of personnel: “Of course, there could be two, three more employees and it would help, but I also understand that they have limits to comply with”. When the sales clerks move around the store, this also contributes to increase simultaneous demands. For instance, when they go from one location to another to help customers with what they are looking for and/or to get products that are no longer available on the display shelves and for which the excess merchandise is not close by, then it is not always obvious to other customers in the store that they are already busy with one customer, and hence they get intercepted. During the observations, the sales clerks from the office supplies departments of both stores went from one location to another 160 times (Fig. 2) and on average spent 90s in one location. Finally, some customers’ impatience and rudeness are two other reasons for simultaneous demands. In the daily journals, the sales clerks considered that it was stressful to be serving different customers at the same time in 18% (A) and 32% (C) of the work shifts (Table 6).

Although customer service is a sales clerks’ main task, s/he devotes much time to MMH activities. Alternating between these tasks forces the sales clerk to interrupt one task to accomplish another one. Customer service, taking

place in the store as well as over the telephone, is the main interruption in the sales clerks’ work. The average time that sales clerks spent doing a task continuously during busy periods was less than 2 min in the office supply department (A & C) and about 3 min (A) and 6 min (C) in the computer department (Table 5). Sales clerks in the latter department are interrupted less often because a larger proportion of their time is devoted to customer service, which decreases the number of times that they need to alternate between different tasks.

In the daily journals, the sales clerks indicated being annoyed by the interruptions in 45% (A & C) of the 48 work shifts, while their associated level of stress was high or very high in 4.2% (A) and 20.8% (C) of these 48 work shifts (Table 6). Interruptions by customers is not an important source of stress for sales clerks because customer service is their main task, but it can be annoying: “The tasks are not hard, the problem is that we are interrupted by customers most of the time, so sometimes it’s very hard to come back to the task we had to do and to remember exactly where we left”. The frequent phone calls are annoying for sales clerks, but mainly for those working in the computer department: many customers call to get help

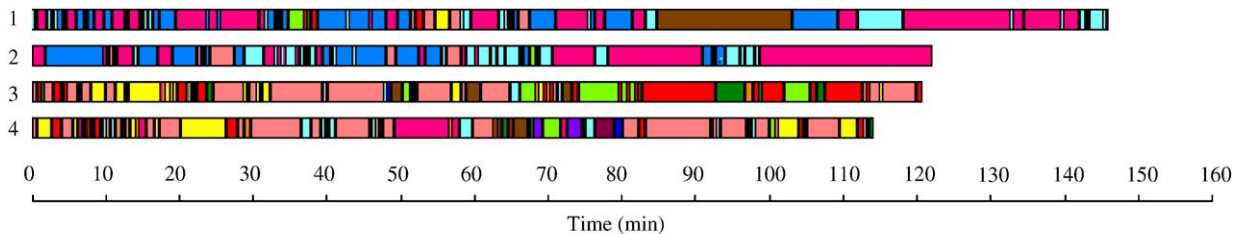


Fig. 1. A sales clerk serving two customers simultaneously.

Table 6
The sales clerks’ perception regarding the sources of stress—daily journals (%)

	Sales volume	
	A	C
	<i>n</i> ^a = 24	<i>n</i> = 24
Level of stress (high or very high)		
Simultaneous demands	18.2	31.8
Interruptions	4.2	20.8
Incomplete tasks	14.3	36.4
Extended warranties	16.7	34.3
Perception in terms of annoyance		
Interruptions	45.8	45.8
Extended warranties	53.3	63.6
Incomplete tasks at the end of the work shifts	54.2	66.7

^aNumber of daily journals/work shifts.



Legend

1 and 2 : computer department’s sales clerks
3 and 4 : office supply department’s sales clerks

Note: the color changes each time a sales clerk moves from one location to another.

Fig. 2. Sales clerks moving from one location to another during busy periods.

with the products they have purchased. The interruptions often prevent sales clerks from finishing their tasks before the end of their work day. In fact, they reported in the daily journals that they were unable to complete their tasks in 54% (A) and 67% (C) of the 48 work shifts, and they expressed an associated high or very high level of stress in 14% (A) and 36% (C) of these work shifts. Finally, some sales clerks mentioned during the interviews that incomplete tasks are not stressful for them when their superiors are understanding and when they know that a co-worker will finish these tasks during the next shift.

The computer department's sales clerks have to sell extended warranties, and the difficulty that they have convincing customers to purchase these annoys and stresses them. In the daily journals, the level of stress was evaluated by the sales clerks in the small sales volume store as being high or very high in twice as many work shifts as in the large sales volume store (34% vs 17%). Sales clerks mentioned during the interviews that their level of stress is higher when they do not sell enough warranties. Remarks about the difficulty selling extended warranties were eloquent: "Some days you would give them away, people don't even want them". "If they want us to lie to the customers, there is no problem, I can sell 12 warranties in 20 min right now". The minimum number of warranties that have to be sold in the computer department is set for the team and not individually, but some managers put pressure on sales clerks who sell very few: "What is very annoying is that there is a guy here who doesn't leave us alone, his name is..., he doesn't leave us alone, he practically harasses us". When the selling of extended warranties was not stressful for sales clerks, it was annoying for them: that was the case in 54% (A) and 67% (C) of the 48 work shifts.

4. Discussion

4.1. A stressed population of sales clerk and managers

The use of two questionnaires indicates that the warehouse superstore population studied is a population under significant stress. Karasek's questionnaire has been extensively used in the literature. Some studies suggest that there is a relationship between a combination of high psychological demand and low decision latitude on the job and an increase in psychological symptoms such as psychological distress, depression and burnout (Braun and Hollander, 1988; Landsbergis, 1988; Karasek and Theorell, 1990; Cree and Kelloway, 1993).

The results of this study can be compared to those of a population survey conducted in 1998 in the Province of Québec (Government of Québec, 2001). This survey concerned the working population consisting of people 15 y of age or older who at that time had a job and worked 25 h or more per week; this population was estimated at 2,961,000 Quebecers. The Québec population survey found that the proportion of workers with low decision latitude

was 55.5%, while the corresponding proportion in the sales clerks studied here is 71.4%, and 39.3% in managers. The sales clerk group would therefore be particularly affected. The results of the Québec survey show that decision latitude increases with age since 70.2% of those aged 15–24 had low decision latitude. These results are compatible with the characteristics of our sales clerks group, where close to 64% of them were under 25 y of age. As for Karasek's model, the Québec survey found that 22.5% of the workers were exposed to a high risk (PD + DL–), while such a risk was observed in 26.4% of our sales clerks and 32.1% of our managers. The warehouse superstore population would therefore have an increased exposure to psychological risk factors than Québec's worker population.

4.2. Different stressors

The comparison of sales clerks and managers suggests that these two population groups are exposed to different risk factors. A significant proportion of sales clerks have low decision latitude, while conversely, many managers are exposed to high psychological demands. When these two categories of workers are compared, one notes that a higher proportion of managers are exposed to the PD + DL– combination. A startling difference involves the PD – DL– combination to which 45% of sales clerks are exposed but only 7% of the managers. The scientific literature suggests that this combination has been associated with passive participation in social, political or leisure activities. This detachment from social life is itself associated with low social support, a determinant of degraded health (Bourbonnais et al., 2000).

As for the Maslach indicators, overall the same proportion of managers and sales clerks are at high risk for burnout. However, a higher proportion of managers (33.3%) are at high risk for burnout in the large sales volume stores. There are considerable differences regarding the feeling of depersonalization, which are close to being significant. More than one sales clerk in five is at high risk, compared to less than one in 25 managers. As for the feeling of personal accomplishment, differences (although not significant) are observed between the two populations. Close to 68% of the managers are at low risk for the feeling of personal accomplishment, while this proportion decreases to 47% in sales clerks.

Based on the results of two questionnaires, the hypothesis can be made that sales clerks and managers do not suffer the same stress. It seems that the managers felt valorized by their work and got very involved; if there is stress, it would be due to an overinvestment in the work. Sales clerks on the other hand would appear to be more passive, less stimulated by their work, and suffer mainly from a lack of personal accomplishment; stress would then be related to low self-esteem. These results are consistent with the working conditions where many of the workers are young people working part-time who have little seniority. They therefore probably have less of a sense of belonging

to the organization and invest themselves less in their work. Managers are often older and more experienced; it can be assumed that they are more stimulated by their work and more likely to stay with the company. The organization would therefore have a problem retaining, interesting and promoting the self-esteem of its young workforce. Such conditions may lead to higher personnel turnover, which can bring the organization to invest less in new worker training. Insufficiently trained workers would not know the products well enough to be efficient at serving the customers and performing their other tasks and thus over time develop an increasing sense of poor personal accomplishment that would in turn contribute to personnel turnover.

4.3. *Stress generating work characteristics in sales clerks*

One of the strong points of this study is that it offers a description of working conditions causing stress to sales clerks that is based on systematic observations and interviews as opposed to previous studies which were based solely on interviews dealing with general characteristics of the work. In the preliminary steps of the study, the workers indicated that customer service was the main cause of stress. The observations, daily journals, and in-depth interviews provided better insights on customer service activities. Sales clerks have to serve many customers and have little time to devote to each of these interventions. In the office supplies department, sales clerks spend on average less than one minute with each customer. One of the major stressors is that they have to constantly interrupt the tasks they are performing and hence, are unable to carry out a task continuously and finish it. In this department, on average less than 1.5 min are spent on the same task. Difficult customers are also a source of stress, as well as the pressure to sell extended warranties in the computer department. Daily journals were used to allow the sales clerks to qualify the level of stress they felt from the different working conditions observed. For instance, they revealed that the level of stress is higher in the small sales volume store due to the presence of a new employee not very familiar with the work and who was particularly stressed by all the tasks related to customer service. For the different characteristics of customer service, the workers expressed in the daily journals high or intense stress in proportion often close to 15–30% of the 48 work shifts assessed. The level of stress revealed by the journals can be thought to be underestimated because, despite the efforts deployed by the authors, the journals were completed during a period of the year when there were fewer customers and when the demands related to customer service were less marked (October) than those documented during the systematic observations carried out during the busiest period of the year (August).

It is difficult to compare the results of this study to data from the scientific literature because few ergonomic studies have been conducted in similar retail outlets. However, it

has been shown that other populations such as nurses have many interruptions in their work and that this is an important source of stress for them (Estryn-Behar, 1998). Authors have shown that interruptions in work activities could increase the workload (Wickens, 1984), are a source of stress (Carayon, 1994) and generally affect psychological well-being (Roe et al., 1996). According to Eyrolle and Cellier (2000), the most common consequences of interruptions are mistakes, stress and a reduction in performance.

Characteristics of the work other than customer service can also explain the symptoms indicated in the two questionnaires. General employment conditions such as the precariousness of part-time work and uncertain work schedules have been shown in the literature to be an important cause of stress in workers of the retail sector (Baret et al., 1998; Guignon and Cholet, 2003; Zeytinoglu et al., 2004).

One of the weak points of this study is that the analysis of customer service has a mainly descriptive character. In future studies, it would be interesting to investigate the sales clerks' work strategies. It would therefore be relevant to determine whether sales clerks modify the nature of their communications with customers and whether their strategies for moving around the store vary with the level of customer patronage. Such information would contribute to the development of work methods or behavior strategies that reduce the level of stress during peak hours and also shed light on the best management practices to promote such methods.

4.4. *Possible solutions*

The stress related to customer service may be reduced through changes in work organization, which are more complex than technical solutions related to equipment, for instance. To improve the situation, sales clerks must be allowed to spend more time with the customers; movements from one location to another in the store should also be limited since they promote multiple customer inquiries and therefore interruptions, which are to be avoided. The following solution scenarios were proposed to the head office. The first and the most costly consisted in increasing the number of working hours allocated to the stores to allow an additional person to be hired for the office supplies and computer departments during busy periods and at lunchtime (between 11 a.m. and 3 p.m.). The installation of a computer in the office supplies department to reduce movements in other departments was also recommended since not every department has a computer. Furthermore, an improvement in stock management involving a more organized arrangement of the merchandise would help limit movements from one location to another. To further reduce interruptions, it was also recommended that certain tasks be eliminated during the busiest hours. Finally, the transfer of telephone calls to voice mail was proposed.

5. Conclusions

This study is original because it is based on systematic observations, interviews and daily journals. It shows that sales clerks and managers in the warehouse superstore sector suffer from considerable symptoms of stress. Stress is expressed differently in these two categories of jobs. Managers would be more likely to have a career plan, and stress would result from an overinvestment in the work. In sales clerks, who are younger and don't have such a strong sense of belonging to the company, stress would result in a sense of low self-esteem. It would be interesting to understand how to motivate this population of sales clerks better and make its members more likely to stay with the company. Customer service is the main stress-generating task for sales clerks owing to the high number of customers to serve during peak hours. Interventions to correct the problems should minimize interruptions, whose most common consequences reported in the literature are mistakes, stress, a reduction in performance, and an increased workload. Future studies addressing this issue, should provide a more in depth analysis of work strategies used in varying customer patronage conditions.

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