Stressful work, sickness absence and turnover in truck drivers from etiology to prevention

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Chapter 5

Stressful work, psychological job strain and turnover in truck drivers: A 2-years prospective cohort study
Chapter 5 Stressful work, psychological job strain and turnover

Abstract

Background Psychological job strain (i.e. short-term work stress reaction) is assumed to mediate the relationship between stressful working conditions (in terms of job demands and job control) and employee turnover.

Objectives This study examined the assumed work-strain-turnover relationship longitudinally.

Methods Self-administered questionnaires providing information on the study variables were sent to a random sample of 2,000 Dutch truck drivers. Of the 1,123 responders, 820 returned a questionnaire two years later (response: 72%).

Results The univariate results showed that stressful working conditions and psychological job strain were predictive of turnover. After adjustment for psychological job strain, the significant influence of stressful working conditions on turnover disappeared.

Conclusions Psychological job strain mediates the relationship between stressful working conditions and employee turnover.

De Croon EM, Sluiter JK, Blonk RWB, Broersen JPJ, Frings-Dresen MHW. (submitted) (Chapter 5)
Introduction

A recent survey among 21,500 European Union workers (Paoli and Merlié, 2001) showed that work has intensified almost continuously over the last decade. In 1990, 1995, and 2000, 48 percent, 54 percent, and 56 percent of the workers, respectively, reported working at very high speed during at least one quarter of their working time. The survey of 2000 also revealed that 20 percent of the workers work more than 45 hours per week. Furthermore, 29 percent and 30 percent of the workers do not have a choice over their pace of work or their methods of work, respectively (Paoli and Merlié, 2001).

Epidemiological research shows that structural exposure to the stressful working conditions described above may have health consequences for individual workers. For instance, Fredriksson et al. (2000) showed in a nested case-control study covering 24 years that high job demands and low job control were associated with neck and shoulder disorders. Furthermore, Steptoe (2001) demonstrated that low job control was associated with increased blood pressure. Alike, Bosma et al. (1997) found that London civil servants with low levels of job control, either self reported or independently assessed, had a higher risk of newly reported coronary heart disease during the three year follow up.

In addition to negative health consequences, research has provided evidence that stressful working conditions may have negative consequences for companies as well. Besides elevated sickness absence rates (e.g. Niedhammer et al., 1998; Kivimäki et al., 1997; Bourbonnais and Mondor, 2001) and decreased productivity (e.g. Jex, 1998), an organizational consequence of stressful working conditions may be employee turnover (see for a review Griffith et al., 2000).

According to several researchers, psychological job strain (short-term work stress reaction) is an intervening variable in the relationship between stressful working conditions and voluntary employee turnover (e.g. Lee and Ashforth, 1996; Moore, 2000; Taris et al., 2001). Specifically, these researchers hypothesize that accumulation of psychological job strain due to the exposure to stressful working conditions results in employee turnover in the long run. Voluntary turnover in this respect is seen as an adaptive response to the experienced cumulated psychological strain of a stressful job. Thus, workers may use turnover opportunities to shift from a stressful job to a less stressful job, thereby maintaining a state of psycho-physiological equilibrium (homeostasis hypothesis of turnover).
Examination of the occupational stress literature suggests that the assumed relation from stressful work to psychological job strain to turnover is plausible. First, a vast amount of studies reviewed by Van der Doef and Maes (1999), found positive "effects" of stressful working conditions on psychological job strain supporting the relationship from stressful work to psychological job strain. Secondly, positive "effects" of psychological job strain on employee turnover are discerned in the literature as well (e.g. Klenke and Hamel, 1990; Geurts et al., 1998; Wright and Cropanzano, 1998; Weisberg and Sagie, 1999; Swaen et al., 2002) providing support for the relationship from psychological job strain to turnover as part of the chain of reactions.

Because of three reasons, however, the results of the studies cited above should be interpreted cautiously. Firstly, most studies examined the relationship between stressful working conditions, psychological job strain and turnover in a cross-sectional design, which precludes causal inferences. Secondly, the majority of studies assessed turnover intentions instead of actual voluntary turnover. The moderate association between turnover intention and actual turnover (sample size weighted average correlation is $r = .35$; Griffeth et al., 2000), however, underscores that the intention to quit cannot be equated with actual turnover. Thirdly, to the authors' knowledge, not a single study examined the relationship between stressful working conditions, psychological job strain, and actual turnover in a longitudinal design concurrently. Consequently, the question whether psychological job strain mediates the relationship between stressful working conditions and employee turnover remains unanswered.

The aim of the present longitudinal study, therefore, is to examine the relationship between stressful working conditions, psychological job strain, and actual voluntary turnover in truck drivers simultaneously. Based on the evidence from (mainly) cross-sectional questionnaire research, described above, it is hypothesized that psychological job strain is predictive of employee turnover. Furthermore, in accordance with the assumed intervening role of psychological job strain in between stressful working conditions and employee turnover, it is hypothesized that psychological job strain mediates the relationship between stressful working conditions and employee turnover. Finally, in agreement with the "homeostasis hypothesis" according to which workers quit a stressful job to maintain a state of equilibrium, it is hypothesized that these workers will search for a job that is less stressful.
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Method

Subjects and times of measurements

The present study was part of a prospective cohort study on stressful working conditions and health in Dutch truck drivers. In September 1998, a random sample of truck drivers was taken from the directory of the Dutch Central Bureau of Occupational Health Care in Road Transport (BGZ Wegvervoer) \((n = 2,000)\). Of the 2,000 mailed self-administered questionnaires, 1,225 were returned. Two years later, in September 2000, 102 of these 1,225 drivers were not traceable anymore. Therefore 1,123 \((1,225 - 102)\) drivers received a second questionnaire of which 820 participants returned a questionnaire \((response: 72\%)\). Because of retirement, dismissal, and incomplete questionnaires for this study, 137 drivers were excluded from the analyses.

Respondents versus non-respondents

A non-response analysis revealed two significant differences between non-respondents and respondents in 2000. Compared with the respondents, non-respondents were significantly younger in 1998 \(mean \text{ age} 38 \text{ years} v. 40 \text{ years}, t = -3.41, p < .01\) and had a lower tenure in 1998 \(mean \text{ tenure} 8 \text{ years} v. 10 \text{ years}, t = -4.00, p < .01\).

Measures

Stressful working conditions, in terms of low job control and high job demands, were measured in 1998 and 2000 by means of the validated Dutch Questionnaire on the Experience and Assessment of Work \(\text{(VBBA)}\) \((Van Veldhoven and Meijman, 1994)\). The psychometric qualities of the VBBA scales are good. During construction of the scales Rho, comparable to Cronbach's alpha, varied between .82 to .95. Loevinger's H varied between .42 and .75. These values are consistent with underlying uni-dimensional constructs.

Job control An 11-item scale of the VBBA questionnaire quantified job control in 1998 and 2000. Some examples of this scale are: "Can you decide on your own the order in which you carry out your work?" and "Can you interrupt your work for a short time if you find it necessary to do so?". Items were scored on a four-point scale \(1 = \text{never}, 2 = \text{sometimes}, 3 = \text{often}, 4 = \text{always}\). A job control scale score was calculated by adding the individual's scores on the items. Subsequently, this scale score was transformed into a scale ranging from 0 to 100. Low scores on the job control scale are indicative of a negative evaluation.
Job demands Three relevant job demands for truck driving (De Croon et al., 2002a), were assessed in 1998 and 2000 by means of VBBA questionnaire scales, namely psychological job demands, physical job demands and supervisor job demands. An 11-item scale assessed psychological job demands. Two example items are: "Do you work under pressure of time?" and "Do you have to work extra hard in order to complete something?" A 7-item scale assessed physical job demands. Typical items of this scale are: "Does your work require physical strength?" and "In your work, are you seriously bothered by having to lift or move loads?" Supervisor job demands were measured by means of the relationship with your immediate boss scale of the VBBA comprising 9 items. Some examples of this scale are: "Do you have conflicts with your boss?" and "Do you experience aggressiveness from your boss?" All items of the three job demand scales were scored on a four-point scale (1 = never, 2 = sometimes, 3 = often, 4 = always). Psychological job demands scale scores, physical job demands scale scores, and supervisor job demands scale scores were calculated by adding the individual's scores on the respective items. All scale scores were transformed into scales ranging from 0 to 100. High scores on the job demand scales reflect a negative assessment.

Psychological job strain The 1998 questionnaire as well as the 2000 questionnaire encompassed two indicators of psychological job strain. These indicators were need for recovery after work and fatigue.

Need for recovery after work was measured by means of the similarly named scale of the Dutch VBBA questionnaire (Van Veldhoven and Meijman, 1994). The need for recovery after work scale comprises 11 dichotomous items. Typical items of the need for recovery after work scale are: "At the end of a working day I am really feeling worn-out" and "I find it hard to relax at the end of a working day." The need for recovery after work scale contains one reversed item that is recoded. A need for recovery after work scale score is calculated by adding the individual's scores on the eleven (recoded) items. This scale score is transformed into a scale ranging from 0 to 100. Higher scores indicate a higher degree of need for recovery after work. Need for recovery after work is strongly related to emotional exhaustion (Schaufeli and Van Dierendonck, 1999) and reflects the extent to which workers have difficulties to recover adequately from work-related fatigue after a working day.

Fatigue was measured by means of the Checklist Individual Strength (CIS) (Vercoulen et al., 1994). The CIS consists of 20 statements for which the person has to indicate on a 7 point scale to what extent the particular statement applies to him or her (1 = Yes, that is
true; to 7 = No, that is not true). The statements refer to four fatigue aspects: (1) subjective fatigue (e.g. I feel tired), (2) reduced motivation (e.g. I feel no desire to do anything), (3) reduced activity (e.g. I don't do much during the day), and (4) reduced concentration (e.g. My thoughts easily wander). The CIS is well validated within the clinical setting (e.g. Vercoulen et al., 1996) and the working situation (e.g. Beurskens et al., 2000; Bültmann et al., 2000). In this study, a composite CIS total score (ranging from 20 to 140) was calculated by adding the individual's scores on the four factors. Higher scores indicate a higher degree of fatigue, more concentration problems, reduced motivation or low levels of activity.

Demographic variables In 1998 and in 2000, the truck drivers provided information on several demographic variables. Two demographic variables, which have been consistently shown to be related to voluntary employee turnover meaningfully (Griffeth et al., 2000), were used in the present study. These variables are organizational tenure, and age.

Employee turnover Past researchers have defined turnover in a number of ways (e.g. Wright and Bonett, 1992). In this study, turnover was defined only as voluntary actual withdrawal from the organization. Voluntary employee turnover among the participating truck drivers was measured in 2000 by means of one question, namely: “During the last 2 years (between the first and the present measurement) did you voluntarily quit your job?” In the present study 23 percent of the participants (n = 156) changed jobs voluntarily during the 2-year follow-up period.

Analyses

Firstly, Pearson correlation coefficients were calculated between the demographic variables and the study variables. Secondly, logistic regression analyses examined the relationship between each stressful working condition in 1998 and employee turnover during the 2-year follow-up. At the first stage of these analyses, the influence of each separate working condition on employee turnover, after adjustment for age and organizational tenure was examined. To test the presumed mediating role of psychological job strain, at the second stage of the analyses, the influence of each separate working condition on employee turnover after additional adjustment of psychological job strain was examined. Thirdly, to examine possible changes over time in the study variables, auto-correlation analyses and paired t-tests were conducted separately among the drivers who remained with their job (job stayers) and the drivers who changed jobs (job changers).
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Results

Descriptive and correlational analyses

Descriptive statistics, internal consistency and intercorrelations for the variables under study are displayed in Table 1. Inspection of Table 1 reveals that older drivers \( r = -0.16, p < .01 \), higher tenure drivers \( r = -0.25, p < .01 \), and drivers with more job control \( r = -0.08, p < .05 \) are less likely to change jobs. In addition, drivers with higher physical job demands \( r = 0.07, p < .05 \), higher supervisor job demands \( r = 0.07, p < .05 \), higher need for recovery after work \( r = 0.12, p < .01 \) and higher fatigue \( r = 0.08, p < .05 \) are more likely to change jobs. Furthermore, all stressful working conditions are significantly associated with both psychological job strain indicators (i.e. need for recovery after work and fatigue) in the expected direction. Additionally, more need for recovery after work shows a strong association with more fatigue \( r = 0.71, p < .01 \). Finally, all questionnaire scales evidenced favorable internal consistency (Cronbach's alpha ranging between .88 and .92).

Table 1 Mean (M), standard deviation (SD), internal consistency (α), and zero-order Pearson correlation coefficients of the study variables in the cohort (n ranges between 664 and 683 due to missing values)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>α</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Age (y)*</td>
<td>39.1</td>
<td>9.4</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2 Organizational tenure (y)*</td>
<td>9.8</td>
<td>8.4</td>
<td>.54*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3 Job control(^a)</td>
<td>46.4</td>
<td>20.4</td>
<td>.05*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>4 Psychological demands(^b)</td>
<td>45.0</td>
<td>16.0</td>
<td>.15**</td>
<td>.13*</td>
<td>.38**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5 Physical demands(^b)</td>
<td>34.9</td>
<td>22.0</td>
<td>.07*</td>
<td>.08*</td>
<td>.10**</td>
<td>.44*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 Supervisor demands(^b)</td>
<td>27.2</td>
<td>19.4</td>
<td>.07*</td>
<td>10**</td>
<td>.37**</td>
<td>.45**</td>
<td>.33**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7 Need for recovery(^a)</td>
<td>35.7</td>
<td>32.6</td>
<td>.09*</td>
<td>.04*</td>
<td>.32**</td>
<td>.56**</td>
<td>.41**</td>
<td>.40**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8 Fatigue^c</td>
<td>49.0</td>
<td>21.9</td>
<td>.07*</td>
<td>.03*</td>
<td>.31**</td>
<td>.44**</td>
<td>.31**</td>
<td>.37**</td>
<td>.71**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9 Employee turnover(^a)</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
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</tr>
</tbody>
</table>

*p < .05 (one tailed); **p < .01 (one tailed)

\( ^a \) years

\( ^b \) For the job demands, need for recovery after work and fatigue, high scale scores reflect a negative evaluation. High scores on the job control scale are indicative of a positive evaluation.

\( ^c \) Spearman rank correlation coefficients (rho)

Relations between stressful working conditions, psychological job strain and turnover

Table 2 presents the results of the logistic regression analyses examining the relation between each separate stressful working condition in 1998 and employee turnover during the 2-year follow-up. As can be seen in Table 2, job control was significantly related with employee turnover after adjustment for age and organizational tenure (\( B = -0.011, p < .05 \))...
.05) (Model 1). Similarly, psychological job demands ($B = .013$, $p < .05$), physical job demands ($B = .010$, $p < .05$) and supervisor job demands ($B = .013$, $p < .05$) were positively related to employee turnover.

The results of Model 2 show that need for recovery after work fully mediated the relationship between the stressful working conditions and employee turnover. Specifically, after adjustments for need for recovery after work (in addition to age and organizational tenure), all relations between the stressful working conditions and employee turnover became non-significant. The results of Model 3 show that after adjustments for fatigue (in addition to age and organizational tenure) the significant associations between job control, psychological and physical job demands turnover disappeared as well. These results indicate that fatigue also fully mediated the relationship between these stressful working conditions and employee turnover. Furthermore, fatigue partially mediated the relationship between supervisor job demands and employee turnover. Stated differently, although the magnitude of the B coefficient was reduced, supervisor job demands continued to be related to employee turnover ($B = .010$, $p < .05$).

### Table 2

Prospective relations between the separate stressful working conditions and employee turnover during the two-year follow-up in the cohort, after adjustment for age and organizational tenure (Model 1), after adjustment for age, organizational tenure and need for recovery after work (Model 2), and after adjustment for age, organizational tenure and fatigue (Model 3).

<table>
<thead>
<tr>
<th>Stressful Working Condition</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job control</td>
<td>$-.011^{**}$</td>
<td>$-.006$</td>
<td>$-.007$</td>
</tr>
<tr>
<td>Psychological job demands</td>
<td>$+.013^{**}$</td>
<td>$+.001$</td>
<td>$+.006$</td>
</tr>
<tr>
<td>Physical job demands</td>
<td>$+.010^{**}$</td>
<td>$+.004$</td>
<td>$+.006$</td>
</tr>
<tr>
<td>Supervisor job demands</td>
<td>$+.013^{**}$</td>
<td>$+.007$</td>
<td>$+.010^{*}$</td>
</tr>
</tbody>
</table>

* $p < .05$ (one tailed); ** $p < .05$ (two tailed)
† Adjusted for age and organizational tenure (all variables continuous)
‡ Adjusted for age, organizational tenure, and need for recovery after work (all variables continuous)
§ Adjusted for age, organizational tenure, and fatigue (all variables continuous)

Changes over time of the study variables in the job stayers and the job changers

Table 3 displays information on the stressful working conditions and psychological job strain of the drivers who remained with their job (job stayers) and of those who changed jobs (job changers). From Table 3, it can be seen that three significant changes over time occurred in the job stayers. Firstly, supervisor job demands increased between 1998 and 2000 in this group ($t = 3.53$, $p < .01$). Secondly, an elevation of need for recovery after work took place between 1998 and 2000 among these drivers ($t = 3.23$, $p < .01$). Thirdly,
fatigue increased in the job stayers between 1998 and 2000 \( (t = 5.38, p < .01) \). Among the job changers, opposite changes over time were discerned. After the job change, the job changers perceived more job control \( (t = 2.78, p < .01) \) and less psychological \( (t = -3.47, p < .01) \), physical \( (t = -4.34, p < .01) \) and supervisor job demands \( (t = -3.60, p < .01) \). Finally, the moderately high auto-correlations of the measures assessing the stressful working conditions and psychological job strain among the job stayers (auto-correlations ranging between \( r = .56 \) and \( r = .67 \)) underscore the stability of these variables. Contrarily, the auto-correlations of the study variables in the job changers were low (auto-correlations ranging between \( r = .21 \) and \( r = .53 \)) indicating that the differences between the individual drivers in 1998 changed after the job change had occurred.
Table 3  Mean (M), standard deviation (SD), paired t-values, auto-correlations (stability) of age, organizational tenure, job control, job demands, need for recovery after work and fatigue in 1998 and 2000 for the truck drivers who remained with their job (job stayers) during the two-year follow up period, and for the truck drivers who changed jobs (job changers) during the two-year follow up period

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<tbody>
<tr>
<td>Age</td>
<td>39.9</td>
<td>10.1</td>
<td>36.6</td>
<td>9.1</td>
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<td></td>
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</tr>
<tr>
<td>Organizational tenure</td>
<td>10.9</td>
<td>8.5</td>
<td>6.3</td>
<td>6.4</td>
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<tr>
<td>Job control</td>
<td>47.6</td>
<td>20.6</td>
<td>43.6</td>
<td>19.4</td>
<td>.77</td>
<td>.62</td>
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<tr>
<td>Psychological job demands</td>
<td>44.7</td>
<td>16.1</td>
<td>45.9</td>
<td>16.0</td>
<td>.63</td>
<td>.64</td>
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<tr>
<td>Physical job demands</td>
<td>34.2</td>
<td>22.2</td>
<td>37.5</td>
<td>21.9</td>
<td>.27</td>
<td>.67</td>
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<tr>
<td>Supervisor job demands</td>
<td>26.4</td>
<td>19.2</td>
<td>29.1</td>
<td>19.6</td>
<td>3.53*</td>
<td>.56</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Need for recovery after work</td>
<td>33.4</td>
<td>31.7</td>
<td>42.9</td>
<td>34.3</td>
<td>3.23*</td>
<td>.66</td>
<td></td>
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<tr>
<td>Fatigue</td>
<td>47.9</td>
<td>21.1</td>
<td>52.6</td>
<td>24.3</td>
<td>5.38*</td>
<td>.57</td>
<td></td>
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</tbody>
</table>

* p < .01 (two tailed)

n ranges between 503 and 526 due to missing values

n ranges between 153 and 155 due to missing values

Paired t-value is an indicator of the difference between the mean value in 1998 and the mean value in 2000 of the same variable.
Discussion

The present study was designed to examine the relation between stressful working conditions, psychological job strain, and employee turnover longitudinally. In accordance with the hypothesis, psychological job strain was predictive of voluntary employee turnover. Furthermore, as expected, the influence of stressful working conditions on employee turnover disappeared after adjustment for psychological job strain. This suggests that psychological job strain mediates the relationship between the exposure to chronic stressful working conditions and the occurrence of employee turnover.

The results of the present study confirm findings in cross-sectional research (Klenke-Hamel and Mathieu, 1990; Lang et al., 1992; Moore, 2000) and are consistent with the effort-recovery model of Meijman et al. (1992) and Sluiter et al. (2001) and Leiter's process model of burnout (Leiter, 1991; Leiter, 1993). According to Meijman et al. (1992) and Sluiter et al. (2001), repeated insufficient recovery after work (i.e. high need for recovery), due to stressful working conditions, starts a vicious circle, in which extra effort is required every new working period to cope with the job demands. Consequently, more need for recovery is experienced after the working period. The consequence of this vicious circle is cumulated fatigue, which may result in an accumulated health deterioration on the longer term.

In accordance with process theories on burnout (e.g. Leiter, 1991; Leiter, 1993), a worker experiencing chronic cumulated fatigue (i.e. exhaustion) may at some time feel compelled to withdraw him/herself from the working situation. According to Leiter, this withdrawal response may first come about in an attitudinal adjustment (i.e. decreased commitment to the organization), and, thereafter, in a behavioral response (i.e. tardiness, performance-deterioration, absenteeism, employee turnover).

Also consistent with previous research, low organizational tenure predicted subsequent employee turnover (Griffeth et al., 2000). Possibly, the low-tenure (inexperienced) drivers were psychologically unfit for the stressful and strenuous work of truck driving (i.e. "healthy worker survivor effect"). Alternatively, these drivers still had to learn about their new work-role before achieving an adequate person-work environment fit (Edwards, 1991). The consequential psychological job strain in these drivers might have paved the way to turnover. Additionally, turnover may have been more difficult for the high-tenure drivers because of restricted alternative employment availability and family concerns (Johns, 1991). Besides, the high-tenure drivers in this study may have collected more side
bets and investments with the organization making it more difficult to change jobs (Meyer and Allen, 1984).

Another aim of this study was to examine the hypothesis that workers use turnover opportunities to shift from a stressful job to a less stressful job. The observed significant improvement in job control and the significant decrease in all job demands in the group of job changers confirmed this hypothesis. These results correspond with Newton and Keenan (1990), Wright and Bonett (1992), Van der Velde and Feij (1995) and Swaen et al. (2002). Apparently, the drivers used the job change to obtain less stressful employment for which they were better suited. Alternatively, compatible with the theory of cognitive dissonance (Festinger, 1957), the job changers may have made their job change legitimate by creating an imaginary more positive picture of the new job.

Three other aspects of this study should be taken into account to appreciate the implications of the results. Firstly, the sample of truck drivers in this study was taken at random out of practically the total population of Dutch truck drivers. Therefore, the variation in age, tenure, stressful working conditions, and psychological job strain was high. Nevertheless, though consistent with most turnover studies, the effects of stressful working conditions and psychological job strain on employee turnover were small. The small effects observed in this study may be explained by the multi-factorial nature of employee turnover. Other factors in the work domain (e.g. distributive justice, market conditions) and family domain (e.g. family constraints) influence turnover (see for a review Griffeth et al., 2000). Furthermore, personality factors may affect turnover as well. Barrick and Mount (1996), for instance, showed that, compared to their coworkers, conscientious and emotionally stable truck drivers were less likely to change jobs.

Secondly, in spite of the publicity given to the research project, and the employment of three repeated mailings, the percentage of drivers who participated at the first measurement was 61%. Unfortunately, characteristics of the drivers who did not respond to the first questionnaire could not be retrieved. The drivers who did not respond at follow-up were on average somewhat younger and had a moderately lower tenure compared to the respondents at follow-up. Considering the negative relation between tenure and turnover, it is presumable that the rate of job changers among the non-respondents was comparatively high. However, the analyses were adjusted for the potential disturbing effect of age and tenure. Furthermore, no significant differences in psychological job strain between non-respondents and respondents at follow-up were observed. Thus, despite the
dropout of drivers in this study, the influence of selection bias is not thought to be prominent.

Thirdly, the present study was conducted in one occupational group (i.e. truck drivers). Therefore, prudence is required when generalizing the present results to other occupations outside the road transport industry. As reported by Griffith et al. (2000), effect sizes of turnover predictors may vary across occupations. In the case of truck drivers, elevated levels of occupationally induced fatigue can have consequences for road safety. Research shows that fatigue in drivers plays a part in the incidence of traffic accidents (e.g. Brown, 1994; Summala and Mikkola, 1994; Horne and Reyner, 1999). Consequently, elevated levels of fatigue and high needs for recovery after work may compel truck drivers in particular to search for another, less stressful job.

The results of the present study have methodological as well as practical implications. From a methodological point of view, the results suggest that researchers in the field of occupational stress and health research may underestimate relationships between stressful working conditions and health problems in prospective cohort research. Specifically, the results insinuate that workers experiencing cumulated psychological job strain might decide to change jobs because they find the job too stressful. Consequently, a selection effect may occur among the workers in the cohort that is comparable with the previously described “healthy worker survivor effect”. The healthy worker survivor effect is a self-selection process that allows relatively healthy workers to remain in certain jobs, whereas those who change jobs are less healthy (Rothman, 1986). Similarly, the attrition of workers with high psychological job strain may restrict the range of health complaints over time thereby attenuating prospective relations between stressful working conditions and health complaints.

 Practically, the results of this study suggest that managers may be encouraged to know that organizational stress reducing interventions may simultaneously decrease psychological job strain, which in turn may reduce voluntary turnover. At the individual level, managers and practitioners may prevent voluntary turnover by means of extending the psychological resources of workers with elevated psychological job strain. For instance, these workers may be given the opportunity to attend stress management courses. When there is no prospect of improvement, practitioners may encourage “strained” workers who have trouble in coping with the stress of the job, to search for alternative jobs that are more suitable.
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