

Effects of Getting Married on Offending

Results from a Prospective Longitudinal Survey of Males

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ABSTRACT

In the Cambridge Study in Delinquent Development, 411 males were followed up from age 8 to age 48. This analysis of the effects of marriage on offending is based on 162 convicted males. The age of marriage was stratified into early (18–21 years), mid-range (22–24 years), and late (25 years or later). Risk factors at age 8–10 were used to calculate propensity scores that predicted the likelihood of getting married. Convictions before and after the age of first marriage were investigated for married males and for unmarried males who were matched on the number of convictions before marriage and on the propensity score. The results showed that getting married was followed by a reduction in offending but only for early (age 18–21) and mid-range (age 22–24) marriages. The analysis was replicated using risk factors at age 18, with the same results.

KEY WORDS

Desistance / Marriage / Offending / Propensity Score / Prospective Longitudinal Survey.

Introduction

Marriage has been studied within criminology as an influence on desistance from offending (Sampson and Laub 1990, 1993; Farrington and West 1995; Horney et al. 1995; Laub et al. 1998; Piquero et al. 2002; Laub and Sampson 2003; Sampson et al. 2006; King et al. 2007). It is difficult to

investigate the effects of getting married because of selection effects: those who get married are different from those who do not marry on factors that influence offending. Causal mechanisms are not well understood and it is very difficult to isolate the effects of marriage on offending.

Previous research on the effects of marriage has, on the whole, compared the offending of married versus unmarried individuals, often using cross-sectional designs and between-individual analyses. These studies have controlled for prior offending and then examined the net effect of marriage on later offending behaviour. However, they have not controlled effectively for extraneous influences on both marriage and offending. Within-individual analyses, in which people are followed up before and after marriage, are better able to establish causal effects because the causal ordering is clear and each person acts as his/her own control, thus controlling more effectively for extraneous influences on both marriage and offending.

Recent research (e.g. King et al. 2007) has attempted to conceptualize and model the propensity to marry, in order to control extraneous variables more effectively. Clearly, it is not possible to assign individuals randomly into a state of marriage or non-marriage (i.e. to carry out a randomized controlled trial) and so it is not possible to establish causality convincingly. If individuals could be randomly assigned to marriage it would be very clear whether marriage had an effect on offending behaviour because the randomization process would produce two groups of people who were similar in all measured and unmeasured variables other than whether they were married or not. Essentially, randomization overcomes the problem of selection effects. The aim of propensity score matching (used in this article) is similarly to overcome the problem of selection effects by matching married and unmarried people on their likelihood of getting married. Propensity score matching is useful to the extent that a wide range of predictor variables have been measured. Background variables that affect an individual's propensity to get married are determined by regression analyses.

King et al. (2007) investigated influences on desistance using propensity score matching and studied women as well as men. In their analyses, using National Youth Survey data, they employed observed covariates to predict an individual's probability of getting married. Individuals were then matched on these propensity scores to examine the effect of marriage on offending. These authors found that marriage had a modest reducing effect on offending for males but was particularly significant for those who had a low propensity to get married. Results were less significant for females than for males; marriage had more of a reducing effect on offending for those women who had a moderate propensity to marry.

Sampson et al. (2006) used an 'inverse probability of treatment weighting' (IPTW) approach where the 'treatment' was marriage. This

method seems similar to the more standard method of propensity score matching. They used the same Glueck and Glueck (1950, 1968) data as in their previous studies, namely 500 delinquent males from Massachusetts tracked from age 14 to age 32. They also conducted a follow-up study of these men through state and national record searches for both crimes and deaths (to rule out false desistance) and conducted in-depth interviews with a stratified subsample of 52 men. Using within-individual analyses to assess the effect of being married compared with remaining unmarried and weighting for time-varying propensities (based on background characteristics) year by year, they were able to show that marriage had a reducing effect on offending. This applied to offending from ages 17 to 32 in the full delinquent group and from ages 17 to 70 in the small interviewed group. Their results suggested that marriage was associated with an average reduction of 35 percent in the odds of crime, compared with remaining unmarried (Laub and Sampson 2003).

These two studies are limited in some respects. Sampson et al. (2006) utilized a sample of institutionalized delinquent males, with the majority followed to age 32 and only a small subsample ($n = 52$) followed to age 70. King et al. (2007) studied a national probability sample, but participants were followed only to age 27 and the information was purely based on self-reports, which could overestimate the effects of marriage since those who get married may wish to present a facade of respectability regarding their offending behaviour. Finally, both sets of data were from samples in the United States and therefore results may not be generalizable to European countries such as the UK.

There is one study that has been carried out in the UK, namely the Cambridge Study in Delinquent Development (CSDD), in which participants have been followed for over 40 years. Interviews were carried out at intervals of two to three years from age 8 through to age 21 and then at ages 25, 32 and 48. Many background risk factors have been measured. Of the original sample of 411 males, 365 were interviewed at age 48, which is equivalent to 93 percent of the 394 still alive at that time (Farrington et al. 2006). This is a remarkable response rate in a 40-year follow-up study.

Work on this sample in the 1990s found, using both within-individual and between-individual analyses, that getting married had a reducing effect on offending compared with those who remained single (Farrington and West 1995). From a selection perspective, offenders were no less likely to marry than non-offenders. Farrington and West (1995) also found that later offending increased if there was a breakdown in the relationship and men were no longer living with their spouse. Offending rates for these men increased by 44 percent over the periods when they were separated compared with when they were married. However, in the within-individual analyses,

the married and unmarried men were matched only on their numbers of prior convictions, not on any other extraneous variables.

Aims

This paper aims to extend the findings of Farrington and West (1995) with regard to the effects of marriage on offending using more adequate propensity score matching. Like Sampson et al. (2006) and King et al. (2007), we examine an individual's likelihood of marrying based on background factors and then assess the effect of marriage on offending after matching for this propensity. The background characteristics that may influence an individual's likelihood of getting married are many, including life experiences and demographic factors. However, in this paper we decided to examine the individual's propensity to marry firstly using childhood risk factors measured at ages 8–10 and secondly (in a replication study) using adolescent risk factors measured at age 18. Important childhood and adolescent risk factors in this study have been described elsewhere (e.g. Farrington 2000, 2003; Farrington et al. 2009b).

The key questions are:

1. What is the effect of getting married on offending for first marriages between age 18 and age 48?
2. Do the results hold up after matching men on the likelihood of getting married using propensity scores?
3. How do these results vary for different ages of marriage?

Methodology

Sample

The Cambridge Study in Delinquent Development is a prospective longitudinal survey of 411 South London males, mainly born in 1953. The study began in 1961 and has followed up these males over a period of more than 40 years (Farrington 2003; Farrington et al. 2006, 2009a). The original aim of the study was to gain an understanding of the development of delinquent and criminal behaviour in boys from an inner-city area, to see to what extent it could be predicted in advance and to explore the reasons why criminal careers start, continue and end.

Of the original sample of 411 males, 365 (93 percent of the 394 still alive) were interviewed at age 48. In this interview, as in previous interviews, information about life success was collected, including information about

relationships and dates of marriages, separations and divorces. The most important interviews providing data about marriages were at ages 32 and 48; in addition, searches were conducted in the Public Record Office to confirm the dates of marriages. Criminal records were searched repeatedly from 1964 to 2004 to gather information concerning the number of offences leading to convictions for each individual, the age of onset, and the frequency and duration of offending plus dates of incarcerations. 'Convictions' were equivalent to offending days; where more than one offence was committed on one day, only the most serious was counted. Offences taken into consideration were not counted. Most court appearances arose from only one offending day; for example, the 760 recorded offences up to age 40 corresponded to 686 separate court appearances leading to conviction.

Because we wanted to investigate the effects of getting married on convictions, our analysis was based only on the convicted males. Seven men emigrated at an early age and were not searched for in criminal records, leaving a searched sample size of 404, of whom 41 percent were convicted of an offence between ages 10 and 50: 167 individuals (Farrington et al. 2006). For the purposes of this analysis, only 162 convicted males were included; two participants died young (under age 21) and three participants refused to give personal details at ages 32 and 48 and were excluded because no information was available regarding their relationship(s).

Information on the first long-term relationship was used, which was most likely to have been marriage. Out of these 162 offenders, 133 had a first marriage, 11 had only cohabiting relationship(s), 3 were only ever involved in casual relationship(s) (i.e. not living together) and 15 were never involved in a cohabiting relationship or marriage up to age 48.

One of our aims, following the analyses of Farrington and West (1995), was to study offending during the five years before and five years after the date of marriage. Because convictions were infrequent, it was important to study them over relatively long time periods. Therefore, it was decided that the 22 individuals who did not remain married for at least five years should be excluded from the analyses. This resulted in a sample size of 140, of whom 111 (79.3 percent) remained married for at least five years and 29 (20.7 percent) were never married. Ages at first marriage were calculated (median age = 22.93, inter-quartile range = 20.81–25.69). The ages of first marriage of the convicted men were similar to those of the unconvicted men; of the 237 men who were never convicted, 191 married, with a median age of 23.00 and an interquartile range of 21.05–27.65.

Of the 111 convicted men who married, 5 married at age 18, 16 at age 19, 7 at age 20, 17 at age 21, 14 at age 22, 7 at age 23, 11 at age 24, 10 at age 25, 2 at age 26, 4 at age 27, 2 at age 28, 3 at age 29, 4 at age 30, 2 at age 31, 2 at age 32, 1 at age 35, 1 at age 39, 1 at age 40, 1 at age 41 and 1 at

age 43. Thus, 21 was the most common age of first marriage in this sample of convicted men. The sample was stratified into those who first married between ages 18 and 21 ($n = 45$), which are referred to as early marriages; between ages 22 and 24 ($n = 32$), classified as mid-range marriages; and at ages 25 or later ($n = 34$), classified as late marriages. The results were brought out more clearly by trichotomizing rather than dichotomizing the age of first marriage.

Measures

Offences leading to convictions were counted during the five years before marriage, the five years after marriage, the period from age 10 up to the date of marriage, and during the ten years after marriage. These offences included burglary, theft of a motor vehicle, theft from a motor vehicle, shoplifting, theft from a machine, theft from work, other theft, fraud, receiving, robbery, assault, threats, possessing an offensive weapon, sex offences, drugs and vandalism (Farrington et al. 2006).

For the purpose of these analyses the convictions of the control (the unmarried man) were counted before and after the age of marriage of the case (the married man). Incarceration times when an individual was not at risk of offending were taken into account and used to extend the period of the count. For example, if an individual had been incarcerated for six months in the period before marriage, the count was extended by six months to 5.5 years before marriage.

Analysis plan

Firstly, each married man was matched with an unmarried man near him in the alphabet, and convictions before and after the age of marriage (of the married man) were counted.

Secondly, we calculated a propensity score based on risk factors measured at ages 8–10. (In the replication study, we calculated a propensity score based on risk factors measured at age 18.)

Thirdly, we matched each married man on both his propensity score and his previous convictions with another man who remained unmarried for at least five years after the age of marriage of the married man. The control man could be someone who later got married, although no man served as both a case and a control in any specific analysis.

Matching

For the purposes of these analyses a strategy of ‘nearest neighbour’ matching without replacement was implemented whereby each person’s

age of marriage (in ascending order) was matched with the nearest person in the alphabet who still remained unmarried at least five years afterwards. This non-replacement meant that an unmarried individual could not be matched more than once. This procedure was used when matching on age of marriage alone. In order to determine if there were significant differences between convictions before and after marriage for the cases and controls, a paired sample t-test was used. The change in the number of convictions of the cases (after vs. before marriage) was compared with the corresponding change in the number of convictions of the controls.

Table 1 shows the mean number of convictions of cases and controls before and after the age of marriage of the case. For example, for early marriages, the cases incurred 1.70 convictions (on average) during the five years before marriage, compared with 0.53 during the five years after marriage; their controls incurred 1.51 convictions during the five years before marriage, compared with 1.00 during the five years after marriage. Although the offending of both groups decreased with age (as expected), the decrease for the controls (34 percent) was much less than for the cases (69 percent). However, this difference was not significant on the paired t-test. Similar results were obtained in analyses based on prior convictions from age 10 to the age of marriage and on subsequent convictions in the ten years after marriage (a 50% decrease for cases vs a 31% decrease for controls; t-test not significant).

The means indicate that offences decreased after marriage for both cases and controls for both early and mid-range marriages, but not for late marriages. This is apparent when we look at the percentage decreases in convictions for cases versus controls. Comparing five years before with five years after marriage, the decrease in convictions after marriage of cases was double that of controls for early marriages, and there was a very similar pattern for mid-range marriages (73 percent for cases versus 35 percent for controls). Similar results were obtained in an analysis comparing prior convictions from age 10 to the age of marriage with subsequent convictions in the ten years after marriage (an 80% decrease for cases vs a 60% decrease for controls; t-test not significant).

For late marriages (at age 25 or later) the 'treatment' effect was in the opposite direction. For example, comparing five years before marriage with five years after marriage for cases, there was an increase in offending of 29 percent, whereas for controls in the same counting periods there was a 62 percent decrease. The paired t-test was nearly significant ($t(31) = 2.03$; $p = .052$). However, those who married late had many fewer convictions before marriage than the controls, suggesting that the results could have been artefactually caused by regression to the mean, and that it is necessary to match cases and controls on the number of convictions before marriage.

Table 1 Mean number of convictions for early, mid-range and late marriages

| <i>Marriage (age)</i> | <i>Count period</i> | <i>Mean no. convictions (sd)</i> | <i>Percent change</i> |
|-----------------------------------|------------------------|----------------------------------|-----------------------|
| Early (18–21) <i>n</i> =43 | 5 yrs pre 'case' | 1.70 (2.46) | |
| | 5 yrs post 'case' | 0.53 (1.05) | -68.8 |
| | 5 yrs pre 'control' | 1.51 (2.22) | |
| | 5 yrs post 'control' | 1.00 (1.66) | -33.8 |
| | Pre-marriage 'case' | 2.30 (3.21) | |
| | 10 yrs post 'case' | 1.14 (1.55) | -50.4 |
| | Pre-marriage 'control' | 2.05 (2.61) | |
| | 10 yrs post 'control' | 1.42 (2.03) | -30.7 |
| | 5 yrs pre 'case' | 1.29 (1.53) | |
| | 5 yrs post 'case' | 0.35 (0.61) | -72.9 |
| Mid-range (22–24) <i>n</i> =31 | 5 yrs pre 'control' | 1.58 (2.45) | |
| | 5 yrs post 'control' | 1.03 (2.04) | -34.8 |
| | Pre-marriage 'case' | 3.35 (3.40) | |
| | 10 yrs post 'case' | 0.68 (1.01) | -79.7 |
| | Pre-marriage 'control' | 3.10 (3.66) | |
| | 10 yrs post 'control' | 1.23 (2.19) | -60.3 |
| | 5 yrs pre 'case' | 0.34 (0.75) | |
| | 5 yrs post 'case' | 0.44 (1.08) | +29.4 |
| | 5 yrs pre 'control' | 1.41 (3.07) | |
| | 5 yrs post 'control' | 0.53 (1.11) | -62.4 |
| Late (25+) <i>n</i> =32 | Pre-marriage 'case' | 2.59 (3.11) | |
| | 10 yrs post 'case' | 0.66 (1.52) | -74.5 |
| | Pre-marriage 'control' | 3.94 (4.93) | |
| | 10 yrs post 'control' | 0.72 (1.11) | -81.7 |

There was no effect of late marriages on offending in the comparison of prior convictions from age 10 to the age of marriage and subsequent convictions in the ten years after marriage. Also, matching purely on age of marriage does not take into account the fact that the best match for the treated individual may be different from him on many extraneous variables and may have a very different likelihood of getting married. More careful matching of cases and controls is needed, based on the likelihood of marriage, which can be estimated using propensity scores.

Propensity scores

Propensity scores were first calculated using key childhood risk factors measured in the CSDD. For the purpose of these analyses, 27 factors measured at ages 8–10 years were studied: broken home, convicted parent, delinquent sibling, harsh parental discipline, high delinquency rate school, large family size, low family income, low socio-economic status, nervous father, nervous mother, parental disharmony, poor housing, poor parental supervision, young mother, daring, dishonesty, few friends, high extraversion, hyperactive/lacks concentration, impulsiveness, low school attainment, low verbal IQ, low non-verbal IQ, nervousness, small size, troublesomeness, and unpopularity. These variables were compared with the outcome variables of getting married ($n = 111$) or never married ($n = 29$).

Three variables significantly predicted remaining unmarried: low family income, few friends and unpopularity. Five other factors were nearly significant: young mother, poor parental supervision, broken home, impulsiveness and nervousness of the boy. These eight factors were then included in a forward stepwise logistic regression (Table 2). Because of small numbers, variables that were nearly significant at $p = .05$ were included (one-tailed tests were used because of directional predictions). The regression results suggest that, if a boy at age 8–10 came from a low-income family, had few friends, was unpopular¹ and came from a broken home, he was less likely to marry. The strongest predictor was having few friends. More details about the association between the four age 8–10 risk factors and whether an individual got married or not are shown in Table 3. For example, 35 percent of unpopular boys remained unmarried, compared with 12 percent of the remainder. It can be seen that the number of boys with few friends was small.

¹ 'Unpopularity' was a variable that resulted from questions boys answered about who were the most popular boys in the class, whereas 'few friends' was determined from a leisure questionnaire completed by the parents of the boy. The intercorrelation between these variables was significant but low ($r = .2$).

Table 2 Results of logistic regression analyses predicting getting married

| Predictors in final model | B | SE | Wald (df = 1) | p | Partial OR | 95% CI for OR | |
|--|--------|------|------------------|-------|------------|---------------|-------|
| | | | | | | Lower | Upper |
| <i>Age 8–10 risk factors^a</i> | | | | | | | |
| 1 – Low family income | –0.789 | .518 | 2.316 | .064 | .454 | .164 | 1.255 |
| 2 – Few friends | –2.180 | .942 | 5.350 | .011* | .113 | .018 | 0.717 |
| 3 – Unpopular | –0.779 | .491 | 2.511 | .057 | .459 | .175 | 1.203 |
| 4 – Broken home | –0.940 | .606 | 2.405 | .061 | .391 | .119 | 1.282 |
| <i>Age 18 risk factors^b</i> | | | | | | | |
| 1 – Unemployed | –0.766 | .446 | 2.945 | .043* | .465 | .194 | 1.115 |
| 2 – Never had sex | –1.341 | .581 | 5.331 | .011* | .261 | .084 | 0.816 |
| 3 – Cannabis use | –0.898 | .460 | 3.810 | .025* | .408 | .166 | 1.004 |

Notes: OR = odds ratio; CI = confidence interval.

^a Cox & Snell = .132, Nagelkerke = .205.

^b Cox & Snell = .075, Nagelkerke = .118.

* $p < .05$ (one-tailed)

Table 3 Predictors of remaining unmarried

| Risk factor | | Married | Unmarried | χ^2 (df = 1) | OR (one-tailed CI) |
|-------------------|-----|-------------|------------|----------------------|-----------------------|
| | | n = 111 (%) | n = 29 (%) | | |
| <i>Age 8–10</i> | | | | | |
| Low family income | Yes | 26 (68.4) | 12 (31.6) | 3.74* | 2.3 (1.16–4.59) |
| | No | 85 (83.3) | 17 (16.7) | | |
| Few friends | Yes | 3 (30.0) | 7 (70.0) | 15.93** | 11.5 (3.45–37.98) |
| | No | 108 (83.1) | 22 (16.9) | | |
| Unpopular | Yes | 33 (64.7) | 18 (35.3) | 10.38** | 3.9 (1.89–7.91) |
| | No | 78 (87.6) | 11 (12.4) | | |
| Broken home | Yes | 14 (63.6) | 8 (36.4) | 3.89* | 2.6 (1.19–5.87) |
| | No | 97 (82.2) | 21 (17.8) | | |
| <i>Age 18</i> | | | | | |
| Unemployed | Yes | 33 (70.2) | 14 (29.8) | 3.55* | 2.2 (1.14–4.29) |
| | No | 78 (83.9) | 15 (16.1) | | |
| Never had sex | Yes | 12 (63.2) | 7 (36.8) | 3.48* | 2.6 (1.17–5.90) |
| | No | 99 (81.8) | 22 (18.2) | | |
| Cannabis use | Yes | 37 (71.2) | 15 (28.8) | 3.33* | 2.1 (1.14–4.06) |
| | No | 74 (88.1) | 14 (15.9) | | |

Notes: OR = odds ratio; CI = confidence interval.

* $p < .05$ (one-tailed); ** $p < .001$

In order to carry out a replication analysis, a propensity score was calculated using adolescent risk factors measured at age 18. These 29 key factors were: having an aggressive attitude, going out with mates, no girlfriend, never had sex, had unprotected sex, promiscuous sex (two or more girls in the previous six months), high debt, heavy drinker, engages in fights after drinking, a positive attitude to drugs, cannabis user, engaged in group violence/vandalism, anti-establishment attitude, hangs about, small, tall, impulsive, unskilled manual job, unstable job record, unemployed, low take-home pay, not living with parents, poor reader, no exams passed, poor relationship with parents, heavy smoker, wears glasses, tattooed, and bully. Only three factors were significantly correlated with the outcome variable, married versus unmarried. These three factors were entered into a logistic regression. The regression results suggest that, if a young man at age 18 is unemployed, has never had sex and is a cannabis user, he is less likely to marry (Table 2). The relationship between these factors and remaining unmarried is shown in Table 3. For example, 30 percent of unemployed boys remained unmarried, compared with 16 percent of the remainder.

First, a propensity score was calculated from the logistic regression analysis, indicating the probability of getting married (ranging from 0 to 1) based on the four age 8–10 variables. In the replication analysis, a second propensity score was calculated based on the three age 18 variables. These scores succeeded in discriminating between men with low or high probabilities of getting married. For propensity scores based on age 8–10 factors, those with the lowest propensities (predicted probabilities of .12–.36) were in fact the least likely to marry (25 percent). Two-thirds (65 percent) of those with a medium propensity to marry (.48–.67) in fact married, while 83 percent of those with the greatest probability of getting married (.78–.88) did indeed marry. For propensity scores based on age 18 factors: those with the lowest propensities (predicted probabilities of .32–.53) were the least likely to marry (33 percent). Three-quarters of those with a medium propensity (.64–.71) in fact married, while 82 percent of those with the greatest probability of getting married (.79–.90) did indeed marry.

Propensity to marry and offending behaviour

Matching of cases (married men) and controls was then carried out using both the propensity score based on age 8–10 variables and the number of convictions before marriage. This was carried out on a nearest neighbour without replacement basis. We used a calliper restriction of .15 in the propensity score between cases and controls and also allowed a deviation of no more than 1 or (in very few cases) 2 convictions either way. This meant

that the treated individual and his unmarried match did not differ on their propensity scores by more than .15 and on their number of convictions by 1 or 2 convictions. The matching on convictions was more exact (68 percent exact, 28 percent different by 1, 4 percent different by 2) than the matching on propensity scores (62 percent exact).

Comparisons were then made between before and after offending for both cases and controls. Paired sample *t*-tests, comparing the before and after change in offending for cases with the before and after change in offending for controls, were carried out for early, mid-range and late marriages. As before, these comparisons were made for five years before marriage, age 10 up to the age of marriage, five years after marriage, and ten years after marriage.

Table 4 shows the mean number of convictions of cases and controls before and after the age of marriage of the case, when matching on convictions before marriage and on the propensity score specifying the likelihood of getting married. For example, for early marriages the cases incurred 1.42 convictions (on average) during the five years before marriage, compared with 0.47 convictions during the five years after marriage; their controls incurred 1.35 convictions during the five years before marriage, compared with 1.09 during the five years after marriage. While the offending of both groups decreased with age (as expected), the decrease for the cases (67 percent) was much greater than the decrease for their matched controls (19 percent). When comparing the two matched groups, the paired sample *t*-test was significant ($t(42) = -2.27, p = .029$), with a medium effect size of $r = .33$ (Cohen, 1988, 1992). The decreases in the other tests were also substantial, and significant in the comparison between the total time up to marriage and five years after.

For mid-range marriages, the reduction in the number of convictions was twice as great for cases (73 percent) compared with controls (36 percent) when comparing number of convictions during the five years before marriage with the five years after marriage. When comparing the two matched groups, the paired sample *t*-test was not quite significant ($t(28) = -1.34, p = .095$). However, the sample size was quite small and Pearson's *r* suggested a small effect size ($r = .25$). The decreases after conviction were significant when comparing five years before and ten years after marriage, and when comparing the total time before marriage with five years after marriage.²

² Of the 111 men who remained married for at least five years, 24 did not remain married for at least ten years. Therefore, the use of the ten-year follow-up period in studying the effects of marriage is a conservative test.

Table 4 Mean number of convictions for early, mid-range and late marriages, matching on propensity score (based on age 8–10 risk factors) and convictions before marriage

| Marriage (age) | Count period | Mean no. convictions (sd) | Percent change | Comparison | t | p | Effect size |
|-----------------------------|------------------------|---------------------------|----------------|---------------|-------|------|-------------|
| Early (18–21) n = 43 | 5 yrs pre 'case' | 1.42 (1.88) | | | | | |
| | 5 yrs post 'case' | 0.47 (0.98) | -66.9 | | | | |
| | 5 yrs pre 'control' | 1.35 (1.85) | | 5pre-5 post | -2.27 | .029 | .33 |
| | 5 yrs post 'control' | 1.09 (2.28) | -19.3 | 5pre-10post | -1.89 | .066 | .28 |
| | Pre-marriage 'case' | 1.98 (2.53) | | Premar-5 post | -2.17 | .035 | .32 |
| | 10 yrs post 'case' | 0.98 (1.47) | -50.5 | Premar-10post | -1.77 | .084 | .26 |
| | Pre-marriage 'control' | 1.88 (2.43) | | | | | |
| | 10 yrs post 'control' | 1.72 (2.84) | -8.5 | | | | |
| | 5 yrs pre 'case' | 1.14 (1.46) | | | | | |
| | 5 yrs post 'case' | 0.31 (0.54) | -72.8 | | | | |
| Mid-range (22–24) n = 29 | 5 yrs pre 'control' | 1.24 (2.21) | | 5pre-5 post | -1.34 | .095 | .25 |
| | 5 yrs post 'control' | 0.79 (1.45) | -36.3 | 5pre-10post | -1.79 | .042 | .32 |
| | Pre-marriage 'case' | 2.69 (2.79) | | Premar-5post | -1.98 | .029 | .35 |
| | 10 yrs post 'case' | 0.55 (0.91) | -79.6 | Premar-10post | -1.63 | .058 | .29 |
| | Pre-marriage 'control' | 2.66 (2.79) | | | | | |
| | 10 yrs post 'control' | 1.21 (2.13) | -54.5 | | | | |
| | 5 yrs pre 'case' | 0.56 (0.87) | | | | | |
| | 5 yrs post 'case' | 0.48 (1.16) | -14.3 | | | | |
| | 5 yrs pre 'control' | 0.80 (1.53) | | 5pre-5 post | 0.87 | ns | .17 |
| | 5 yrs post 'control' | 0.32 (0.75) | -60.0 | 5pre-10post | 0.87 | ns | .17 |
| Late (25+) n = 25 | Pre-marriage 'case' | 2.72 (2.62) | | Premar-5post | -0.42 | ns | .09 |
| | 10 yrs post 'case' | 0.80 (1.68) | -70.6 | Premar-10post | -0.17 | ns | .04 |
| | Pre-marriage 'control' | 2.40 (2.36) | | | | | |
| | 10 yrs post 'control' | 0.56 (0.92) | -76.7 | | | | |

Notes: p-values one-tailed; effect size calculated using Pearson's r; ns = not significant.

For those who married later there were larger reductions for controls than there were for cases. For example, the cases incurred 0.56 convictions (on average) during the five years before marriage, compared with 0.48 during the five years after marriage; their controls incurred 0.80 convictions during the five years before marriage, compared with 0.32 during the five years after marriage. The convictions of the controls decreased by 60 percent, compared with 14 percent for the cases. A paired sample *t*-test showed no significant difference ($t(24) = 0.87$, ns). Offences committed during the five years before marriage in these groups were low compared with those who married earlier (as would be expected), and it may be the case that any changes in offending may have been too small to have been detected.

Table 5 shows the results of the replication study based on age 18 risk factors. For early marriages, the cases incurred 1.40 convictions (on average) during the five years before marriage, compared with 0.38 convictions during the five years after marriage; their controls incurred 1.28 convictions during the five years before marriage, compared with 1.10 during the five years after marriage. The offending of both groups decreased with age as expected, but the cases decreased by 73 percent, which was much greater than the decrease for their matched controls (14 percent). When comparing the two matched groups, the paired sample *t*-test was significant ($t(39) = -2.63$, $p = .012$), with a medium effect size of $r = .39$. The decreases in the other tests were also substantial, with small to medium effect sizes.

For mid-range marriages, there was a reduction in the number of convictions when comparing five years before marriage with five years after marriage. The reduction for the cases (72 percent) was double that for the controls (36 percent). The paired sample *t*-test was not quite significant but there was a medium effect size, $r = .34$. The decrease after conviction when comparing five years before and ten years after marriage was significant, ($t(26) = -2.14$, $p = .042$), with a medium effect size, $r = .39$. Comparisons of total time before marriage with five years after and total time before marriage with ten years after did not reach significance but had medium effect sizes.

For later marriages, there were again larger reductions for controls than there were for cases. For example, the cases incurred 0.48 convictions (on average) during the five years before marriage, compared with 0.48 convictions after marriage; their controls incurred 0.56 convictions during the five years before marriage, compared with 0.44 during the five years after marriage. The convictions of the controls decreased by 21 percent, compared with no decrease for the cases. A matched sample *t*-test showed no significant difference ($t(24) = .28$, ns). These results are very similar to

Table 5 Mean number of convictions for early, mid-range and late marriages, matching on propensity score (based on age 18 risk factors) and convictions before marriage

| Marriage (age) | Count period | Mean no. convictions (sd) | Percent change | Comparison | t | p | Effect size | |
|-------------------------|-----------------------------|---------------------------|----------------|---------------|-------|------|-------------|--|
| Early (18–21) n = 40 | 5 yrs pre 'case' | 1.40 (1.88) | | | | | | |
| | 5 yrs post 'case' | 0.38 (0.93) | -72.9 | | | | | |
| | 5 yrs pre 'control' | 1.28 (2.03) | | 5pre-5 post | -2.63 | .012 | .39 | |
| | 5 yrs post 'control' | 1.10 (2.39) | -14.1 | 5pre-10post | -1.58 | ns | .28 | |
| | Pre-marriage 'case' | 2.00 (2.57) | | Premar-5post | -2.49 | .017 | .37 | |
| | 10 yrs post 'case' | 0.95 (1.52) | -52.5 | Premar-10post | -1.53 | ns | .24 | |
| | Pre-marriage 'control' | 1.83 (2.64) | | | | | | |
| | 10 yrs post 'control' | 1.50 (2.86) | -18.0 | | | | | |
| | Mid-range (22–24) n = 27 | 5 yrs pre 'case' | 1.30 (1.56) | | | | | |
| | | 5 yrs post 'case' | 0.37 (0.63) | -71.5 | | | | |
| 5 yrs pre 'control' | | 1.15 (1.89) | | 5pre-5 post | -1.85 | .075 | .34 | |
| 5 yrs post 'control' | | 0.74 (1.20) | -35.7 | 5pre-10post | -2.14 | .042 | .39 | |
| Pre-marriage 'case' | | 2.48 (2.65) | | Premar-5post | -1.56 | ns | .29 | |
| 10 yrs post 'case' | | 0.59 (0.84) | -76.2 | Premar-10post | -1.99 | .057 | .36 | |
| Pre-marriage 'control' | | 2.41 (2.76) | | | | | | |
| 10 yrs post 'control' | | 1.19 (1.50) | -50.6 | | | | | |
| Late (25+) n = 25 | | 5 yrs pre 'case' | 0.48 (0.87) | | | | | |
| | | 5 yrs post 'case' | 0.48 (1.16) | 0.0 | | | | |
| | 5 yrs pre 'control' | 0.56 (1.53) | | 5pre-5 post | .28 | ns | .06 | |
| | 5 yrs post 'control' | 0.44 (0.65) | -21.4 | 5pre-10post | .55 | ns | .11 | |
| | Pre-marriage 'case' | 2.12 (2.07) | | Premar-5post | .09 | ns | .02 | |
| | 10 yrs post 'case' | 0.80 (1.68) | -62.3 | Premar-10post | .37 | ns | .08 | |
| | Pre-marriage 'control' | 2.12 (2.46) | | | | | | |
| | 10 yrs post 'control' | 0.60 (0.71) | -71.7 | | | | | |

Notes: p-values one-tailed; effect size calculated using Pearson's r ; ns = not significant.

those obtained by matching on age 8–10 risk factors and convictions before marriage, increasing our confidence in the correctness of the conclusions.

Discussion

We set out to investigate whether an individual's rate of offending was influenced by getting married, after taking into account their propensity to marry and their criminal history (the number of convictions before marriage). We did this using a propensity score matching procedure based on risk factors measured at ages 8–10 (and, in a replication study, at age 18) for males in the Cambridge Study in Delinquent Development.

Using regression modelling we found that coming from a low-income family, having few friends, being unpopular and coming from a broken home at ages 8–10 predicted a low probability of getting married. It has been suggested that being brought up in a low-income family is predictive of later low income, which undoubtedly would affect a man's competitiveness in the marriage market. Having few friends and being generally unpopular may well diminish the likelihood of meeting prospective partners, perhaps because these variables indicate poor social skills. Coming from a broken home could in itself have a negative effect, but psychologically it may influence an individual's ability to maintain relationships where a large emotional investment is needed. It is possible that children from broken homes are less likely to get married because they have witnessed some of the negative features associated with unstable marriages.

We also found that, at age 18, unemployment, never having had sex and being a cannabis user predicted a low probability of getting married. It seems likely that those men who are unemployed are less likely to attract partners for long-term relationships because they do not offer financial stability and may not want to take on the increased costs of a wife and the possibility of a family. Men who have not had sex by age 18 may be those who are not so popular with the opposite sex, possibly because they have underlying personality problems or are lacking in social skills. The use of drugs impacts on many individual factors that may affect the likelihood of getting married, including employability, health, personality and attractiveness to females. Overall, these factors cannot necessarily be taken as indicators of the likelihood of getting married in themselves, but cumulatively they may indicate characteristics of an individual that may predispose him to compete less well in the marriage market.

It could be argued that some event (e.g. increasing maturity, or deciding to settle down and live a prosocial life) might cause both getting married and a reduction in offending. We cannot test these hypotheses in this paper,

because we do not have time-specific repeated measures of events that might be connected with marriage. All we can demonstrate is that getting married is followed by a reduction in offending after controlling for extraneous variables that might influence both marriage and offending.

After matching for the propensity to get married and the number of convictions before marriage, we found that, for men who got married, there were significant reductions in the number of convictions after marriage. Importantly, the effect of marriage on offending varied with age: there was an effect for early and mid-range marriages but not for late marriages. Therefore, there may be an interaction effect between marriage and some variable that is correlated with age such as malleability – a willingness to change or be more flexible in behaviour. Perhaps as the males become older, they become more set in their ways and are less likely to change their social habits after getting married.

For early and mid-range marriages, the men may be indirectly discouraged from offending because marriage disrupts relationships with deviant friends (Warr 1998; Simons et al. 2002). If an individual decides to commit to a conventional lifestyle by marrying and investing in the relationship because he has a desire to make it work, then to continue in an antisocial lifestyle would undermine his efforts. Therefore he might decide that he has to put his previous lifestyle behind him and make a determined effort not to mix with criminal friends, to drink less, and so on. This is in effect a ‘knifing off’ of the past from the present, as suggested by Sampson and Laub (1993). On the other hand, this change may be thrust upon the man by a strongly prosocial woman who may demand that he conforms.

For late marriages, we did not see a significant effect of getting married. When we compared these men on their risk factors, there were definite differences between those who married late and those who married earlier. For example, at ages 8–10, these late-marrying men were less likely to have experienced harsh and erratic discipline from their parents, less likely to have low junior school attainment, less likely to have siblings with behaviour problems, and less likely to be daring. At age 18 they were less likely to have an aggressive attitude or to be antisocial. They were more likely to go out with their mates and more likely to use cannabis but less likely to get into fights after drinking. They were more likely to have passed exams and to have a stable job record. Overall, these men had a different profile from those who married earlier. These men may be less serious offenders who continue with their offending at a very low level and are less amenable to change. They may have married a younger wife who is not influential enough to curb their offending, or is unaware of it, or they may have continued to mix with deviant friends because they are more set in their ways at older ages. There is also the possibility that, because they

had fewer convictions in the five years before marriage, any changes in offending may be difficult to detect because of the insensitivity of the tests.

There are limitations to this study. It is based on relatively small numbers. The Cambridge Study is based on men who married (mostly) in the 1970s when there may have been cultural pressures to remain married however difficult the relationship may have been. Today people seem less prepared to put up with difficult times and the ease of divorce does not necessarily encourage individuals to remain married. Nevertheless, in this particular sample, over half (59 percent) of the 133 convicted men who married eventually separated from their first wife some time after marriage.

Propensity scores are limited by the available data, so some variables may not have been taken into account that may be pertinent to the likelihood of getting married. Many variables were measured in the CSDD because they were likely to be related to offending, not necessarily to getting married. However, these variables may also have an impact on an individual's personality development and hence influence the way in which he develops and sustains relationships. Certainly, propensity score matching helps us to shed some light on the effects of marriage and it also provides a basis for future research into which types of individuals are most affected (King et al. 2007).

As suggested by King et al. (2007), information about the characteristics of the spouse may be important. Farrington and West (1995) suggested that there is most probably an association between the personal characteristics of the spouse and the quality of the relationship. It could be presumed that most female partners have a prosocial influence and encourage reductions in deviant behaviour. Alternatively, if the spouse has antisocial tendencies, this may encourage continuity in the man's deviant behaviour (Farrington and West 1995; Simon et al. 2002). The partner can contribute considerably to the continuity in, moderation of, redirection of or desistance from antisocial behaviour and offending (Elder 1998; Sampson and Laub 1993; Engfer et al. 1994; King et al. 2007).

Future research

Changes in criminal careers may be attributable to the effects of separation and divorce on offending. Both Farrington and West (1995) and Horney et al. (1995) found that men's offending increased if there was a breakdown in their relationships, when men were no longer living with their spouse. However, data were not available on the circumstances surrounding and following these separations and these circumstances may have had an effect on the man's offending. It may be that a man who maintains a strong bond

with his children and a reasonable relationship with his (ex-)spouse after a separation or divorce is less likely to recommence or increase his offending behaviour than a man who loses all contact with them. Undoubtedly, there are many possible influencing factors and further research should address: the effects of subsequent marriages after the initial divorce; whether the type of partner an individual marries has an effect on his offending; whether he got married because of an unplanned pregnancy; and the positive or negative effects this had on the durability and sustainability of the marriage and on offending.

Ideally, we should attempt to investigate how marriage affects the types of crime committed, especially self-reported crime and other antisocial behaviours such as drug use, heavy drinking and domestic violence. The CSDD has self-report data available but these offences were measured infrequently. There should be more research on why the effect of marriage varies with age and also whether the effects of getting married can be separated from the effects of having children.

As mentioned earlier, marriage as an institution is not as commonplace now as it was in the 1970s and many individuals now opt for cohabitation – sometimes instead of marriage, sometimes as a trial marriage or sometimes as a prelude to marriage. Living together may have the effect of postponing marriage overall and increasing the age at which individuals settle down in this institution. Since our results show that later marriages do not have a beneficial effect on offending, if there is a trend for individuals to marry later, the beneficial effects of marriage on offending may decrease over time.

Our research agrees with prior studies in showing the beneficial effects of getting married in reducing crime. The main strengths of this research compared with prior studies of the effects of marriage are: it is based on a prospective longitudinal study with complete data (reflecting low attrition) on individuals over a 40-year time period; it is based on within-individual analyses, which make it possible to exclude selection effects convincingly; it includes information on convictions before and after the date of marriage; many risk factors from many different domains were measured and hence could potentially be controlled; and this is a community sample from the UK.

One possible policy implication of our findings is that schools should mount programmes to teach the social skills that are needed to make and sustain committed relationships and to encourage children to consider the benefits of getting married over other forms of partnerships that may be less stable. It may also be desirable to encourage the commitment to relationships, such as marriage, at earlier rather than later ages if any beneficial effect is to be observed.

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