Non-Technical Summary: Multilevel Multi-process Models for Partnership and Childbearing Event Histories

Aims

The project had several aims and objectives:

- To develop methodology for the analysis of event history data, where there are correlated histories, repeated events, multiple states and competing risks.

- To apply these methods in a study of the interrelationships between transitions from cohabitation and marriage, and childbearing in Britain.

- To provide social scientists with the means to implement these methods in their own research.

Methods

The methodological developments of the research were motivated by a substantive research question, the link between partnership transitions and childbearing among British women. Specifically, we were interested in examining the effects of pregnancy and the presence and characteristics of children on the chance that a marital or cohabiting union is dissolved, or cohabitation is converted into marriage. One methodological issue that must be considered when assessing the impact of fertility outcomes on partnership outcomes is the possibility that decisions about childbearing and partnerships are subject to shared influences, some of which will be unobserved. For example, a woman's unmeasured view of cohabitation, whether as a precursor or alternative to marriage, could influence not only her odds of marriage but also her chance of getting pregnant before marriage. If ignored, this joint determination of the partnership and fertility processes could lead to biased estimates of the effects of having children on partnership transitions. So in the example just given, if the 'true' effect of having children is to increase the odds of marriage and women who believe cohabitation is an alternative to marriage are more likely to have an extra-marital conception, we would under-estimate the effect of having children on the odds of marriage. To account for this, we use a simultaneous equations model, in which partnership transitions are modelled jointly with the probability of having a child. Correlation between the unobserved factors affecting the partnership and fertility processes is represented in the model as a correlation between the residual components of the simultaneous equations.

Other features of partnership histories which need to be considered are repeated events (multiple partnerships per woman), multiple states (cohabitation and marriage), and competing risks (a cohabitation may be dissolved or converted to marriage). We develop a general model which takes account of all of these features in addition to the potential correlation between the partnership and childbearing processes. We show that, after some restructuring of the data, this model may be fitted using existing estimation procedures. Macros for data preparation and model specification in MLwiN are available from the project website.

Key substantive questions and findings

Three empirical studies were carried out as part of the research, using data from the

National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS70).

(i) The effect of fertility outcomes on partnership dissolution and the move from cohabitation to marriage (among the 1958 birth cohort between the ages of 16 and 42)

(ii) Changes in the relationship between the outcomes of cohabitation and fertility (a comparison of the 1958 and 1970 birth cohorts to age 30)

(iii) The formation and outcomes of cohabiting and marital partnerships among women of the 1970 birth cohort

Some key findings from these studies are:

- In the 1958 cohort, having preschool children reduces the risk of union dissolution between ages 16 and 42, with a weaker effect for cohabiting couples. The stabilizing effect of children weakens as they get older. In a comparison of the 1958 and 1970 cohorts to age 30, we find that having preschool children with a cohabiting partner reduces the risk of separation but only for the 1970 cohort.
- Among NCDS women who were cohabiting before age 30, there is evidence that the presence of school age children from a previous partnership reduces the odds of dissolution. Otherwise, having children from a previous co-residential relationship has no effect on the dissolution of marriages or cohabitations for either cohort.
- Allowing for correlation between the unmeasured determinants of fertility and partnership outcomes has little effect on our substantive conclusions. However, allowing for residual correlation between partnership formation and dissolution has a marked impact on conclusions about the effects of previous partnership experience on future transitions.

Research outputs

Three papers have been prepared for submission to journals, and one of these has been accepted for publication in *Demography*. An article has also appeared in the *Multilevel Modelling Newsletter*. Another article will appear in the autumn 2005 issue of the Cohort Studies newsletter, *Kohort*.

A major part of the first year of the project was devoted to preparing the NCDS partnership history data for analysis. Partnership histories were collected retrospectively when the cohort members were age 33 and 42, and these had to be linked to form a continuous history for ages 16-42. This involved resolving inconsistencies such as differences in the date of marriage reported at each age. The linked, cleaned NCDS histories, together with the cleaned BCS70 histories, have been submitted with documentation to the Data Archive so that they are available to other researchers.

Training materials on event history analysis have been developed and made available on the project web-site (see Dissemination below).

Dissemination

The methodological developments and substantive findings of the research have been widely disseminated both in the UK and overseas. Presentations at

international conferences include the RC 33 conference in Amsterdam, the annual meetings of the Population Association of America in Philadelphia, and the annual meeting of the statistical society of Canada in Montreal. In addition, invited talks have been given at the Max Planck Institute for Demographic Research in Germany, the Royal Statistical Society and at the universities of Southampton, Essex and Bristol.

Methodology developed under the project was disseminated in a two-day workshop on Multilevel Event History Analysis, held at the Institute of Education, 10-11 February 2005. All materials from the workshop – slides, computer exercises, MLwiN macros, and datasets (via the Data Archive) – are freely available for download from the project website www.mlwin.com/team/mmmpceh.html. These aim to guide researchers through the processes of data preparation, analysis and interpretation of results, starting with simple event history analysis, and gradually building up to multiprocess models for correlated histories.