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Partnership history and completed family sizes in Great Britain: a preliminary, empirical, exploration of characteristics and associations

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Partnership history and completed family sizes in Great Britain: a preliminary, empirical, exploration of characteristics and associations

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Abstract

Apart from some important analyses on childlessness, comparatively little research has been undertaken on the association between partnership history and related general demographic outcomes, and this exploratory study investigates the relationship between the completed family sizes of both men and women in the light of their full marital and cohabitational histories. The variability in respondents' family sizes is related to their partnership histories. The data-file, from the British Household Panel Survey, BHPS, contains detailed information on partnership history and children born, but omits socio-economic and other background variables which could act as controls. The analyses are therefore limited, but ones which nevertheless demonstrate the utility of a thorough examination of the basic variables using straightforward statistical techniques, which can inform further work applying more sophisticated analytic techniques to fuller datasets. An equally important by-product benefit of such analyses is that they reveal the strengths and weaknesses of different aspects of the survey data.

Keywords:

Partnership history, unions, family size, childlessness, period at risk

Acknowledgements

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1. Background

This paper investigates the demographic characteristics and possible associations between partnership history and childbearing. These might well be expected since each partnership history charts the different forms of relationship with partners each of whom could have co-parented children with the respondent. Registration and survey data show that the marital status - or de facto marital status – of mothers at the time of their giving birth differentiates between very different levels of fertility rates (Office for National Statistics 2014a). It might well be suspected that the entire history of partnerships over the childbearing period of a woman's life might be linked to even larger variations in completed fertility.

Furthermore, the stability of the parents' relationship at the time of, and shortly after, their child's birth is known to be associated with the mother's subsequent partnership status (Kiernan and Smith 2003), so that the partnership history can reflect the stability of the sequence of relationships – which in turn may be expected to affect decisions on having children. Completed family sizes are therefore studied in relation to partnership histories, and particular characteristics of having children to various aspects of partnership histories. The “extremes” of family size are also examined; those having no children and those having four or more children.

Completed family size has been particularly difficult to predict amongst those who have not yet reached the end of their childbearing years. Fertility intentions have often been poor predictors of eventual outcomes, despite improvements in formulating appropriate survey questions (Berrington 2004). Various factors associated with how many children a woman will bear have been investigated, mostly through survey questions addressed to women, including their level of educational attainment, their

occupation, and the differences between their characteristics and those of their partner, with regard to age and social status. Also, besides direct questions on the woman's own wishes for having - or not having - children, questions have been posed on their general views on the reasons for having children, their attitudes on the importance of family relationships, and their attitudes towards different lifestyles, including those not involving families.

The main disadvantage in surveys in this field is the inaccurate recall of dates of birth and the start and end dates of each relationship, and also the inadvertent omission of the odd event entirely (Kreyenfeld and Bastin 2016). Even in long-established and respected surveys, respondents have failed to record some of their children (Murphy 2009; Ni Bhrolchain, Beaujouan and Murphy 2011), although it is likely to be a larger problem in cross-sectional surveys than in panel surveys. This consideration is part of the reason for terming this investigation as exploratory and empirical. Nevertheless, new insights can be gained into the strengths and weaknesses of the survey data – which may be of help to others using the same data source.

If a woman has several partners and some or no children with each of them, the size of the family varies, and is of different types at different times. By the time that the mother has had her last child, her family could consist of a mixture of her own children, stepchildren and half-siblings – and possibly also adopted or foster children. Hence it is more appropriate to consider the eventual number of children the mother has herself had, and assign them to her as an individual, rather than consider them as part of a family. The numbers of biological children men have fathered will be considered in the same way. Women and men have different partnership histories, and their patterns of reproduction need to be explored accordingly. Despite the above

considerations, reference will be made to family size - for simplicity and economy of expression, but it should be interpreted as outlined above. In addition, an entire *partnership history* can be composed of a sequence of one or more *unions*, either marriages or cohabitations. Some respondents reported having no unions at all, and, for completeness, they are included in the total of all partnership histories, unless otherwise stated. As apparent, and for clarity, the term '*partnership*' will be reserved for the concept of 'partnership history', whereas the constituent different relationships within that history will be referred to as '*unions*'.

Three measures of completed fertility will be considered: the proportions childless; the average family size; and the proportion having four or more children. These measures are inevitably related: for example, a group of women with a large proportion childless will tend to have relatively few large families and a smaller average family size. Conversely, another group of women with a small proportion childless will tend to have relatively more large families, and a larger average family size. Historical exceptions have, nevertheless, occurred.

1.2 Historical context

During the 1960s and 1970s when the prevalence of cohabitation was still low and marriage accounted for virtually all unions, the incidence of births outside marriage began to increase, as so did the rate of divorce. A question which then exercised demographers and sociologists was how marital breakdown and childlessness (and childbearing) were associated (Chester 1972; Gibson 1980). These enquiries were conducted at a time when marriage was universally popular and teenage marriages were at a peak. Later, new survey data showed that childlessness was associated with age at marriage and marital breakdown (Kiernan 1989). Since the 1970s, however,

the incidence of marriage has declined considerably, and has been entered into at steadily older ages. Meanwhile cohabitation has accounted for a growing proportion of all unions (particularly at the youngest ages), reaching one in 5 of all couples in England and Wales in 2016. Even for the couples who marry, the vast majority now start their union by cohabiting pre-maritally (Beaujouan and Ní Bhrolcháin 2011). Trends suggest that the prevalence of cohabitation will continue to rise, especially at older ages.

New questions have inevitably arisen concerning cohabitation, rather than on marriage and divorce. Although cohabitation has increased, the proportion of cohabiting couples who have subsequently married has declined, whereas the proportion separating has increased (Beaujouan and Ní Bhrolcháin 2011). Hence the majority of these relationships do not continue (Ermisch and Francesconi 2000; Steele et al. 2005). Simultaneously, women have been having their first birth at steadily older ages (and not necessarily in their first union) and the proportion of women who have not had a child has been slowly increasing. Furthermore, a straightforward comparison of childlessness between cohabiting and married couples from several surveys seems to indicate that the former are much more likely not to have had any children e.g. (Steele et al. 2005), and higher prevalence of childlessness have been found amongst cohabiting couples in a number of European countries (Lesthaeghe and Moors 1994; de Rose and Racioppi 2001). Consequently, the former question of the relationship between marital breakdown and childlessness has been increasingly replaced by the relationship between cohabitation and childlessness, with marital childlessness forming a comparison group, rather than playing centre stage.

There have been few studies on the association between partnership history and demographic features of childbearing *in general*, although a number have considered partnership history and childlessness. One, based on cross-sectional survey data for 2002-04 in The Netherlands, investigated whether the educational and employment backgrounds for the ever married and ever cohabited had an effect upon the likelihood of childlessness (Keizer, Dykstra and Jansen 2008). A somewhat similar study, on childlessness in The Netherlands, and the United States, also considered educational and employment factors for the currently and formerly married (Hagestad and Call 2007). Another study on partnership history of British women concentrated upon the hazards of the different possible marital and cohabitational union transitions, taking into account the women's education and current fertility status (Steele, Kallis and Joshi 2006). A number of analyses of partnership history and childlessness have concentrated on the influence of women's education and employment and these factors have been well explored. Two very recent analyses have employed sequence analysis to study partnership history and childlessness in other ways (Hart 2015; Jalovaara and Fasang 2017), whilst another study has used both sequence analysis and Event History Analysis to relate family background and childhood socio-emotional characteristics to partnership history (Helske et al. 2015). Other studies have considered the effect of partnership history upon various aspects of health (Demey et al. 2014; Keenan et al. 2016; Guma, Cámara and Treviño 2015), etc.

1.3 Objective

This paper describes the basic characteristics of childbearing in the context of partnership history, as well as an exploratory investigation of possible associations between respondents' sequences of unions - marriages and cohabitations – and their

eventual family sizes. The different patterns of births outside unions also play a part. Despite containing detailed information on past childbearing and partnership histories, the BHPS data-file used (extracted and provided by the ESRC for general use), does not include many relevant background variables, so that controlling for such factors was not possible. This is the reason for terming the analyses exploratory, although they do serve to demonstrate the utility of an initial thorough investigation of the basic variables, and are advocated as an important preliminary to more thorough analyses.

2. Sample and Data Collection

The present study uses statistical information derived from the British Household Panel Survey, BHPS, in which the residents of a nationally representative sample of 5 thousand households were first interviewed between September 1991 and January 1992, forming the set of “Wave 1 interviews”. These “original sample members”, who were aged 16 or over, were subsequently followed and re-interviewed in each successive year, up to Wave 18, in September 2008/April 2009. The original sample members were re-contacted each year, even if they had moved from the original sampled household; also, if new residents joined households where the original sample members were living, they were added to the study - but only while still living in the same household - to give a full history of the household circumstances in which the sample member had lived. Hence the study aimed to provide a longitudinal view of the characteristics of a representative sample of individuals, no matter whether they had moved or not, over a growing period of time – 18 years, in this case. (Wave 18 marked the end of BHPS, although BHPS Wave 18 participants were invited to join the larger, successor survey, *Understanding Society*.)

Each year, the questionnaire package included questions on marital status and the relationship to the reference person in the household, and from Wave 8 (i.e. from 1998/99 onwards), asked: whether the respondent's marital status had changed in the past year, and if so, when; whether the respondent had ever lived with someone as a couple, and, if so, when was the first occasion, and whether they went on to marry that person; how many times they had married; and whether they had ever had, or fathered, any children. In certain years, in Waves 2, 11 and 12, extra questions on marriage, cohabitation and fertility were asked to obtain respondents' full histories of all marriages and all cohabitations which lasted at least three months – when they started and ended, and how.

3. Data Management

The UK Data Archive used these retrospective histories, the updating questions, and the other information collected to construct a special file: "The British Household Panel Survey Consolidated Marital, Cohabitation and Fertility Histories 1991-2009" (Pronzato 2011), where documentation is given. This file has been used, and to ensure that data up to the latest in 2009 was used, respondents were selected who were recorded as resident in one of the regions in 2008/09. Overall, the file contained 8,166 women who were last interviewed in 2008/09 (Wave 18), 2,505 of whom were childless. In addition, there were 7,147 men who were last interviewed in 2008/09, 2,880 of whom reported never having fathered a child.

This file allowed the full partnership history and completed fertility of a representative sample of men and women in Great Britain to be investigated. (Historically, there has

been a decided paucity of information about men's fertility (Coleman 2000) which has slowly been remedied in surveys such as the BHPS.) In an appraisal of three European panel surveys including the BHPS, the attrition rate for individuals was found to be low for the BHPS – around 1 per cent per year, on average – although it was unexpectedly found to be significant for men and those cohabiting. However it was concluded that the 'explanatory power' was highest in the BHPS (Lipps 2009).

In the present investigation, only those respondents who were recorded in the latest Wave of the panel survey, in 2008/09, and who belonged to birth cohorts whose members had reached, on average, age 45 or older by 2008/09, were included. Hence 5-year birth cohorts up to and including the one for 1960-64 were used. Also, in order to achieve sufficiently large sample numbers, a broader birth cohort of 1945-64 will be used in some analyses, so covering respondents who in 2008/09 would have been aged from 44 to 64. These respondents may be assumed to have finished their childbearing.

4. Statistical Analyses

Some basic statistical tests are used to test differences between means and proportions, and contingency table tests of independence of factors which are applied to a variety of sub-groups of respondents to explore differentials. Data are considered on a birth cohort basis, which ensures that each cohort experiences the same set of secular events and developments.

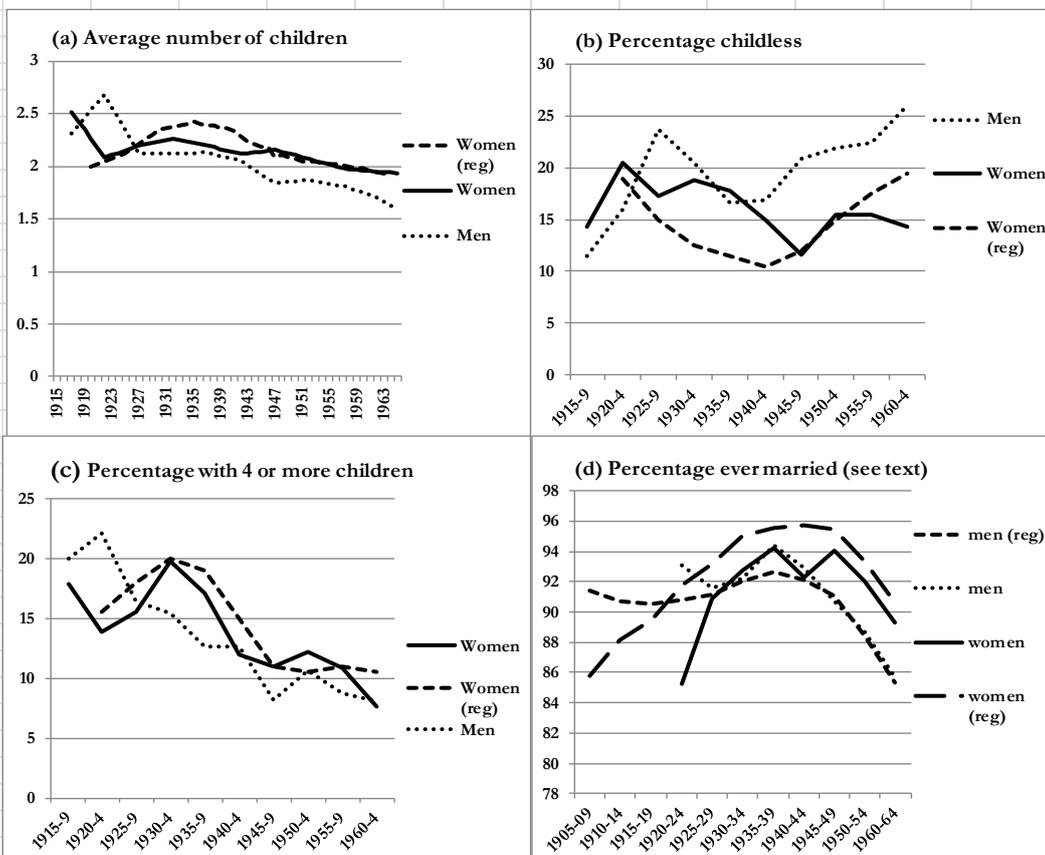
5. Results

5.1 Comparisons with estimates derived from other sources

5.1.1 Completed family size – average number of children

Before applying the statistical tests, as a checking procedure, Figure 1 compares the trends in the three measures of completed family size between those derived from the BHPS extract file and those obtained from registration data (Office for National Statistics 2012). (The latter are based on data by true birth order, derived from registration data, which are the source of statistics on births in England and Wales.) In Figure 1, the latest birth cohort shown in each graph is for the first half of the 1960s, so that the respondents in this cohort would have reached ages from about 44 to 49 by 2008/09.

Figure 1 Average number of children, percentages childless and with 4 or more children, percentages ever married, for women and men, by birth cohort, 1915-1964, BHPS and registration data (reg) (for England and Wales), Great Britain



There are discrepancies between the BHPS and registration data estimates for women in each graph of Figure 1, but least in Figure 1a for the average number of children, where the two sets agree reasonably well, the only exception being the registration estimates exceed those of the survey for the years in the 1930s. For most of the cohorts born after the 1920s, and more so for those born after the War, the average number of children fathered by men appeared to be fewer than that borne to women. Under-reporting is likely to be the reason, since, using BHPS data on fertility intentions in 1992, no evidence was found that men intended to have fewer children than women (Berrington 2004).

5.1.2 Completed family size – proportions childless

The proportion of women reporting they were childless has increased steadily for cohorts born since the War in most European countries (Sardon 2006) as in Great Britain – see (Figure 1b). The BHPS estimated proportions of women who were childless were larger than those from registration data between the early 1930s and the early 1940s, by as much as 6 per cent. In contrast, for those born in the early 1960s, the corresponding BHPS estimates were lower than the registration estimates by 5 per cent.

For men, the trend by birth cohort roughly follows that of women, with a relatively low level of childlessness for men born just before and during the war. These men would have been entering adulthood during the period between the late 1950s and late 1960s when marriage, and particularly youthful marriage, was especially prevalent. In almost every cohort, the proportion of men who have been childless has apparently exceeded that of women, particularly for men born since the War; the difference widening from around 9 per cent to about 11 per cent.

Of course, some men will not have known that they became fathers, and others may have fathered children with someone other than their current partner, and not reported the births. Besides increasing men's apparent childlessness, both these factors could depress their average reported number of children, and the proportion having had four or more children. More generally, there is inevitably greater uncertainty about men's reporting of their fathering of children than of women of their childbearing. An analysis using early, 1992, data from the BHPS investigated and evaluated the incomplete reporting of men's fertility (Rendall et al. 1999). Over the period from 1974 to 1991, the ratio of men's births to women's births in the BHPS was uniformly around 0.89 –

consistent with the current 11 per cent difference found between the proportions of childless men and of childless women. In addition, in the same analysis, the levels of men's incompleteness of reporting births outside marriage were high – around one third – whilst the corresponding level for births within marriage was much smaller at 8 per cent. All these results suggest caution is necessary in interpreting BHPS estimates of men's childlessness and of their completed family sizes in general.

5.1.3 Completed family size – proportions with four or more children

Figure 1c shows the trends in the proportions of women and men who had had four or more children, where, for women, there is fairly close agreement between the survey estimates and the registration results. The proportions of men reporting they had four or more children are slightly lower than those of women. Overall, Figure 1(c) indicates the long-term decline in the proportion of women and men having these larger families.

5.1.4 Comparisons for the proportions ever married

Figure 1d provides a comparison with estimates derived from marriage registration records for England and Wales, of the proportions of men and women who had ever married by age 50, separately for each birth cohort (Office for National Statistics 2014). These are depicted with the corresponding estimates from the BHPS extract file of the proportions of respondents who reported they had had a marriage in any of their unions up to, and including, if appropriate, their sixth. Although the BHPS respondents in the last birth cohort shown, for 1960-64, would have been between 44 and 49 in 2008/09, successively earlier birth cohorts would have been successively older than 50 in 2008/09, but relatively few marry beyond age 50. In general, the agreement between the BHPS estimates and the registration estimates is very close for men, particularly since the war years, but for women, the BHPS estimates are lower than

the registration estimates, although the differences are smallest for the post-war birth cohorts, a 1 or 2 per cent shortfall.

5.2 Partnership history

Not only does the BHPS file provide the number of marriages and cohabitations the respondent has had, but also the order in which they occurred. These ordered histories have proved more enlightening in understanding demographic trends and patterns associated with relationships than those based solely on current marital and cohabitational status (Haskey 1999; Kiernan 2004; Keizer, Dykstra and Jansen 2007; Hart 2015; Jalovaara and Fasang 2017). Some partnership histories involve no unions at all, and childlessness might be expected to be particularly prevalent amongst this group.

Of course, the sample numbers of men and women with the different partnership histories vary enormously. To investigate the profile of partnership histories in detail, a broad birth cohort had to be used; chosen was the group born between 1945 and 1964. The resulting sample sizes enabled the three family size measures to be estimated for partnership histories of up to and including three unions – which accounted for the histories of 94 per cent of women in this cohort.

The BHPS survey provides information on how each union ended, or whether it was continuing at the time of the last Wave interview. Consequently, cohabiting unions which ended in the marriage of the partners could be distinguished from those that did not. Each cohabitation was classified as either pre-marital or not, and retained as a new derived variable. Similarly, each marriage was classified as either having been preceded by pre-marital cohabitation or not, and retained as another derived variable. By this means it was possible to treat the pre-marital cohabitation and the subsequent

marriage either as a single union (as is usually the case), or two. In the subsequent Tables and Figures, a non-premarital cohabitation will be called simply a cohabitation and designated as 'c'; a direct marriage – one without pre-marital cohabitation - as 'm'; a pre-marital cohabitation, with its subsequent marriage as 'cm'. In contrast, two successive unions of a cohabitation followed by a subsequent marriage (to another person) will be designated as 'cm'. Each union in the partnership history of a given couple is therefore be represented by either **c**, **m**, or **cm**.

Figure 2 shows the profiles by partnership history of the three measures of completed family size, for both women and men – as percentages of all their possible partnership histories - including no unions at all. These estimated measures have not been standardized and therefore give crude proportions. Two sets of partnership history percentages have been omitted from Figure 2a; firstly partnerships which consisted of a single direct marriage only – just over one half of all partnership histories for women and men were of this kind – 58 per cent and 56 per cent, respectively. A single direct marriage, **m**, is therefore the most frequent partnership history for those born after the War. The second set of partnership histories omitted from Figure 2a is a 'remainder' category of all other, more complex, sequences of unions, which comprise 6 per cent of all women's histories and 5 per cent of all men's. As a result of these omissions, the partnership histories shown in Figure 2a account for just over one third of women's and men's partnership histories – and illustrate clearly the "second division" of the profile of partnership histories. In the other graphs in Figure 2, the results for a single direct marriage *are* shown, but not for the 'remainder' category.

histories are no unions at all, and a single cohabitation not leading to marriage, **c**. Just under two thirds of partnership histories consist of a single union (and just under three quarters, if marriages preceded by pre-marital cohabitation are so counted). Evidently the sample numbers for the different partnership histories are far from evenly spread, so some grouping is necessary for analytic purposes.

Out of the five histories with an average of 2 or more children (Figure 2b), four started with a direct marriage, and out of the three histories with an average number of children of less than 1, all consisted solely of cohabitations which did not lead to marriage. Undoubtedly various factors, including durations of the various unions, play a part in these findings.

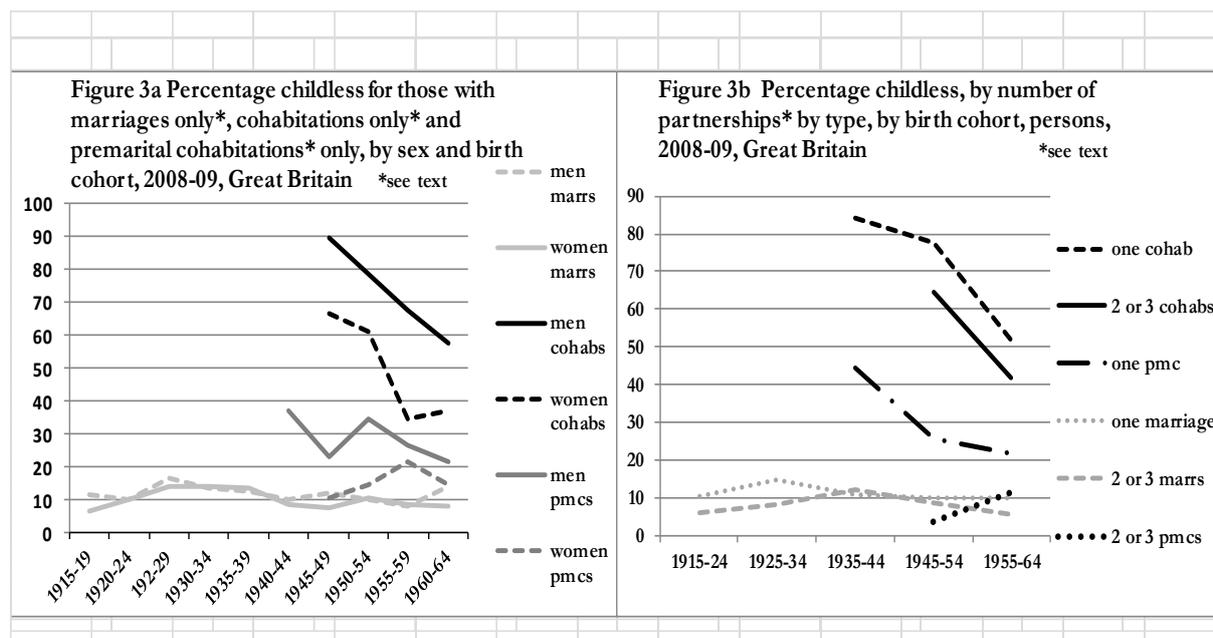
Women who reported having had no unions were largely childless, some 7 in every ten, whereas the corresponding proportion for men was almost 100 per cent (Figure 2c). The 3 in ten women who had had at least one child presumably had been lone mothers who had never lived with the children's father(s). The other partnership histories associated with childlessness are those consisting of one, two or three cohabitations, **c**, **cc**, or **ccc**. Although the increase in childlessness is often thought to be a consequence of the growth in cohabitation and the decline in marriage, the reverse mechanism might have occurred – with the increase in childlessness and decline in fertility observed in most European countries (Sardon 2006) encouraging cohabitation and new forms of living arrangements. Indeed, a high degree of correlation has been found between intended childlessness and a preference for less traditional living arrangements (Sobotka and Testa 2008). In addition, using data from the England and Wales Longitudinal Study to identify characteristics associated with childlessness, being single and *without* a partner was a strong factor, followed closely

by being single and *with* a partner – that is, never-married and cohabiting (Portanti and Whitworth 2009).

To a large extent, the profiles of the proportions of women and men who had had four or more children (Figure 2d) are largely the complement of those of the proportions childless, as might be expected. The respondents whose histories consisted of a single direct marriage, or began with one, tended to report having large family sizes relatively more frequently than other respondents. It has been found that, in recent birth cohorts of women who have completed their childbearing, about one in ten had four or more children, with a slightly larger proportion of younger women intending to have this family size (Berrington 2004). Women with larger numbers of children tend to differ in their characteristics from those with fewer children; for example, of all women who had just completed their family size, 20 per cent of those with no qualifications had had four or more children, whereas the proportion was only 5 per cent of those with degree qualifications (Berrington 2004).

5.3 Partnership histories and childlessness

In the present investigation, the proportions of men and women who were childless were derived for those with partnership histories of up to three unions which consisted of: only cohabitations; only pre-marital cohabitations; and only direct marriages. Decade-long birth cohorts were used to maximise sample sizes.



The results are shown in Figures 3a where those whose histories consisted of cohabitations reported the largest proportions childless; those with only pre-marital cohabitations in their history having reported smaller proportions childless; and those with only direct marriages, the smallest of all proportions childless. And for respondents with either of the cohabitation histories, the proportions childless have consistently been larger for men than women. Whilst the proportions for the respondents with histories of direct marriages have been relatively constant, the proportions for those with cohabitation or pre-marital cohabitation histories have declined markedly since the War, showing signs of convergence.

Some basic analyses of the number of unions and the proportions childless were also undertaken for those with up to three unions in their history. Figure 3b gives the proportions childless amongst those who had had, for a given kind of union: only one such union; and two or three such unions only (in both cases, without any other kind of union in their history).

The proportions childless appear to be slightly larger for those who had cohabited only once, than for those who had cohabited two or three times, and the same applies to those who had pre-maritally cohabited. With direct marriages, there seems to be little difference in childlessness with the number of times married. However, the proportions childless appear to have been converging between the types of union for more recent birth cohorts, possibly the indirect result of cohabitation and pre-marital cohabitation becoming much more frequent in more recent years – with the latter growing especially before first marriages (Beaujouan and Ní Bhrolcháin 2011).

The finding that a slightly larger proportion of respondents who had had only one cohabiting union were childless compared with those who had two or three such unions is seemingly contrary to the evidence found in the Netherlands study, where multiple unions – two or more - were found to increase both women's and men's odds of remaining childless (Keizer, Dykstra and Jansen 2008). However, consistent with the above, the study did conclude that, for both women and men, the odds of remaining childless were significantly larger amongst those who had only ever cohabited than amongst those who had ever-married (Keizer, Dykstra and Jansen 2008). Somewhat surprisingly, results from two US surveys found that women who approved of non-marital cohabitation were less likely to endorse childlessness, although, for women, less traditional views on the importance and permanence of *marriage* were strongly linked to support for childlessness (Koropecj-Cox and Pendell 2007). In addition, the difference in attitudes towards childlessness between men and women was particularly marked for those who were college-educated; women being positive about childlessness, and men being negative.

As well as the possibility of past partnership history playing a part in future unions and births, it should also be borne in mind that births can trigger changes of union, and hence overall partnership history; for example, although those cohabiting are less likely to have children, there is evidence that pregnancy precipitates cohabiting couples to marry (Steele et al. 2005). In addition, it has been found that children, especially when young, tend to cement a union (ibid), from which it may be concluded that the risk of the current union breaking down is reduced.

5.4 First unions

First unions, their type and outcome, may play a role in subsequent unions, and it is known that the younger the age at first marriage, the larger the proportion who subsequently divorce.

5.4.1 Age at first union - differences in mean ages between the childless and those with children

Estimates of the mean ages at first union – at the start of marriage or cohabitation – both for the childless and for those with children – are shown in Table 1, separately

Sex	First union [§]	Way first union ended	Mean age at first union			Average number of children	Percentage childless	Percentage with 4 or more children	Sample number
			childless	with children	all				
Women	Marriage	separation	28.5 [^]	28.5 [*]	28.5 ^{**}	2.19	8.6	11.4	70
		divorce	24.1 ^{**}	21.8 ^{**}	22.0 ^{**}	2.19	7.4	12.8	541
		widowed	30.7	27.1 ^{**}	27.4 ^{**}	2.45	8.4	16.9	83
		continuing	42.8 ^{**}	35.8 ^{**}	36.4 ^{**}	2.23	8.9	11.2	1240
		Total (A)	37.2	31.2	31.7	2.23	8.4	11.9	1934
Men	Marriage	separation	40.7	31.3	32.0	2.24	8.1	16.2	37
		divorce	27.7 ^{**}	23.7 ^{**}	24.1 ^{**}	2.32 [*]	7.8	17.1 ^{**}	309
		widowed	37.7	33.1	33.9	2.00	17.4	8.7	23
		continuing	42.3 [^]	37.3 ^{**}	37.8 ^{**}	2.08	11.4	9.3	1184
		Total (B)	40.0	34.3	34.9	2.13	10.7	11.0	1553
Women	Cohabitation	separation	26.4 ^{**}	23.1 ^{**}	24.0 ^{**}	1.49 [^]	28.3	5.8	138
		marriage [£]	31.7	24.3 [*]	25.4 ^{**}	1.95 [*]	15.2 [*]	7.7	349
		continuing	32.6	28.8	30.3	1.22 [^]	38.9 [^]	0.0	18
		Total (C)	32.9	25.4	27.0	1.71	21.9	6.3	557
Men	Cohabitation	separation	28.4 ^{**}	24.4 ^{**}	26.0 ^{**}	1.19 [^]	40.4	4.4	136
		marriage [£]	36.7	26.5	28.9 [*]	1.76 ^{**}	23.9 ^{**}	8.2	364
		continuing	33.2	29.7	32.1	0.74 [*]	68.4 ^{**}	0.0	19
		Total (D)	36.5	26.8	30.3	1.42	35.4	6.2	596

Statistically significantly different from the mean/proportion in the corresponding Total row (A,B,C,or D)
[^] 10% level; ^{*} 5% level; ^{**} 1% level (all 2-tailed tests)

[§]first unions which were marriages were *direct* (i.e. non-pre-maritally cohabited) marriages. First union cohabitations comprise both pre-marital & non premarital cohabitations, but [£]those ending in marriage are pre-marital cohabitations

for men and women, and also according to how those first unions ended. Whether the first union was a cohabitation or a direct marriage, men and women who remained childless had begun their first union at older ages, on average, than their counterparts who went on to have children (comparing the ages in the first two columns of mean

ages in Table 1, for rows A, B, C, and D). Hence both married childless women and men were both some 6 years older at marriage than their counterparts who went on to have children. The corresponding difference in average age at first union was even more pronounced where the first union was a cohabitation; a difference of around 8 years for women and 10 years for men. The mean ages at marriage are surprisingly old for childless men and women, 40.0 and 37.2 years, respectively, but only some 4 years older than the corresponding mean ages of their childless cohabiting counterparts, 36.5 and 32.9 years, respectively (see Rows A and B, and C and D, in Table 1). Even childless men and women whose first partnership was a cohabitation, started that cohabitation, on average, in their thirties, although those with children had started cohabiting in their mid-twenties (Rows C and D). Research has shown that the chance of having a child (or another child) declines as the age at the start of a cohabitation or marriage increases, but the effect is stronger for cohabiting women (Steele et al. 2005).

Comparisons can be made between women whose first union was a direct marriage (Row A) and those whose first union was a pre-marital cohabitation (see Row: Cohabitation marriage[£]). Women were younger on average on starting to cohabit pre-maritally than at starting marriage directly, whether childless or with children. Also, for those who pre-maritally cohabited, the average ages at first union for the childless were much older than for those with children – by 7.4 years for women and 10.2 years for men. Although a much older age at first cohabiting union for the childless suggests that the opportunity for having children was smaller – in terms of less time - the situation has also been viewed as an increased period of cohabitation due to a delay in marrying (Manting and Post 1995).

5.4.2 Age at first union - mean ages and how first unions ended

Men and women who divorced from their first marriage – whether or not they had children – were the youngest on average. The mean age at first marriage for childless women who subsequently divorced, at 24.1 years was significantly younger than the mean age of 37.2 years for all first marriage childless women (Row A). The same also applies to men. In parallel to first marriage ending in divorce, women whose first union of cohabitation ended in separation were significantly younger than the average, and similarly so for childless men.

The oldest mean age recorded for childless women whose first union was a cohabitation, 32.6 years, occurred for those who were still cohabiting with their partner (when they would have been 44 or older). Similarly, the oldest mean age for their counterparts who had children, 28.8 years, also occurred for those who were still cohabiting in 2008/09. Analogously, the men and women whose first marriage continued at least until they were 44 are found to have married at the oldest ages on average, whether they were childless or not. In addition, those whose union, marriage or cohabitation, had endured were more likely to be childless (significantly so for cohabitators). The greater chance of childlessness could be partly due to the older age at the start of the union, with respondents missing an important part of their young adult lives of higher fertility. For men and women whose first marriage ended by either separation, divorce or death, there is no apparent relationship between the age at marriage and the proportion childless, consistent with findings elsewhere (Keizer, Dykstra and Jansen 2007).

5.4.3 *First unions - number of children*

For women and men whose first union was a marriage (Rows A and B), the average number of children reported by women, 2.23, exceeds that by men by just under 5 per cent. Consistent with that, a larger proportion of men than women said that they had had no children, and a slightly smaller proportion of men stated that they had had four or more children. A similar picture is found for first unions which were cohabitations (Rows C and D). The average number of children borne to women whose first union was a marriage, 2.23, was larger than that of women whose first union was a pre-marital cohabitation, 1.95 – which, in turn, was significantly larger than that for all women whose first union was a cohabitation, 1.71. For the same three types of first unions, the proportions childless were, for women, respectively: 8.4; 15.2; and 21.9 per cent, and the proportions with four or more children were, for women, respectively: 11.9; 7.7 and 6.3 per cent. There appears therefore to be a consistent differential in the three types of first union with regard to completed family size, and the two prevalence measures. These results are consistent with those found in the US, that at every duration, married women have their first birth sooner than cohabiting women - and that, most often, cohabitation is not the union in which women start their family (Manning 1995).

Of men and women who subsequently divorced from their first union marriage, smaller than average proportions of them were childless, and larger proportions had four or more children, related, no doubt, to their younger ages at marriage. However, the opposite applies to those whose first cohabitations which ended in separation. This contrast is interesting; the finalised breakup of a first marriage generally being

associated with less childlessness, whilst the breakup of a first cohabitation generally being associated with more childlessness.

5.4.4 First unions – general considerations

The birth cohort used for the results in Table 1, 1945 to 1964, is, of analytical sample size, a broad one, and those reaching, say, age 25 from this cohort would have done so between 1970 and 1989, during which period the average age at marriage increased by some 4 years, and the average age at starting to cohabit pre-maritally rose by about 3 years. Hence childlessness was increasing in more recent times at the same time that the age at first union was becoming older. However, while the age at first marriage has risen decisively, the age at first cohabitation has increased comparatively slowly (Beaujouan and Ní Bhrolcháin 2011), and it is likely that the increase in the prevalence of cohabitation has had some effect upon the extent and timing of marriage, as has been concluded in the United States (Manning, Brown and Payne 2014).

Cohabitations - especially those splitting up, and those continuing first cohabiting unions - seems to be associated with increased childlessness, but there appears to be an association of a lower prevalence of childlessness when a cohabitation is translated into a marriage than when no such translation takes place. Selection effects may operate so that women and men are selected into particular types of unions, and their characteristics may also determine their entire partnership history, although no evidence has been found of an association between the breakdown of a previous union and the risk of breakdown of a subsequent one (Steele, Kallis and Joshi 2006). However, selection effects have been identified, such as those more likely to cohabit are more likely to separate, should they subsequently marry.

Childless men and women tend to have formed their first union at relatively older ages compared with those who subsequently had children. And women and men whose first union was a cohabitation which ended in separation had above average levels of childlessness. These results suggest that timing effects, such as delays in forming a first union, periods of uncertainty at the breakdown of unions, etc., may play a crucial role in the level of eventual childlessness.

5.5 Total durations of unions within partnership histories, and number of children

The duration of time during which women, and men, are “at risk” of becoming parents might be expected to be associated with the likelihood of having a child, and the number of children they have. The upper part, A, of Table 2 presents the average total time women had spent within unions according to their type of partnership history, and also by the number of children they had. Three kinds of partnership were

Table 2 Average duration of all unions within partnership histories and percentage of first births occurring before first union, for women born 1945-64, 2008-09, Great Britain										
A. Average duration of all unions for women by their partnership history (years)										
			Number of children (over all unions)							Average duration
Partnership history										
type [^]			0	1	2	3	4	5	All ^s	per child
(a) direct marriages only			12	16	20	18	17	13	18	18
(b) (non-pmc) cohabitations			7	8	13	14			10	12
(c) pmc cohabitations			19	23	25	27	29	[30]	24	26
All histories			13	18	21	20	20	15	19	20
B. Proportion of first births born before start of first union (percentages)										
			Number of children (over all unions)							
Partnership history										
type [^]			0	1	2	3	4	5	All ^s	
(a) direct marriages only				49	45	54	54	71		49
(b) (non-pmc) cohabitations				35	44	29				38
(c) pmc cohabitations				11	10	12	14			11
All histories				36	36	42	44	64		39
[^] taken from partnerships histories of up to 4 unions; either histories with: (a) all non-pmc marriages; (b) all or mainly non-pmc cohabitations; and (c) all or mainly pmc cohabitations/pmc marriages ^{&} the pmc cohabitation and following marriage (no further unions) are treated as two unions with the pmc cohabitation being the first union and the marriage as the second ^s includes women with 6 or more children										

used: direct marriages only; all or mainly (non pre-marital) cohabitations; and all or mainly pre-marital cohabitations. It may be seen that for histories which consisted mainly of marriages preceded by pre-marital cohabitation, (Row c) - and also of cohabitations which did not lead to marriage (Row b) - the larger the number of children, the longer the average total duration of all the unions within partnership histories. For direct marriages, though, as the number of children increases the

average total duration increases, but only up to 2 children, larger numbers of children being associated with progressively shorter average total durations. Given, from Table 1, that women were older at the start of their direct marriage than their counterparts whose first union was a cohabitation, and that the former had more children on average than the latter, part of the explanation must lie in direct married couples concentrating their childbearing into relatively shorter periods.

The average duration of all unions within histories consisting of pre-marital cohabitations was longer than that for histories of direct marriages, irrespective of the number of children born. A similar, but even greater contrast occurs between women with pre-marital cohabitation histories and women with cohabitation histories, the average duration of all unions in the histories of the former being at least twice that of the latter. Possibly pre-marital cohabitation whilst contributing to the total period “at risk” also is associated with a delay in starting a family, as the average duration per child (final column of Table 2) suggests.

Although the results in Table 2 apply to women, it is likely that similar patterns also hold for men. Using Australian survey data for 2001, Parr concluded that the longer a man had been married, the smaller the likelihood of his being childless, and similarly for men in cohabiting unions (Parr 2010).

Children can, of course, be born *outside* unions and such births occur outside the traditional period “at risk”. (These “in-between” intervals can be viewed as periods of “no union”.) The proportion of first births which took place before the start of the first union are shown in the lower part, B, of Table 2. Overall, for all partnership histories, the larger the number of children, the larger the proportion of first births which occurred before the first union (though the proportions all seem questionably large, and suggest

that either some earlier unions have been omitted, orv errors have been made in recalling dates of events). The proportions of first births before the first union are smallest for women with histories comprising pre-marital cohabitations, and largest for those with histories of direct marriages, no matter how many children the woman has had. This finding is perhaps understandable (even if the proportions have been exaggerated), as a birth within the period of pre-marital cohabitation might be considered the equivalent to a birth before the start of the direct marriage, with the birth being *within* the first union for the former, but *before* the first union for the latter.

A closer examination of the pattern of first and second births and the early unions in which they occurred is given in Table 3. (Of course, a majority of women had only one or two births and also only one or two unions within their partnership history. Also, the periods chosen in Table 3 and 4 during which the births occurred are not exhaustive, but reflect those in which most observed births did occur.) For women with only one child, and who had had only one (direct) marriage, **m**, around one half apparently reported that they had had their child before the marriage, and a similar proportion was reported by women who had had only a single cohabitation, **c**. (Both these results, though consistent with those in Table 2B, are suspiciously large.) For women who had pre-maritally cohabited, **c**, (of **cm**) the majority of the births, 61 per cent, had taken place within the marriage itself, **m**, with only 8 per cent during the

Table 3 Analysis of births within unions, by partnership history, for women born 1945-64, 2008-09, Great Britain

Percentages

Partnership history [^]	Women who had one child, who was born:					Women who had two children who were born:				
	before first union	during first union	during second union	in other periods	Sample number =100%	both before 1st union	both in first union	both in second union	in other periods	Sample number =100%
	m	54	46		0	199	43	54		3
c	52	24		24	25	56	20		24	25
cη	26	8	61	5	38	13	0	76	11	108
mm	0	65	25	10	20	21	17	21	41	24
mc	0	85	5	10	20	7	75		18	28
mη	0	58	9	33	33	0	70	0	30	54
cm/cc/cη	9	9	27	55	22	0	16	26	58	19
cηm/cηc/cηcη	9	0	55	36	11	0	0	47	53	34

Partnership history [^]	Women who had three children, who were born:					Women who had four children who were born:				
	1st two children born before 1st union	1st two children born in first union	1st two children born in second union	both 2nd and 3rd births in first union [@]	Total (sample number) =100%	1st two children born before 1st union	1st two children born in first union	1st two children born in second union	both 3rd and 4th births in first union [@]	Total (sample number) =100%
	m	56	42		44	326	57	38		41
c	80	20		20	5					1
cη	7	5	62	7	42	0	23	62	0	13
mm	4	73	12	54	26)				(
mc	11	83	0	67	18)	0	77	4	42 (26
mη	0	60	0	30	40)				(
cηm/cηc/cηcη	5	0	74	0	19					

[^]m=direct marriage; c=non-pmc cohabitation; c=pmc cohabitation; η = marriage preceded by pmc cohabitation; the unions are given in order, and, in this Table, a pre-marital cohabitation and the following marriage are treated as two unions, not one

[@]this column is different from the others in not being mutually exclusive from the others (added for information)

pre-marital cohabitation, **c**, but 26 per cent before the pre-marital cohabitation, **c**. Research shows that women with a high propensity to marry their cohabiting partner have a low propensity to start a family before their marriage (Steele et al. 2005), and that, using US data, cohabiting women enter motherhood later than married women, but do not marry to start childbearing (Manning 1995). For women whose first union

(of two or more) was a direct marriage, **m** (lines 4 to 6 in Table 3), the majority of first births occurred during the initial marriage, rather than in a subsequent union.

It is evident that the standard periods of being “at risk” of having a child – i.e. within unions - do not give a complete picture, since children are born outside such periods, and inter-union periods are likely to be associated with childlessness.

5.6 Time spent outside unions – and childlessness, average number of children, and large families

The BHPS datafile allows the total time reported to have been spent outside unions between the ages of 16 and 45 to be calculated. Table 4a gives the results for respondents who had had only one union (where pre-marital cohabitation and the subsequent marriage were together taken as a single union). Table 4(a) (top line) shows that women whose only union was a cohabitation spent, on average, the longest time outside that union; 21 years. Overall, cohabitations are more unstable than marriages (Steele et al. 2006) – and also to last shorter times (Beaujouan and Ní Bhrolcháin 2011) - so that a longer period outside a cohabiting union might be expected. Direct marriage was the next longest with an average of 19.6 years, and shortest of all - and significantly so - were marriages which were preceded by pre-marital cohabitation, 12.1 years. The corresponding average durations for men were in the same order, but each slightly longer.

Table 4a Time spent outside a union by type of union, by average number of children, proportions childless and with 4 or more children, for those who had only one union in their partnership history, for birth cohort 1945-64, 2008-09, Great Britain										
		marriage with no pmc	marriage with pmc	non-pmc cohab- itation	all single union p'ships(A)		marriage with no pmc	marriage with pmc	non-pmc cohab- itation	all single union p'ships(B)
		Women					Men			
Mean time outside union (yrs)		19.6*	12.1**	21.0	18.6		21.7**	15.2**	21.9	20.5
Time outside union (years)		Women					Men			
		Average number of children					Average number of children			
0-9		2.29	2.24		2.27		2.25	2.37		2.25
10-19		2.16	1.82		2.01		1.98 [†]	1.60		1.77
20-29		2.16	1.19**		2.05		2.02*	0.80**		1.79
All		2.23 [†]	1.89**	1.04**	2.15		2.09**	1.63**	0.59**	1.95
		Percentage childless					Percentage childless			
0-9		3.2	10.5*		5.2		4.0	7.0		4.6
10-19		9.7	12.6		10.9		12.3*	23.2		19.1
20-29		9.9	34.6		12.9		11.3**	54.6		19.9
All		8.4*	16.8**	41.3**	10.4		11.0**	27.7**	72.3**	15.8
		Percentage with 4 or more children					Percentage with 4 or more children			
0-9		9.2	10.5		9.3		7.6	11.0		8.4
10-19		10.4	5.8		8.5		6.7	3.6		5.3
20-29		11.0	0.0		10.0		7.6	3.6		6.9
All		11.5	7.2 [†]	2.2	10.6		9.1	6.2	2.1	8.3
Statistically significantly different from the corresponding mean/proportion in the corresponding "all" column - (A) or (B): [†] 10% level; * 5% level; ** 1% level (all 2-tailed tests)										
In this table, a pre-marital cohabitation (pmc) plus the subsequent marriage is treated as a single union										

Overall, for each kind of union, the average number of children is smaller the longer the time spent outside that union. The average number of children borne to women

who had married directly, 2.23, was larger than that for all women who had a single union, 2.15 (in column A), whereas women who had cohabited, or pre-maritally cohabited, both had significantly smaller average numbers of children.

As expected, the proportion of women (and men) who were childless is generally larger the longer the time spent outside the union, irrespective of the type of union. A similar result was found from the Netherlands study (Keizer, Dykstra and Jansen 2007). The proportion of women who had spent 20 to 29 years outside a union who were childless, at 12.9 per cent, is over twice that, 5.2 per cent, for those who had spent less than half that time outside unions. The pattern of the proportion of women having four or more children is not so clearcut with the length of time outside a union; there appears to be much less of a gradient than with the proportions childless, and no significant differences.

Table 4b is the equivalent of Table 4a, but for two-union partnerships. The mean time spent outside unions for each kind of two-union partnership (top line of Table 4b) is approximately half that of its nearest equivalent in the one-union partnership histories, and, for women, the mean times for all two-union and one-union partnerships are 10.8 years and 18.6 years, respectively (top line of Table 4a).

Table 4b Time spent outside unions, by type of partnership history, by average number of children, proportions childless and with 4 or more children, for those who had two unions only, for birth cohort 1945-64, 2008-09, Great Britain										
		1 or 2 non-pmc marriages	1 or 2 pmc marriages	1 or 2 non-pmc cohabs	all two union p'ships(A)		1 or 2 non-pmc marriages	1 or 2 pmc marriages	1 or 2 non-pmc cohabs	all two union p'ships(B)
		Women					Men			
Mean time outside unions (years)		10.5	8.8**	13.9**	10.8		11.4	8.9**	14.4**	11.4
Time outside unions (years)		Women					Men			
		Average number of children					Average number of children			
0-9		2.36	2.23	1.96	2.34		2.48	2.38	2.12	2.39
10-19		2.01	1.87	1.84	1.97		2.16	1.96	1.63	1.97
20-29		1.76	1.55	1.38	1.38		1.84*	2.00	1.10	1.05
All		2.22**	2.19*	1.80	1.94		2.29**	2.23**	1.61	1.80
		Percentage childless					Percentage childless			
0-9		6.3	7.5	17.0	9.7		6.9	8.5	6.1	8.6
10-19		14.3	11.8	16.1	12.8		7.4	15.1	19.6	16.4
20-29		14.7	18.2	20.8	32.8		10.5	-	50.0	49.7
All		9.1*	8.6**	17.5	18.0		8.7**	11.2	25.7	24.7
		Percentage with 4 or more children					Percentage with 4 or more children			
0-9		13.1	10.6	10.6	14.9		21.8	20.8	15.2	20.1
10-19		8.2	4.4	5.4	8.9		16.2	13.2	6.5	11.8
20-29		5.9	0.0	0.0	5.0		0.0	-	5.0	4.1
All		12.1	10.9	7.3	10.6		18.8*	19.0*	9.2	12.4
Statistically significantly different from the corresponding mean/proportion in the corresponding 'all' column, A or B:										
† 10% level; * 5% level; ** 1% level (all 2-tailed tests)										
In this table, a pre-marital cohabitation (pmc) plus the subsequent marriage is treated as a single union										

In addition, most of the differentials appear to be more pronounced in two-union partnerships than in one-union partnerships (Table 4b). The longer the period outside

the two unions: the (even) smaller the average number of children; the (even) larger the proportion childless; and the (even) smaller the proportion with four or more children. These larger differentials might suggest that there is an additional disruptive effect upon family building by ending one union and starting another, compared with having only one union.

5.7 Association of childlessness and large families with one form partnership history compared with another

One basic question which has been in the background throughout is whether, at its simplest, one form of union, or partnership history - more than another - is associated with smaller or larger numbers of children. Sample numbers do not allow all the partnership comparisons one would like to make, especially as the different unions and forms of partnership history were prevalent (or rare) at different times during the twentieth century. For this reason, analyses have been undertaken by birth cohort. Whilst comparisons can be made between a number of groups of respondents who had different one-union partnerships (given in Table 5a), sample sizes allow only a limited number of comparisons for two-union partnerships (given in Table 5b).

Table 5a Odds ratios of being childless, and of having four or more children, comparing pairs of partnership histories for those having had one union [^] only, by birth cohort and sex, 2008-9, Great Britain							
Partnership history		Sex	Birth years				
1st group	2nd group		1945-49	1950-54	1954-59	1960-64	
(A)	(B)						
(a) Odds ratio [§] of being childless							
c η	m	Women	1.9	1.8	3.2***	1.9†	
		Men	2.8*	4.8***	4.7***	1.7*	
c	m	Women	25.2***	14.3***	4.4**	6.8***	
		Men	97.7***	47.7***	40.0***	8.6***	
c	c η	Women	13.0**	8.1**	1.4	3.6**	
		Men	35.0**	9.9***	8.4***	5.0***	
no unions	c	Women	1.1	1.4	6.2**	3.7**	
		Men	[6.5]	5.5	5.5	32.7***	
no unions	c η	Women	14.9***	11.3***	8.5***	13.5***	
		Men	-	54.3***	46.1***	163.9***	
no unions	m	Women	28.8***	20.0***	26.9***	25.1***	
		Men		261.2***	218.3***	282.3***	
(b) Odds ratio [§] of having four or more children							
m	c η	Women	1.1	2.6	1.9	1.1	
		Men	0.6	1.9	2.3	1.2	
[§] Ratio of odds of being childless of column A respondents compared with that for respondents in column B. Using Fisher Exact Probability Test: † 10% level; * 5% level; ** 1% level and *** 0.1% level (all 2-tailed tests) [^] or no unions. In this table, a pre-marital cohabitation, c , and the subsequent marriage, m , is treated as a single union							

To investigate childlessness, for example, a simple test of association was performed between the two factors: not having had/having had children; and one single-union partnership (column (A) of Table 5a) compared with another (column (B)) in a 2 by 2

contingency table for different pairs of single union partnerships for women. The results of the tests are given as odds ratios. A corresponding set of results for pairs of two-union partnerships is given in Table 5b.

Comparisons are made in Table 5a, not only between different single union partnerships, but also between single union, and “no union” partnership histories. As an example, women who had had one cohabitation were between about 4 and 25 times as likely to be childless as those who had had one direct marriage (second line of Table 5a). The odds ratios are all significantly larger than one, and generally decline with each successive birth cohort of women. In contrast, women who had had no unions were more likely than those who had had only one cohabitation to be childless (fourth pair of lines of Table 5a) – and this proportion appears to have grown, albeit somewhat erratically, for successive birth cohorts of women. The largest differential, however, occurs between women who had had no unions and those who had a single direct marriage (sixth pair of lines), with the former being between twenty and thirty times as likely as the latter to be childless. Research shows that, for both women and men, never having had a partner increases the odds of remaining childless substantially, with men’s odds being significantly higher than women’s (Keizer, Dykstra and Jansen 2008), as is borne out in Table 5a. Although the odds of childlessness amongst those cohabiting has declined compared with those for direct marriages and marriages preceded by pre-marital cohabitation (and increased compared with “no unions”), the differentials still apply between the three types of union. Sample sizes allow only one comparison concerning four or more children, with a direct marriage seemingly more likely than one involving pre-marital cohabitation to be associated with having four or more children (though not statistically significantly so).

Table 5b Odds ratios of being childless, and of having four or more children, comparing pairs of partnership histories for those having had two unions ^ only by birth cohort and sex, 2008-09, Great Britain						
Partnership history		Sex	Birth years			
1st group	2nd group		1945-54	1955-64	1945-64	
(A)	(B)					
(a) Odds ratio [§] of being childless						
cm	mm	Women	0.7	2.9	1.7	
		Men	8.5	14.8*	15.8***	
cchj	mchj	Women	0.6	32.5*	2.7†	
		Men	0.07†	7.3**	3.9*	
cc	mc	Women	6.6†	22.0**	6.5**	
		Men	42.7***	7.3*	15.0***	
(b) Odds ratio [§] of having four or more children						
mc	mm	Women	1.7	1.1	1.5	
		Men	0.5	0.8	0.7	
cmchj	mchj	Women	2.4	0.7	1.3	
		Men	0.8	0.5	0.7	

[§]Ratio of odds of being childless of column A respondents compared with that for respondents in column B.
Using Fisher Exact Probability Test: † 10% level; * 5% level; ** 1% level; *** 0.1% level (all 2-tailed test)
^In this table, a pre-marital cohabitation, **c**, and the subsequent marriage, **m**, is treated as a single union

Part(a) of Table 5b allows three comparisons of a first union cohabitation to be made with a first union direct marriage (with a different second union being held constant

each time: either a direct marriage; or one with pre-marital cohabitation; or a cohabitation). (Because of smaller sample sizes, two, wider, 10-year birth cohorts have been used.) It may be seen that, irrespective of the kind of second union, the odds ratio of being childless is generally significantly larger for cohabiting first unions than for direct marriage first unions. It is notable, too, that with only one exception, all the odds ratios for men in Part (a) of Table 5b exceed those of women, reflecting the larger apparent prevalence of childlessness amongst men, perhaps exacerbated by their greater under-reporting. Part(b) of Table 5b considers the odds ratios of having four or more children, and, unlike the results in Part(a), suggests that the odds ratios for men and women fall either side of unity, seemingly indicating associations in opposite directions with double union partnership history comparisons. However, none of these odds ratios are statistically significant, so any attempted interpretation is unwise.

Overall, the results in both Tables 5a and 5b suggest that the odds ratios of childlessness have generally declined for virtually all single-union partnership history comparisons, but appear to have increased for two-union partnerships. Although controlling for other factors could well modify the results, marriages with pre-marital cohabitation appear to be more likely to be childless than direct marriages, and that cohabitations appear to be more likely to be childless than marriages with pre-marital cohabitation. In addition, men and women who have not lived in any union are more likely to have been childless than their counterparts who have lived in any of the three kinds of union.

6. Comment

At the outset, it should be recalled that earlier evidence has suggested that men's reporting of their fathering of children is under-estimated in the BHPS (Rendall et al. 1999), so that estimates of the prevalence of childlessness for men are likely to be biased upwards, while the estimates of the average number of children fathered, and the proportion of men having fathered four or more children are both likely to be under-estimated. Partly for that reason, more attention has been concentrated on the number of children that women have had, although some under-reporting by women is also evident from the comparisons of the BHPS datafile estimates with those of registration data in Figure 1. Also, some derived estimates have been suspiciously large or small, such as the proportions of first births occurring before the first union. Seen in this light, the results from the BHPS presented here should be treated, and interpreted, with caution. They do serve, however, to reveal some potential weaknesses in the survey data, but do, nevertheless, allow certain conclusions to be drawn.

A number of coherent results have been obtained, some confirmed by comparison with those from independent sources, such as the relationship between the age at start of marriage and childlessness. Men and women whose first union was a direct marriage had the largest number of children on average, followed by those whose first union was a marriage preceded by pre-marital cohabitation, followed lastly by first unions which were cohabitations which did not lead to marriage. This rank order reappeared a number of times in different approaches and analyses of the data, and was especially apparent in a separate analysis of the concentration of reproduction (to be submitted). From that analysis, and also from some of the others, there are indications that the differentials in this rank ordering have been narrowing for

successive birth cohorts, and not only for the average number of children, but also in the prevalence of childlessness. The question arises as to the reason for these developments, and whether this convergence will continue, or whether the differentials will remain, but be less pronounced. The sea-change in attitudes to marriage, cohabitation, and pre-marital cohabitation - as well as to having children both inside and outside the different kinds of unions - have undoubtedly been reflected in changed demographic behaviour – which includes childlessness and large family sizes.

As part of the rank ordering mentioned immediately above, it is evident that direct marriage, and cohabitation without marriage, are the unions at opposite ends of the spectrum with regard to the completed numbers of children which men and women have had. Both exhibit the same characteristics in some circumstances, but opposite in others. For example, for both kinds of union, the longer the time spent outside unions, the larger the proportion who were childless, but marriages which broke down were associated with less childlessness, whereas cohabitations which ended in separation were associated with more childlessness. Also, it is notable that, amongst men and women whose first partnership was a cohabitation, the proportions who were childless were significantly larger amongst those whose cohabitation continued, than amongst those who translated their cohabitation into a marriage.

The occurrence of larger average numbers of children varies according to the respondent's age at the start of the first union – both for marriages and cohabitations – and also according to how that union ended. Married men and women tended to have married at older ages than those who had cohabited, but had more children, on average. And cohabitations which translated into marriages tended to have led to larger family sizes on average, whilst those that did not so translate, did not. Women

whose first marriage had continued had the largest number of children, on average, but in complete contrast, those whose cohabitation had continued had distinctly smaller numbers of children. Amongst women who had married as their first union, those who had spent the least time outside unions had the largest average number of children.

Because of sample size limitations, the number of analyses involving partnership histories comprising more than two unions was restricted in practice. The analysis of the odds ratios did, however, allow the effect of the first union to be assessed, keeping the second constant, so that, for example, women who had two cohabitations in succession were more likely to remain childless than women whose first union was a direct marriage followed by a cohabitation.

Overall, the results form a coherent whole, if necessarily based on a restricted number of basic variables. The results extend previous findings, and signal lines of further enquiry, although a fuller analysis of partnership histories will require not only the inclusion of additional explanatory variables, but also larger sample sizes to capture the still comparatively rare multi-union partnership histories, a similar conclusion also drawn in other studies.

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