Abstract: Examination of prognostic factors for staying at work for long-term sick-listed workers with subjective health complaints (SHC) who partially work in a paid job, and to evaluate whether these factors are comparable with those of workers with other disorders. We used data of 86 partially sick-listed workers with SHC (57 females, 29 males, mean age 47.1 years) and 433 with other disorders (227 females, 206 males, mean age 50.9 years), from an existing prospective cohort study consisting of 2593 workers aged 18–65 years and registered as sick-listed with different health complaints or disorders for at least 84 weeks in the database of the Dutch Social Security Institute. We performed univariable logistic regression analyses (p ≤ 0.157) for all independent variables with the dependent variable staying at work for the workers with SHC. We then performed multivariable logistic regression analyses with forward selection (p ≤ 0.157) and combined the remaining factors in a final, multivariable model (p ≤ 0.05), which we also used for logistic regression analysis in the workers with other disorders. The following factors were significant prognostic factors for staying at work for workers with SHC: full work disability benefits (odds ratio (OR) 0.07, 95% confidence interval (95% CI) 0.01–0.64), good mental health (OR 1.08, 95% CI 1.02–1.14), positive expectations for staying at work (OR 6.49, 95% CI 2.00–21.09), previous absenteeism for the same health complaint (OR 0.31, 95% CI 0.10–0.96) and good coping strategies (OR 1.13, 95% CI 1.04–1.23). For workers with other disorders, full work disability benefits, good mental health and positive expectations for staying at work were also prognostic factors for staying at work. Individual and policy factors seem to be important for staying at work of sick-listed workers with SHC and those with other disorders alike, but several biopsychosocial factors are particularly important for workers with SHC.

Keywords: longitudinal; medically unexplained physical symptoms; paid work; remaining employed; sickness absence; work maintenance
1. Introduction

Subjective health complaints (SHC) for which no pathological cause can be found after adequate physical examination are common in the general public and workforce of industrialized countries [1]. SHC is an umbrella term for health complaints (e.g., pain and dizziness) and syndromes (e.g., fibromyalgia and irritable bowel syndrome) that cannot be fully explained by a well-defined organic disease, comparable to other well-known terms such as medically unexplained physical symptoms and bodily distress disorder [2]. Approximately 30–70% of the working age population report at least one SHC during their working life [3,4]. In most cases, workers with SHC have only mild health complaints and can manage to stay productive at work, or they recover quickly and can return to work after a short period [3]. In 20–40% of the workers with SHC, however, the health complaints may become chronic, and the workers have persistent difficulties in meeting work demands [4,5]. This can lead to an increased risk of occupational dysfunction, long-term sickness absence and permanent exit from paid work [6].

Most research on workers with SHC has focused on identifying which workers are at increased risk of sickness absence, and on finding ways for absent workers to return to work [7–9]. This research has revealed that psychosocial and work-related factors in particular, such as mental distress, self-perceived disability, self-efficacy and expectations, social support, work demands, and compensation status, are associated with sickness absence and possibilities for returning to work [7–9]. Many researchers have argued that modification of these factors may help to prevent sickness absence and to support full return to work [10,11]. A key problem is that after long-term sickness absence, workers with SHC can partially return to work but may still experience difficulties in maintaining their work productivity and may be confronted with increased workload due to their chronic health complaints [12]. This group of workers therefore remains at increased risk for recurrent sickness absence and, ultimately, permanent exit from paid work [10,12]. As it is well known that early exit from paid work leads to a poorer quality of life [13], knowledge is needed on how to support staying at work for this group of workers.

To date, knowledge on factors that play a role in staying at work for workers with SHC is limited. The few studies that have examined work functioning and staying at work after return to work have mostly focused on well-defined chronic health complaints, or on a mixture of several chronic disorders [14,15], but not on SHC specifically. In many countries, it is difficult to examine long-term partially sick-listed workers with SHC, as the criteria for work disability benefits for this group of workers are mostly very strict. The conditions for work disability benefits in the Netherlands, however, do not distinguish between SHC and other disorders. We, therefore, investigated prognostic factors for staying at work for partially sick-listed workers with SHC who managed to stay at work (at least partially), as well as for workers with other disorders, to gain insight into which factors may be modified with timely interventions to avoid recurrent sickness absence after return to work and to determine whether these factors are different for workers with SHC and workers with other disorders.

2. Materials and Methods

2.1. Study Design and Study Population

We selected participants from the Forward cohort, which is a prospective cohort study performed among workers aged 18–65 years and registered as sick-listed for at least 84 weeks in the electronic database of the Dutch Social Security Institute between June 2014 and May 2015. The Forward cohort primarily aimed to find prognostic factors for return to work and included 2593 workers who met all inclusion criteria and returned a filled-in baseline questionnaire (T0) and a signed informed consent. We followed the included participants for 24 months with questionnaires after one year (T1) and two years (T2) from baseline. The flowchart in Figure 1 describes the design of the Forward cohort and the study population of the present study.

For the present study, we selected 519 participants from the Forward cohort who were still partially at work at baseline (n = 658), despite a medical condition (n = 595), and who had a fully
documented work status during follow-up \((n = 519)\). Information about work status was derived from the questionnaires, and information about the medical condition from the medical work disability assessments at the Dutch Social Security Institute, for which workers who are still sick-listed after 84 weeks can apply in the Netherlands. Insurance physicians, who perform these assessments, report diagnoses by using a code list \([16]\), which is based on the International Classification of Diseases (ICD classification) \([17]\). If the insurance physician reported one of the 10 functional somatic syndromes (somatic (pain) syndrome; somatization disorder; pelvic girdle pain; tension headache; Tietze syndrome; irritable bowel syndrome; chronic fatigue syndrome; fibromyalgia; whiplash; and repetitive strain injury) or one of the 25 health complaints that matches with the 23 (partially) unexplained physical complaints of the Robbins list \([18]\), then participants were indicated as having SHC (subjective health complaints). If the insurance physician reported another diagnosis, participants were indicated as having other disorders than SHC, and were used in the present study as a reference group.

**Figure 1.** Flow chart of the study design of the Forward cohort and the study population of the present study.
2.2. Informed Consent

The Medical Ethics Committee of the Amsterdam University Medical Center (Vrije Universiteit Amsterdam; IRB00002991), gave ethical approval for the study. They declared that no comprehensive ethical review was needed for this study. All procedures performed in this study were in accordance with the ethical standards of this institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All patients have given consent to the inclusion of material pertaining to themselves, and they were informed that we have fully anonymized all data so that their identity cannot be identified via the paper.

2.3. Measures

2.3.1. Dependent Variable

The primary outcome measure was staying at work. Staying at work was assumed if participants, who were on long-term sickness absence, worked partially in a paid job at baseline (T0) and reported that they continued work participation in paid work, independent of the number of working hours, during the whole follow-up period (i.e., at T1 as well as T2). Participants who reported that they worked partially in a paid job at baseline, but not anymore during any of the follow-up measurements, were categorized as not staying at work.

2.3.2. Independent Variables

The independent variables were collected from data of the Dutch Social Security Institute after the medical work disability assessment and via self-reported answers on general questions in the questionnaires at baseline (Table S1) and validated questions in the questionnaires at baseline. We based the selection of variables on literature [7,8,14,15], and we used the biopsychosocial model to categorize the variables because it is a broad model that focuses on all aspects of functioning [17,19]. The validated questions were based on the following validated questionnaires:

1. The work and well-being inventory (WBI) questionnaire with 85 questions and five subscales [20]:
   - The stressors subscale with a scoring range of 16–64 (higher scores indicate more stressors).
   - The support subscale with a scoring range of 21–84 (higher scores indicate better support).
   - The symptom subscale with a scoring range of 20–80 (higher scores indicate more symptoms).
   - The coping strategies subscale with a scoring range of 17–68 (higher scores indicate better coping).
   - The self-perceived disability subscale with a scoring range of 7–28 (higher scores indicate more self-perceived disability).
2. The hospital anxiety and depression scale (HADS) with 14 questions and two subscales [21]:
   - The depressive disorder subscale with a scoring range of 0–21 (higher scores indicate a higher risk for a depressive disorder).
   - The anxiety disorder subscale with a scoring range of 0–21 (higher scores indicate a higher risk for an anxiety disorder).
3. The patient health questionnaire (PHQ-15) with 15 questions and one scale [22]:
   - The severity of complaints scale with a scoring range of 5–30 (higher scores indicate more severe complaints).
4. The short form health survey 36 (SF-36) with 36 questions and three subscales [23,24]:
   - The physical health subscale (PCS) with a scoring range of 0–100 (higher scores indicate better levels of physical health and functioning).
   - The mental health subscale (MCS) with a scoring range of 0–100 (higher scores indicate better levels of mental health and functioning).
   - The health change subscale (SF-2), which was derived from the following question on the SF-36: “How is your health in general compared to a year ago?” We categorized the five answering options into two categories: ‘same or better’ and ‘worse’.

The health change subscale with a scoring range of 0–100 (higher scores indicate better levels of physical health and functioning).
5. The Whitty index questionnaire (WI) with 14 questions and one scale [25]:
   - The hypochondria scale with a scoring range of 0–14 (higher scores indicate a higher risk for hypochondria).
6. The work ability index (WAI) with three questions and two subscales [26]:
   - The work ability in general subscale with a scoring range of 0–10 (higher scores indicate higher self-perceived work ability).
   - The work ability in the context of work load subscale with a scoring range of 2–10 (higher scores indicate higher self-perceived work ability in the context of work load).
7. The obstacles to return to work questionnaire (ORQ) with six questions and one scale [27]:
   - The perceived prognosis of work return scale with a scoring range of 0–36 (higher scores indicate higher self-perceived possibilities for returning to work).

2.4. Statistics

We divided the participants into one subgroup with SHC and one subgroup with other disorders (reference group). We divided the independent variables into four domains (i.e., demographic, socio-economic and work-related, health-related, and self-perceived ability) based on the biopsychosocial framework [17,19]. For all variables, we analyzed the descriptives for both groups separately. We started further analyses with the SHC group. To analyze possible prognostic factors for staying at work for this group, we first checked for multicollinearity between the independent variables. Variables that had a variance inflation factor (VIF) of <10 and a Pearson correlation of <0.8 were included in the analyses [28]. For all included independent variables, we performed univariable logistic regression analyses, with the dependent variable staying at work. We performed multivariable logistic regression analyses with forward selection per domain separately with all independent variables that had a p-value ≤ 0.157 [29] in the univariable analyses. We used this Akaike information criterion of p ≤ 0.157 for the selection of predictors as it is widely used and also particularly recommended in the TRIPOD statement for a small data set [29,30]. Next, we combined all variables with a p-value ≤ 0.157 in the logistic regression analyses per domain in one multivariable logistic regression analysis with Forward selection. Subsequently, we analyzed all variables that remained with a p-value ≤ 0.05 in a combined final logistic model. To evaluate the overall fit and predictive ability, we analyzed the Hosmer–Lemeshow and Nagelkerke’s R2 Value of the final model [28]. We assessed the discrimination possibilities of the final model for the SHC group by applying the same final SHC model in the group with other disorders. We calculated the odds ratios (OR), 95% confidence intervals (95% CI), the Hosmer–Lemeshow and Nagelkerke’s R2 to compare the outcomes with the outcomes of the SHC group. We used SPSS version 24.0 and R-studio for all statistical analyses.

3. Results

Table 1 shows the baseline characteristics of the study population. A total of 86 workers with SHC (subjective health complaints) and 433 workers with other disorders (reference group) participated in the present study, with 44 participants (51%) in the SHC group and 242 participants (56%) in the reference group staying at work during the follow-up of two years. Overall, the baseline characteristics were comparable between the two groups, but in all four domains we found some differences between participants with SHC and those with other disorders. Participants with SHC were somewhat younger, more often female and less often the breadwinner of the family. They also had more psychologically than physically demanding jobs and received full work disability benefits less often than those with other disorders. Furthermore, participants with SHC tended to have more complaints and less self-perceived ability and positive expectations to function than participants with other disorders (Table 1).
Table 1. Baseline characteristics of the study population.

| Domains                              | SHC \(^1\) (No \(^2\)=86) | Other disorders (No = 433) |
|--------------------------------------|-----------------------------|----------------------------|
|                                      | Mean/No SD \(^3\) %        | Mean/No SD \(^3\) %        |
| **Demographic**                      |                             |                            |
| Age in years                         |                             |                            |
| 18–65                                | 47.12 10.46 50.90 9.21      |                            |
| Gender                               |                             |                            |
| Male                                 | 29 34% 206 48%              |                            |
| Married or partner                   |                             |                            |
| Yes                                  | 69 80% 321 74%              |                            |
| Breadwinner of the family            |                             |                            |
| Yes                                  | 49 57% 296 68%              |                            |
| Land of birth                        |                             |                            |
| The Netherlands                      | 78 91% 393 91%              |                            |
| Educational level                    |                             |                            |
| Primary / Secondary school           | 33 38% 170 39%              |                            |
| High school                          | 27 32% 145 34%              |                            |
| Bachelor’s / Master’s degree         | 26 30% 118 27%              |                            |
| **Socio-economic and work-related**  |                             |                            |
| Collar job                           |                             |                            |
| Blue                                 | 14 16% 105 24%              |                            |
| White                                | 31 36% 158 37%              |                            |
| Pink                                 | 41 48% 170 39%              |                            |
| Employed                             |                             |                            |
| Yes                                  | 75 87% 378 82%              |                            |
| Usual working time in hours          |                             |                            |
| 4–60                                 | 30.84 8.31 33.20 8.69       |                            |
| Regular work schedule                |                             |                            |
| Yes                                  | 59 69% 309 71%              |                            |
| Managerial position                  |                             |                            |
| Yes                                  | 15 17% 62 14%               |                            |
| Job demands                          |                             |                            |
| Psychological                        | 20 23% 154 36%              |                            |
| Physical                             | 36 42% 132 30%              |                            |
| Combination of both                  | 30 35% 147 34%              |                            |
| Stressors\(^4\)                      |                             |                            |
| 16–64                                | 35.84 9.11 35.64 8.39       |                            |
| Support\(^4\)                        |                             |                            |
| 21–84                                | 60.79 10.49 61.41 11.38     |                            |
| Previous absenteeism for the same health complaint | Yes | 39 45% 230 53%               |                            |
| Work disability benefits             | No / Partial                | 73 85% 301 70%              |                            |
| Adjustments at work                  |                             |                            |
| Yes                                  | 70 81% 360 83%              |                            |
| Interventions at work (e.g., job coaching) | Yes | 77 89% 392 91%               |                            |
| **Health-related**                   |                             |                            |
| Use of specialist care in the last 2 years | Yes | 73 85% 363 84%               |                            |
| Use of psychiatric care in the last 2 years | Yes | 52 61% 213 49%               |                            |
| Use of medication                    |                             |                            |
| Yes                                  | 61 71% 368 85%              |                            |
| Depressive disorder\(^5\)            |                             |                            |
| 0–21                                 | 7.60 4.10 7.66 4.62         |                            |
| Anxiety disorder\(^5\)               |                             |                            |
| 0–21                                 | 7.40 4.06 8.07 4.17         |                            |
| Severity of complaints\(^6\)         |                             |                            |
| 5–30                                 | 11.83 5.04 10.91 4.37       |                            |
| Physical health\(^7\)                |                             |                            |
| 0–100                                | 31.96 8.58 34.29 9.59       |                            |
| Mental health\(^7\)                  |                             |                            |
| 0–100                                | 40.78 12.48 38.63 13.07     |                            |
| Health compared to a year ago\(^2\) |                             |                            |
| Worse                                 | 28 33% 163 38%              |                            |
| Hypochondria\(^8\)                   |                             |                            |
| 0–14                                 | 5.28 2.93 5.38 2.98         |                            |
| Symptom scale\(^4\)                  |                             |                            |
| 20–80                                | 41.01 9.20 41.37 10.39      |                            |
| Coping strategies\(^4\)              |                             |                            |
| 17–68                                | 40.68 9.37 41.17 9.51       |                            |
| **Self-perceived ability**            |                             |                            |
| Positive expectations for staying at work | Yes / Inconclusive | 43 50% 271 63%               |                            |
| Disability\(^4\)                     |                             |                            |
| 7–28                                 | 21.70 4.65 20.54 4.90       |                            |
| Work ability in general\(^p\)        |                             |                            |
| 0–10                                 | 4.14 2.04 4.64 1.96         |                            |
Nagelkerke’s R² was 0.51.

We included all independent variables in the univariable logistic regression analyses as we found VIF scores of <10 and correlations of <0.8 for all variables and did not assume multicollinearity (Figure S1 and Table S2). Univariable logistic regression analyses showed 17 potential predictors (p ≤ 0.157) for staying at work, divided over all four domains (i.e., demographic, socio-economic and work-related, health-related, and self-perceived ability) (Table 2). Multivariable logistic regression analyses with separate forward selection per domain showed that 11 of these 17 potential predictors remained statistically significant (p ≤ 0.157) (Table 3). We then combined these 11 potential predictors in one multivariable logistic regression analysis and found five statistically significant predictors (p ≤ 0.05) after forward selection, which we combined in the final model (Table 4). In this final model for workers with SHC, previous absenteeism for the same health complaint (OR 0.31, 95% CI 0.10–0.96) and full work disability benefits (OR 0.07, 95% CI 0.01–0.64) reduced the probability of staying at work. We also found that the chance of staying at work increased if participants reported a good mental health (OR 1.08, 95% CI 1.02–1.14), good coping strategies (OR 1.13, 95% CI 1.04–1.23) and positive expectations for staying at work (OR 6.49, 95% CI 2.00–21.09). We found a good fit for this final model: the Hosmer–Lemeshow was not statistically significant (p-value 0.57) and the Nagelkerke’s R² was 0.51.

### Table 2. Univariable logistic regression analyses of all potential predictors for staying at work for participants with subjective health complaints (SHC).

| Domains                        | Categories / Ranges | OR ¹ | 95% CI      | p    |
|--------------------------------|---------------------|------|-------------|------|
| **Demographic**                |                     |      |             |      |
| Age in years                   | 18–65               | 0.99 | 0.95–1.03   | 0.51 |
| Gender                         | Male Reference      | -    |             |      |
|                                | Female              | 0.97 | 0.40–2.37   | 0.94 |
| Married or partner             | No Reference        | -    |             |      |
|                                | Yes                 | 0.92 | 0.32–2.65   | 0.87 |
| Breadwinner of the family       | No Reference        | -    |             |      |
|                                | Yes                 | 1.19 | 0.51–2.81   | 0.69 |
| Land of birth                  | The Netherlands Reference | -   |             |      |
|                                | Other country       | 0.29 | 0.05–1.50   | 0.14 |
| Educational level              | Primary / Secondary school Reference | - | | |
|                                | High school         | 2.55 | 0.90–7.24   | 0.08 |
|                                | Bachelor’s / Master’s degree | 2.80 | 0.97–8.10   | 0.06 |

| Socio-economic and work-related | |
| Collar job                     | Blue Reference     | -    | | |

Footnotes: ¹ SHC = subjective health complaints; ² No = number; ³ SD = standard deviation; ⁴ based on the work and well-being inventory questionnaire (WBI); ⁵ based on the hospital anxiety and depression scale (HADS); ⁶ based on the patient health questionnaire (PHQ-15); ⁷ based on the short form health survey 36 (SF-36); ⁸ based on the Whiteley index questionnaire (WI); ⁹ based on the work ability index (WAI); ¹⁰ based on the obstacles to return to work questionnaire (ORQ).
|                           | White 1.62 | 0.45–5.78 | 0.46 |
|---------------------------|------------|-----------|------|
|                           | Pink 1.40  | 0.41–4.76 | 0.59 |
| Employed                  | No Reference -  |       |
|                           | Yes 0.56   | 0.15–2.06 | 0.38 |
| Usual working time in hours | 4–60 1.03 | 0.98–1.08 | 0.30 |
| Regular work schedule     | No Reference -  |       |
|                           | Yes 0.77   | 0.31–1.93 | 0.58 |
| Managerial position       | No Reference -  |       |
|                           | Yes 1.11   | 0.36–3.39 | 0.85 |
| Job demands               | Psychological | Reference -  |       |
|                           | Physical 1.02 | 0.34–3.07 | 0.97 |
|                           | Combination of both 0.63 | 0.20–1.96 | 0.42 |
| Stressors³                | 16–64 0.98 | 0.94–1.03 | 0.41 |
| Support³                  | 21–84 1.03 | 0.99–1.08 | 0.14 |
| Previous absenteeism for the same health complaint | No Reference -  |       |
|                           | Yes 0.32   | 0.13–0.77 | 0.01 |
| Work disability benefits  | No / Partial Reference -  |       |
|                           | Full 0.06  | 0.01–0.47 | 0.01 |
| Adjustments at work       | No Reference -  |       |
|                           | Yes 1.44   | 0.48–4.30 | 0.51 |
| Interventions at work (e.g., job coaching) | No Reference -  |       |
|                           | Yes 0.82   | 0.21–3.29 | 0.78 |
| Health-related            |            |           |      |
| Use of specialist care for the last 2 years | No Reference -  |       |
|                           | Yes 0.88   | 0.27–2.88 | 0.83 |
| Use of psychiatric care for the last 2 years | No Reference -  |       |
|                           | Yes 0.89   | 0.37–2.11 | 0.79 |
| Use of medication         | No Reference -  |       |
|                           | Yes 0.22   | 0.08–0.63 | 0.01 |
| Depressive disorder⁴      | 0–21 0.89 | 0.80–0.99 | 0.05 |
| Anxiety disorder⁴         | 0–21 0.94 | 0.85–1.05 | 0.28 |
| Severity of complaints⁵   | 5–30 0.85 | 0.77–0.94 | 0.002 |
| Physical health⁶          | 0–100 1.04 | 1.00–1.09 | 0.21 |
| Mental health⁶            | 0–100 1.04 | 1.00–1.07 | 0.05 |
Table 3. Multivariable logistic regression analyses of 11 remaining potential predictors for staying at work for participants with subjective health complaints (SHC) per domain separately.

| Domains                              | Categories / Ranges | OR \(^1\) | 95% CI \(^2\) | p   |
|--------------------------------------|---------------------|-----------|---------------|-----|
| **Demographic**                      |                     |           |               |     |
| Educational level                    | Primary / Secondary school | Reference | -             |     |
|                                     | High school         | 2.35      | 0.90–7.24     | 0.08|
|                                     | Bachelor’s / Master’s degree | 2.80      | 0.97–8.10     | 0.06|
| **Socio-economic and work-related**  |                     |           |               |     |
| Support\(^3\)                       | 21–84               | 1.04      | 0.99–1.09     | 0.11|
| Previous absenteeism for the same health complaint | No | Reference | -       |     |
|                                     | Yes                 | 0.33      | 0.13–0.87     | 0.03|
| Work disability benefits            | No / Partial        | Reference | -             |     |
|                                     | Full                | 0.06      | 0.01–0.48     | 0.01|
| **Health-related**                   |                     |           |               |     |
| Use of medication                    | No                  | Reference | -             |     |
|                                     | Yes                 | 0.40      | 0.12–1.31     | 0.13|
| Severity of complaints\(^4\)        | 5–30                | 0.90      | 0.79–1.03     | 0.12|
| Mental Health\(^5\)                 | 0–100               | 1.05      | 1.00–1.11     | 0.07|
| Health compared to a year ago\(^6\) | Worse               | Reference | -             |     |
|                                     | Same / Better       | 2.77      | 0.87–8.80     | 0.08|
| Coping strategies\(^3\)             | 17–68               | 1.08      | 1.01–1.15     | 0.02|
| **Self-perceived ability**           |                     |           |               |     |
| Positive expectations for staying at work | No | Reference | -       |     |
|                                     | Yes / Inconclusive  | 3.44      | 1.38–8.58     | 0.01|
| Work ability in the context of work load\(^6\) | 2–10 | 1.27 | 0.92–1.74 | 0.14|

Footnotes: \(^1\) OR = odds ratio; \(^2\) 95% CI = 95% confidence intervals; \(^3\) based on the work and well-being inventory questionnaire (WBI); \(^4\) based on the the hospital anxiety and depression scale (HADS); \(^5\) based on the patient health questionnaire (PHQ-15); \(^6\) based on the Short form health survey 36 (SF-36); \(^7\) based on the Whitely index questionnaire (WI); \(^8\) based on the work ability index (WAI); \(^9\) based on the obstacles to return to work questionnaire (ORQ).
Footnotes: ¹ OR = odds ratio; ² 95% CI = 95% confidence intervals; ³ based on the work and well-being inventory questionnaire (WBI); ⁴ based on the patient health questionnaire (PHQ-15); ⁵ based on the short form health survey 36 (SF-36); ⁶ based on the work ability index (WAI).

3.2. Staying at Work Predictors for Participants with Other Disorders (Reference group) than SHC

We applied the same variables of the final model for the SHC group to the group with other disorders and found statistically significant (p ≤ 0.05) associations with SAW for three out of the five variables (Table 4). In the socio-economic and work-related domain, we found that full work disability benefits (OR 0.13, 95% CI 0.08–0.21) reduced the probability of staying at work. Within the health domain, we found that if participants reported a good mental health (OR 1.03, 95% CI 1.01–1.05), they were more likely to stay at work. The domain of self-perceived ability showed that participants who reported positive expectations for staying at work (OR 3.15, 95% CI 2.00–4.97) stayed at work more often than those with negative expectations for staying at work. The Nagelkerke’s R2 was 0.33 and the Hosmer–Lemeshow was not statistically significant (p-value 0.66), indicating that there was also a good fit for the model for workers with other disorders than SHC.

Table 4. Final model of all remaining predictors for staying at work for participants with subjective health complaints (SHC) and other disorders separately.

| Domains                      | SHC (N = 86) | Other disorders (N = 433) |
|------------------------------|--------------|--------------------------|
|                              | Categories / Ranges | OR ² | 95% CI ³ | p  | OR  | 95% CI | p  |
| Socio-economic and work-related | No | Reference | Reference | | | | |
| Previous absenteeism for the same health complaint | Yes | 0.31 | 0.10–0.96 | 0.04 | 0.72 | 0.46–1.13 | 0.16 |
| Work disability benefits | No / Partial | Reference | Reference | | | | |
|                              | Full | 0.07 | 0.01–0.64 | 0.02 | 0.13 | 0.08–0.21 | 0.000 |
| Health-related                | No | Reference | Reference | | | | |
|                              | Mental Health ⁴ | 0–100 | 1.08 | 1.02–1.14 | 0.01 | 1.03 | 1.01–1.05 | 0.002 |
|                              | Coping strategies ⁵ | 17–68 | 1.13 | 1.04–1.23 | 0.004 | 1.02 | 1.00–1.04 | 0.23 |
| Self-perceived ability       | No | Reference | Reference | | | | |
| Positive expectations for staying at work | Yes / Inconclusive | 6.49 | 2.00–21.09 | 0.002 | 3.15 | 2.00–4.97 | 0.000 |

Footnotes: ¹ no = number; ² OR = odds ratio; ³ 95% CI = 95% confidence intervals; ⁴ based on the short form health survey 36 (SF-36); ⁵ based on the work and well-being inventory questionnaire (WBI).

4. Discussion

The primary aim of this prospective cohort study was to analyze prognostic factors for staying at work for partially sick-listed workers with SHC (subjective health complaints). The secondary aim was to analyze if these factors were also valid for partially sick-listed workers with other disorders. Our study showed that five factors across the biopsychosocial model were associated with staying at work for workers with SHC. We found that previous absenteeism for the same health complaint, poor coping strategies and full work disability benefits were negatively related to staying at work, and that a good mental health and positive expectations for staying at work were positively related to staying at work. Three of these five factors were also valid for workers with other disorders than SHC, which suggests that the mechanism underlying staying at work in workers with SHC are mostly comparable to those of workers with other disorders.

Although the present study was mainly based on workers with SHC who were able to work partially, eligibility for full work disability benefits still lead to a decreased chance of staying at work.
The exact underlying mechanism that leads to this effect is difficult to extract directly from our results. As the severity of the complaints did not show a significant impact on staying at work, it seems unlikely that health status itself played a major role. Instead, an anti-therapeutic effect of full work disability benefits, as reported by Murgatroyd et al. [31], may play a role. Workers who receive full work disability benefits do not have the obligation to work and may fear losing their work disability status when staying at work. This concurs with the work of Cassidy et al. [32] and the OECD [33], which suggest that eligibility for full compensations is indeed associated with less work participation. Cassidy et al. [32] argue that this may be due to financial incentives or secondary gain, especially for workers with SHC as they may be more focused on proving that their health complaints are real. However, we found that a decreased chance for staying at work was also valid for workers with other disorders who were able to work partially but were also eligible for a full work disability benefit. This apparent contrast might be explained by an underlying mechanism: workers who are not eligible for compensation may effectively be forced to stay at work due to financial necessity, even if this exceeds their self-perceived work capacity and even if they have not recovered sufficiently [34]. Keeping in mind that we found that no or partial eligibility for work disability benefits positively impacted on staying at work, it should be possible to find a way in which partial work disability benefits can be granted that are better adapted to the individual needs and capacities of both SHC workers and workers with other disorders [33]. The importance to adapt to individual needs and capacities is further underpinned by our results, which indicate that a good mental health and positive expectations for staying at work are important factors for staying at work for both workers with SHC as for those with other disorders. This suggests that there is a possible relation between good mental health and positive expectations on the one hand and better capacities to deal with health complaints and meeting work demands on the other. This relation has also been addressed by other studies [7,8,35–37]. Some of these studies have even reported that the way in which workers respond and act in their rehabilitation process is largely based on good mental health and positive expectations, and they suggest that interventions focused on the individual capacities and needs in the working context decrease distress and may increase the mental capacity and expectations for workers at risk for sickness absence and permanent exit from paid work [35–37].

We found that workers with SHC with previous absenteeism for the same health complaint were less able to stay at work, which may suggest they are less able to deal with their complaints and to adjust to the specific demands of their job. We found that good coping strategies (e.g., good personal control) were associated with better possibilities for staying at work for workers with chronic SHC. It seems that those workers are better able to adjust to the specific demands of their job. A possible explanation is that those workers are better able to change cognitive and behavioral efforts and can adopt various strategies to deal with their complaints [38]. Our findings are consistent with those of a previous study that reported that non sick-listed women with fibromyalgia, who adopted successful strategies to cope with their problems, managed to continue to work without sickness absence [39]. Other studies have also showed that workers with effective coping strategies have better outcomes in their work functioning [8,40,41]. In addition, workers with good coping strategies seem to have a better self-efficacy, are more resilient and are better able to use past experiences to adapt their strategies [42]. Our results support the need for interventions aimed at enhancing coping skills (i.e. counselling programs and support systems) for workers with SHC, to improve their coping abilities and enhance their work ability and staying at work [43].

4.1. Strengths and Limitations

Our study design made it possible to evaluate the influence of work disability benefits over time on staying at work because we included workers after two years of sickness absence, just before their medical work disability assessment. The design of our study also made it possible to analyze the influence of these work disability benefits for workers with SHC and other common chronic disorders separately. The results from this Dutch cohort are useful for comparable Western countries whose legislation makes it especially difficult to examine workers with chronic SHC. Furthermore, our use
of the biopsychosocial model [17,19] made it possible to study long-term effects of demographic, personal, health and work-related factors on staying at work equally, and gave us the opportunity to focus on all aspects and the synergy of multiple factors that play a role in work functioning and staying at work.

Unfortunately, our study only included a small number of workers, especially workers with chronic SHC. This could be a consequence of the manner in which we included participants and the fact that the Forward cohort primarily aimed to find prognostic factors for return to work. Via postal mail, we asked all registered sick-listed workers at the Dutch Social Security Institute whether they wanted to participate in the study, if they were still sick-listed and planning to apply for work disability benefits. We suspect that most workers who were partially sick-listed did not see themselves as sick-listed or were unsure if they would apply for a work disability assessment at all. Because we could only obtain information on work status and diagnosis after the work disability assessment, we could also not fully foresee the number of workers with SHC and other disorders. However, taking into account that approximately 15–20% of long-term sick-listed workers are sick-listed due to SHC [44], the distribution of workers in our study (SHC 17% and other disorders 83%) can be considered as representative. Still, the somewhat limited number of included workers is likely to have caused some selection bias. Unfortunately, we cannot obtain more information about the direction of bias, because data of workers who did not respond is unavailable due to privacy policies.

Additionally, there could be differences in the number of working hours between workers, also potentially leading to selection bias. Because of the use of self-reported outcome measures, it was difficult to compare hours at work. Therefore, we included all workers that were at work at baseline and at follow-up, irrespective of the number of hours at work. Despite the fact that questionnaires are valid and valuable sources of information, data gathered from objective registrations is preferable to data based on questionnaires [45]. However, we mostly used questionnaires to obtain information on predictor and outcome variables, and the sometimes incomplete questionnaires resulted in the exclusion of another 13% of the original participants. To assess if this biased our results, we performed a missing data analysis. Although workers with an unknown staying at work outcome differed in health compared to the workers with a known staying at work outcome, sensitivity analyses did not show any differences on regression coefficients in the final model. Therefore, we assumed that there is missing at random data and that the data in the complete case analyses is robust, unselective and representative for other workers [46]. We included only the results of the complete case analyses in this study; however, the missing data analyses, including the recommended missing data handling method multiple imputation, are presented in the supplementary materials for comparison (Table S3 and S4).

4.2. Implications for Policy, Practice and Future Research

To support partially long-term sick-listed workers with SHC for staying at work, our research suggests that stakeholders could focus on a multilevel solution. On the level of the individual worker, focus on the individual capacities and needs of the worker in the working context seems beneficial, with particular focus on improving self-management strategies and resilience of the worker. On a societal level, modifying the policies regarding the social security systems, particularly rules and regulations around work disability benefits, is advisable to avoid permanent exit from the workforce of workers with SHC. Further research is however needed to examine in which way these particularly rules and regulations have to be modified. It seems that this multilevel solution is also a good option for workers with other chronic disorders.

Other researchers have recommended comparable solutions for staying at work or returning to work, once workers are absent [33,43]. However, those recommendations and intervention studies are mostly based on a one-level solution and did not take into account the synergy of multiple factors [33,43]. More research is required to better examine the effect of a combination of supporting individual capacities and needs in the working context and modifying the policies of the social security systems for workers with several chronic disorders.
5. Conclusions

Staying at work for partially sick-listed workers with chronic subjective health complaints was associated with several biopsychosocial factors. We found similar factors for partially sick-listed workers with other chronic disorders. We therefore suggest a focus on multilevel solutions—supporting individual capacities and needs in the working context and modifying the policies of the social security systems—to support staying at work for sick-listed workers. Further research is needed to investigate in which way policy rules and regulations have to be modified and whether these suggested solutions can be implemented and evaluated in practice.

Supplementary Materials: The following are available online at www.mdpi.com/1660-4601/17/19/7184/s1, Table S1: general questions and collected data from the Dutch Social Security Institute, Table S2: variance inflation factor (VIF) multicollinearity scores for workers with subjective health complaints (SHC), Table S3: missing data analyses of the baseline characteristics of the present study population, Table S4: multivariable logistic regression multiple imputation analysis (pooled data) of all final potential predictors for staying at work for partially sick-listed workers. Fu

Author Contributions: Conceptualization, K.W., F.S., A.B. and J.A.; methodology, K.W., F.S., K.B.-G., M.H., A.B. and J.A.; software, K.W. and K.B.-G.; validation, K.W., K.B.-G., F.S. and M.H.; formal analysis, K.W., K.B.-G. and M.H.; investigation, K.W., F.S., K.B.-G., M.H, A.B. and J.A.; resources, K.W., F.S. and K.B.-G.; data curation, K.W. and K.B.-G.; writing—original draft preparation, K.W. and F.S.; writing—review and editing, K.W., F.S., K.B.-G., M.H, A.B. and J.A.; visualization, K.W.; supervision, F.S., A.B. and J.A.; project administration, K.W. and K.B.-G.; funding acquisition, J.A. All authors have read and agreed to the published version of the manuscript.

Funding: This study was funded by the Dutch Social Security Institute (funding number 2002045). The funding organization had no further role in the study design, the analyses and interpretation of the data, nor in writing the paper or in the decision to submit the paper for publication.

Acknowledgments: M. Maaker-Berkhof, employee of Amsterdam University Medical Center (UMC) location Vrije Universiteit Amsterdam, assisted in preparing and processing the data of the Forward study.

Conflicts of Interest: Authors K.W. and K.B.-G. are employees of the Dutch Social Security Institute. Author J.A. is shareholder of the VUmc spin-off company Evalua Nederland B.V. (www.evalua.nl) and holds a chair in Insurance Medicine on behalf of the Dutch Social Security Institute. Author A.B. is shareholder of the VUmc spin-off company Evalua Nederland B.V. (www.evalua.nl). The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. World Health Organisation (WHO). Global Health Estimates 2016: Disease Burden by Cause, Age, Sex, by Country and by Region 2000–2016. Geneva: WHO; 2018. Available online: https://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html (accessed on 2000).
2. Marks, E.M.; Hunter, M.S. Medically unexplained symptoms: An acceptable term? Br. J. Pain 2015, 9, 109–114.
3. Breivik, H.; Collett, B.; Ventafridda, V.; Cohen, R.; Gallacher, D. Survey of chronic pain in Europe: Prevalence, impact on daily life, and treatment. Eur. J. Pain 2006, 10, 287–333.
4. Lerner, D.; Allaire, S.H.; Reisine, S.T. Work disability resulting from chronic health conditions. J. Occup. Environ. Med. 2005, 47, 253–264.
5. Cochrane, A.; Higgins, N.M.; Rothwell, C.; Ashton, J.; Breen, R.; Corcoran, O. Work outcomes in patients who stay at work despite musculoskeletal pain. J. Occup. Rehabil. 2018, 28, 559–567.
6. Loengaard, K.; Bjorner, J.B.; Fink, P.K.; Burr, H.; Rugulies, R. Medically unexplained symptoms and the risk of loss of labor market participation: A prospective study in the Danish population. BMC Public Health 2015, 15, 844.
7. De Vries, H.J.; Reneman, M.F.; Groothoff, J.W.; Geertzen, J.H.; Brouwer, S. Factors promoting staying at work in people with chronic nonspecific musculoskeletal pain: A systematic review. Disabil. Rehabil. 2012, 34, 443–458.
8. Cancelliere, C.; Donovan, J.; Stockendahl, M.J.; Biscardi, M.; Ammendolia, C.; Myburgh, C. Factors affecting return to work after injury or illness: Best evidence synthesis of systematic reviews. *Chiropr. Man. Ther.* 2016, 24, 32.

9. Weerdesteijn, K.H.N.; Schaafsma, F.; Bonefaas-Groenewoud, K.; Heymans, M.; Van der Beek, A.; Anema, J. Predicting return to work after long-term sickness absence with subjective health complaints: A prospective cohort study. *BMC Public Health* 2020, 20, 1095.

10. Van Duijn, M.; Burdorf, A. Influence of modified work on recurrence of sick leave due to musculoskeletal complaints. *J. Rehabil. Med.* 2008, 40, 576–581.

11. Durand, M.J.; Corbiere, M.; Coutu, M.F.; Reinharz, D.; Albert, V. A review of best work-absence management and return-to-work practices for workers with musculoskeletal or common mental disorders. *Work* 2014, 48, 579–589.

12. Buck, R.; Wynne-Jones, G.; Varnava, A.; Main, C.J.; Phillips, C.J. Working with musculoskeletal pain. *Rev. Pain* 2009, 3, 6–10.

13. Van der Noordt, M.; IJzelenburg, H.; Droomers, M.; Proper, K.I. Health effects of employment: A systematic review of prospective studies. *Occup. Environ. Med.* 2014, 71, 730–736.

14. De Vries, G.; Koeter, M.W.; Nieuwenhuijsen, K.; Hees, H.L.; Schene, A.H. Predictors of impaired work functioning in employees with major depression in remission. *J. Affect. Disord.* 2015, 185, 180–187.

15. Noordik, E.; Nieuwenhuijsen, K.; Varekamp, I.; Van der Klink, J.J.; Van Dijk, F.J. Exploring the return-to-work process for workers partially returned to work and partially on long-term sick leave due to common mental disorders: A qualitative study. *Disabil. Rehabil.* 2011, 33, 1625–1635.

16. The Dutch Social Security Institute: The Institute for Employee Benefits Schemes. CAS: Classification of symptoms, diseases and causes for occupational and insurance physicians. Amsterdam: The Social Security Institute; 2002 [Updated 2010]. Available online: https://www.steungroep.nl/images/her_keuring_WIA_86186691.pdf (accessed on 2002).

17. World Health Organization (WHO). Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death. Geneva: WHO; 1977. Available online: https://apps.who.int/iris/handle/10665/40492 (accessed on 2010).

18. Robbins, J.M.; Kirmayer, L.J.; Hemami, S. Latent variable models of functional somatic distress. *J. Nerv. Ment. Dis.* 1997, 185, 606–615.

19. Wade, D.T.; Halligan, P.W. The biopsychosocial model of illness: A model whose time has come. *Clin. Rehabil.* 2017, 31, 995–1004.

20. Vondrig, A.A.; Schaafsma, F.G. Reliability and validity of the work and well-being inventory (WBI) for employees. *J. Occup. Rehabil.* 2018, 28, 377–390.

21. Terluin, B.; Brouwers, E.P.; Van Marwijk, H.W.; Verhaak, P.; Van der Horst, H.E. Detecting depressive and anxiety disorders in distressed patients in primary care; comparative diagnostic accuracy of the Four-Dimensional Symptom Questionnaire (4DSQ) and the Hospital Anxiety and Depression Scale (HADS). *BMC Fam. Pract.* 2009, 10, 58.

22. De Vrooge, I.; Hoedeman, R.; Nuyen, J.; Sijtsma, K.; Van der Feltz-Cornelis, C.M. Validation of the PHQ-15 for somatoform disorder in the occupational health care setting. *J. Occup. Rehabil.* 2012, 22, 51–58.

23. Aaronson, N.K.; Muller, M.; Cohen, P.D.; Essink-Bot, M.L.; Fekkes, M.; Sanderman, R. Translation, validation, and norming of the Dutch language version of the SF-36 Health Survey in community and chronic disease populations. *J. Clin. Epidemiol.* 1998, 51, 1055–1068.

24. Ware, J.; Kosinski, M.; Keller, S.D. SF-36 Physical and Mental Health Summary Scales: A User’s Manual, 5th ed.; Health Institute New England Medical Center: Boston, MA, USA, 1994; p. 191.

25. Speckens, A.E.; Spinboven, P.; Sloekers, P.P.; Bolk, J.H.; Van Hemert, A.M. A validation study of the Whiteley Index, the Illness Attitude Scales, and the Somatosensory Amplification Scale in general medical and general practice patients. *J. Psychosom. Res.* 1996, 40, 95–104.

26. El Fassi, M.; Bocquet, V.; Majery, N.; Lair, M.L.; Couffignal, S.; Mairiaux, P. Work ability assessment in a worker population: Comparison and determinants of Work Ability Index and Work Ability score. *BMC Public Health* 2013, 13, 305.

27. Marhold, C.; Linton, S.J.; Melin, L. Identification of obstacles for chronic pain patients to return to work: Evaluation of a questionnaire. *J. Occup. Rehabil.* 2002, 12, 65–75.

28. Field, A. *Discovering Statistics Using IBM SPSS Statistics*, 4th ed.; Sage Publications Ltd.: London, UK, 2015.
29. Moons, K.G.; Altman, D.G.; Reitsma, J.B.; Ioannidis, J.P.; Macaskill, P.; Steyerberg, E.W. Transparent reporting of a multivariable prediction model for individual prognostis or diagnosis (TRIPOD): Explanation and elaboration. *Ann. Intern. Med.* **2015**, *162*, W1–W73.
30. Steyerberg, E.W. *Clinical Prediction Models: A Practical Approach to Development, Validation, and Updating*, 1st ed.; Springer: New York, NY, USA, 2009.
31. Murgatroyd, D.F.; Casey, P.P.; Cameron, I.D.; Harris, I.A. The effect of financial compensation on health outcomes following musculoskeletal injury: Systematic review. *PLoS ONE* **2015**, *10*, e0117597.
32. Cassidy, J.D.; Carroll, L.J.; Cote, P.; Lemstra, M.; Berglund, A.; Nygren, A. Effect of eliminating compensation for pain and suffering on the outcome of insurance claims for whiplash injury. *New Engl. J. Med.* **2000**, *342*, 1179–1186.
33. Organisation for Economic Co-operation and Development (OECD). Transforming Disability into Ability: Policies to Promote Work and Income Security for Disabled People. Paris: OECD; 2003. Available online: https://read.oecd-ilibrary.org/social-issues-migration-health/transforming-disability-into-ability_9789264158245-en#page1 (accessed on 2003).
34. Sheehan, L.R.; Lane, T.J.; Collie, A. The impact of income sources on financial stress in workers’ compensation claimants. *J. Occup. Rehabil.* **2020**, doi:10.1007/s10926–020–09883–1 2020.
35. Wynne-Jones, G.; Buck, R.; Varnava, A.; Phillips, C.J.; Main, C.J. Impacts on work performance; what matters 6 months on? *Occup. Med.* **2011**, *61*, 205–208.
36. Butterworth, P.; Leach, L.S.; Pirkis, J.; Kelaher, M. Poor mental health influences risk and duration of unemployment: A prospective study. *Soc. Psychiatry Psychiatr. Epidemiol.* **2012**, *47*, 1013–1021.
37. Arends, I.; Almansa, J.; Stansfeld, S.A.; Amick, B.C.; Van der Klink, J.J.L.; Bultmann, U. One-year trajectories of mental health and work outcomes post return to work in patients with common mental disorders. *J. Affect. Disord.* **2019**, *257*, 263–270.
38. Laisne, F.; Lecomte, C.; Corbiere, M. Biopsychosocial predictors of prognosis in musculoskeletal disorders: A systematic review of the literature (corrected and republished). *Disabil. Rehabil.* **2012**, *34*, 1912–1941.
39. Lofgren, M.; Ekholm, J.; Ohman, A. ‘A constant struggle’: Successful strategies of women in work despite fibromyalgia. *Disabil. Rehabil.* **2006**, *28*, 447–455.
40. Van Rhenen, W.; Schaufeli, W.B.; Van Dijk, F.J.; Blonk, R.W. Coping and sickness absence. *Int. Arch. Occup. Environ. Health* **2008**, *81*, 461–472.
41. Etuknwa, A.; Daniels, K.; Eib, C. Sustainable return to work: A systematic review focusing on personal and social factors. *J. Occup. Rehabil.* **2019**, *29*, 679–700.
42. Lazarus, R.S.; Folkman, S. *Stress, Appraisal, and Coping*, 1st ed.; Springer Publishing Company: New York, NY, USA, 1984.
43. Varekamp, I.; Verbeek, J.H.; Van Dijk, F.J. How can we help employees with chronic diseases to stay at work? A review of interventions aimed at job retention and based on an empowerment perspective. *Int. Arch. Occup. Environ. Health* **2006**, *80*, 87–97.
44. Brenninkmeijer, V.; Lagerveld, S.E.; Blonk, R.W.B. Moeilijk objecteerbare klachten in de praktijk van de bedrijfs- en verzekeringarts [Symptoms difficult to objectify in occupational and insurance health care]. *Tijdschr. Voor Bedr. Verzek.* **2006**, *74*, 424–430, doi:10.1007/BF03074450.
45. Van Poppel, M.N.; De Vet, H.C.; Koes, B.W.; Smid, T.; Bouter, L.M. Measuring sick leave: A comparison of self-reported data on sick leave and data from company records. *Occup. Med.* **2002**, *52*, 485–490.
46. Kontopantelis, E.; White, I.R.; Sperrin, M.; Buchan, I. Outcome-sensitive multiple imputation: A simulation study. *BMC Med Res. Methodol.* **2017**, *17*, 2.

© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).