

RESEARCH REPORT

Psychological distress after employment transitions: the role of subjective financial position as a mediator

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Objective: To explore the extent to which the mental health effects of transitions into unemployment, or other forms of non-employment, and vice versa, are mediated by financial changes.

Methods: Longitudinal analysis of the British Household Panel Survey from 1991 to 2000. There were 89 264 person-years of observation from 14 686 individuals aged ≥ 16 years. Main outcome measure was psychological distress measured by the 12-item General Health Questionnaire.

Results: Transitions to unemployment were associated with increased risk of psychological distress for men (adjusted odds ratio (OR) 3.15 (95% confidence interval (CI) 2.50 to 3.98)) and for women (OR 2.60 (95% CI 1.97 to 3.43)). Women who left work to look after the family were also more likely to experience psychological distress (OR 1.72 (95% CI 1.45 to 2.05)). A reduced risk of psychological distress was seen for transitions from unemployment to paid employment for men (OR 0.52 (95% CI 0.41 to 0.68)) and for women (OR 0.68 (95% CI 0.69 to 1.40)). Financial difficulty partially mediated these relationships: men who became unemployed and were worse off financially were more likely to experience psychological distress (OR 4.19 (95% CI 3.20 to 5.50)) than men who were not (OR 1.48 (95% CI 0.95 to 2.33)). Conversely, the beneficial health effect for people who left unemployment and became employed was confined to those who were better off financially (OR 0.34 (0.25 to 0.48) for men).

Conclusions: Changes in employment status have both direct and indirect effects, through changes in financial circumstances, on subsequent psychological distress. The results support the view that the direction of causation runs from employment transitions to financial difficulties and psychological distress.

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Falls in income seem to be more detrimental to health than increases are beneficial.¹ However, the reasons for drops in income need to be considered—for example, a sudden unexpected fall due to unemployment may be more detrimental than a predictable change when retiring from paid employment.^{1,2} It is therefore important to examine the causes of changes in financial circumstances, and the effect of changes in income, on health, so that their relative contribution can be assessed. Changes in employment status are themselves associated with health; unemployment has been linked to psychological distress in several studies.^{3–6} However, the relationship with other forms of non-employment is less clear. Although retirement may be beneficial to mental health,^{5,7} women who stay at home to care for the family may experience considerable psychological distress.^{5,8}

A decline in monetary income at a specific point in time may not adequately reflect the actual resources available to provide the necessities for good health. For example, people may be able to reduce expenditure, delay payments or draw on savings to maintain their standard of living in the case of income loss. Psychological distress is likely to be more associated with the gap between a family's expenditure and resources rather than its income as such. Such a financial gap may be more adequately measured by perceived financial difficulties than income. Using data from the British Household Panel Survey (BHPS), Wildman⁶ showed that subjective financial status was a stronger determinant of mental health than were objective measures of household income.

Given this, we examined the extent to which the mental health effects of employment change can be explained by perceived changes in financial circumstances using the BHPS. Three hypotheses were tested: (1) employment transitions are independently associated with psychological distress after controlling for health, social and economic circumstances

before the transition; (2) changes in subjective financial circumstances mediate the effect of employment transitions on psychological distress; and (3) the direction of causation runs from employment transitions to financial changes and to psychological distress.

PARTICIPANTS AND METHODS

Study population

The BHPS, which started in 1990, is a longitudinal general population survey of a nationally representative sample of 5000 private households, resulting in a sample of about 10 000 people in Great Britain.⁹ All original household members have been followed up over time and anyone joining such a household is added to the survey, helping to maintain its representativeness.⁴ From the first 10 years of follow-up, 89 264 person-years of observation from 14 686 individuals aged ≥ 16 years were available for analysis. To examine annual changes in employment status, we included individuals who contributed at least two consecutive years to the study and whose complete data were available for the analyses. This provided 86 932 observations, which we have termed transitions, although many of them relate to those who remain in employment (or non-employment).

Measures

The outcome used in this study was psychological distress, measured by the 12-item General Health Questionnaire (GHQ-12). Individuals with a GHQ-12 score of ≥ 3 , which is the average for the sample, were classified as cases of psychological distress; this approach recommended by Goldberg *et al*¹⁰ is commonly used.

Abbreviations: BHPS, British Household Panel Survey; GHQ-12, 12-item General Health Questionnaire

Employment transitions were measured as year-to-year changes in employment status (t-1 to t); changes within a year were not considered here. Transitions were constructed in two directions: (1) from paid employment (fulltime or part-time) to various categories of non-employment (unemployed, retired, maternity leave or family care); and (2) from each non-employment category into paid employment. Given the small numbers of transitions to and from maternity leave, we merged this category with family care, which included women looking after children or other adults.⁵ Although different mechanisms may underpin the way these transitions affect health, previous work shows that these two groups of transitions have similar effects on psychosocial distress.⁵

To explore the role of financial resources as a key mediator of the health effects of employment transitions, year-to-year changes in subjective financial circumstances were obtained from the answer to the question “Would you say that you yourself are better off or worse off financially than you were a year ago?” The responses were coded as (1) about the same, (2) better off and (3) worse off. The variable was recoded and used in two ways depending on the specific analysis. For analysis of transitions into non-employment, the variable was coded 0, not worse off (same or better off) or 1, worse off; for transitions from non-employment, it was coded 0, not better off (same or worse off) or 1, better off.

Data on a range of confounders were considered in the analysis. These consisted of the following:

1. Fixed or unmodifiable factors: age, sex.
2. Precursors measured at t-1: psychological distress, long-term limiting illness, marital status (never married; married or cohabiting; separated, divorced or widowed), parenthood status (parent or guardian of a dependent child aged ≤ 16 years living in the same household), carer status (spend >20 h/week looking after a sick, elderly or handicapped person), Registrar General’s social class (manual, non-manual).
3. Accumulated factors up to t-1: home ownership, level of education, proportion of survey spent in fulltime employment.

Statistical analysis

Random-effects logistic regression models were used in this analysis to account for the repeated measures nature of the data. STATA V.8 was used for all analyses. The main focus of the analysis was to explore (1) the direct effects of employment transitions on psychological distress; and (2) the indirect effects of employment transitions on psychological distress mediated

by changes in financial circumstances. The analysis also took into consideration other factors that might confound or modify the association between employment transitions and health. Four sets of models were fitted.

- First, main effect models were fitted separately for men and for women to estimate the direct association between employment transitions and psychological distress. To avoid collinearity and over-adjustment of models, parsimonious models were selected by examining the effect of each potential confounder on the employment transition model associations. Confounders were removed from the model only if they did not alter the exposure association and if they were not independently associated with the outcome (likelihood ratio (LR) test, p≥0.05). Thus, not all confounders identified earlier were retained in the final models.
- In the second set of models, effect modification by precursor variables was investigated by fitting interaction terms to the models and tested using the LR statistic (p≤0.05).
- Third, the role of financial circumstances as a mediator of the effect of employment transitions on psychological distress was examined by assessing whether the addition of financial circumstances to the model reduced the association between employment transitions and psychological distress.
- In the fourth set of models, the interaction between the transitions and subjective financial circumstances was examined.

The variance inflation factor was used to test for multicollinearity of model variables; no significant effects were found.

Health status before the transitions was adjusted for in all models to control for health selection. The possibility of health selection was also explored by undertaking a sensitivity analysis, repeating the analysis excluding those who reported the presence of limiting illness (t-1).

RESULTS

Relationship between employment transitions and psychological distress

Table 1 describes the prevalence of perceived changes in financial difficulties by each employment transition and psychological distress after each of the employment transition types and subsequent changes in perceived financial circum-

Table 1 Percentage prevalence of psychological distress after employment transitions

| Transition type | Number of transitions | Experiencing financial difficulties/improvements | | | |
|--------------------------------|-----------------------|--|---|----------------------------|------------------------|
| | | Experiencing financial difficulties/improvements (%) | Experiencing psychological distress (%) | | |
| Transition from employment to* | | Percentage worse off financially | Overall | Not worse off financially | Worse off financially |
| Unemployment | 1390 | 71.3 | 43.4 | 28.6 | 49.4 |
| Retirement | 798 | 53.1 | 20.7 | 17.6 | 23.3 |
| Family care† | 1187 | 47.5 | 36.7 | 29.9 | 44.3 |
| Stayed employed | 47370 | 23.1 | 23.2 | 19.3 | 36.2 |
| Transition to employment from* | | Percentage better off financially | Overall | Not better off financially | Better off financially |
| Unemployment | 1346 | 62.3 | 25.6 | 35.4 | 19.6 |
| Family care† | 399 | 25.3 | 23.1 | 22.5 | 24.7 |
| Stayed non-employed | 31136 | 15.1 | 29.6 | 30.0 | 27.5 |

*A total of 51 534 transitions from employment to non-employment occurred; 789 transitions were into categories that were not a focus of this study: fulltime student (n=407), long-term illness (n=285), government training (n=42), something else (n=55). A total of 35 398 transitions were from non-employment to employment; 2517 transitions were from categories that were not a focus of this study: fulltime students (n=1076), retirement (n=212), long-term illness (n=105), government training (n=123), something else (n=127).

†Family care applies only to women and includes maternity leave or staying at home to look after the family.

Table 2 Relationship between employment transitions and psychological distress*

| | Men | | Women | |
|---------------------------------------|------|--------------|-------|--------------|
| | OR | 95% CI | OR | 95% CI |
| Transition from employment to† | | | | |
| Unemployment | 3.15 | 2.50 to 3.98 | 2.60 | 1.97 to 3.43 |
| Retirement | 0.95 | 0.64 to 1.63 | 1.15 | 0.83 to 1.60 |
| Family care | – | – | 1.72 | 1.45 to 2.05 |
| Transition to employment from† | | | | |
| Unemployment | 0.52 | 0.41 to 0.68 | 0.68 | 0.51 to 0.92 |
| Family care | – | – | 0.98 | 0.69 to 1.40 |

*Models are adjusted for current age (time, t), psychological distress, limiting illness, marital status, caring status, home ownership and manual occupational class (all measured at time, t–1).

†Reference categories are “stay employed” for models of transitions from employment to non-employment, and “stay non-employed” for models of transitions from non-employment to employment.

stances. Individuals moving in or out of unemployment were much more likely to perceive a change in their financial difficulties than other employment transitions. Interestingly, those returning to work after a period of maternity or family care were less likely to report an improvement in their financial circumstances than those returning from unemployment.

Overall, there was a higher prevalence of distress for transitions from employment to unemployment (43.4%) and to family care (36.7%) than that among people who stayed employed (23.2%). For each of these transitions, we also found a higher prevalence of distress for people who were worse off financially than those who were not, as well as for those who remained in employment. For transitions in the opposite direction, there was a lower prevalence of distress for people who returned to paid work from unemployment (25.6%) or from family care (23.1%) than for those who stayed in non-employment (29.6%). This was strongly related to a perceived improvement in financial circumstances after leaving unemployment (19.6%) but not after leaving family care (24.7%).

Table 2 summarises the main effects associations for employment transitions and psychological distress. Controlling for relevant confounders, a transition from paid employment to unemployment was significantly associated with an increased likelihood of psychological distress both for men (adjusted odds ratio (OR) 3.15) and for women (OR 2.60). We found a significant interaction for the transition and prior psychological distress, suggesting that this effect was limited to people without prior psychological distress (OR 3.50 (95% confidence interval (CI) 2.67 to 4.59 for men; OR 2.97 (95% CI 2.07 to 4.28) for women). Women who left paid employment for maternity leave or family care were nearly twice as likely to experience psychological distress as those who stayed at work; an effect that was also limited to women without prior distress (OR 1.80 (95% CI 1.47 to 2.22)). A significant interaction was also found for social class and retirement. Men who retired from manual occupational classes were nearly three times as likely to experience distress (OR 2.69 (95% CI 1.21 to 5.97)), and men from non-manual classes were almost half as likely to be distressed (OR 0.59 (95% CI 0.33 to 1.06)), as those still working.

Both men and women who returned to work from unemployment were less likely to experience distress (OR 0.52 and 0.68, respectively) than those who remained in non-employment (table 2). However, interaction testing found that the beneficial effects of transitions from unemployment to employment were limited to those with distress while unemployed (OR 0.40 (95% CI 0.25 to 0.64) for men; OR 0.62 (95% CI 0.35 to 1.10) for women). The beneficial effect of transitions from family care to paid employment on mental health was also limited to women who experienced

psychological distress before the transition (OR 0.48 (95% CI 0.24 to 0.96)).

Perceived financial difficulties as a mediator

Experiencing a change in perceived financial difficulties was significantly associated with psychological distress for both men (OR 2.32 (95% CI 2.12 to 2.54)) and for women (OR 2.06 (95% CI 1.92 to 2.21)). When this factor was added to the main effects models (table 2), the ORs for transitions from employment to unemployment were diminished by about 30% for both men and women, and for transitions to family care (for women) by 19%. The addition of perceived financial difficulties to the models reduced the OR for transitions from unemployment to employment by 30% for men and by 16% for women, with a loss of significance. For transitions from family care to employment, perceptions of financial difficulties had no effect on the association. These results suggest that changes in subjective financial circumstances partially mediated the associations between employment transitions and psychological distress.

To examine this mediating effect further, an analysis using a single variable that combined the transition and perceived financial difficulties data was undertaken (table 3). People who became unemployed or women who began family care and considered themselves to be financially worse off, compared with their status the year before the employment transition, were more likely to experience psychological distress than those who underwent these transitions but did not experience financial difficulty. This relationship was stronger for men from manual than those from non-manual social classes ($p < 0.001$, LR test for interaction). The association with psychological distress was greater for those from manual classes who become unemployed or retired and were worse off financially (OR 4.86 (95% CI 3.48 to 6.79) for unemployment; OR 4.01 (95% CI 2.65 to 6.07) for retirement) than those from non-manual classes (OR 3.10 (95% CI 2.01 to 4.79) for unemployment; OR 1.82 (95% CI 1.10 to 3.01) for retirement). An association with psychological distress was also found for those from manual classes despite reporting that they were the same or better off after becoming unemployed (OR 1.92 (95% CI 1.13 to 3.25)), an effect that was not seen for men from non-manual classes. The lower half of table 3 shows that the beneficial effect on mental health related to returning to paid work from unemployment was closely linked to perceived improvements in financial position both for men (OR 0.34) and for women (OR 0.43). However, this was not the case for women entering employment after a period of family care. The beneficial effect of gaining employment and being better off financially was greater for men from manual (OR 0.29 (95% CI

Table 3 Employment transitions, income change and psychological distress*

| | Men | | Women | |
|---------------------------------------|------|--------------|-------|--------------|
| | OR | 95% CI | OR | 95% CI |
| Transition from employment to† | | | | |
| Unemployment | | | | |
| Not worse off financially | 1.48 | 0.95 to 2.33 | 0.58 | 0.34 to 1.00 |
| Worse off financially | 4.19 | 3.20 to 5.50 | 4.89 | 3.48 to 6.88 |
| Retirement | | | | |
| Not worse off financially | 0.79 | 0.42 to 1.46 | 1.35 | 0.83 to 2.18 |
| Worse off financially | 1.14 | 0.67 to 1.93 | 1.11 | 0.71 to 1.72 |
| Family care | | | | |
| Not worse off financially | – | – | 1.27 | 1.00 to 1.63 |
| Worse off financially | – | – | 2.28 | 1.80 to 2.91 |
| Transition to employment from† | | | | |
| Unemployment | | | | |
| Not better off financially | 1.03 | 0.71 to 1.51 | 1.15 | 0.76 to 1.75 |
| Better off financially | 0.34 | 0.25 to 0.48 | 0.43 | 0.28 to 0.65 |
| Family care | | | | |
| Not better off financially | – | – | 0.94 | 0.63 to 1.41 |
| Better off financially | – | – | 1.13 | 0.56 to 2.26 |

*Models are adjusted for current age (time t) psychological distress, limiting illness, marital status, caring status, home ownership and manual occupational class (all measured at time, t–1).

†Reference categories are “stay employed” for models of transitions from employment to non-employment, and “stay non-employed” for models of transitions from non-employment to employment.

0.19 to 0.45)) than from non-manual (OR 0.45 (95% CI 0.28 to 0.72); $p < 0.001$, LR test) backgrounds.

Health selection

In all models, we controlled for prior health status (psychological distress and long-term limiting illness at $t-1$). Further, a slightly higher prevalence of psychological distress after employment transitions was found for the full sample compared with a healthy sample that excluded those with prior limiting illness (56 563 person-years; 10 866 people). In particular, for transitions from paid employment to retirement for men, the prevalence was 14.6% compared with 10% for the healthy sample. This suggests that there is some evidence for selection out of employment into retirement due to poor health. More generally, however, after regression analysis of the healthy sample, we found that the effect estimates for employment transitions were similar to those obtained from the full analysis, indicating that the influence of health selection was adequately controlled for in the models.

DISCUSSION

The findings from a 10-year general population survey have shown that transitions from paid employment to unemployment are associated with an increased likelihood of psychological distress after adjusting for a range of prior social circumstances and health selection; a finding that is consistent with that from other studies.^{3–5} Evidence that the results represented the onset or resolution of psychological distress, rather than the maintenance of episodes, was supported by the observation that the negative effects of transitions to non-employment were limited to those without distress before the transition, and the beneficial effects of employment were seen only for those who were distressed before becoming employed. Although there was some indication of health selection into non-employment in the BHPS, we provide evidence for an effect of employment transitions on mental health that was independent of prior health status. Our results also show that changes in subjective financial circumstances mediated the relationship between employment change and health.

It is important that men and women are considered separately in analyses because they have different patterns of employment, with women spending considerable periods in

fulltime non-employment roles.¹¹ Previous research indicates that the health experiences of women are related to their combinations of work and family roles.¹² In this analysis, women who left work to stay at home and look after the family were more likely to experience psychological distress than women who stayed in paid employment. This group included women on maternity leave, those looking after children and those with other caring responsibilities. Other analyses have shown that women who care for both children and adults have the highest scores on the GHQ.⁵ This suggests that caring may be an important cause of psychological distress and this has also been found in other studies.^{13–15} This may also explain why women returning to work after a period of family care do not see an improvement in their health in the same way as those returning after being unemployed because of the effects of role overload.

Another important non-employment transition is into retirement. For men, the mental health effect of retirement transitions was more strongly related to occupational class than to financial situation. An increased risk of psychological distress was seen for those from manual occupational classes, and a reduced association for men from non-manual occupations, a finding that is consistent with findings from the Whitehall II Study,¹⁶ but has not been widely demonstrated in the general population. We also found that the effects of transitions into unemployment accompanied by financial difficulties (and vice versa) varied by social class in men but not in women. Further research is needed to fully understand the inter-relationships between social class, employment transitions and mental health.

Although differences by sex exist, transitions to unemployment have similar detrimental effects on the psychological health of both men and women. However, the effect for men seems stronger than that for women. This is in keeping with the findings of Artazcoz *et al's*,¹⁷ who suggested that unemployment has a greater effect on men's health because of their role as “primary providers for the family”, whereas women are protected by their nurturing roles.

For transitions to paid employment, both men and women were less likely to experience psychological distress if they found paid work after a period of unemployment than those who remained non-employed, and improvements in perceived

What is already known

- Changes in both financial circumstances and employment–unemployment transitions affect mental health. However, less is known about the effect of transitions into and out of other forms of non-employment.
- An individual's perceived financial situation may be more strongly related to mental health than measures of monetary income because it could more adequately capture the gap between expenditure and resources.
- Mediation of the effect of the full range of employment transitions on mental health by financial circumstances has not yet been investigated.

What this paper adds

- Changes in subjective financial circumstances are an important mediating factor in the longitudinal association between employment transitions and mental health.
- This seems to be more important for transitions to and from unemployment than for other types of employment change.

financial circumstances were important mediators. However, other factors such as social status, self esteem, physical and mental activity and using one's skills may also have a role in mediating health effects of employment transitions.¹⁷

Strengths and limitations

Our study has several limitations. Using subjective financial difficulty, we assessed the role of financial resources as a mediator of the health effects of employment transitions. An association with psychological distress was previously shown for this measure in two consecutive years of the BHPS.¹⁸ However, whether this association is causal or the consequence of negative affectivity is not clear. This is a genuine concern but there are reasons to believe it may be causal. Subjective financial circumstances have been shown to be a strong predictor of health,⁶ and may capture the adequacy of financial resources in relation to need more succinctly, and completely, than actual household income at one point in time.

The potential for bias due to missing data must also be considered. In the BHPS, psychological distress, unemployment, being younger, single, not having any children and being in fulltime education are most strongly associated with observation gaps and loss to follow-up.¹⁹ As unemployment and prior psychological distress were associated with current distress, the results represented here are therefore most likely to underestimate the effects of employment transitions on psychological distress.

Our study has several key strengths. Data from longitudinal surveys allow the temporal order of exposures, confounders, intermediate factors and the outcome under consideration to be established, which help reach stronger causal conclusions.²⁰ In our study, the health outcome was always measured after the transition had occurred and health indicators that were measured before the transition were included in statistical models to control for health selection into or out of employment. This is important because the effect of an employment transition may be dependent on the social circumstances immediately before the transition and on the accumulation of experiences during the life course.

CONCLUSIONS

Both unemployment and financial hardship have been previously shown to be associated with poor mental health. Transitions into unemployment or family care were more likely to result in psychological distress if accompanied by increased financial hardship. Improvements in financial resources as a result of becoming employed seemed to be responsible for the resolution of psychological distress.

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REFERENCES

- 1 **Benzeval M**, Judge K. Income and health: the time dimension. *Soc Sci Med* 2001;**52**:1371–90.
- 2 **Duncan G**. Income dynamics and health. *Int J Health Serv* 1996;**26**:419–44.
- 3 **Murphy G**, Athanasou J. The effect of unemployment on mental health. *J Occup Organ Psychol* 1999;**72**:83–99.
- 4 **Pevalin DJ**, Goldberg DP. Social precursors to onset and recovery from episodes of common mental illness. *Psychol Med* 2003;**33**:299–306.
- 5 **Thomas C**, Benzeval M, Stansfeld SA. Employment transitions and mental health: an analysis from the British Household Panel Survey. *J Epidemiol Community Health* 2005;**59**:243–9.
- 6 **Wildman J**. Income related inequalities in mental health in Great Britain: analysing the causes of health inequality over time. *J Health Econ* 2003;**22**:295–312.
- 7 **Kasl S**, Jones B. The impact of job loss and retirement on health. In: Berkman L, Kawachi I, eds. *Social epidemiology*. New York: Oxford University Press, 2000:118–36.
- 8 **Matthews S**, Power C. Socio-economic gradients in psychological distress: a focus on women, social roles and work-home characteristics. *Soc Sci Med* 2002;**54**:799–810.
- 9 **Taylor MF**, Brice J, Buck N, et al. *British Household Panel Survey user manual volume A: introduction, technical report and appendices*. Colchester: University of Essex, 2003.
- 10 **Goldberg D**, Oldehinkel T, Ormel J. Why GHQ threshold varies from one place to another. *Psychol Med* 1998;**28**:915–21.
- 11 **Lahelma E**, Arber S, Kivela K, et al. Multiple roles and health among British and Finnish women: the influence of socioeconomic circumstances. *Soc Sci Med* 2002;**54**:727–40.
- 12 **Arber S**. Class, paid employment and family roles: making sense of structural disadvantage, gender and health status. *Soc Sci Med* 1991;**32**:425–36.
- 13 **Brown S**, Birtwistle J. People with schizophrenia and their families. Fifteen-year outcome. *Br J Psychiatry* 1998;**173**:139–44.
- 14 **Livingston G**, Manela M, Katona C. Depression and other psychiatric morbidity in carers of elderly people living at home. *BMJ* 1996;**312**:153–6.
- 15 **Popay J**, Jones G. Patterns of health and illness amongst lone parents. *J Soc Policy* 1990;**19**:499–534.
- 16 **Mein G**, Martikainen P, Hemingway H, et al. Is retirement good or bad for mental and physical health functioning? Whitehall II longitudinal study of civil servants. *J Epidemiol Community Health* 2003;**57**:46–9.
- 17 **Artazcoz L**, Benach J, Borrell C, et al. Unemployment and mental health: understanding the interactions among gender, family roles, and social class. *Am J Public Health* 2004;**94**:82–8.
- 18 **Weich S**, Lewis G. Poverty, unemployment, and common mental disorders: population based cohort study. *BMJ* 1998;**317**:115–19.
- 19 **Buck N**, Burton J, Laurie H, et al. *British Household Panel Survey Waves 1–10: 1991–2000*. Colchester: Institute for Social and Economic Research, University of Essex, 2003.
- 20 **Twisk JWR**. *Applied longitudinal data analysis for epidemiology: a practical guide*. Cambridge: Cambridge University Press, 2003.