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Comparing the benefits of cohabitation and marriage for health in mid-life: Is the relationship similar across countries?

Brienna Perelli-Harris
Marta Styrc
Fenaba Addo
Stefanie Hoherz
Trude Lappegård
Sharon Sassler
Ann Evans

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ABSTRACT

Extensive research has found that marriage provides health benefits to individuals. The rise of cohabitation, however, raises questions about whether simply being in an intimate co-residential partnership conveys the same health benefits as marriage. Here we use OLS regression to compare differences between cohabitation and marriage with respect to self-rated health in mid-life, an understudied part of the lifecourse. We pay particular attention to selection mechanisms arising in childhood to investigate how early life conditions shape later life outcomes. We compare results in five countries with different social, economic, and policy contexts. Results show no differences in self-rated health between cohabiting and married people in Norway, Germany, and for Australian women. In the U.K, and U.S., and for Australian men, however, marriage is significantly associated with better health. Much of this association disappears when accounting for childhood disadvantage and union duration in the U.S., Australia, and for British women, but differences persist for British men. Our study indicates that early life conditions can be an important source of selection for explaining marriage benefits, and that policy makers should focus on reducing disadvantage in childhood rather than legislating incentives to marry in adulthood.

KEYWORDS

Cohabitation; marriage; health; cross-national comparisons.

EDITORIAL NOTE

Brienna Perelli-Harris is an Associate Professor of Demography at the University of Southampton and a member of the ESRC Centre for Population Change.

Marta Styrc is a former Research Fellow in Demography at the University of Southampton and an associate of the ESRC Centre for Population Change.

Fenaba Addo is an Assistant Professor of Consumer Science at the University of Wisconsin.

Stefanie Hoherz is a Research Fellow for the ESRC Centre for Population Change at the University of Southampton.

Trude Lappegård is Professor of Sociology, University of Oslo.

Sharon Sassler is a Professor in Social Demography at Cornell University.

Ann Evans is Associate Professor at the Australian National University.

Corresponding author: Dr Brienna Perelli-Harris, B.G.Perelli-Harris@soton.ac.uk.

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COMPARING THE BENEFITS OF COHABITATION AND MARRIAGE FOR HEALTH IN MID-LIFE: IS THE RELATIONSHIP SIMILAR ACROSS COUNTRIES?

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1. INTRODUCTION

Extensive research has found that marriage provides health benefits to individuals (see Waite and Gallagher 2002, Wood et al 2007, Hughes and Waite 2009, Umberson 1992, Williams et al 2011, Robles et al 2014). Many prior studies, however, have compared the married with the unmarried, without specifically analyzing differences between cohabitation and marriage. The recent increase in cohabitation and its new prominence as a normative partnership type raises questions about whether cohabitation provides the same health benefits as marriage. Cohabitation has taken on many of the functions of marriage, for example, providing intimacy, support, social networks, and a setting for having and raising children (Cherlin 2004, Perelli-Harris et al 2012). As a result, cohabitation may provide many of the same advantages to health that marriage does, resulting in similar outcomes.

Whether marriage and cohabitation provide similar benefits may depend on the context that shapes the meaning of cohabitation and marriage. Here we study five countries that have recently experienced increases in cohabitation but vary across welfare-state policies, legal approaches to cohabitation, and social norms: the United States, the United Kingdom, Australia, Norway, and Germany. Previous research has suggested that the meaning of cohabitation, and the social emphasis on marriage, differs across these countries (Perelli-Harris et al 2014, Hiekel et al 2014, Smock et al 2005, Miller et al 2011). Differences are to some degree associated with the prevalence of cohabitation (Heuveline and Timberlake 2004), but distinct social, political, and cultural contexts also shape views on cohabitation and partnership behavior (Perelli-Harris et al 2014, Lappegard and Noack 2015, Berrington et al 2015). The U.S. and U.K. have a similar history of early nonmarital childbearing, as well as a negative

educational gradient of cohabitation, suggesting that cohabitation is associated with disadvantage (Raymo et al 2015, Perelli-Harris et al 2010). These countries also have welfare systems that employ targeted, means-tested benefits for single mothers (Brady and Burroway 2012) and few laws regulating cohabitation (Bowman 2010, Barlow 2014). Norway's social-democratic welfare-state, which focuses on gender equality and individual autonomy and regulates cohabitation, may have facilitated the increase in cohabitation (Noack 2001). Norway has a much longer history of cohabitation; nearly 90% of unions that eventually have children start with cohabitation (Perelli-Harris et al 2012). Australia falls in between the two types of regimes; although it has many similarities with the other English-speaking countries, it tends to have more liberal social policies and has made greater strides towards regulating cohabitation (Hewitt and Baxter 2012). Germany is also unique with laws and policies that promote marriage (Perelli-Harris and Sanchez Gassen 2012), but distinct regional differences: eastern Germany has a long history of cohabitation and very high cohabitation rates, while western Germany's male breadwinner model has kept cohabitation lower (Hiekel et al 2015, Kreyenfeld et al 2011).

Many studies have examined the correlates of cohabitation, generally finding that background characteristics, particularly those developed in childhood or based on family of origin, predict entrance into cohabitation. Across Europe and the U.S., parents' socio-economic background is important for union formation (Wiik et al 2009, Berrington and Diamond 2000) and the experience of parental divorce is linked to entering cohabitation (Perelli-Harris et al 2017, Liefbroer and Elzinga 2012, Wolfinger 2005). Nonetheless, the social and legal context of a country may influence the degree to which marriage is more or less associated with childhood conditions. These selection

mechanisms may in turn attenuate the subsequent association between union type and health. The selection hypothesis posits that healthier people with greater socio-economic resources and childhood stability are more likely to marry, and in some countries these mechanisms may play an important role in eliminating differences between cohabitation and marriage.

Here we use OLS regression to investigate whether men and women in marital unions have significantly better self-rated health in mid-life than those in cohabiting unions. We study mid-life, because cohabitation in this age-range is understudied, especially cross-nationally, and most individuals have already made decisions about whether to marry even if they postponed marriage. In addition, mid-life is when health disparities become more pronounced (Pearlin et al 2005). We also examine whether the association between partnership type and health differs by gender across countries. We are interested in whether conditions before partnership formation reduce the association between partnership type and health; i.e. factors and characteristics of childhood may select people into different types of unions. In addition, we include mediator events, which occur in adulthood and may affect health, for example experience of union dissolution (Hughes and Waite 2009) and number of children (Read et al 2011). While we acknowledge that many other factors may influence health, we are primarily interested in examining variables exogenous to partnership formation, and therefore our primary focus is on controlling for conditions that occur in childhood.

2. BACKGROUND

2.1. BENEFITS TO COHABITATION AND MARRIAGE

Living in an intimate partnership, either marriage or cohabitation, may provide advantages that could directly influence health. By living together, couples can benefit

from shared resources, sexual and emotional intimacy, companionship, and daily interaction (Waite 1995). Couples who live together often provide each other with care and monitor each other's health behaviors, for example reminding each other to go the doctor or maintain a healthy lifestyle (Umberson et al 2010, Musick and Bumpass 2012). Through social ties, partners link each other to broader networks, which can instil a sense of kinship and responsibility (Umberson and Montez 2010). Although poor-quality relationships may result in strain and stress (Umberson et al 2006), in general co-residential relationships provide positive psychosocial benefits by offering social support and providing symbolic meaning to one's life (Umberson and Montez 2010). Hence, living in a partnership regardless of its type may be what is most important to health.

On the other hand, the official act of marriage may convey unique benefits to health. With a public vow and a legal contract, marriage usually signals a higher commitment between the partners -- to family, friends, and strangers, but also to each other (Wiik et al 2009, Berrington et al 2015, Cherlin 2004). Married people may have a stronger sense of the long-term prospects of their relationship, since marriage is usually intended for life. Those outside the relationship may find it easier to understand the spouses' commitment, and therefore provide greater social support (Marcussen 2005). Marriage's "enforceable trust" (Cherlin 2004) may persuade couples to work harder on their relationships, especially during stressful periods. In addition, marriage may provide a sense of security and well-being. Focus group respondents throughout Europe and Australia mentioned dimensions of marital security that generally did not apply to cohabitation, for example emotional reassurance; financial stability; security for their children; and the comfort of not being alone in old age (Perelli-Harris et al

2014). This sense of security may be bolstered by the additional level of legal protection that marriage provides in some countries (Perelli-Harris and Sanchez Gassen 2012). Thus, the higher commitment of marriage may reduce life uncertainty and increase general well-being, which could then have positive effects on health (Liu and Umberson 2008).

2.2. UNION DURATION, DIVORCE, AND CHILDBEARING

Because partnership trajectories have become more complex, examining current partnership status alone may not reflect the full benefits that partnerships can convey. In particular, union duration may be most important: longer union duration often signals deeper relationship commitment, investments (Lyngstad et al 2011) and better relationship quality, which is associated with a range of physical health outcomes (Robles et al 2014). Staying married may also matter – the experience of divorce can be stressful with long-term ramifications for health (Hughes and Waite 2009). Finally, children can signal investment in a relationship (Perelli-Harris 2014, Berrington et al 2015) and positively influence future health, since parents may adopt healthier behaviors for the sake of their children (Hank 2010, Read et al 2011).

It is important to note that the positive health benefits to cohabiting or marital unions may have diminishing returns, especially over the long-term. Men and women may stop caring as much about their physical attractiveness or reduce their physical activity once they have found a partner (Rapp and Schneider 2008). In addition, parenthood can contribute to weight gain for both men and women, which could lead to poorer health (Umberson et al 2011); some studies have found that higher fertility is associated with poor health outcomes, possibly related to role overload and stress (Read

et al 2011). Thus, while we control for union duration, prior divorce, and children, we acknowledge that the effect of the controls may go either way.

2.3. FAMILY BACKGROUND AND FACTORS IN CHILDHOOD

A positive association between marriage and better health may not indicate a causal relationship, but instead be the result of selection; individual characteristics and prior experiences select healthier people into marriage. In this paper, we focus on selection mechanisms that influence partnership choices before entrance into union, in particular parental socio-economic status and family structure in childhood. The experience of childhood adversity may influence both adult relationships and future health through the accumulation of disadvantage and stress over the life course (Hayward and Gorman 2004, Umberson et al 2014). In addition, childhood may be a sensitive period during which significant stress or adversity triggers psychological or physiological reactions leading to chronic disease and/or life-long poor health (Umberson et al 2014, Haas 2008). Controlling for childhood conditions before entrance into adulthood may be sufficient for explaining differences in the association between marital status and health.

In many countries, father's low social class and childhood poverty are associated with poor adult health (Luo and Waite 2005, Kuh et al 2004, Haas 2008). Childhood deprivation may also result in fewer resources and skills in adulthood, which may hamper individuals from finding a suitable marriage partner or achieving the perceived economic bar necessary for marriage, leading them to choose cohabitation instead (Oppenheimer 2003, Berrington and Diamond 2000, Smock 2000). Parental divorce may also be an important selection characteristic for cohabitation. Those who

experienced parental divorce may be jaded with the institution of marriage or not want to risk the financial, social, and emotional costs of divorce (Liefbroer and Elizinga 2012, Miler et al., 2011, Perelli-Harris et al 2015). In addition, those whose parents divorced may have lower well-being in adulthood (Kuh et al 2004), which may be one of the underlying reasons why cohabitors have worse health than married individuals.

2.4. GENDER DIFFERENCES

Men and women may receive different benefits from being in a cohabiting partnership or marriage (Liu and Umberson 2008). Previous studies have argued that marriage provides men with more social support and control of their behavior, thereby positively influencing their health. If men benefit more from social and emotional support and sexual intimacy, then cohabitation may provide similar advantages to marriage. On the other hand, the public vow of marriage may still reflect the social control provided by the institution of marriage, which could exert a stronger influence on men's health behaviors. Women supposedly benefit from marriage because of higher economic resources that can keep them healthy (Waite 1995). If women benefit more from the financial security of a partnership, they may benefit more from marriage, especially because many women reduce employment hours and become more finically dependent on their spouses around the time of childbearing. Thus, the marital contract may provide women with greater stability and have more long-term rewards to health than cohabitation.

2.5. DIFFERENCES ACROSS COUNTRIES

Cultural, economic, and legal factors have produced differential rates of decline in marriage and increase in cohabitation, and may also result in different associations

between marriage and well-being. Social and political developments alter historical kinship systems and produce ideational change that leads to the practice of new behaviors (Lesthaeghe and Surkyn 2002). Depending on starting conditions and subsequent social change, the diffusion of new behaviors moves quickly through some societies, but takes much longer in others. Policy developments may have exacerbated the increase in cohabitation in some countries, although the increase in cohabitation may also have prompted changes in legislation. Some welfare states recognize cohabitation as an alternative to marriage, providing many of the same rights and responsibilities, for example similar tax benefits, access to courts upon union dissolution, or parental rights to child custody (Perelli-Harris and Sanchez Gassen 2012). The welfare state may also influence partnership decisions. On the one hand, single mother benefits and tax penalties for low-income married couples may encourage women to stay unmarried in order to maintain their eligibility for benefits (Michelmore 2016). On the other hand, tax incentives that promote a breadwinner model may encourage people to marry. Thus, policies and laws may influence people's decisions about marriage and cohabitation. Below, we discuss how cultural meanings of marriage, selection effects, and policies could produce a different association between marriage, cohabitation and health in each context.

Marriage in the U.S. has a special status, especially compared to other countries where cohabitation is often perceived as equivalent to marriage (Cherlin 2009). Although cohabitation has increased rapidly over the past decades, the majority of those born in the 1970s had married by their 40s (Kennedy and Bumpass 2008). Those who cohabit instead of marrying are usually the most disadvantaged; cohabitation in the U.S. is highly selective of the poor and less educated (Kennedy and Bumpass 2008) and

associated with poor relationship quality (Brown and Booth 1996), depression (Brown 2000), physical violence and abuse (Kenney and McLanahan 2006). Many studies show strong health benefits to marriage (Waite and Gallagher 2000), although most do not distinguish between those who are cohabiting and single. Nonetheless, a recent study that does compare partnership types found that after accounting for unobserved heterogeneity, differences between the relationship types were small (Musick and Bumpass 2012). For the most part, US law does not recognize cohabitation; no states have passed legislation relating to unmarried partners (Bowman 2010). Welfare state policies, however, tend to privilege low-income single mothers, and single-mother benefits may in fact discourage marriage (Lichter et al 2004). All in all, the strong association between cohabitation and disadvantage in the U.S., combined with a context that legally and socially favors marriage, may result in a negative association between cohabitation and health. After controlling for background characteristics, however we expect that the difference in self-rated health for cohabiting and married individuals may disappear.

The situation in the UK is similar, although the emphasis on marriage as the utmost ideal is less strident. Since the 1970s, the prevalence and duration of cohabitation in the UK has been increasing rapidly. Around 84% of those married in 2004-07 had previously lived together before marrying, usually for around four years (Beaujouan and Ni Bhrolchain 2011). Long-term cohabitation, however, is less common; only 10% of cohabiting couples were still together after 10 years; about half of the remainder married, and 40% separated (Beaujouan and Ni Bhrolchain 2011). Thus, while cohabitation is socially acceptable and the majority of the population perceives few differences between cohabitation and marriage (Duncan and Philips

2008), marriage is generally considered a more committed union and preferred by most (Berrington et al 2015). The legal situation in England and Wales still reflects this preference for marriage; cohabiting couples are unable to access family courts upon union dissolution and have to pay inheritance tax when one partner dies (Perelli-Harris and Sanchez Gassen 2012). Given the negative educational gradient for having a birth within cohabitation (Perelli-Harris et al 2010), the lack of legal protection is disproportionately likely to influence those who are less educated. Single-mother benefits in the UK, on the other hand, may not only discourage marriage, but also co-residential partnerships; qualitative research revealed that women on benefits were aware of how many nights their partner could spend the night before losing their benefits (Berrington et al 2015). Overall, we expect that as in the U.S, cohabitation in the UK will be associated with lower self-rated health, but controlling for childhood background characteristics will eliminate most differences between cohabitation and marriage.

In many ways, Australia has had the same Anglo-Saxon development of family behaviors as the U.S. and U.K., but recently some of the legislative and social developments may have produced differences. As in the U.K. and U.S., the majority of first co-residential unions start with cohabitation (Evans 2013), which is widely accepted (Evans and Gray 2005, Qu and Weston 2008). Nonetheless, qualitative research has continued to demonstrate the importance of marriage, especially as the pinnacle of live-in relationships (Carmichael and Whittaker 2007). Recently, studies have found a weak social selection into marriage; highly educated women are more likely to be married than women with lower levels of education (Heard, 2011, Evans 2015, Hewitt and Baxter 2012). Throughout the 1980s and 90s, lawmakers changed

policies to provide cohabiting couples the same rights and responsibilities as married couples. In 2009, the Family Law Act was amended to give couples living together for 2 years or having a child together the same access to the courts in relation to property and spousal maintenance on separation (Family Law Amendment (De facto Financial Matters and Other Measures) Act 2008). Access to government welfare payments, on the other hand, is calculated based on household income, which may discourage some couples from moving in together. Thus, although there is weak selection into cohabitation and a slight social preference for marriage, the legal and social acceptability of cohabitation in Australia leads us to expect few differences in the mid-life health of cohabiting and married individuals.

Cohabitation in Norway developed more rapidly and extensively than in the English-speaking countries. Among men and women born around 1970, 90% of all co-residential unions started with cohabitation (Wiik and Dommermuth 2011), and almost a quarter of the total population (aged 18-55) are currently cohabiting (Noack et al 2014). Research has shown that childbearing within cohabitation had a negative educational gradient (Perelli-Harris et al 2010), but now that more births occur within cohabitation than marriage, selection effects are diminishing. Over the past few decades, the legal system gradually provided cohabitors with similar rights to married couples, particularly those having children together, and more recently those that have been in long-term unions. The focus shifted to provide cohabitors with inheritance rights, but unlike married couples, cohabitors still need to have a will or cohabitation contract to inherit from each other (Noack 2001). Nonetheless, although cohabitation is generally considered equal to marriage, socially and legally, many still prefer marriage, especially as a way of formalizing the commitment of parenthood or

expressing the ultimate romantic gesture towards each other (Lappegard and Noack 2015). Thus, we expect that cohabiting and married individuals will be similar, especially with respect to self-rated health, but marriage in Norway is unlikely to disappear anytime soon (Lappegard and Noack 2015).

Finally, in Germany, as in the other countries, cohabitation has also recently increased. Unlike the other countries in this study, social policies and taxation law continue to favor marriage over cohabitation; the advantages of tax splitting and sharing the health insurance of the main earner are limited to married couples only (Konietzka and Kreyenfeld 2002; Perelli-Harris and Sanchez Gassen 2012). Moreover, Germany was one of the last countries in Europe to introduce joint parental responsibility for children of unmarried parents. Despite shared institutional and political conditions since reunification in 1990 and the alignment of other family behaviors, such as fertility and divorce, the eastern and western parts of the country still differ considerably with respect to prevalence and meaning of cohabitation (Klaerner 2015, Hiekel et al 2015). Differences are especially apparent for childbearing in cohabitation: of those born in the 1971-73 cohort, by 2009, 31 per cent of western German mothers had their first birth out of wedlock while this was the case for 61 per cent of eastern German mothers (Kreyenfeld et al 2011). In both parts of the country, a higher level of education increases the likelihood of being married when the first child is born (Perelli-Harris et al 2010). People who live together in cohabitation or marriage are also similar for some health behaviors, but differ from those who do not live with their partner or are single. For instance, those living with a partner have a reduced probability of exercising (Rapp and Schneider 2013). Overall, we expect that cohabitation in Germany will be associated with lower self-rated health due to social and legal preferences for marriage.

However, because of eastern Germany's impact, we expect the differences in married and cohabiting individuals' health to be relatively small and to disappear when controlling for background characteristics.

3. DATA AND METHODS

3.1. DATA

To examine the effect of partnership experiences on health in mid-life, we employ five nationally representative longitudinal data sets: the British Cohort Study 1970 (BCS70) for the UK, the National Longitudinal Survey of Youth 1979 (NLSY79) for the U.S., the Household, Income and Labour Dynamics in Australia (HILDA) for Australia, the Generations and Gender Survey (GGS) for Norway, and the Socio-Economic Panel (SOEP) for Germany. The British Cohort Study followed children born in the UK in a single week of 1970 and interviewed them or their parents regularly until age 42. The NLSY79 is also a birth cohort survey following a representative sample of individuals born between 1957 and 1964. In 1979, the survey participants were 14-22 years old and they were interviewed annually through to 1994 and biennially since. HILDA is a nationally representative household-based longitudinal survey. The survey started in 2001 and annually interviews all adults over 15 years old in the selected households. The sample includes new households when household members leave the original household (i.e. through children leaving home, divorce or separation). The Norwegian GGS is a nationally representative cross-sectional survey of respondents aged 18-79 in 2007. It combines information obtained during telephone interviews and a self-administered questionnaire (SAQ) with data from administrative records. It collected complete partnership histories from the interviews, childbearing histories from the administrative register and childhood background characteristics through an extra

battery of questions in the SAQ. The SOEP is a representative longitudinal study of private households which interviews all members of the household (from the age of 15) annually. It started 1984 in West Germany and 1990 in the former East Germany. Individuals who left the household were followed and all members of the new households were interviewed.

Because we are interested in mid-life outcomes, we selected respondents in their late 30s to 40s, depending on sample size. The analytic sample for Britain is comprised of people aged 42 in 2012, the latest round of the BCS70; the US sample is comprised of people aged 39-49 (surveys conducted in 1998-2006); the Australian and German sample includes people 38-48 in 2013; and for Norway respondents were aged 38-50 in 2007. Despite slightly different designs, all five surveys provided information on the partnership histories of respondents, self-rated health in mid-life, and childhood background characteristics. Except for the BCS70, the surveys asked questions about childhood retrospectively, although for the US, the time elapsed since childhood until age 14-22 when the initial survey was conducted was relatively short. The partnership histories in the BCS70 were first collected when survey participants were 34 and updated at following waves. In the NLSY79 the partnership histories were collected prospectively at each wave. In HILDA the partnership histories were collected retrospectively at first wave in 2001 and updated in the following waves. In the Norwegian GGS all information about partnerships was retrieved retrospectively in 2007. In the SOEP marriage histories and, since 2007, partnership histories, were collected retrospectively when respondents entered the survey and updated in subsequent waves. Because we were specifically interested in comparing cohabiting and married individuals, we only selected those in a partnership, which was 65% of the

sample in the U.S. (N=5481), 76% in the UK (N=6675), 70% in Australia (N=1970), 74% in Norway (N=2052), and 79% in Germany (N=3658).

3.2. MEASURES

3.2.1. DEPENDENT VARIABLE

Our dependent variable is self-rated health. Self-rated health is associated with current and future physical and mental health conditions, and it is recognized as a reliable and valid indicator of general health (Hardy et al 2014). In all surveys, health is self-assessed and measured with a single question ("In general, would you say your health is") on a five-level scale with responses: 1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, 5 = *excellent*. The responses for all countries were originally in reverse order but were recoded so that higher values denote better health. Because self-rated health has context-specific meanings (Hardy et al 2014), we do not directly compare measures across countries, but keep all analyses specific to each country.

3.2.2. INDEPENDENT VARIABLES.

In order to account for missing data on independent variables, we followed standardized procedures for multiple imputation using the mi impute command in Stata 13.0. The process predicts values on missing data using an iterative method that bases predictions on random draws from the posterior distributions of parameters observed in the sample (Allison 2001).

3.2.2.1. PARTNERSHIP TYPE.

Our main variable of interest is whether respondents reported currently being in a cohabiting or marital union. For the NLSY79, union status was reported during the age 40 health module assessed between1998-2006 when respondents were 39-49 years old;

for the BCS70 union status was measured in the latest wave in 2012 when respondents were 42 years old; for HILDA union status was measured in 2013; for the Norwegian GGS union status was reported in 2007; and for the SOEP union status was measured in 2013.

3.2.2.2. CHILDHOOD CHARACTERISTICS.

Based on findings from previous literature (Berrington and Diamond 2000; Teachman 2003), we distinguished four dimensions important both for union formation behavior and well-being outcomes: region or current place of residence; ethnicity; family structure in childhood; and parental socio-economic status. We aimed to harmonize the variables covering each of the dimensions; however this was not always possible, either because some variables were not available for all countries, or because some variables were relevant only for some countries, such as race and ethnicity. Because our goal was to create analyses appropriate for each country, we decided that this was the most valid approach. The categories for each of the variables are shown in the Appendix A (further descriptives for each variable available on request).

3.2.2.3. FAMILY FORMATION EXPERIENCE.

Duration of the current union, whether current union was the first or later union, and the number of children can also affect self-rated health. We included measures of family formation as controls in the regression models. Current union duration was entered as a quadratic term to allow for non-linear duration dependence, and because it resulted in better model fit than a linear specification. Having experienced a divorce was entered as a binary indicator; and number of children distinguished between having no children,

one child, two children, and three or more children, which can capture the non-linearity (e.g. J or U-shaped) of the effect of having children on health (Read et al 2011).

3.3. ANALYTICAL APPROACH

We estimate the relationship between current union status and mid-life health using OLS regression methods. We also ran Propensity Score Models to see if results varied by the propensity to be in a cohabiting or marital union, but the PSM results did not differ from the OLS models, and OLS provides the opportunity to include mediator variables such as prior union dissolution and number of children. We found nearly identical results using ordered logit models, but present OLS estimates because they provide the easiest comparison across countries; categorical or logit models would require arbitrary cut-off points and re-coding. We regress the outcome variable on the indicator of union type and different sets of controls including age of the respondent, selection factors linked to childhood experience, and the characteristics of his or her family formation biography. Our analytical approach is presented graphically in Figure 1.

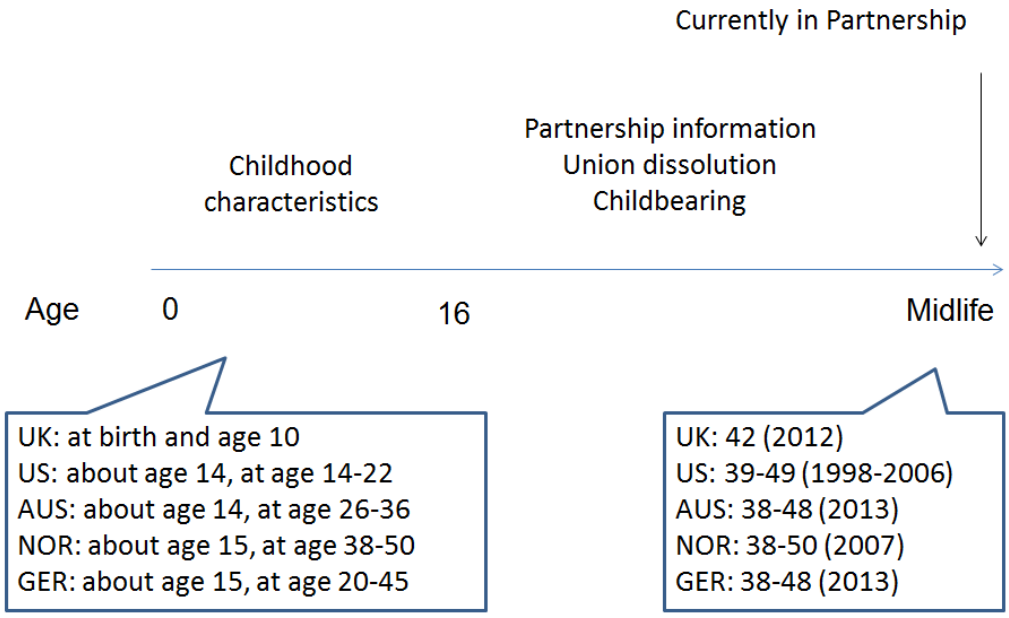

Figure 1: Analytic approach
Notes: In brackets: the year when the outcome variable was collected.

We apply a sequential approach by first running a regression that includes only the union type and respondent's age to estimate the difference between married and cohabiting individuals net of the age effect, since health tends to deteriorate over age. We then add a set of covariates describing childhood characteristics to control for selection mechanisms into a particular type of union. The childhood characteristics are exogenous, because they refer to the time before respondents started their union formation experience. Finally we add a set of controls that capture the respondent's experience of family formation. We chose characteristics that are potentially linked to self-rated health in mid-life: duration of the current union, experience of union separation, and number of children. Those characteristics are not strictly exogenous and may reflect the pathway through which marriage and cohabitation influence self-rated health. The sequential addition of the control variables allows us to observe how the variables mediate the differences in self-rated health between married and cohabiting respondents.

4. RESULTS

Table 1 compares the mean self-rated health of men and women by current partnership type for those currently in a partnership in mid-life across all five countries. The percent of men and women cohabitating ranges from about 10% of American women to about 22% of British men. Some of the differences in magnitude may be due to the different years in which the surveys were conducted, as well as different age ranges. Confidence intervals indicate that in the UK and the U.S. mean self-rated health scores are higher for married men and women compared to cohabiting men and women. German married women also have higher self-rated health than their cohabiting counterparts. However, mean self-rated health does not differ significantly by union type in Australia and Norway for either men or women.

		US		UK		Australia		Norway		Germany	
		percent (n)	mean (CI95%)	percent (n)	mean (CI95%)	percent (n)	mean (CI95%)	percent (n)	mean (CI95%)	percent (n)	mean (CI95%)
Men	Married	88% (2428)	3.79 (3.75,3.83)	78% (2486)	3.72 (3.68,3.76)	85% (803)	3.46 (3.40,3.53)	84% (775)	3.79 (3.71,3.86)	86% (1500)	3.61 (3.56,3.65)
	Cohabiting	12% (322)	3.57 (3.46,3.68)	22% (701)	3.52 (3.44,3.59)	15% (141)	3.27 (3.11,3.43)	16% (147)	3.69 (3.52,3.87)	14% (241)	3.51 (3.40,3.62)
Women	Married	90% (2506)	3.71 (3.67,3.75)	79% (2694)	3.74 (3.70,3.78)	87% (908)	3.52 (3.46,3.59)	85% (953)	3.72 (3.65,3.79)	88% (1642)	3.55 (3.50,3.59)
	Cohabiting	10% (274)	3.46 (3.34,3.59)	21% (705)	3.59 (3.51,3.67)	13% (139)	3.54 (3.37,3.71)	15% (173)	3.75 (3.58,3.92)	12% (231)	3.47 (3.35,3.59)

Table 1: Percent married or cohabiting and mean self-rated health by current union status

Note: Self-rated heath ranges from 1 to 5 with 5 being 'excellent'.

Source: Own calculations of NLSY79, BCS70, HILDA, GGS, and SOEP

Table 2 summarizes the results of the Ordinary Least-Squares models for self-rated health by gender, showing the coefficients that indicate whether an individual was cohabiting or married at the time of the most recent interview. (Appendix A presents the full models and each covariate separately for each country). The baseline model controls for age in the US (39-49), Norway (38-50), Australia and Germany (38-48); in the UK all respondents were age 42 at the time of the survey. Each subsequent model includes an additional set of control variables (see Appendix A for specific controls included in each country). In Norway, cohabiting and married men and women reported no significant differences in self-rated health at mid-life, supporting our hypothesis that differences by union type would be minimal in these countries. The results are the same in Germany: cohabitors and married men and women report no significant health differences. Unfortunately, it was not possible to perform separate regional analyses: the number of women in eastern Germany was too small and some variables were missing. However, when we restricted the analysis to western Germany the results were similar to those for Australia: cohabiting men had significantly worse self-rated health than married men, and differences were eliminated when controlling for the number of children; western German women showed no significant differences in self-rated health by union status. In order to keep the analyses consistent between countries we only show the results for Germany as a whole and control for region of birth.

	Controls	Norway	Germany	US	UK[a]	Australia
Men	Age	0.11	0.11	0.21***	0.21***	0.22*
		(0.10)	(0.06)	(0.06)	(0.04)	(0.09)
	Age, childhood characteristics	0.08	0.10	0.14*	0.16***	0.15
		(0.10)	(0.06)	(0.06)	(0.04)	(0.09)
	Age, childhood characteristics, union duration squared	0.06	0.12	0.09	0.17***	0.09
		(0.10)	(0.07)	(0.07)	(0.05)	(0.09)
	Age, childhood characteristics, union duration squared, previous divorce	0.05	0.12	0.08	0.17***	0.09
		(0.10)	(0.07)	(0.07)	(0.05)	(0.10)
	Age, childhood characteristics, union duration squared, previous divorce, number of own children	0.04	0.10	0.08	0.17***	0.09
		(0.10)	(0.07)	(0.07)	(0.05)	(0.10)
Women	Age	-0.01	0.09	0.25***	0.15***	0.01
		(0.09)	(0.06)	(0.06)	(0.04)	(0.09)
	Age, childhood characteristics	-0.10	0.07	0.15*	0.11*	-0.03
		(0.09)	(0.06)	(0.06)	(0.04)	(0.09)
	Age, childhood characteristics, union duration squared	-0.10	0.09	0.10	0.01	-0.07
		(0.10)	(0.07)	(0.07)	(0.05)	(0.09)
	Age, childhood characteristics, union duration squared, previous divorce	-0.09	0.11	0.09	0.01	-0.07
		(0.10)	(0.07)	(0.07)	(0.05)	(0.10)
	Age, childhood characteristics, union duration squared, previous divorce, number of own children	-0.11	0.08	0.09	-0.00	-0.06
		(0.10)	(0.07)	(0.07)	(0.05)	(0.10)

Table 2: Effect of currently married versus currently cohabiting on self-rated health (standard errors in parentheses). Full models shown in Appendix A.

Note: * p<0.05, **<0.01, *** p<0.001
a - controlling for age not applicable in the UK because all respondents are age 42

In the English-speaking countries differences between cohabiting and married individuals were more apparent, depending on gender and controls. Table 2 shows that in the US, cohabiting men and women had significantly lower self-rated health scores compared to married men and women when only age was taken into account

(significant at the .001 level). The next row shows that magnitude and significance level declined when childhood characteristics (region and ethnicity, parents' socio-economic status, and family structure) were included (p-value =.05), suggesting that childhood conditions are an important selection mechanism in the U.S. Including union duration reduced differences to non-significance, indicating that long-term cohabiting unions may be providing many of the same social support benefits to health as marital unions. Controlling for divorce reduced differences slightly more, suggesting that the experience of divorce, which is more likely to apply to cohabitors who repartnered, is important for mediating the association between union type and self-rated health, possibly because the effects of divorce have long-term consequences for health (Hughes and Waite 2009). Number of children, on the other hand, did not seem to reduce partnership differentials further.

The results for the UK are somewhat similar to those of the U.S.: without controls, cohabiting men and women were significantly different from married men and women (p-value=.001) and controlling for childhood characteristics reduced the magnitude of the effect. As in the U.S., including union duration in the models eliminated significant differences between cohabitation and marriage for British women; however, union duration did not reduce differences in significance levels for British men and even increased the magnitude slightly. Including controls for prior union and children also did not reduce the magnitude or significance level of the difference between cohabiting and married men in the U.K. These results suggest that cohabiting men continue to be different from married men due to unobserved factors that influence health.

The results for Australia also showed gender differences, with Australian men similar to American men, and Australian women similar to Norwegian women. As in the U.S. and UK, cohabiting men in Australia had significantly worse self-rated health than married men when only controlling for age. When childhood characteristics were included, the differences became insignificant, although the lack of significance may be due to small sample size since the magnitude of the coefficient was similar to that in the US and UK. Further controls for union duration, previous union, and children reduced differences further, as in the U.S. Australian women, on the other hand, showed no significant differences in self-rated health for cohabiting and married women, and after controls, the magnitude of the coefficients was even negative, hinting that cohabiting women may have better health than married women, although the lack of significance overall indicated no major differences.

5. DISCUSSION

Cohabitation has become a normative living arrangement in many countries, raising questions about whether it provides the same health benefits as marriage. Here we examine whether the association between cohabitation and self-rated health is the same as for marriage. Taking a lifecourse approach, we examine partnership status in mid-life, but pay particular attention to the role of early life conditions in attenuating any association between partnership and self-rated health. Our study finds that differences between cohabitation and marriage strongly depend on context and gender, as well as the childhood background characteristics that select individuals into a particular type of union, the length of the union, and number of children.

First, we find striking differences across countries. Men and women in Norway and Germany have similar levels of self-rated health, regardless of whether they are cohabiting or married in mid-life. This result was expected in Norway, a country with a long history of cohabitation, a focus on gender equal policies, and a movement towards legally equalizing cohabitation and marriage (Perelli-Harris and Sanchez Gassen 2012) as well as a country with high levels of social equality. Note, however, that the majority of survey respondents in this age range were married by the time of the survey, indicating that those who were cohabiting in mid-life may still be selective. Qualitative research has revealed that although Norwegians tend to think that cohabitation and marriage are indistinguishable, and parents do not necessarily need to marry when they have children, most people eventually marry for symbolic or romantic reasons (Lappegard and Noack 2015). Thus, although cohabitation may not be associated with lower self-rated health in Norway, cohabitors may differ from married people along other dimensions.

The results for Germany were not expected, given the German state's privileging of the marital breadwinner model. However, the similarities may partly result from the inclusion of eastern Germany, where the status of cohabitation is more accepted as an alternative to marriage than in western Germany (Hiekel et al. 2015, Klärner 2015). Models restricted to Western Germany only did show some differences between cohabitation and marriage for men. Nonetheless, on the whole, our findings corroborate recent research showing similarities in health-related behavior between cohabiting and married people in Germany; although some of the studies show positive health outcomes, for example declines in smoking (Klein et al 2013), and others negative, for example reduced physical exercise and increased body mass index (Rapp

and Schneider 2013, Klein et al 2013). Thus, in Germany simply being in a partnership may be most important for health, not the type of partnership.

In the English-speaking countries, however, we find that marriage is strongly associated with benefits to health relative to cohabitation, except for Australian women. Our results corroborate previous studies which find a strong association between marriage and positive health outcomes in these countries (e.g. Liu and Umberson 2008, Grundy and Tomassini 2010). The countries share a similar cultural background and history of means-tested welfare benefits (Brady and Burroway 2012), and marriage tends to have a privileged status (Cherlin 2009, Berrington et al 2015, Perelli-Harris et al 2014). Thus, it is not surprising that marriage appears to provide greater benefits. However, the findings are not necessarily the same for men and women; the Australian and UK results suggest that the association between marriage and health can vary by gender, as found in other studies (Liu and Umberson 2008). In Australia, any economic benefits that may have positively affected married women's health appear to have diminished, while health benefits to marriage for men seem to remain, at least before additional controls. In the UK, marriage continues to have a stronger association with health than cohabitation, as discussed below.

Our study also demonstrates that the role of early life conditions can be key to explaining differences between marriage and cohabitation. Controlling for a range of factors, such as family structure in childhood and parental socio-economic status, substantially reduced differences between marriage and cohabitation in the U.S. and U.K., and eliminated differences for Australian men, although the magnitude was still similar to that in the U.S. These results suggest that exogenous mechanisms that select

individuals into cohabitation or marriage play an important role in producing the differential association between partnership and health. Nonetheless, differences between partnership types remained significant in the U.S. and the U.K., suggesting that the background characteristics we investigated could be insufficient; other selection mechanisms such as poor health, self-esteem, or school performance in childhood may be more likely to eliminate differences. Indeed, another study using the BCS70 found that including childhood educational aspirations and psychological attributes eliminated differences in mental well-being by partnership type (Perelli-Harris and Styrc forthcoming). Hence, further research is needed to better understand the source of selection in these countries.

Characteristics of the union, particularly its length, did eliminate differences for American men and women and British women: the longer the union, the more likely health differentials disappeared. Although sample size shrinks for longer cohabiting unions, which may be responsible for the non-significant results, the coefficients nonetheless suggest that cohabiting unions become more similar to marital unions over time (or selection becomes less relevant). Previous research has also found that union duration reduces or eliminates differences between cohabitation and marriage, for example in the pooling of financial resources (Lyngstad et al 2010). Over time, couples usually invest more in a relationship, become more dependent on each other, but also provide more support, which could have positive health benefits. In addition, longer unions may reflect higher relationship quality, one of the strongest predictors of health (Robles et al 2014). The association between poor health and cohabitation may not be the lack of official marriage per se, but instead worse relationship quality and the higher likelihood of union dissolution among cohabitors. Nonetheless, British men seem to be

an exception to this finding: including union duration did not completely eliminate differences between cohabitation and marriage and may even marginally increase differences. British men may indeed benefit from the stability and legal recognition that marriage provides, although again we urge caution in interpreting these results as a causal effect, since we could not control for all sources of selection, especially in adulthood.

The study, and each survey, has limitations that must be noted. The study used the best available data in each country to answer the research questions, but different survey designs may influence the results. Because the UK BCS70 follows respondents from birth, it more accurately measures childhood characteristics but suffers from attrition. The other surveys have fewer missing values, but rely primarily on retrospective measures of childhood, which may not be as accurately reported. In addition, our measures capture similar constructs, but they may not precisely match each other. We decided to include context-specific variables that may be included in one country but not applicable in another, for example race or ethnicity, which may produce differences in the models. Ultimately, the models are subject to the accuracy of the survey measures and can only capture effects within a country, which means we cannot directly compare results across countries. However, because our intent is to assess self-rated health with respect to partnership status within countries, we think that this approach is appropriate.

In conclusion, this study demonstrates that cohabitation has different consequences depending on context. Cohabiting and married individuals in Germany and Norway have very similar levels of self-rated health, but in Anglo-Saxon countries

marriage provides clear advantages. Policies, norms, and economic conditions can shape the meaning of cohabitation and its association with health outcomes in later life. We also find that selection mechanisms based on childhood conditions and investments into the union can reduce health differentials. These findings are important for conceptualizing cohabitation; cohabitation is a very heterogeneous type of partnership, and studies that do not control for the variation in union duration and shared children may be missing important confounders. Finally, our study shows that early life conditions can be an important source of selection for explaining marriage benefits. Our results imply that policy makers should focus on reducing disadvantage in childhood rather than legislating incentives to marry in adulthood.

REFERENCES

Allison, P.D. (2001). "Missing Data". Thousand Oaks, CA, Sage Publications.

Barlow, A. (2004). "Regulation of cohabitation, changing family policies and social attitudes: a discussion of Britain within Europe." *Law & Policy,* 26 (1), 57-86.

Beaujouan, E. and Ni Bhrolchain, M. (2011). "Cohabitation and marriage in Britain since the 1970s." *Population Trends,* 145 (1), 35-59.

Berrington, A. and Diamond, I. (2000). "Marriage or cohabitation: A competing risks analysis of first-partnership formation among the 1958 British birth cohort." *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 163 (2), 127-151.

Berrington, A., Perelli-Harris, B. and Trevena, P. (2015). "Commitment and the changing sequence of cohabitation, childbearing, and marriage: Insights from qualitative research in the UK." *Demographic Research,* 33 (12), 327-362.

Bowman, C.G. (2010). "Unmarried couples, law, and public policy." Oxford University Press, USA.

Brady, D. and Burroway, R. (2012). "Targeting, Universalism, and Single-Mother Poverty: A Multilevel Analysis Across 18 Affluent Democracies." *Demography,* 49 (2), 719-746.

Brown, S.L. (2000). "The effect of union type on psychological well-being: Depression among cohabitors versus marrieds." *Journal of Health and Social Behavior,* 41 (3), 241-255.

Brown, S.L. and Booth, A. (1996). "Cohabitation versus marriage: A comparison of relationship quality." *Journal of Marriage and the Family,* 58 (3), 668-678.

Carmichael, G.A. and Whittaker, A. (2007). "Living together in Australia: Qualitative insights into a complex phenomenon." *Journal of Family Studies,* 13 (2), 202-223.

Cherlin, A. (2009). "The marriage-go-round: The state of marriage and the family in America today." New York. Knopf.

Cherlin, A.J. (2004). "The Deinstitutionalization of American Marriage." *Journal of Marriage and Family,* 66, 848–861.

Duncan, S. and Phillips, M. (2008). "New families? Tradition and change in modern relationships." In Park, A. (ed.) *British Social Attitudes: the 24th Report*. London, Sage.

Evans, A. (2013). "Generational change in leaving the parental home." In Evans, A. and Baxter, J. (eds.) *Negotiating the Life Course*: *Stability and Change in Life Pathways.* Springer, Netherlands, pp 53-67.

Evans, A. (2015). "Entering a Union in the Twenty-First Century: Cohabitation and 'Living Apart Together'." In Heard, g. and Arunachalam, D. (eds.) *Family Formation in 21st Century Australia*. Springer, Netherlands pp. 13-30.

Evans, H.A. and Gray, E. (2005). "What makes an Australian family?" In Gibson, R., Wilson, S., Denemark, D., Meagher, G. and Western, M. (eds.) *Australian social attitudes: The first report*. Sydney, University of New South Wales Press.

Grundy, E.M. and Tomassini, C. (2010). "Marital history, health and mortality among older men and women in England and Wales." *BMC Public Health,* 10 (554).

Haas, S. (2008). "Trajectories of functional health: the 'long arm' of childhood health and socioeconomic factors." *Social science & medicine,* 66 (4), 849-861.

Hank, K. (2010). "Childbearing history, later-life health, and mortality in Germany." *Population Studies,* 64 (3), 275-291.

Hardy, M.A., Acciai, F. and Reyes, A.M. (2014). "How Health Conditions Translate into Self-Ratings A Comparative Study of Older Adults across Europe." *Journal of Health and Social Behavior,* 55 (3), 320-341.

Hayward, M.D. and Gorman, B.K. (2004). "The long arm of childhood: the influence of early-life social conditions on men's mortality." *Demography,* 41 (1), 87-107.

Heard, G. (2011). "Socioeconomic marriage differentials in Australia and New Zealand." *Population and Development Review,* 37 (1), 125-160.

Heuveline, P. and Timberlake, J.M. (2004). "The role of cohabitation in family formation: the United States in comparative perspective." *Journal of Marriage and the Family,* 66 (5), 1214-1230.

Hewitt, B. and Baxter, J. (2012). "Who gets married in Australia? The characteristics associated with a transition into first marriage 2001–6." *Journal of Sociology,* 48 (1), 43-61.

Hiekel, N., Liefbroer, A.C. and Poortman, A.R. (2014). "Understanding Diversity in the Meaning of Cohabitation Across Europe." *European Journal of Population,* 30 (4), 391-410.

Hiekel, N., Liefbroer, A.C. and Poortman, A.R. (2015). "Marriage and separation risks among German cohabiters: Differences between types of cohabiter." *Population Studies,* 69 (2), 237-251.

Hughes, M.E., and Waite, L.J. (2009). "Marital biography and health at mid-life." *Journal of Health and Social Behavior,* 50 (3), 344-358.

Kennedy, S. and Bumpass, L. (2008). "Cohabitation and children's living arrangements: New estimates from the United States." *Demographic Research,* 19, 1663-1692.

Kenney, C.T. and McLanahan, S.S. (2006). "Why are cohabiting relationships more violent than marriages?" *Demography,* 43 (1), 127-140.

Klärner, A. (2015). "The low importance of marriage in eastern Germany-social norms and the role of peoples' perceptions of the past." *Demographic Research,* 33, 239-272.

Klein, T., Rapp, I. and Schneider, B. (2013). "Der Einfl uss der partnerschaftlichen Lebensform auf Rauchverhalten und Körpergewicht." *Comparative Population Studies,* 38 (3), 649-672.

Konietzka, D. and Kreyenfeld, M. (2002). "Women's Employment and Non-Marital Childbearing: A Comparison between East and West Germany in the 1990s." *Population (English Edition),* 57 (2), 331-358.

Kreyenfeld, M.R., Konietzka, D. and Walke, R. (2011). "Dynamik Und Determinanten Nichtehelicher Mutterschaft in Ost- Und Westdeutschland." In Brüderl, J., Castiglioni, L. and Schumann, N. (eds.) *Partnerschaft, Fertilität Und Intergenerationale Beziehungen: Ergebnisse Der Ersten Welle Des Beziehungs- Und Familienpanels. Schriften Zum Beziehungs- Und Familienentwicklungspanel*. Würzburg, Ergon Verlag, 155-174.

Kuh, D., Power, C., Blane, D. and Bartley, M. (2004). "Socioeconomic pathways between childhood and adult health." In Kuh, D., Ben Sholomo, Y. and Ezra, S. (eds.) *A life course approach to chronic disease epidemiology*. Oxford, Oxford University Press.

Lappegård, T. and Noack, T. (2015). "The link between parenthood and partnership in contemporary Norway - Findings from focus group research." *Demographic Research,* 32 (9), 287-310.

Lesthaeghe, R. and Surkyn, J. (2002). "New forms of household formation in Central and Eastern Europe: Are they related to newly emerging value orientations?" Brussels, Belgium, Interface Demography (SOCO) Vrije Universiteit Brussel.

Lichter, D.T., Batson, C.D. and Brown, J.B. (2004). "Welfare reform and marriage promotion: the marital expectations and desires of single and cohabiting mothers." *The Social Service Review*, 78 (1), 2-25.

Liefbroer, A.C. and Elzinga, C.H. (2012). "Intergenerational transmission of behavioural patterns: How similar are parents' and children's demographic trajectories?" *Advances in Life Course Research,* 17 (1), 1-10.

Liu, H. and Umberson, D.J. (2008). "The times they are a changin': marital status and health differentials from 1972 to 2003." *Journal of Health and Social Behavior,* 49 (3), 239-253.

Luo, Y. and Waite, L.J. (2005). "The impact of childhood and adult SES on physical, mental, and cognitive well-being in later life." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences,* 60 (2), S93-S101.

Lyngstad, T.H., Noack, T. and Tufte, P.A. (2011). "Pooling of Economic Resources: A Comparison of Norwegian Married and Cohabiting Couples." *European Sociological Review,* 27 (5), 624-635.

Marcussen, K. (2005). "Explaining differences in mental health between married and cohabiting individuals." *Social Psychology Quarterly,* 68 (3), 239-257.

Michelmore, K. (2016). "The Earned Income Tax Credit and Union Formation: The Impact of Expected Spouse Earnings." *Review of Economics of the Household,* (In press).

Miller, A.J., Sassler, S. and Kusi-Appouh, D. (2011). "The Specter of Divorce: Views From Working-and Middle-Class Cohabitors." *Family relations,* 60 (5), 602-616.

Musick, K. and Bumpass, L. (2012). "Reexamining the case for marriage: Union formation and changes in well-being." *Journal of Marriage and Family,* 74 (1), 1-18.

Noack, T. (2001). "Cohabitation in Norway: An accepted and gradually more regulated way of living." *International Journal of Law, Policy and the Family,* 15 (1), 102-117.

Noack, T., Bernhardt, E. and Wiik, K.A. (2014). "Cohabitation or Marriage? Contemporary Living Arrangements in the West." In Abela, A. and Walker, J. (eds.) *Contemporary Issues in Family Studies. Global Perspectives on Partnerships, Parenting and Support in a Changing World.* Wiley Blackwell.

Oppenheimer, V.K. (2003). "Cohabiting and Marriage during Young Men's Career-Development Process." *Demography,* 40 (1), 127-149.

Pearlin, L.I., Schieman, S., Fazio, E.M. and Meersman, S.C. (2005). "Stress, health, and the life course: Some conceptual perspectives." *Journal of Health and Social Behavior,* 46 (2), 205-219.

Perelli-Harris, B. (2014). "How similar are cohabiting and married parents? Second conception risks by union type in the United States and across Europe." *European Journal of Population,* 30 (4), 437-464.

Perelli-Harris, B., Kreyenfeld, M. and Kubisch, K. (2010). "Harmonized histories: manual for the preparation of comparative fertility and union histories." *MPDIR Working Paper WP-2010-01,* Max Planck Institute for Demographic Research, Rostock, Germany.

Perelli-Harris, B., Kreyenfeld, M., Sigle-Rushton, W., Keizer, R., Lappegård, T., Jasilioniene, A., Berghammer, C. and Giulio, P.D. (2012). "Changes in union status during the transition to parenthood: An examination of 11 European countries." *Population Studies,* 66 (2), 167-182.

Perelli-Harris, B., Mynarska, M., Berrington, A., Berghammer, C., Evans, A., Isupova, O., Keizer, R., Klärner, A., Lappegård, T. and Vignoli, D. (2014). "Towards a new understanding of cohabitation: Insights from focus group research across Europe and Australia." *Demographic Research,* 31 (34), 1043-1078.

Perelli-Harris, B. and Sánchez Gassen, N. (2012). "How Similar are Cohabitation and Marriage? Legal Approaches to Cohabitation across Western Europe." *Population and Development Review,* 38 (3), 435-467.

Perelli-Harris, B. and Styrc, M. (Forthcoming). "Mental well-being differences in cohabitation and marriage: the role of childhood selection." *Journal of Marriage and Family.*

Perelli-Harris, B., Berrington, A., Sanchez Gassen, N., Galezewska, P., and Holland, J. (2017) "Is there a link between the divorce revolution and the cohabitation boom?" *Population and Development Review.* June 2017.

Qu, L. and Weston, R. (2008). "Snapshot of Family Relationships." (Facts Sheet). Melbourne, Australian Institute of Family Studies.

Rapp, I. and Schneider, B. (2013). "The impacts of marriage, cohabitation and dating relationships on weekly self-reported physical activity in Germany: A 19-year longitudinal study." *Social science & medicine,* 98, 197-203.

Raymo, J., Carlson, M., Van Orman, A., Lim, S.J., Perelli-Harris, B. and Iwasawa, M. (2015). "Educational differences in early childbearing: a cross-national comparative study." *Demographic Research,* 33 (3), 65-92.

Read, S., Grundy, E. and Wolf, D.A. (2011). "Fertility history, health, and health changes in later life: A panel study of British women and men born 1923–49." *Population Studies,* 65 (2), 201-215.

Robles, T.F., Slatcher, R.B., Trombello, J.M. and McGinn, M.M. (2014). "Marital quality and health: A meta-analytic review." *Psychological Bulletin* 140 (1), 140.

Smock, P.J. (2000). "Cohabitation in the United States: an appraisal of research themes, findings, and implications." *Annual Review of Sociology,* 26, 1-20.

Smock, P.J., Manning, W.D. and Porter, M. (2005). "'"Everything's there except money": How money shapes decisions to marry among cohabitors." *Journal of Marriage and Family,* 67 (3), 680-696.

Steele, F., Kallis, C. and Joshi, H. (2006). "The formation and outcomes of cohabiting and marital partnerships in early adulthood: the role of previous partnership experience." *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 169 (4), 757-779.

Teachman, J.D. (2003). "Childhood living arrangements and the formation of coresidential unions." *Journal of Marriage and Family,* 65 (3), 507-524.

Umberson, D. (1992). "Gender, marital status and the social control of health behavior." *Social science & medicine,* 34 (8), 907-917.

Umberson, D., Crosnoe, R. and Reczek, C. (2010). "Social relationships and health behavior across life course." *Annual Review of Sociology,* 36, 139.

Umberson, D., Liu, H., Mirowsky, J. and Reczek, C. (2011). "Parenthood and trajectories of change in body weight over the life course." *Social science & medicine,* 73 (9), 1323-1331.

Umberson, D. and Montez, J.K. (2010). "Social relationships and health a flashpoint for health policy." *Journal of Health and Social Behavior,* 51 (1 suppl), S54-S66.

Umberson, D., Williams, K., Powers, D.A., Liu, H. and Needham, B. (2006). "You make me sick: Marital quality and health over the life course." *Journal of Health and Social Behavior,* 47 (1), 1-16.

Umberson, D., Williams, K., Thomas, P.A., Liu, H. and Thomeer, M.B. (2014). "Race, gender, and chains of disadvantage childhood adversity, social relationships, and health." *Journal of Health and Social Behavior,* 55 (1), 20-38.

Waite, L.J. (1995). "Does marriage matter?" *Demography,* 32 (4), 483-507.

Waite, L.J. and Gallagher, M. (2000). *The case for marriage: why married people are happier, healthier, and better off financially*. New York, Doubleday.

Waite, L. and Gallagher, M. (2002). "The case for marriage: Why married people are happier, healthier and better off financially." Random House LLC.

Wiik, K.A., Bernhardt, E. and Noack, T. (2009). "A Study of Commitment and Relationship Quality in Sweden and Norway." *Journal of Marriage and Family,* 71 (3), 465-477.

Wiik, K.A. and Dommermuth, L. (2011). "Type, Number, and Incidence: Recent Patterns and Differentials in Relationship Careers in Norway." *Discussion Papers No. 650*, Statistics Norway, Oslo.

Williams, K., Sassler, S., Frech, A., Addo, F. and Cooksey, E. (2011). "Nonmarital childbearing, union history, and women's health at midlife." *American Sociological Review,* 76 (3), 465-486.

Wolfinger, N.H. (2005). "Understanding the divorce cycle: The children of divorce in their own marriages." Cambridge University Press.

Wood, R.G., Goesling, B. and Avellar, S. (2007). "The effects of marriage on health: a synthesis of recent research evidence." *Report for the Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaulation*, Washington DC, Mathematica Policy Research.

APPENDIX A. ESTIMATIONS OF THE OLS REGRESSION OF SELF-RATED HEALTH

Table A1. Regression of self-rated health by sex, U.S.

	Men	Women
Married (ref. cohabiting)	0.08	0.09
	(0.07)	(0.07)
Age	-0.04*	-0.03
	(0.02)	(0.02)
REGION AND ETHNICITY		
Lived in South at 14	-0.05	-0.06
	(0.04)	(0.04)
Race (ref. Non-Hispanic White)		
- Black	0.08	-0.15**
	(0.05)	(0.06)
- Hispanic	-0.06	-0.13*
	(0.06)	(0.06)
Mother born outside U.S.	0.13	0.09
	(0.08)	(0.09)
Father born outside U.S.	0.02	0.02
	(0.09)	(0.09)
FAMILY STRUCTURE IN CHILDHOOD		
Lived with both parents at 14	0.09*	0.02
	(0.04)	(0.04)
Number of siblings (ref. 0)		
one	-0.07	0.00
	(0.05)	(0.05)
two or more	-0.05	-0.10
	(0.06)	(0.06)
Mother's age at respondent's birth (ref. 20-24 years)		
-less than 20 years	0.01	0.02
	(0.07)	(0.07)
-25-29 years	0.03	-0.02
	(0.06)	(0.06)
-30 and above	0.06	0.08
	(0.06)	(0.06)
SOCIO-ECONOMIC BACKGROUND OF PARENTS		
Mother has less than high school degree	-0.17***	-0.22***
	(0.05)	(0.05)
Father has less than high school degree	-0.12**	-0.04
	(0.05)	(0.05)
Mother employed when respondent was 14	0.09*	0.07
	(0.04)	(0.04)
Father's occupation during childhood (ref. not working)		
- managerial and professional	0.23*	0.38***
	(0.10)	(0.09)
- intermediate occupation	0.23*	0.26**
	(0.10)	(0.09)
- routine and manual occupation	0.11	0.26**
	(0.09)	(0.09)
RESPONDENT'S FAMILY FORMATION HISTORY		
Duration of current union	0.03*	0.01
	(0.01)	(0.01)
Duration of current union squared	-0.00*	-0.00
	(0.00)	(0.00)
Ever experienced divorce	-0.07	-0.08
	(0.05)	(0.05)
No. of own children (ref. 0)		
One	0.02	-0.00
	(0.07)	(0.07)
Two	0.05	0.08
	(0.06)	(0.06)
three or more	-0.04	0.02
	(0.06)	(0.07)
N	2726	2755

*** p<0.05, **<0.01, *** p<0.001.**

Table A2. Regression of self-rated health by sex, U.K.

	Men	Women
Married (ref. cohabiting)	0.17***	-0.00
	(0.05)	(0.05)
REGION AND ETHNICITY		
Region of residence at birth (ref. Scotland, Ireland and North)		
Midlands and Wales	-0.05	-0.08
	(0.05)	(0.05)
South West	-0.01	-0.06
	(0.07)	(0.07)
South East and East	-0.06	-0.04
	(0.04)	(0.04)
At least one parent born outside UK	0.06	-0.07
	(0.06)	(0.06)
FAMILY STRUCTURE IN CHILDHOOD		
Lived with both biological parents at age 10	0.11	0.12*
	(0.06)	(0.05)
Number of siblings	-0.04*	-0.03
	(0.02)	(0.02)
Mother's age at respondents birth (ref. 20-24 years)		
-less than 20 years	-0.09	-0.04
	(0.07)	(0.07)
-25-29 years	0.02	0.10*
	(0.04)	(0.04)
-30 and above	0.10*	-0.00
	(0.05)	(0.05)
SOCIO-ECONOMIC BACKGROUND OF PARENTS		
Mother's education (ref. low)		
Medium	0.14**	0.11*
	(0.05)	(0.05)
High	0.25**	0.23**
	(0.08)	(0.08)
Father's education (ref. low)		
Medium	0.00	0.13**
	(0.05)	(0.05)
High	-0.02	0.24**
	(0.08)	(0.07)
Mother employed when respondent aged 10	0.05	-0.04
	(0.04)	(0.04)
Father employed when respondent aged 10	-0.26*	-0.19*
	(0.11)	(0.10)
Father's occupation during childhood (ref. routine and manual)		
- intermediate occupation	0.03	0.03
	(0.06)	(0.05)
- routine and manual occupation	0.14	0.02
	(0.07)	(0.07)
RESPONDENT'S FAMILY FORMATION HISTORY		
Union duration	-0.00	0.00**
	(0.00)	(0.00)
Union duration squared	-0.00	-0.00**
	(0.00)	(0.00)
Ever experienced divorce	-0.07	-0.08
	(0.04)	(0.05)
No. of own children (ref. 0)		
One	-0.01	0.02
	(0.06)	(0.06)
Two	0.04	0.09
	(0.05)	(0.06)
three or more	-0.10	-0.03
	(0.06)	(0.06)
N	3184	3396

*** p<0.05, **<0.01, *** p<0.001.**

Table A3. Regression of self-rated health by sex, Australia

	Men	Women
Married (ref. cohabiting)	0.09	-0.06
	(0.10)	(0.10)
Age	-0.03**	-0.02
	(0.01)	(0.01)
REGION AND ETHNICITY		
Respondent born outside Australia	-0.01	-0.10
	(0.11)	(0.11)
Any parent born outside Australia	0.06	0.09
	(0.08)	(0.07)
Aboriginal or Torres Strait Islander	-0.49	-0.68**
	(0.33)	(0.21)
English first language	0.10	0.13
	(0.14)	(0.12)
FAMILY STRUCTURE IN CHILDHOOD		
Parents separated before age 16	-0.04	-0.15
	(0.12)	(0.12)
Lived with both parents at 14	0.10	0.08
	(0.12)	(0.11)
SOCIO-ECONOMIC BACKGROUND OF PARENTS		
Mother's schooling (ref. none or primary)		
- some secondary	-0.15	-0.01
	(0.15)	(0.12)
- complete secondary	-0.11	0.15
	(0.16)	(0.14)
Mother's post school qualification (ref. university)		
- TAFE	-0.16	0.21
	(0.14)	(0.13)
- other	-0.07	0.18
	(0.14)	(0.14)
- no post school qualification	-0.11	0.05
	(0.11)	(0.11)
Father's schooling (ref. none or primary)		
- some secondary	0.19	0.33***
	(0.13)	(0.10)
- complete secondary	0.27	0.17
	(0.15)	(0.12)
Father's post school qualification (ref. university)		
- TAFE	-0.12	-0.05
	(0.13)	(0.12)
- other	-0.04	-0.07
	(0.14)	(0.13)
- no post school qualification	-0.13	-0.12
	(0.12)	(0.11)
Father unemployed for at least 6 months during respondent's childhood	0.13	-0.02
	(0.10)	(0.09)
Father's occupation during childhood (ref. managerial and professional)		
- intermediate occupation	-0.05	-0.10
	(0.08)	(0.07)
- routine and manual occupation	-0.16	-0.01
	(0.09)	(0.09)
RESPONDENT'S FAMILY FORMATION HISTORY		
Duration of current union	0.04*	0.03
	(0.02)	(0.02)
Duration of current union squared	-0.00	-0.00
	(0.00)	(0.00)
Ever experienced divorce	0.01	-0.01
	(0.10)	(0.09)
No. of own children (ref. 0)		
one	-0.03	-0.30*
	(0.12)	(0.12)
two	0.03	-0.06
	(0.11)	(0.11)
three or more	-0.03	-0.10
	(0.11)	(0.11)
N	934	1036

*** p<0.05, **<0.01, *** p<0.001.**

Table A4. Regression of self-rated health by sex, Norway

	Men	Women
Married (ref. cohabiting)	0.04	-0.11
	(0.10)	(0.10)
Age	0.00	0.02
	(0.01)	(0.01)
REGION AND ETHNICITY		
Region of residence until age 15 (ref. Oslo area)		
East	-0.12	-0.25*
	(0.11)	(0.10)
South and West	-0.11	-0.08
	(0.10)	(0.10)
Mid- and North	0.04	-0.24*
	(0.11)	(0.11)
Any parent born outside Norway	-0.17	-0.17
	(0.13)	(0.12)
FAMILY STRUCTURE IN CHILDHOOD		
Lived with both parents at age 15	0.16	0.10
	(0.16)	(0.14)
Mother's age at respondent's birth*	-0.00	-0.00
	(0.01)	(0.01)
Number of siblings	0.05	-0.02
	(0.04)	(0.04)
SOCIO-ECONOMIC BACKGROUND OF PARENTS		
Mother's education*	0.01	0.13*
	(0.09)	(0.07)
Father's education*	0.19*	0.09
	(0.10)	(0.07)
Mother worked when respondent was 15	0.10	0.05
	(0.08)	(0.08)
Father's occupation when respondent was 15*	0.22*	0.03
	(0.09)	(0.07)
RESPONDENT'S FAMILY FORMATION HISTORY		
Duration of current union	0.00	0.00
	(0.00)	(0.00)
Duration of current union squared	-0.00	-0.00
	(0.00)	(0.00)
Ever experienced divorce	-0.07	-0.26**
	(0.09)	(0.09)
No. of own children (ref. 0)		
one	0.12	0.06
	(0.17)	(0.16)
two	0.15	0.17
	(0.15)	(0.15)
three or more	0.30*	0.28
	(0.15)	(0.15)
n	921	1122

*** p<0.05, **<0.01, *** p<0.001.**

Table A5. Regression of self-rated health by sex, Germany

	Men	Women
Married (ref. cohabiting)	0.10	0.08
	(0.08)	(0.07)
Age	-0.02**	-0.01
	(0.01)	(0.01)
Region and ethnicity		
Respondent born (ref. West Germany)		
East Germany (stayed in East)	-0.06	-0.08
	(0.07)	(0.07)
East Germany (moved to West)	-0.02	-0.08
	(0.12)	(0.11)
Outside of Germany	0.09	-0.07
	(0.10)	(0.11)
At least one parent born outside Germany	0.16	0.05
	(0.17)	(0.16)
Family structure in childhood		
Lived with both parents before age 15	0.17*	0.04
	(0.07)	(0.07)
Mother's age at respondent's birth (ref. 20-24 years)		
-less than 20 years	-0.13	-0.12
	(0.08)	(0.08)
-25-29 years	-0.08	-0.01
	(0.06)	(0.05)
-30 and above	-0.07	-0.03
	(0.06)	(0.06)
Number of siblings	-0.01	-0.03
	(0.03)	(0.03)
Socio-economic background of parents		
Mother's education (ref. low)		
medium	0.10	0.12*
	(0.06)	(0.06)
high	0.14	0.26**
	(0.09)	(0.09)
Father's education (ref. low)		
medium	0.04	0.07
	(0.08)	(0.08)
high	0.04	0.12
	(0.11)	(0.10)
Father's occupation during childhood (ref. working class)		
- intermediate occupation	0.00	0.06
	(0.08)	(0.07)
- salaried	-0.00	0.09
	(0.09)	(0.09)
- not working	-0.19	-0.12
	(0.17)	(0.17)
Mother worked when respondent was 15	0.03	-0.12
	(0.08)	(0.06)
Respondent's family formation history		
Duration of current union	0.00	-0.00
	(0.00)	(0.00)
Duration of current union squared	-0.00	0.00
	(0.00)	(0.00)
Ever experienced divorce	-0.01	-0.09
	(0.05)	(0.05)
No. of own children (ref. 0)		
one	0.11	0.03
	(0.06)	(0.05)
two	0.10	0.13*
	(0.06)	(0.06)
three or more	0.03	0.02
	(0.08)	(0.09)
N	1741	1873

*** p<0.05, **<0.01, *** p<0.001.**

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ESRC Centre for Population Change
Building 58,
Faculty of Social and Human Sciences
University of Southampton
SO17 1BJ

T: +44 (0)2380 592579
E: cpc@soton.ac.uk
www.cpc.ac.uk

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