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Interpersonal conflicts at work as a predictor of self-reported health outcomes and occupational mobility

L De Raeve,¹ N W H Jansen,¹ P A van den Brandt,¹ R Vasse,² IJ Kant¹

ABSTRACT

Objectives: The aim of this prospective study was to examine the relationship between interpersonal conflicts at work and subsequent self-reported health outcomes (self-reported general health, need for recovery, and prolonged fatigue) and occupational mobility (internal mobility ie, changing job function, and external mobility ie, changing employers).

Methods: Data from the Maastricht Cohort Study on fatigue at work (n = 5582 for co-worker conflict; n = 5530 for supervisor conflict) were used. Interpersonal conflict with either co-workers or supervisors was assessed between baseline and 1-year follow-up. Outcomes were studied every 4 months between 1-year and 2-year follow-up. Logistic regression analyses using generalised estimating equations were conducted for each of the dichotomous outcomes, while controlling for demographic factors, the presence of a long-term illness, other workplace stressors, coping, and outcome at baseline. Analyses were conducted for men only.

Results: At baseline, conflicts with co-workers occurred in 7.2% of the study population, while conflicts with supervisors occurred in 9.5% of the study population. In general, this study showed that co-worker conflict was a statistically significant risk factor for the onset of an elevated need for recovery, prolonged fatigue, poor general health and external occupational mobility. Supervisor conflict was a significant risk factor for the onset of an elevated need for recovery, prolonged fatigue, external occupational mobility, and internal occupational mobility.

Conclusions: The results of this study indicate a possible causal relationship between interpersonal conflicts at work and self-reported health and occupational mobility. Given the considerable impact of interpersonal conflicts at work on the individual worker and on the organisation, and the fact that interpersonal conflicts at work are highly prevalent, these findings underline the need for interventions aimed at preventing the occurrence of interpersonal conflicts at work, or at least reducing the harmful effects on both the employee and the organisation.

Interpersonal conflicts are highly prevalent¹ and have often been identified as a leading source of stress in the occupational setting.²–⁴ Interpersonal conflicts at work have previously been associated with health-related outcomes, such as poor sleep quality,⁵–⁶ the use of tranquilisers and hypnotics,⁷ psychiatric morbidity,⁸ burnout,⁹ anxiety, frustration and depression,¹⁰ ¹¹ ¹² and with organisational outcomes such as job dissatisfaction,¹³ ¹⁴ turnover intention,¹⁵ intention to quit,¹⁶ ¹⁷ and work disability.¹

The majority of studies examining effects of interpersonal conflicts at work on the individual is based on a cross-sectional design, and therefore they do not allow any causal inferences to be made. Some studies did, however, examine the effects of interpersonal conflicts at work using a longitudinal design. Two studies that used data collected in the 1980s found that conflicts constituted an elevated risk for work disability among women¹ and for psychiatric morbidity among men and women.⁶ A more recent prospective study by Bültmann et al¹⁶ found that interpersonal conflicts at baseline predicted the onset of prolonged fatigue and psychological distress at 1-year follow-up.

Even when using a longitudinal design, previous prospective studies did not always succeed in disentangling the cause and effect relationship between interpersonal conflicts and health and organisational outcomes. Insight into this causal relationship is, however, a prerequisite for designing and implementing interventions in the workplace aimed at preventing or at least reducing the negative effects of interpersonal conflicts at work. Methodological limitations, such as small study populations and the inability to control for the initial value of the outcome measure often prevent researchers from providing evidence regarding the causal effects of interpersonal conflicts at work. Moreover, the onset of an interpersonal conflict needs to be measured before the onset of a certain outcome, because a prerequisite for examining causality is that the change in exposure is measured before the actual change in the outcome.¹⁷ Furthermore, the net effects of interpersonal conflicts at work can only be determined by controlling for possible confounding factors that have shown to be associated with both exposure and outcome.

Once these methodological requirements are fulfilled, several other considerations need to be taken into account. First, the impact of work-related interpersonal conflicts may depend on the source of the conflict. Previous research has found differential outcomes for conflicts with co-workers and conflicts with supervisors.⁵ ¹⁵ ¹⁸ Second, interpersonal conflicts at work might have different effects, depending on the outcome studied. Moreover, when looking at different outcomes, one also has to consider the time lag that is needed to find the strongest effect. For example, it is possible that effects on health outcomes occur rather quickly in response to a conflict. However, it might take longer for an individual to actually change jobs because of this conflict. Previous research has often used long time lags between exposure and outcome. Consequently, it is possible that initial effects have already taken place at an earlier stage and that therefore, at the time of...
actual outcome measurement, only a residual effect, that is, an underestimation of the actual effect, was measured.12 Finally, previous studies found gender differences in the effects of interpersonal conflicts at work.13–21 However, existing literature was not always consistent.8 The analyses in this study were conducted for men only.

Taking into account the above methodological and conceptual considerations, the goal of this prospective study is to gain insight into the negative effects of interpersonal conflicts with co-workers and supervisors within a large cohort of male employees. This study examines the effects of interpersonal conflicts at work between baseline and 1-year follow-up on three self-reported health outcomes (self-reported general health, need for recovery, and prolonged fatigue) and on organisational outcomes (occupational mobility) between 1-year and 2-year follow-up, while controlling for demographic factors, the presence of a long-term illness, other workplace stressors and coping.

METHODS

Study population

This study is based on data from the Maastricht Cohort Study, a prospective study on fatigue at work,22 in which employees from 45 different companies were followed by means of 10 consecutive self-administered questionnaires, which they received at 4-month intervals. Once a year, in May, the employees received an extensive questionnaire with items on work and non-work-related factors, demographics and health factors. Twice a year (in September and January) the employees received a short questionnaire, capturing mainly outcome measures. In May 1998, the baseline questionnaire was sent out to 26,978 employees. Altogether, 12,161 employees completed and returned the baseline questionnaire (response rate of 45%). Twenty-one questionnaires were excluded from analysis due to technical problems. The baseline (T0) cohort thus consisted of 12,140 people and captured both blue-collar and white-collar workers. Non-response analyses at baseline yielded no significant differences between respondents and non-respondents regarding demographic characteristics. Non-respondents were somewhat less likely to report fatigue complaints. Further details on non-response, the procedure, and sectors and trades represented in the Maastricht Cohort Study have been reported elsewhere.22–25 Employees who had completed the baseline questionnaire and at least one of the following two short questionnaires (T1 and T2), received the 1-year follow-up questionnaire (T3) in May 1999 (response rate 79.5%, n = 9655). The employees who returned the questionnaire at T3 and at least one of the consecutive short questionnaires (T4 and T5) also received the extensive questionnaire (T6) in May 2000 (response rate 66.5%, n = 8070).

For this study, data from T0, T3, T4, T5 and T6 were used. Questionnaires at baseline (T0) and 1-year follow-up (T3) were used to determine the onset of an interpersonal conflict at work. Questionnaires at T3 (May 1999), T4 (September 1999), T5 (January 2000) and T6 (May 2000) were used to assess the outcomes (fig 1).

Employees on whom at least baseline and 1-year follow-up data were available were considered for this study (n = 9655). As it is possible that the effects of interpersonal conflict are different for men and women, and because of the limited amount of women that were available for the longitudinal analyses in this study, women were excluded (n = 2606) and the analyses in this study were conducted for men only. Employees with multiple jobs at T0 or T3 were excluded (n = 427) because information on the other job was lacking. Moreover, employees who reported themselves to be absent from work because of illness or reported working under modified conditions related to former sickness absence (eg, fewer hours, modified tasks or other functions) at the time of administering the T0 or the T3 questionnaire were excluded from the analyses (n = 943) as they might have a distorted view of their work situation because of sickness absence. After exclusion of employees with missing data on the exposure of interest (97 missings on co-worker conflict and 149 missings on supervisor conflict) co-worker conflict could be studied in 5582 employees, and supervisor conflict could be studied in 5550 employees. Baseline characteristics of these final study populations are presented in table 1.

Measures

Interpersonal conflicts at work

Conflicts with co-workers and supervisors were measured with two items from the Dutch Questionnaire on the Experience and Evaluation of Work (Dutch abbreviation VBBA).26 Conflicts with co-workers were assessed with the question “Do you have conflicts with your co-workers? (no/yes)”. Supervisor conflict was assessed with the question “Do you have conflicts with your daily supervisor? (no/yes)”. Information on interpersonal conflicts was gathered once a year in the extensive questionnaires.

Self-reported health outcomes

Self-reported general health was measured using one item adapted from the SF-36,27 giving an overall rating of health on a five-point scale (1 = excellent, 2 = very good, 3 = good, 4 = moderate, 5 = bad). In line with several other studies,26–31 this measure was dichotomised by grouping response scores 1–3 into the category of good general health and scores 4–5 into the category of poor general health. Self-reported general health was assessed every 4 months.

The need for recovery from work was assessed every 4 months using an 11-item scale from the VBBA.28–30 The items represent short-term effects of a day of work. Responses (no/yes) to the 11 items were summed up to generate a total score ranging from 0 to 100 (Cronbach’s alpha 0.78). As no cut-off point existed for classifying persons with a high score on the total scale, we used the upper tertile to define employees with a considerable need for recovery from work.

Prolonged fatigue was measured every 4 months with the 20-item self-reported Checklist Individual Strength (CIS), which has been described extensively elsewhere.32–33 A composite CIS-total score, ranging from 20 to 140 (Cronbach’s alpha 0.93), was constructed by adding the item scores. A cut-off point of CIS total >76 was used for case classification. This cut-off point was established in a separate pilot study by means of defined samples with differences in fatigue levels.34 Persons scoring >76 on the CIS-total were designated as probable cases of prolonged fatigue. Whereas the need for recovery scale measures the recuperation period after 1 day of work and thus represents short-term effects, the CIS asked employees how they felt during the past 2 weeks.

Occupational mobility

Occupational mobility was assessed every 4 months from T1 onwards and can be divided into internal mobility and external mobility. Internal mobility was defined as a job change within the company and was assessed with one item asking employees whether they changed their job function in the past 4 months.
External mobility was defined as a change in jobs from one employer to another and was assessed with one item asking employees whether they changed employers in the past 4 months (no/yes).

Confounding factors
Self-reported data were available on age (continuous), living situation (living alone no/yes), and the presence of a long-term illness (no/yes). Educational level was measured according to the highest level of education the person completed and was recoded in three categories: low (primary and lower vocational school), medium (lower secondary school, intermediate vocational school and secondary school), and high (higher vocational school and university). Moreover, as psychological job demands, decision latitude, social support and coping behaviour have previously shown to be related to both interpersonal conflicts as well as to the outcome measures, they were treated as possible confounders in this study. Psychological job demands, decision latitude, and social support were measured with a validated Dutch version of the self-administered Job Content Questionnaire (JCQ).36,37 Coping was measured by the 15-item Utrecht Coping List and consisted of two subscales: problem-focused coping (an active way of altering the problem causing stress), and emotion-focused coping (the regulation of the emotional response to a stressful situation). Because information on coping style was not available in our baseline questionnaire, but since this factor is often seen as a stable characteristic, we used the 1-year follow-up (T3) measurement to assess coping style.

Statistical analysis
The onset of interpersonal conflicts was assessed between baseline (T0) and 1-year follow-up (T3). Employees reporting conflicts at work were divided into four groups because the duration, the settlement and/or the recurrence of a conflict might influence the strength of the effects. This classification was made both for co-worker conflict and for supervisor conflict. The reference group (group 1) consisted of employees reporting neither a conflict at baseline (T0) nor at 1-year follow-up (T3). The second group consisted of employees reporting a T0: no T0: yes T0: no T0: yes T0: no T0: yes T0: no T0: yes
T3: no T3: no T3: yes T3: yes T3: no T3: no T3: yes T3: yes
Total, n 4971 262 209 140 4731 329 280 190
Mean (SD) age 42.60 (8.50) 41.69 (8.15) 40.89 (8.01) 41.26 (8.50)** 32.85 (5.43) 35.67 (6.15) 34.48 (5.68) 36.51 (6.02)**
Education (%)
Low 19.3 25.9 26.4 23.0* 18.8 23.7 24.7 30.4***
Medium 41.5 40.4 40.4 45.3 40.8 43.8 49.5 40.8
High 39.3 33.7 33.2 31.7 40.3 32.5 25.8 28.8
Living alone, yes (%) 8.4 11.9 10.5 11.5 ns 8.7 10.7 8.6 5.8 ns
Long-term illness, yes (%) 19.0 19.8 32.3 25.5*** 18.6 25.5 20.4 23.2***
Mean (SD) psychological job demands (12–48)
Co-worker conflict (n = 5582) Supervisor conflict (n = 5530)
Group 1 Group 2 Group 3 Group 4 Group 1 Group 2 Group 3 Group 4
**p < 0.01; ***p < 0.001.
Scale range.
conflict at baseline but not at follow-up. The third group consisted of employees who reported no conflict at baseline, but who did report a conflict at 1-year follow-up. The fourth group consisted of employees who reported a conflict both at baseline and at 1-year follow-up.

When a causal relationship exists between an exposure variable and an outcome variable in a study, then a change in exposure (ie, the onset of a conflict) must be followed by a change in the outcome over time. To examine whether there is a causal relationship in this study, we examined the effect of the onset of a conflict between baseline (T0) and 1-year follow-up (T3) on subsequent changes in the outcome measures between 1-year follow-up (T3) and 2-year follow-up (T6). Therefore, first, all prevalent cases from the involved dependent variable at 1-year follow-up (T3) were excluded and incident cases for each outcome were studied at T4, T5 and T6. We used logistic regression analyses for repeated measurements (generalised estimating equations (GEEs)) to examine the relationship between the onset of an interpersonal conflict and subsequent changes in self-reported health outcomes and occupational mobility. GEE can be used as a method for dealing with correlated data arising from repeated measurements.39 Separate logistic regression models were fitted for each of the dichotomised outcome measures: self-reported general health, prolonged fatigue, need for recovery, internal mobility, and external mobility. Odds ratios (ORs) and 95% CI were calculated separately for co-worker conflict and supervisor conflict.

In the analyses, we corrected for age, education, living situation, the presence of a long-term illness, psychological job demands, decision latitude, social support from co-workers or supervisors and coping behaviour. Moreover, when health outcomes were studied, we also corrected for the dichotomous baseline (T0) value of the respective health outcomes to rule out a possible reversed effect of health status on the onset of a conflict. All analyses were performed using SPSS 13.040 and STATA 9.241 statistical packages.

RESULTS
At baseline, conflicts with co-workers occurred in 7.2% of the study population for co-worker conflict (n = 5582), while conflicts with supervisors occurred in 9.5% of the study population for supervisor conflict (n = 5550). When employees experiencing a co-worker conflict at baseline were excluded, the incidence of a co-worker conflict at 1-year follow-up was 4.0% (n = 209). When employees experiencing a supervisor conflict at baseline were excluded, the incidence of a supervisor conflict at 1-year follow-up was 5.6% (n = 280).

Table 1 presents the descriptive characteristics of the study populations at baseline (T0) for conflicts with co-workers and supervisors within 1 year of follow-up. In general, compared to the first group, the second, third, and fourth group were less educated and they more often experienced a long-term illness. Moreover, the groups reporting conflicts reported higher levels of psychological job demands, lower levels of decision latitude, less social support from co-workers or supervisors, and higher levels of emotion-focused coping.

Table 2 presents the percentages of employees reporting caseness of the available outcomes at baseline (T0) and at 1-year follow-up (T5) within each of the four groups. Both at T0 and at T3, unhealthy cases are least prevalent in the group reporting no conflicts. Except for the association between co-worker conflict and the need for recovery at T3, the largest percentage of unhealthy cases on the three health outcomes was observed in the group reporting conflicts at T0 and T3. In the longitudinal GEE analyses, employees reporting caseness at T3 were excluded from the analyses and outcomes were controlled for at T0. Furthermore, the prevalence of occupational mobility was relatively high in the group reporting a conflict at T0 but not at T3 (Group 2). In the other groups, the percentage of employees reporting occupational mobility at T3, especially external mobility, was rather low.

Table 3 presents the results from the logistic GEE analyses for the self-reported health outcomes, after control for possible confounders. Results indicate that, compared to employees reporting no conflict at T0 or T3 (Group 1) the onset of a co-worker conflict (Group 2) was a statistically significant risk factor for the onset of prolonged fatigue and poor general health within 1 year of follow-up. The onset of a supervisor conflict significantly predicted an elevated need for recovery and more prolonged fatigue. A co-worker conflict reported at baseline but not at follow-up (Group 2), was associated with a significantly higher need for recovery. A co-worker conflict reported at both T0 and T3 (Group 4) increased the odds of developing self-reported poor general health, while a supervisor conflict in Group 4 increased the odds of developing a high need for recovery and prolonged fatigue.

Table 4 presents the results from the logistic GEE analyses for internal and external mobility, after control for possible confounding factors. A co-worker conflict resulted in significantly higher odds of changing jobs from one employer to another in Groups 2, 3 and 4. The effect of a co-worker conflict on internal mobility was not statistically significant. The onset of a supervisor conflict (Group 5) was a significant risk factor for both internal and external mobility. A supervisor conflict reported both at baseline and 1-year follow-up (Group 4) also resulted in higher odds of changing jobs, both internally and externally.

DISCUSSION
This prospective study showed that interpersonal conflicts at work are highly prevalent and it provided evidence for a statistically significant longitudinal relationship between the onset of interpersonal conflicts at work within 1 year of follow-up and the incidence of self-reported health outcomes and occupational mobility in the following year. In this study, a longitudinal design was used with relatively short time intervals between exposure and outcome. Moreover, the onset of an interpersonal conflict with either co-workers or supervisors was measured before the onset of a health problem or before changing jobs or job function, while correcting for demographic factors, the presence of a long-term illness, other workplace stressors and coping. Moreover, when examining the impact of conflicts at work on the onset of health problems, we also corrected for baseline health to rule out a possible reversed effect of health status on the onset of a conflict.

Effects on self-reported health outcomes
Both co-worker and supervisor conflict resulted in considerable effects on self-reported health. Results were, however, slightly different depending on the outcome studied. A possible explanation is that different time-dependent relationships existed between these conflicts and the different outcomes. However, the appropriate time that is needed for either a co-worker or a supervisor conflict to affect the different outcomes was not examined in this study.

Not surprisingly, the results of this study showed that, in general, health effects were stronger when conflicts were
reported both at baseline (T0) and at 1-year follow-up (T3). It must, however, be noticed that these effects might still be a serious underestimation of the actual impact of conflicts at work. An indicator for this reasoning is observed in Table 2 showing high associations between conflicts and health outcomes at 1-year follow-up (T3). However, to be able to disentangle the causal relationship, in the longitudinal analyses, the cases of the respective outcomes were excluded at 1-year follow-up, and even then rather large effects were found.

Furthermore, the prevalence of occupational mobility at 1-year follow-up (T3) was rather low. This might indicate that the effect of conflicts on self-reported health occurs rather quickly, while it takes longer to actually decide to or be forced to change employers or job function, possibly because the latter was perceived as a more radical change.

In most cases, a settled conflict seems to have a small, though not significant residual effect on health. It must however, be mentioned that the results for Group 2 need to be interpreted with caution, because even when a conflict was no longer reported at T3, employees experiencing health complaints at T3 were still excluded from the analyses. One might question whether this situation still represents an actually probable situation. For Group 2, it might have been more realistic not to separate the change in exposure from the change in the outcome over time, but rather to simultaneously examine whether health improves when the conflict disappears.

**Effects on occupational mobility**

Both co-worker and supervisor conflict resulted in considerable effects in terms of occupational mobility in the longitudinal analyses. The results showed that employees experiencing a conflict were more likely to change employers (external mobility) than to change job function (internal mobility). Especially when they experienced a conflict with the supervisor, the odds of changing employers were rather high. It seems that people try to avoid interaction with others involved in the conflict by changing employers and not by changing job function as the latter might still imply regular contact with others involved in the conflict.

**Strength of the effects**

Some methodological features of this study might have had an impact on the strength of the effects found. First, it must be noticed that we are not certain about whether or not we used the appropriate time frame to measure conflicts in this study. Despite frequent sampling in the Maastricht Cohort Study, interpersonal conflicts were only measured in the

<table>
<thead>
<tr>
<th>Cases of outcomes at T3†</th>
<th>Poor general health (%)</th>
<th>Need for recovery (%)</th>
<th>Prolonged fatigue (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor general health (%)</td>
<td>11.9 (8.0 to 16.9)</td>
<td>19.0 (14.5 to 23.7)</td>
<td>27.3 (19.8 to 35.7)</td>
</tr>
<tr>
<td>Need for recovery (%)</td>
<td>29.5 (24.9 to 34.3)</td>
<td>43.6 (38.0 to 49.5)</td>
<td>59.8 (53.6 to 66.0)</td>
</tr>
<tr>
<td>Prolonged fatigue (%)</td>
<td>18.3 (13.8 to 22.8)</td>
<td>27.9 (22.1 to 34.0)</td>
<td>38.7 (32.0 to 45.9)</td>
</tr>
<tr>
<td>External mobility (%)</td>
<td>1.3 (0.9 to 1.8)</td>
<td>3.1 (2.5 to 3.9)</td>
<td>5.0 (3.7 to 6.5)</td>
</tr>
<tr>
<td>Internal mobility (%)</td>
<td>6.4 (5.7 to 7.1)</td>
<td>11.9 (10.4 to 13.5)</td>
<td>2.9 (2.5 to 3.3)</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Prevalence of outcomes in the study populations at T0 and T3</th>
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</thead>
<tbody>
<tr>
<td>Co-worker conflict (n = 5582)</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>T0: no</td>
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<tr>
<td>---</td>
</tr>
<tr>
<td>Total, n</td>
</tr>
<tr>
<td>Poor general health (%)</td>
</tr>
<tr>
<td>Need for recovery (%)</td>
</tr>
<tr>
<td>Prolonged fatigue (%)</td>
</tr>
<tr>
<td>Internal mobility (%)</td>
</tr>
<tr>
<td>Supervisor conflict (n = 5530)</td>
</tr>
<tr>
<td>Group 1</td>
</tr>
<tr>
<td>T0: no</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Total, n</td>
</tr>
<tr>
<td>Poor general health (%)</td>
</tr>
<tr>
<td>Need for recovery (%)</td>
</tr>
<tr>
<td>Prolonged fatigue (%)</td>
</tr>
<tr>
<td>Internal mobility (%)</td>
</tr>
</tbody>
</table>

Table 3

<table>
<thead>
<tr>
<th>Interpersonal conflicts at work as a predictor of subsequent self-reported health outcomes: results from the generalised estimating equation analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor general health</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Co-worker conflict</td>
</tr>
<tr>
<td>Group 1 T0: no</td>
</tr>
<tr>
<td>Group 2 T0: yes</td>
</tr>
<tr>
<td>Group 3 T0: no</td>
</tr>
<tr>
<td>Group 4 T0: yes</td>
</tr>
<tr>
<td>Supervisor conflict</td>
</tr>
<tr>
<td>Group 1 T0: no</td>
</tr>
<tr>
<td>Group 2 T0: yes</td>
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<tr>
<td>Group 3 T0: no</td>
</tr>
<tr>
<td>Group 4 T0: yes</td>
</tr>
</tbody>
</table>

Significant results are presented in bold.
*Corrected for age (continuous), education, living situation, the presence of a long-term illness, psychological job demands, decision latitude, social support from co-workers (when examining effects of co-worker conflict) or social support from supervisors (when examining supervisor conflict), coping behaviour, and baseline health outcome.

OR, odds ratio.
questionnaires that were sent out annually. This enabled us to study the onset of a conflict between baseline and 1-year follow-up. However, this time interval does not enable us to identify the exact onset and duration of the conflict. It is possible that the conflict that was reported at 1-year follow-up was already the second or the third conflict. The strength of the effects found in this study might have been influenced depending on when the conflict started, whether or not it recurred, and how long it lasted. For future research it might be interesting to use shorter time intervals to measure the onset of interpersonal conflicts at work.

Second, in this study, the influence of possible confounding factors was examined. Among others, we controlled for social support in this study. Previous studies have indicated that conflicts and support are not the same constructs and may occur independently from one another. It is possible that only one supportive person in the work environment is enough to help alleviate the otherwise harmful effects of interpersonal conflicts according to Barki and Hartwick. Although our study did not provide an in-depth look at the underpinnings of the construct of interpersonal conflicts, and future research might benefit from using a multi-item scale for measuring interpersonal conflicts at work, we do think that our overall assessment of the results of this study indicate a possible causal relationship between interpersonal conflicts and occupational mobility remain significant over and above the potentially protective effect of social support. However, we are aware of the fact that controlling for social support might have led to overcorrection.

Far less research has been conducted on the interrelationship between co-worker and supervisor conflict. In an additional analysis (specific data not shown), we examined the impact of a mutual correction for the other conflict. These analyses showed that the odds ratios somewhat reduced in size but, in general, results remained the same. It should however, be noted that this correction reduced the power of our analyses. For future research, it may be interesting to examine in more detail the interrelations between co-worker and supervisor conflict, and the way in which they might reinforce each other.

Finally, we also examined whether correcting for other possible confounding factors, such as job tenure, shift work and the type of job (eg, job sector or trade), influenced the strength of the relationship between interpersonal conflicts and the outcomes studied, but as none of these factor did, they were left out of the analyses. The characteristics of the job might have already been reflected in the work characteristics such as job demands and decision latitude, which the analyses had already been adjusted for. Despite the fact that a broad range of possible confounders was considered in this study, the possible existence of unidentified confounding factors cannot be ruled out.

**Limitations**

The following issues should also be kept in mind when interpreting the results. First, the results of this study apply to men only. It is possible that results for women are different. For example, it is possible that women are more emotionally responsive to interpersonal conflicts than men, which might result in more serious effects on mental health among women. More research is needed to examine the effects of interpersonal conflicts at work for women. Second, negative affectivity was not included as a confounder in this study. The possible influence of negative affectivity was reduced in the prospective analyses in this study because intra-individual changes in both conflicts and in outcomes were studied. Third, baseline prevalence data may be somewhat biased because of the initial response rate of 45%. Fourth, both co-worker and supervisor conflict were measured with one item asking employees whether they had conflicts with their co-workers or supervisor. Especially when the construct being measured is multidimensional, single-item measures might raise concern with respect to the validity of the study. A previous study however, obtained very high correlations between individuals’ global assessments of interpersonal conflicts and a multidimensional measure of interpersonal conflicts based on assessments of disagreement, interference, and negative emotion, the three key dimensions of conflicts according to Barki and Hartwick. Although our study did not provide an in-depth look at the underpinnings of the construct of interpersonal conflicts, and future research might benefit from using a multi-item scale for measuring interpersonal conflicts at work, we do think that our overall assessment of interpersonal conflicts is useful and valuable. In fact, our measures did not only show the expected effects in a large study population, but they also differentiated between co-worker and supervisor conflict, which was an important shortcoming of previous studies. Finally, results might be influenced by the chosen cut-off points in the dichotomisation of the health variables. The dichotomies for prolonged fatigue and self-reported health used in this study have however, previously shown to be reliable measures of health. To date, there are no existing cut-off points for classifying employees with a marked need for recovery that would put them at risk for future health problems. In our study the upper tertile was used to define employees with a considerable need for recovery from work, the so-called need-for-recovery cases. So far, this appeared to be a good method since the distribution of need for recovery in the cohort covered the whole range of the scale and showed no cut-off points or peculiarities.

Although the limitations of this study need to be taken into account when interpreting the results, the strengths of this study should be mentioned as well. This large prospective study examines the effects of both co-worker and supervisor conflict on different outcomes, while separating a change in exposure (the onset of a conflict) from a change in the outcome (onset of self-reported health problems and occupational mobility) over time using relatively short time intervals, and taking into account several confounding factors. Therefore, we conclude that the results of this study indicate a possible causal relationship between interpersonal conflicts at work and self-reported health and occupational mobility. Given the considerable impact of

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**Table 4  Interpersonal conflicts at work as a predictor of subsequent occupational mobility: results from the generalised estimating equation analysis**

<table>
<thead>
<tr>
<th></th>
<th>External mobility</th>
<th>Internal mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-worker conflict</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1 T0 No No</td>
<td>1.00 (ref)</td>
<td>1.00 (ref)</td>
</tr>
<tr>
<td>Group 2 Yes No</td>
<td>2.51 (1.36 to 4.64)</td>
<td>1.38 (0.92 to 2.07)</td>
</tr>
<tr>
<td>Group 3 No Yes</td>
<td>2.35 (1.19 to 4.61)</td>
<td>1.43 (0.96 to 2.15)</td>
</tr>
<tr>
<td>Group 4 Yes Yes</td>
<td>2.54 (1.21 to 5.33)</td>
<td>1.27 (0.78 to 2.05)</td>
</tr>
<tr>
<td>Supervisor conflict</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1 T0 No No</td>
<td>1.00 (ref)</td>
<td>1.00 (ref)</td>
</tr>
<tr>
<td>Group 2 Yes No</td>
<td>1.48 (0.89 to 2.19)</td>
<td>0.86 (0.56 to 1.34)</td>
</tr>
<tr>
<td>Group 3 No Yes</td>
<td>3.65 (2.12 to 6.28)</td>
<td>1.76 (1.23 to 2.52)</td>
</tr>
<tr>
<td>Group 4 Yes Yes</td>
<td>3.07 (1.44 to 6.55)</td>
<td>1.59 (1.03 to 2.45)</td>
</tr>
</tbody>
</table>

Significant results are presented in bold.

*Corrected for age (continuous), education, living situation, the presence of a long-term illness, psychological job demands, decision latitude, social support from co-workers (when examining effects of co-worker conflict) and supervisors (when examining supervisor conflict) and coping behaviour.

OR, odds ratio.
interpersonal conflicts at work on the individual worker and on the organisation, there is a need for interventions aimed at preventing the occurrence of interpersonal conflicts at work, or at least reducing the harmful effects on both the employee and the organisation.

Competing interests: None declared.

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