**Mental well-being differences in cohabitation and marriage: the role of childhood selection**

Prior studies have found that marriage benefits well-being, but cohabitation may provide similar benefits. Here an analysis of the British Cohort Study 1970, a prospective survey following respondents to age 42, examines whether partnerships in general, and marriage in particular, influences mental well-being in mid-life. Propensity score matching indicates whether childhood characteristics are a sufficient source of selection to eliminate differences in well-being between those living with and without a partner, and those cohabitating and married. Results indicate that matching on childhood characteristics does not eliminate advantages to living with a partner; however, matching eliminates differences between marriage and cohabitation for men and women more likely to marry. On the other hand, marriage may provide benefits to women less likely to marry, unless they have shared children and are in long-lasting partnerships. Hence, childhood selection attenuates differences between cohabitation and marriage, except for women less likely to marry.

Keywords: cohabitation, marital status, mental health, selection effects, union formation,

Numerous studies have found that marriage benefits mental well-being (see Waite and Gallagher 2002 for a review; Lamb et al 2003; Simon 2002). The strength and persistence of these findings have led some policy-makers to call for programs that encourage marriage. For example, pro-marriage policy initiatives were pushed during the George W. Bush administration in the U.S. (Bir et al 2012), and the current conservative UK government has legislated tax breaks for married couples (BBC 2015). Much of the research underlying these initiatives, however, has compared the married and unmarried, without distinguishing between those who were cohabiting or single (e.g. Hughes and Waite 2009; Liu and Umberson 2008; Waite and Gallagher 2002). Some studies have begun to examine differences between cohabitation and marriage with respect to mental health and depression (e.g. Brown 2000; Lamb et al 2003; Musick and Bumpass 2012,), but most of these studies use American cross-sectional data and may not sufficiently control for selection effects. Less is known about the relationship between marriage and mental health in other contexts, where cohabitation is widespread. Given the recent increase in cohabitation and its changing meaning (Berrington et al 2015; Perelli-Harris et al 2014), it is important to revisit whether partnerships in general, and marriage in particular, continue to provide distinct benefits to well-being, especially for those who are less likely to marry.

In this study, we examine whether being in a partnership and the type of the partnership – marriage or cohabitation – is associated with higher mental well-being in mid-life in the United Kingdom. In the UK, cohabitation has become the normative pathway to union formation: in 2004-07 80% of all marriages started with premarital cohabitation and the duration of cohabiting unions has been steadily increasing (Beaujouan and Ni Bhrolchain 2011). Cohabitation has also become common for childbearing: in 2012 30% of all babies were born to cohabiting mothers (ONS 2013). The pervasiveness of cohabitation, especially if it takes on much of the form and function of marriage, suggests that cohabitors may have similar well-being to married individuals.

Nonetheless, a large number of studies across countries have shown distinct differences between cohabitation and marriage with respect to depression in the U.S. (Brown 2000), relationship quality across Europe (Wiik et al 2012), and life satisfaction in Europe (Soons and Kalmijn 2009). Some of the studies that examine the relationship between marriage and psychological or subjective well-being employ a panel design that starts in young adulthood, providing insights into transitions during a short period but not directly comparing long-term cohabiting and marital unions and their effects in mid-life (Germany: Zimmerman and Easterlin 2006; European countries: Soons et al 2009; US: Musick and Bumpass 2012). For example, using fixed-effects models, Musick and Bumpass (2012) find that in the U.S. transitions into cohabitation and marriage have similar effects on psychological, health, and social well-being, and any differences found are relatively small. Musick and Bumpass (2012), however, do not examine the consequences of cohabitation versus marriage later in the lifecourse, after the typical postponement of marriage throughout young adulthood and after the majority of childbearing. In addition, while this and other studies using fixed-effects models examine variation within individuals over time, they do not compare across individuals with different characteristics that select people into cohabitation or marriage, particularly drawing on selection mechanisms occurring early in life, before the entrance into adulthood. These studies do not examine whether marriage is likely to increase well-being for those who are less likely to marry, often those with disadvantaged backgrounds and targeted by pro-marriage policies.

Our study uses propensity score matching to investigate differences between marriage and cohabitation in the UK. Although union status changes over the life course and cohabiting couples often marry (Perelli-Harris and Lyons-Amos 2015), we consider marriage a “treatment,” because couples must officially decide to marry and act on that decision. Our PSM strategy examines whether people with similar background characteristics are more likely to have higher mental well-being scores if they marry. This approach takes into account important selection characteristics that predict both union formation and well-being, but cannot control for the respondents’ current situation. By matching people with similar characteristics, however, we can ascertain whether marriage provides benefits beyond living with someone, as well as the heterogeneity of treatment effects – whether the effects of marriage differ for those with a higher or lower propensity to marry based on childhood characteristics. Our data, the British Cohort Study, followed the 1970 birth cohort up to age 42. This cohort experienced partnership formation in the 1990s and 2000s, which is more recent than many previous studies (e.g. Musick and Bumpass 2012). In addition, cohabitation in mid-life is relatively understudied, despite it becoming a more common phenomenon in Britain (i.e. 20% of adults in our survey were cohabiting at age 42). Given that we are not interested in the timing of marriage/cohabitation per se, the propensity score matching approach is appropriate for examining whether currently being in a marriage matters. However, since the duration of and investments in a union may signal the positive benefits of the partnership, we also compare the type of union for those who have been in long-lasting partnerships, never experienced union separation, and have had children together. In addition, we compare results for men and women who may experience varying effects of different types of partnerships on well-being (Simon 2002; Williams 2003).

We are particularly interested in whether early life conditions attenuate the association between partnership type on later life outcomes, contributing to the growing body of research investigating these links (Elo 2009; Kuh et al 2004; Umberson et al 2010). Early childhood factors often pre-condition individuals to choose cohabitation or marriage, but they are also strongly linked to mental well-being in adulthood and may therefore reduce or eliminate the association between marriage and well-being. Hence, this study not only provides insights into whether marriage makes a difference to well-being beyond simply living in a partnership, it also contributes to our understanding of the role of early life conditions in understanding these differences.

Background

*Current Relationship Status*

An individuals’ current partnership status, regardless of whether married or cohabiting, is potentially the most relevant to current well-being. Living in a partnership usually provides sexual and emotional intimacy, companionship, and daily interaction, which can promote well-being. An intimate partner can provide care, social and emotional support and encourage healthy behaviors (Umberson et al 2010). In addition, partners often link each other to greater friendship and kin networks that can provide social support (Ross 1995). Living together and sharing a household can lead to economies of scale. The savings incurred may be particularly important for low-income couples, who in qualitative interviews in the UK have mentioned that the decision to move in together was motivated by housing costs (Berrington et al 2015).

 Beyond simply living with a partner, however, marriage may provide unique benefits to well-being (Waite and Gallagher 2002). Marriage is often a social sign of commitment, or “enforceable trust” (Cherlin 2004). The symbolic promise of marriage may provide couples with a long-term perspective that the future of their relationship is secure. Because marriages are legally harder to dissolve, couples may be more motivated to work through their disagreements, thereby maintaining union stability and with it general life stability. The long-term perspective may also benefit personal and social control, meaning spouses deliberately influence each other’s personal behavior, because they want them to be healthy and live longer (Umberson 1987). The reduction in life uncertainty and increased care could enhance well-being (Liu and Umberson 2008; Soons et al 2009), and even result in psychological or cognitive changes that promote mental well-being (Li et al 2015). These benefits may be enhanced further through personal networks, such as in-laws, which provide structural social support and coping resources to married couples, because the relationships are more defined (Marcussen 2005). In addition, the UK legal system continues to favor marriage in terms of inheritance tax and access to the courts when unions dissolve which may influence the level of perceived security (Perelli-Harris and Sanchez Gassen 2012). Although general social disapproval of cohabitation is low in Britain, the social expectation to marry is still pervasive (Berrington et al 2015). Thus, although living with someone may result in many of the same benefits to mental well-being, in today’s Britain, marriage may still be a sign of a more committed relationship and confer additional social and legal benefits, which would in turn enhance well-being.

*Long-lasting and First Partnerships*

Although current partnership status conveys certain immediate benefits, longer union duration is usually a sign of a stable, committed relationship potentially providing a greater boost to well-being (Berrington et al 2015; Duncan and Philips 2008; Jamieson et al 2002). Poor quality relationships are more likely to end, and relationships with negative effects on well-being are weeded out. Over time, commitment increases, and couples are likely to invest more in the relationship, for example by investing in housing or pooling resources (Heimdal and Houseknecht 2003; Lyngstad et al 2010). Long-term cohabiting relationships tend to reflect deeper commitment and given the lack of social sanctions against cohabitation in the UK (Duncan and Philips 2008), may be no different to marriage with respect to well-being.

 On the other hand, as people adapt to marriage and cohabitation, they often return to their initial levels of well-being (Lucas and Clark 2006; Soons et al 2009; Zimmerman and Easterlin 2006). Relationship quality tends to decline over time, as partners become used to each other, and the “honeymoon effect” wears off. One Dutch study observed that entrance into cohabitation and marriage increased subjective well-being, with marriage providing the highest boost to well-being, but moderate adaptation occurred in the long run (Soons et al 2009). Soons et al (2009) argue, however, that the return to previous levels occurs very slowly, especially compared to the never partnered whose well-being declines more rapidly. Thus, union duration appears to work in contradictory ways: unions of longer duration imply greater commitment and investment in the relationship, but at the same time, subjective well-being tends to decline after the “honeymoon period.” The question then is whether unions that have made it through this period are similar in their effects on well-being, regardless of whether they are cohabiting or marital. Partnership dissolution may also negatively influence mental well-being (Amato 2010; Carr and Springer 2010). Previous research has found that divorce inflicts costs on physical and mental health for many years, even for those who remarry (Hughes and Waite 2009). People who cohabit may be more at risk for the negative effects of union dissolution, because cohabiting unions have higher dissolution rates than marriage (Beaujouan and Ni Bhrolchain 2011). A greater proportion of those currently cohabiting may be repartnered than those currently married. In addition, people who have separated or divorced are more likely to choose cohabitation for subsequent relationships (Galezewska et al 2013), and second or higher-order partnerships often have higher dissolution rates and worse relationship quality (Hughes and Waite 2009; Sweeney 2010). Thus, because cohabitors are more likely to have experienced union dissolution, it is important to compare cohabitors and married people living with their first partner to eliminate any lingering effects of partnership instability.

*Unions with Children*

Having shared children can be an important sign of investment in a relationship. Previous studies have considered childbearing to be an indicator of the similarity between cohabitation and marriage (Heuveline and Timberlake 2004; Raley 2001). Like married parents, cohabiting parents have a shared interest in their children, can provide care and other resources, and may work harder to maintain their relationship to ensure stability. Unmarried fathers in the UK have the same rights as married fathers and face little social disapproval for not marrying their child’s mother (Barlow 2015; Park and Rhead 2013). Nonetheless, studies show that cohabiting parents continue to be different from married parents; for example, in the UK cohabiting parents are more likely to separate (Goodman and Greaves 2010) and have lower second birth rates than their married counterparts (Perelli-Harris 2014). Hence, cohabiting parents with shared children may continue to have different well-being than married parents.

*Gender Differences in Benefits to Marriage and Cohabitation*

Sociologists have long questioned whether men receive greater psychological benefits to marriage than women, and whether there is a “his” and “her” marriage (Bernard 1972; Williams 2003). Evidence for this argument is weak; most studies find few differences in the benefits to marriage between men and women (Simon 2002; Robles et al 2014; Ross 1995; Williams 2003). These studies, however, did not directly compare cohabitation and marriage, and some subtle differences may emerge for these two types of relationships. The advantages that an intimate co-residential relationship convey, for example sexual and emotional intimacy, pooled resources, and shared household investments, may be sufficient to provide mental health benefits to men. However, cohabitation may lack the same symbolic meaning or commitment that marriage does, which may be more important for women. In British focus groups, Berrington et al (2015) found that both men and women believed women place a greater value on a “proper” wedding, both as a symbol of commitment and as an expression of tradition, feminism, and romantic fantasy. Not experiencing the “big day,” may lead some women may feel discontent with their lives. In addition, because cohabitation does not convey the same legal protection as marriage, women may prefer the security that marriage provides, especially if they have a lower level of income or take time out of the labor force to maintain the household. Hence, men and women may value marriage differently, which may lead to differential effects by gender.

*Selection Based on Childhood Circumstances*

The benefits of partnerships and marriage may not be causal, but instead the result of social selection; differences in well-being are due to the characteristics of the people who choose to be in a particular type of partnership. In our study, we focus on childhood characteristics that occur before the “treatment,” or entering into an adult partnership. Parental influences and characteristics that have developed in childhood are very important for determining later life outcomes (see Elo 2009; Kuh et al 2004 for reviews). Health and mortality research suggests that the “long arm of childhood” extends into adulthood and is a significant predictor of adult health outcomes (Hayward and Gorman 2004; Palloni 2006). Our research includes a range of childhood characteristics that could attenuate the distinction between cohabitation and marriage.

 Parental socio-economic status is one of the most significant predictors of future life outcomes (Case et al 2005; Luo and Waite 2005). The intergenerational transmission of conditions and behaviors is extremely important for educational trajectories, social mobility, and future employment (Goodman et al 2011), all of which can have implications for both partnerships and mental well-being. Parents’ socioeconomic position influences childhood development and adult outcomes through a complex set of transmission mechanisms, including values and attitudes, resources, behaviors, social interactions (Goodman et al 2011), and genetic endowments (Li, Liu and Guo 2015). In many contexts, parental characteristics also directly influences choices to cohabit or marry (Wiik 2009). For example in Britain, mother’s age at birth and father’s social class were associated with entrance into cohabitation (Berrington and Diamond 2000). Parents’ marital status and divorce in childhood can also hinder the development of interpersonal and relationship skills, cognitive growth, and educational achievement (Amato 2010; Kim 2011), which again may influence both partnership formation and mental health. Parental divorce often leads children to reject the institution of marriage and adopt more favorable attitudes towards cohabitation and divorce (Axinn and Thornton 1996), as well as choose cohabitation for their own relationships (Perelli-Harris et al 2015). Thus, the beneficial effects of marriage to mental health may not be due to marriage, but instead childhood socio-economic status and stability, which would lead individuals to marry in adulthood.

 Children’s cognitive development and educational aspirations may have an effect on both future mental well-being and partnership formation that is independent of parental socio-economic status. Cognitive functioning in childhood is closely associated with adult positive mental health, (Hatch et al 2007), and cognitive test-scores in childhood are highly predictive of future educational attainment (Feinstein and Bynner 2004), which may also influence adult mental health. However, education is not only associated with mental health, recent studies have indicated that education is associated with marriage in most countries (Kalmijn 2013).

 An individual’s psychological attributes, values, and attitudes in childhood can also have major influences on both partnership formation and mental well-being. Psychological attributes, for example depression, self-esteem, locus of control, and behavioral problems, are usually predictors of future mental health (Goodman et al 2011), or even an alternative way of measuring the baseline of mental health. Previous studies demonstrate that childhood psychological problems have a long-term effect on adult family income and other non-economic outcomes (Goodman et al 2011). Likewise, those with mental health issues or low self-esteem may have difficulties forming and maintaining healthy relationships. Values, for example religiosity, parental respect, and opinions about sex and marriage may influence future decisions about marriage (Berrington and Diamond 2000), and also possibly adult mental health. Hence, examining the contribution of childhood experiences, values and attitudes on future mental health helps us to better understand the relationship between partnership formation and mental well-being.

Data and Method

To examine the effect of different partnership experiences on well-being in mid-life, we employ the British Cohort Study 1970 (BCS70), which is a nationally representative prospective survey of men and women born in Britain in one week of April 1970. We use data from sweeps 1970, 1980, 1986, 2012 (http://www.cls.ioe.ac.uk/page.aspx?&sitesectionid=795&sitesectiontitle=Welcome+to+the+1970+British+Cohort+Study). Although attrition occurred throughout the period of data collection, follow-up for the 2012 wave was relatively high, with a survey response rate of 75% (TNS BMRB 2013). The cohort members were followed throughout their lives until age 42 (see Figure 1). Before the children reached adulthood, information about cohort members was provided by parents, teachers, nurses, and through self-completed questionnaires. We restrict our sample to the men and women who participated in the survey at age 42 in 2012 (N=9841), who had valid well-being scores (N=8070), participated in the birth sweep (N=7471), and had valid partnership histories (N=7286). Finally, we eliminated those in same sex couples, because until recently they were unable to legally marry in the UK. This resulted in a final analytical sample of 7203.

 Figure 1 shows the waves of data collection in the BCS70 relevant to our methodological approach. The figure shows the years and age at which background characteristics, partnership trajectories, and the outcome variable were measured. The information on background characteristics was collected before partnership histories started, ensuring the correct causal ordering between background factors and the propensity to be in different relationship types. Partnership histories were collected starting in the 2000 wave and covered the period from when the cohort member was 16 to age 42. The Centre for Longitudinal Data provided a data file merging cleaned histories available up to 2008 (Hancock 2011), and we updated partnership histories with wave 2012.

 One of the limitations of this study is the proportion of missing responses, especially on some of the questions collected at age 16. Although the overall response rate for those who had been traced was around 88%, a teacher strike in 1986 meant about half the students did not complete the in-school questionnaires, which included the psychological attribute questions. The teacher strike was not restricted to particular locations in the UK, and the proportion of students attending each school sector was broadly representative (Gerova 2006); therefore, the missingness in that wave seems to have occurred at random. However, non-response across the survey due to attrition does not seem to have occurred at random (Mostafa and Wiggins 2014). Of those interviewed at age 42, about 5% of the original sample died, and 43% were missing due to emigration, non-contact, or refusal.

 To preserve the sample size and reduce bias in the estimation effects due to the missing covariate values, we employed Multiple Imputation using chained equations (Rubin 2004). (Weights were not available). Other analyses of the BCS70 concluded that MI was most effective at reducing bias, as long as the MI was appropriately specified (Mostofa and Wiggins 2014). Our imputation model included all covariates used for matching (see Table 1), as well as the well-being score, partnership indicators and having shared children. We also used a few auxiliary variables – ever been in a partnership, ever married, and reading test score, Rutter behavior score, self-esteem score and locus of control score all measured at age 10. Using STATA 13 we created 10 imputations, separately for men and women. Scores measured at age 10 seemed to be very important for the imputation of scores measured at age 16, and because we wanted to include characteristics as close to entering adulthood as possible, we decided to use the imputed scores measured at age 16 as well as supplement them with other variables that captured norms and attitudes. Given the range of variables that we include in the MI, and the similarity across models, we think that this approach sufficiently reduced the bias of non-response.

*Estimating Union Formation Treatment Effects*

To minimize the potential bias of nonrandom selection into different types of unions (the treatment), we use Propensity Score Matching (PSM) and compare people with similar childhood background characteristics. In contrast to Ordinary Least Squares regression, PSM allows us to examine the heterogeneity of treatment effects based on whether people are more or less likely to marry. Propensity scores are conditional probabilities of experiencing the partnership treatment using logit regression (Guo and Fraser 2014). In order to estimate the propensity score, we draw on factors and characteristics measured at birth in 1970, at age 10 in 1980, and age 16 in 1986. We then use PSM to match respondents in each sample based on the predicted probability to experience a given partnership status (the treatment). PSM models estimate the average effect of treatment among people who are similar by comparing well-being scores (the outcome) among treated (Average effect of the Treatment on the Treated) and untreated individuals (Average effect of the Treatment on the Untreated). Nonetheless, PSM does not match people on unobservables, such as parents’ marital quality in childhood, developments after childhood, and current relationship quality; therefore it is unlikely to demonstrate a true causal effect. Below we show results which use kernel matching ; nearest neighbor matching resulted in very similar estimates. The covariates were unbalanced before matching, and matching effectively reduced the bias. For each covariate the average mean bias after matching for all imputations was always below 5% (further information available on request).

*Outcome variable*: The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) is a battery of 14 questions focusing on positive mental health, such as whether a respondent felt optimistic, loved, relaxed, confident, good about themselves, etc. (Tennant et al 2007). Previous analysis has shown that the scale has good content validity and reliability in the UK (Tennant et al 2007). The WEMWB score ranges from 14 to 70 and the mean is around 49. In our sample it has a Cronbach’s alpha of 0.92 indicating that it has high internal consistency. The score was only calculated if all 14 items were completed and is available for 82 percent of respondents participating in the 2012 sweep. We used logistic regression to examine the characteristics associated with non-response of the WEMWB score and found that men, respondents with children, the unmarried, lower educated and disabled were less likely to have a complete well-being score, which could potentially underestimate raw differences between cohabitation and marriage, but should not influence the PSM results.

*Treatments:* Propensity score matching requires a binary treatment, which makes it difficult to analyze relationship duration or complex partnership transitions (i.e. cohabitation transitioning to marriage, or relationships which dissolve). Our solution is to present increasingly select groups to compare people with more similar unions (Table 1). We start by including everyone in the survey and examining whether being in a partnership matters for well-being (sample 1). We then examine increasingly selective, or committed, types of unions and compare marriage with cohabitation (samples 2-7). In the end, we finally compare people who are in relationships more similar to traditional marriage: first long-term unions with children. The specific samples are:

1) *Currently in a co-residential partnership (3384 men and 3819 women).* This model demonstrates whether currently being in a relationship benefits mental well-being for the entire survey sample. Those who are not in a partnership include the never partnered and the divorced or separated.

2) *Currently married, among those currently in a partnership (2620 men and 2905 women).* Model 2 is restricted to those currently in a partnership and examines whether currently being married boosts well-being more than currently cohabiting.

3) *Currently married, among those in a partnership lasting longer than three years (2417 men and 2684 women).* This model examines differences between marriage and cohabitation only for those in a long-lasting partnership. Anyone who is currently married in a co-residential partnership lasting longer than three years is considered married, regardless of when the marriage occurred (i.e. they could have been married for less than three years, but premaritally cohabiting with the same partner for part of that time so that the total time spent together is more than three years). This approach minimizes the “honeymoon effect” of relationship formation; previous studies have found that forming a relationship in the last 2-3 years provides a boost to well-being, but the initial gains subsequently diminish (Musick and Bumpass 2012; Zimmerman and Easterlin 2006). Note that this specification does not completely eliminate differences in the duration of cohabiting and marital unions, and on average, marital unions are longer than cohabiting unions.

4) *Currently married, among those in a first relationship lasting longer than three years (1746 men and 1874 women).* This sample only includes men and women in long-lasting relationships who have never experienced partnership dissolution. Note that we do not know whether the respondent’s partner is also in a first relationship.

5-7) *Treatments 2, 3, and 4 for couples who have had children together* (*respectively 1977, 1929, 1465 men; and 2187, 2134, 1603 women*). We excluded childless couples, and couples who only have stepchildren, foster children and adopted children.

*Background variables.*We employed a number of strategies to select the covariates used to create the propensity score and settled on a model that includes as many factors as possible. The variables represent a range of different domains: family background variables including parental socio-economic status and divorce behavior; cognitive scores and educational aspirations; adolescent mental health and psychological attributes; and values, such as religiosity and whether the respondent believed sex before marriage was wrong (Table 1). We tested the models with specific variables and sets of variables according to domain, but none had a particularly strong effect with the exception of psychological attributes for men. Thus, we present models with all childhood factors included.

Results

*Descriptive Statistics*

In we report mean values, the standard deviation, and confidence intervals of the mental well-being indicator (WEMWBS) by gender and treatment. About 23% of men and 24% of women currently live outside of a partnership; those not in a partnership have significantly lower mean well-being scores (46 for men and 47 for women) than those in a partnership (50 for men and women). Of those currently in a partnership, cohabitors have significantly lower mean well-being scores than married people, but the difference is not as great as between the un-partnered versus partnered. The raw differences between those in long-lasting cohabiting and marital relationships are also significant, but not as large, especially when people are in their first relationships. Differences are also small when they have had children together. Nonetheless, cohabitors always have significantly lower well-being scores than married people.

*Propensity Score Matching*

In Table 3 we report mean differences between the WEMWBS scores for the treated and untreated groups by gender. Each row shows the estimates for the different treatments and samples. Column 1 shows the difference when the samples are not matched on background characteristics, but only includes those restricted to the common support by the PSM procedure. In line with the descriptives from Table 2, the unmatched differences are statistically significant. Column 2 shows the ATT, the average effects of the treatment on the treated, for those who are more likely to marry. Column 3 shows the ATU, the average effects of the treatment on the untreated, for those who are less likely to marry – often those targeted by marriage policies.

*Unpartnered vs. partnered.* Both men and women who are currently in a cohabiting or marital partnership have higher mental well-being than those currently not in a co-residential partnership, after taking childhood background characteristics into account (Model 1). This result is significant at the .001 level both for those more and less likely to be in a partnership. We found similar results after comparing the unpartnered with only those currently cohabiting (excluding the married): those cohabiting had higher mental well-being than the unpartnered, even after matching on childhood characteristics (significant at .001 level). This indicates that the results were not primarily driven by the married (results available on request). Note that not being in a partnership may reflect prior relationship break-down (Huges and Waite 2002) or a long-term decline in well-being due to never partnering (Soons et al 2009). However, unobserved factors that could currently impact well-being, such as employment status or friendship networks, were not included in the models and may further reduce and eliminate differences between the partnered and unpartnered. Indeed, Rosenbaum sensitivity checks indicate that a moderate amount of unobserved heterogeneity may lead to insignificant results (for men our results may no longer be robust to unobserved heterogeneity for a gamma approximately greater than 2.5 for ATT and 1.7 for ATU. For women this is an approximate gamma of 1.8 for ATT and 1.5 for ATU). Nonetheless, our results are robust to a number of different specifications of childhood characteristics that often predict future outcomes, suggesting that currently living with someone may provide a boost to well-being.

*Married vs. cohabiting.* After applying the propensity score matching, any significant differences in mental well-being between married and cohabiting men disappear completely for both ATU and ATT, regardless of union duration or having common children (Models 2-7). These findings indicate that for men, marriage does not have a significant effect on mental well-being beyond simply living with someone; childhood selection effects completely explain the association. Thus, the British men born in 1970 do not appear to receive a positive benefit from marriage.

 For women, on the other hand, the results are less consistent – the ATT and ATU indicate differences between women who are more and less likely to marry. For those who are more likely to marry (ATT), marriage increases mental well-being more than cohabitation among women currently in a union, an effect significant at the .05 level (Model 2). This result may be picking up poor mental well-being among those who have short-term unions or have recently separated, but note that the difference in mental well-being scores is less than one point, which may not be very meaningful. Once we compare the ATT for relationships which are more committed, for example those lasting more than three years (Models 3 and 4) or including children (Models 5-7), the differences between cohabiting and married women disappear completely. This indicates that once partnerships become more committed, i.e. last longer or include children, the type of union does not matter for women who are more likely to marry anyhow.

 For women less likely to marry (ATU), for example those from disadvantaged backgrounds or with low self-esteem and mental health in adolescence, marriage does seem to make a slight difference to adult mental well-being, except for those who are in long-lasting relationships with children. Those who are currently married have significantly higher well-being than those who are cohabiting, significant at the .05 level (Model 2). Women in long lasting partnerships (Model 3) or even first partnerships (Model 4) also seem to benefit from marriage, as do women who have children but may have been in shorter unions (Model 5). Only when we examine the most committed partnerships – those with shared children and lasting longer than three years (Models 6 and 7) – do we find that the well-being of married and cohabitating women becomes similar. We tested numerous specifications of the models and found that the ATU for women without children remained significant at the .05 level. The richness of our indicators, all of which were measured before entrance into partnership, suggests that marriage does indeed convey benefits for women who are unlikely to marry. However, the PSM cannot rule out unobservables that would select women into cohabitation and result in worse mental well-being (for example, poor relationship skills, or certain personality traits such as disagreeableness). Rosenbaum sensitivity analyses indicated that the results are sensitive to small amounts of unobserved heterogeneity (the gamma threshold is around 1). The analyses also do not control for mechanisms which would lead to positive mental health in adulthood, such as relationship quality, economic stability, or other support networks including friends or other relatives. Thus, while we observe significant differences for women who are less likely to marry, we urge caution in interpreting this as a causal effect.

Discussion

This study provides insights into the role of marriage and cohabitation, and relationships in general, on mental well-being in mid-life in the U.K. While previous studies have examined the transition into different unions -- usually occurring in early adulthood -- few have investigated how different types of relationships matter during prime childrearing ages. Given that cohabitation at these ages has been increasing – in our sample one-fifth of those living with a partner at age 42 was cohabiting -- it is important to understand the consequences of this new living arrangement for mental health, especially for those less likely to marry.

 First, our findings demonstrate the importance of currently being in a co-residential relationship for adult mental well-being. Living with an intimate partner seems to boost well-being, possibly by providing emotional support, social networks, sexual intimacy, companionship, and social meaning – all of which positively influence mental well-being (Umberson et al 2010). While we could not control for unobservable factors in childhood (such as personality or attractiveness) or current factors (such as employment status, disability, or values and opinions) which may impact well-being, the results nonetheless show that a wide range of childhood background characteristics usually predicting entrance into a partnership or future mental well-being could not eliminate differences. Hence, while it is impossible to claim a causal effect, our results suggest that co-residential partnerships may matter for mental well-being.

The type of partnership, on the other hand, seems to matter little, especially once selection is taken into account. As found in other studies (Soons et al 2009), we see a strong positive association between marriage and well-being before controlling for selection, but after matching based on childhood factors, differences between cohabitation and marriage largely disappear, indicating that childhood selection mechanisms are sufficient to eliminate differences by union type. Our results indicate that conditions in childhood, such as parental SES, family structure, cognitive ability and educational aspirations, psychological characteristics, and values and attitudes, are influencing both entrance into partnership and future mental well-being. Nonetheless, results differ by gender, and while these differences are not large, they still raise questions about the meaning of cohabitation and marriage. For men, cohabitation appears to provide the social support necessary to bolster well-being, including companionship, intimacy, and caretaking (Musick and Bumpass 2012; Ross 1995).

 The results for women, on the other hand, are more complicated. Women who are more likely to marry benefit little from marriage, suggesting that their childhood situation attenuates the association between marriage and mental health. Women who are less likely to marry, however, seem to get a small boost from marriage, unless they have children in long-lasting relationships. The benefits for these disadvantaged women may be because marriage usually provides a more secure and stable environment, through legal protection (Barlow 2015), greater social recognition of the relationship, and higher levels of commitment expressed through a public vow (Berrington et al 2015), all of which could in turn provide greater well-being. In addition, marriage may accord with women’s expectations of an ideal life course, including the experience of a traditional white wedding (Berrington et al 2015). Thus, the greater stability that marriage provides may be more important for people coming from insecure backgrounds than for those who had an advantaged upbringing and who would have had other factors positively influencing their mental well-being. However, we urge caution, because our models may not have completely captured unobserved heterogeneity. In particular, part of the marriage effect among disadvantaged women may be due to relationship quality, which was not measured in the BCS70; higher-quality relationships may lead both to marriage and positive mental health. Investments such as having children and staying together may signal that the relationship is of higher quality, not requiring the official act of marriage. Thus, the gains to marriage that men and women receive may be different, with men benefiting from the co-residential aspects, but women who are less likely to marry benefiting marginally from the institutionalized nature of marriage that would provide them with a greater sense of well-being.

Note that this study has several limitations. First, although our prospective, longitudinal dataset is ideally suited for examining the effects of partnership on future well-being while controlling for prior background characteristics, the BCS70 suffers from some attrition. We performed multiple imputation, but this approach assumes that variables measured at birth and age 10 generally predict adolescent characteristics, which leaves little independent development throughout adolescence and may overestimate the effect of early life conditions. Second, the propensity score matching analysis requires that we define a single treatment, which limits how much we can account for characteristics about the partners and the complexity of partnership histories. In order to get around this, we examine increasingly committed types of unions, but we still do not directly compare individuals who have experienced union dissolution or subsequent repartnering. In addition, we cannot control for unions of different duration. If subjective well-being declines over the duration of the partnership (Soons et al 2009), and marital unions are on average longer, then some of the cohabiting unions may still be experiencing greater well-being benefits due to more recent partnership formation, and in the long-run, marriage may still confer greater benefits to well-being. Despite these limitations, however, the results provide insights into the meaning of partnerships in Britain.

 In Britain, partnership status in mid-life is changing: only 38% of our sample of 42-year olds reported being in a first, long-lasting marriage with children, indicating that more than half of all adults live in a situation different from traditional, long-term marriage. Given the context of high dissolution rates and relationship turnover, cohabitation is becoming acceptable as one of those alternative living arrangements, with 16% of all adults in cohabitation at age 42. Relatively few however, are in first long-lasting cohabiting unions and have children together – only 5% of the entire sample. This small percent suggests that long-term cohabiting unions with children are still somewhat rare, and that marriage is still the prevailing norm. On the one hand, our results show that cohabitation in mid-life, regardless of its duration or whether it includes children, is highly selective of characteristics associated with poor future mental health. Cohabitation tends to be associated with instability and suited to those struggling with unemployment, temporary jobs, or general life uncertainty (Cherlin 2009; Berrington and Diamond 2000;Perelli-Harris et al 2010). On the other hand, our results show that the official act of marriage does not lead to long-term benefits to mental well-being, except for some women who have a lower propensity to marry. Thus, it is unlikely that encouraging people to marry will improve mental well-being.

In conclusion, this study has demonstrated the importance of early childhood conditions for understanding the relationship between cohabitation, marriage, and mental well-being. While previous studies comparing outcomes between cohabitation and marriage have generally controlled for contemporaneous selection effects (e.g. Brown 2000; Lamb et al 2003; Marcussen 2005) or unobserved heterogeneity (e.g. Musick and Bumpass 2012; Soons et al 2009), to our knowledge none has specifically examined how selection mechanisms dating back to childhood and before entrance into a union, explain the differential effects of marriage. Our study provides further evidence that early childhood conditions are important for understanding later life well-being (Elo 2009; Kuh et al 2004). Taken together, these background characteristics play a strong role in eliminating most differences between cohabitation and marriage. Nonetheless, they cannot always explain away all differences, as was seen with the unpartnered and women less likely to marry. Overall, however, the results suggest that in order to improve mental well-being, policy makers should focus on reducing the adverse effects of disadvantage in childhood and improving mental well-being in adolescence, rather than legislating incentives to marry in adulthood.

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Table 1. *Descriptive Statistics of Variables Included in the PSM Models*

|  |  |  |
| --- | --- | --- |
| Variable |  | Mean/percent  |
| Family background indicators |
| Region of birth | Scotland, Northern Ireland and North | 36.7 |
| Midlands and Wales | 22.7 |
| South West | 7.1 |
| South East and East | 33.5 |
| Social class at birth | V+IV unskilled and partly-skilled | 19.9 |
| III manual | 43.7 |
| III non manual | 15.2 |
| I + II managerial, technical, professional | 21.2 |
| Parent's marital status and timing of birth | not married | 5.4 |
| married prior to conception | 86.8 |
| married after conception | 7.8 |
| Age mother finished education | 14 years old or younger | 6.0 |
| 15 or 16 years old | 74.0 |
| 17 years old or older | 20.0 |
| Age of mother at first birth | <20 | 22.5 |
| 20-24 | 51.2 |
| 25 and over | 26.3 |
| Smoking behavior of mother during pregnancy | non smoker | 44.0 |
| stopped smoking before or during pregnancy | 17.9 |
| smoked during pregnancy | 38.1 |
| Respondent’s birth order | first child | 35.8 |
| second or next child | 64.2 |
| Parent’s place of birth | both parents born in the UK | 90.0 |
| at least one parent born outside the UK | 10.0 |
| Living with biological parents at age of 10 | no | 14.7 |
| yes | 85.3 |
| Housing tenure (age 10) | owner occupier | 67.4 |
| public rented | 26.4 |
| other | 6.2 |
| Educational aspirations and cognitive development |
| Respondent's plan to continue education  | no | 53.4 |
| yes | 33.7 |
| don't know | 12.9 |
| Math test score at age 10 | Math test score | 45.5(11.8) |
| Vocabulary Test score at age 16  | Standardized Vocabulary Test score | 0.1(1.0) |
| Psychological measures |
| Rutter behavior score | Index of behavior difficulties, derived using 19-item Rutter Behavior Scale questions | 4.1(3.8) |
| LAWSEQ | Scale of self-esteem with reference to teachers, peers and parents and consisted of 10 items | 15.2(3.4) |
| CARALOC | Locus of control scale, measures children's perceived achievement control, consisting of 19 items | 9.9(3.0) |
| Malaise score | Scale to measure signs of psychological distress or depression, based on Malaise Inventory | 9.0(5.3) |
| Norms and attitudes |
| Importance of religion in parental home | no religion | 9.6 |
| not important | 58.9 |
| quite important | 23.0 |
| very important | 8.6 |
| Importance of parental opinion | opinion of both parents important | 90.1 |
| opinion of only one parent important | 6.8 |
| opinion of none of the parents important | 3.1 |
| Nothing wrong with sex before marriage | agree fully | 61.0 |
| agree partly | 29.3 |
| disagree | 9.7 |

Table 2. *Mean Mental Well-being Scores by Partnership Status*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  Category | Fre-quency | Per-centage | Mean well-being | SD of well-being | 95% CI |
|  | **Men** |  |  |  |  |  |
| 1 | Currently not in partnership | 764 | 22.6 | 46.0 | 9.2 | 45.4-46.7 |
| Currently in partnership | 2620 | 77.4 | 49.9 | 7.7 | 49.6-50.2 |
| 2 | Currently cohabiting | 547 | 20.9 | 48.9 | 8.0 | 48.3-49.6 |
| Currently married | 2073 | 79.1 | 50.2 | 7.5 | 49.8-50.5 |
| 3 | Long lasting cohabitation | 406 | 16.8 | 48.5 | 8.1 | 47.7-49.3 |
| Long lasting marriage | 2011 | 83.2 | 50.1 | 7.5 | 49.8-50.4 |
| 4 | First and long lasting cohabitation | 255 | 14.6 | 48.4 | 7.9 | 47.4-49.3 |
| First and long lasting marriage | 1491 | 85.4 | 50.1 | 7.4 | 49.7-50.4 |
| 5 | Currently cohabiting with own child(ren) | 269 | 13.6 | 48.8 | 8.1 | 47.8-49.7 |
| Currently married with own child(ren) | 1708 | 86.4 | 50.0 | 7.4 | 49.7-50.4 |
| 6 | Long lasting cohabitation with own child(ren) | 244 | 12.6 | 48.6 | 7.9 | 47.6-49.6 |
| Long lasting marriage with own child(ren) | 1685 | 87.4 | 50.0 | 7.4 | 49.7-50.4 |
| 7 | First and long lasting cohab. with own child(ren) | 173 | 11.8 | 48.4 | 7.5 | 47.3-49.5 |
| First and long lasting marriage with own child(ren) | 1292 | 88.2 | 50.1 | 7.3 | 49.7-50.5 |
|  | **Women** |  |  |  |  |  |
| 1 | Currently not in partnership | 914 | 23.9 | 46.8 | 9.0 | 46.2-47.4 |
| Currently in partnership | 2905 | 76.1 | 50.0 | 8.2 | 49.7-50.3 |
| 2 | Currently cohabiting | 590 | 20.3 | 48.6 | 8.4 | 48-49.3 |
| Currently married | 2315 | 79.7 | 50.3 | 8.1 | 50-50.6 |
| 3 | Long lasting cohabitation | 432 | 16.1 | 48.4 | 8.4 | 47.6-49.1 |
| Long lasting marriage | 2252 | 83.9 | 50.3 | 8.1 | 50-50.6 |
| 4 | First and long lasting cohabitation | 261 | 13.9 | 48.2 | 8.0 | 47.2-49.1 |
| First and long lasting marriage | 1613 | 86.1 | 50.4 | 8.2 | 50-50.8 |
| 5 | Currently cohabiting with own child(ren) | 261 | 11.9 | 48.4 | 8.4 | 47.3-49.4 |
| Currently married with own child(ren) | 1926 | 88.1 | 50.3 | 8.2 | 49.9-50.7 |
| 6 | Long lasting cohabitation with own child(ren) | 238 | 11.2 | 48.5 | 8.4 | 47.4-49.5 |
| Long lasting marriage with own child(ren) | 1896 | 88.8 | 50.3 | 8.2 | 49.9-50.6 |
| 7 | First and long lasting cohab. with own child(ren) | 166 | 10.4 | 48.5 | 8.5 | 47.2-49.8 |
| First and long lasting marriage with own child(ren) | 1437 | 89.6 | 50.3 | 8.2 | 49.9-50.7 |

Source: own calculations with BCS70 data.

Table 3. *Matching Estimates of Partnership Status on Mental Well-being Scores at Age 42*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Un-matched difference | ATT  |  ATU |
|  | **Men** |  |  |  |  |  |  |
| 1 | Currently in partnership, among all respondents | 3.88 | \*\*\* | 2.98 | \*\*\* | 2.88 | \*\*\* |
|  | (0.33) |  | (0.45) |  | (0.40) |  |
| 2 | Currently married, among respondents in partnerships | 1.22 | \*\* | 0.64 |  | 0.54 |  |
|  | (0.37) |  | (0.48) |  | (0.43) |  |
| 3 | Currently married, among respondents in long lasting partnerships | 1.65 | \*\*\* | 1.03 |  | 0.93 |  |
|  | (0.41) |  | (0.54) |  | (0.51) |  |
| 4 | Currently married, among respondents in first and long lasting partnerships | 1.71 | \*\*\* | 1.00 |  | 1.17 |  |
|  | (0.50) |  | (0.68) |  | (0.59) |  |
| 5 | Currently married, among couples with own child(ren) | 1.29 | \* | 0.32 |  | 0.59 |  |
|  | (0.49) |  | (0.70) |  | (0.59) |  |
| 6 | Currently married, among long lasting couples with own child(ren) | 1.47 | \*\* | 0.47 |  | 0.78 |  |
|  | (0.51) |  | (0.73) |  | (0.61) |  |
| 7 | Currently married, among first and long lasting couples with own child(ren) | 1.64 | \*\* | 0.70 |  | 1.13 |  |
|  | (0.59) |  | (0.84) |  | (0.66) |  |
|  | **Women** |  |  |  |  |  |  |
| 1 | Currently in partnership, among all respondents | 3.15 | \*\*\* | 2.26 | \*\*\* | 2.31 | \*\*\* |
|  | (0.32) |  | (0.38) |  | (0.37) |  |
| 2 | Currently married, among respondents in partnerships | 1.66 | \*\*\* | 0.93 | \* | 1.03 | \* |
|  | (0.38) |  | (0.46) |  | (0.41) |  |
| 3 | Currently married, among respondents in long lasting partnerships | 1.94 | \*\*\* | 0.97 |  | 1.26 | \*\* |
|  | (0.43) |  | (0.54) |  | (0.47) |  |
| 4 | Currently married, among respondents in first and long lasting partnerships | 2.20 | \*\*\* | 0.87 |  | 1.39 | \* |
|  | (0.54) |  | (0.73) |  | (0.63) |  |
| 5 | Currently married, among couples with own child(ren) | 1.93 | \*\*\* | 0.65 |  | 1.30 | \* |
|  | (0.54) |  | (0.72) |  | (0.58) |  |
| 6 | Currently married, among long lasting couples with own child(ren) | 1.81 | \*\* | 0.55 |  | 1.17 |  |
|  | (0.57) |  | (0.70) |  | (0.60) |  |
| 7 | Currently married, among first and long lasting couples with own child(ren) | 1.78 | \*\* | 0.03 |  | 1.11 |  |
|  | (0.68) |  | (0.97) |  | (0.76) |  |

Notes: Numbers in parentheses are SEs. Two-tailed tests. \* P < .05; \*\* P < .01; \*\*\* P < .001.

Figure 1. Methodological Scheme Based on the British Cohort Survey 1970

