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New Perspectives on Intimate Relationships and Singlehood

by

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Thesis for the degree of Doctor of Philosophy (PhD)

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Abstract

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Motivated by the wide changes in partnership and sexual behaviours which started in the 1970s in Europe, this thesis explores the satisfaction with intimate life of those partnered and unpartnered in Britain and Germany. Drawing on theoretical concepts and literature from demography, psychology, gerontology, sociology, and sex research, this three-paper thesis examines relationship quality in different types of partnership, the link between relationship quality and transitions from living apart together to either a coresidential partnership or separation, and the satisfaction with not being in an intimate relationship among singles. In order to investigate these aspects, it adopts a quantitative approach by using a variety of regression models.

The first paper uses rich data from the British National Study of Sexual Attitudes and Lifestyles (Natsal-3) to shed light on how sexual intimacy and relationship happiness differ in married, cohabiting, and living-apart together relationships. The findings from proportional odds models show that living apart together couples report higher sexual compatibility with their partner than coresidential couples. However, they are, overall, less happy in their relationships than coresidential couples. This paper highlights the differences in the evaluations of sexual intimacy and relationship happiness among men and women and how this depends on their relationship type. The second and third papers focus on Germany and use data from the German Family Panel (pairfam). The second paper examines the association between relationship satisfaction and living apart together relationship transitions into coresidence or separation. It considers relationship satisfaction as an umbrella concept, where sexual satisfaction, couple's conflict frequency, and self-disclosure are specific indicators under this umbrella. The results from competing risk event-history models show that a living apart together couple's decision to separate is related to lower levels of relationship and sexual satisfaction, disclosing less to a partner, and having more conflicts with a partner. The decision to move in together is related to higher levels of relationship satisfaction, but this association is attenuated by self-disclosure and conflicts. The third paper explores how singles' past intimate relationships and satisfaction with and frequency of contacting social networks relate to their satisfaction with being single. This paper points to the heterogeneity among singles and discusses potential selection effects into being lifelong single. The results from linear regression models underline the complex role of friends and family in singles' lives and suggest that past intimate relationships are of little importance in explaining singles' satisfaction with not having an intimate partner.

In conclusion, this thesis underlines the need to adopt a wider view in investigating the changing nature of partnerships by considering a greater variety of aspects of the intimate lives not only of those partnered but also of those who are single. This can be done by adopting an

interdisciplinary approach to develop new conceptual frameworks and to collect new data on peoples' satisfaction with intimate life. The thesis suggests that family demographers need to design new surveys, asking about past and present casual sexual relationships, living apart together relationships but also about not having had any partner, moving thus beyond coresidential relationship histories. Peoples' lifestyles are rapidly changing and we need to understand more about the implications of different relationship histories on individuals' life-courses. Additionally, to broaden the understanding of intimate relationships of those partnered and single, this thesis advises family demographers to consider the indicator of the overall satisfaction with (not having) a relationship as a multidimensional concept, with positive, negative, and sexual dimensions.

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Research Thesis: Declaration of Authorship

Print name: Alexandra-Andreea Ciritel

Title of thesis: New Perspectives on Intimate Relationships and Singlehood

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission

Signature: ..... Date:

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Definitions and Abbreviations

LAT – Living Apart Together

SDT – Second Demographic Transition

ONS – Office for National Statistics (United Kingdom)

WHO – World Health Organisation

ISCED – International Standard Classification of Education

NATSAL – (British) National Study of Sexual Attitudes and Lifestyles

NatCen – The National Centre for Social Research (United Kingdom)

PAIRAM – Panel Analysis of Intimate Relationships and Family Dynamics

POM – Proportional Odds Model

UK – United Kingdom

US – United States

Chapter 1 Introduction

1.1 Introduction

Partnership types, both as a way of practicing intimacy and of forming a family, have changed in the last five to six decades (Lesthaeghe and Surkyn, 1988; Lesthaeghe, 2010). Demographic literature indicates a rise in the proportions of those never married and cohabiting, and increased divorce rates, accompanied by a decrease in marriage rates and a change in the meaning of marriage and cohabitation in Europe (Hiekel *et al.*, 2014; Perelli-Harris *et al.*, 2014; Liefbroer *et al.*, 2015; ONS, 2019a), but also in the US (Cherlin, 2009; Manning, 2013; Wang and Parker, 2014; National Center For Family And Marriage Research, 2018), and Australia (Evans, 2015; Gray, 2015; Australian Bureau of Statistics, 2017). A preference for independence has created space for non-coresidential relationships, often referred to as living apart together (LAT) relationships (Liefbroer *et al.*, 2015; Pasteels *et al.*, 2015; Régnier-Loilier, 2016). Furthermore, nowadays people spend more years never being married than in the past, as marriage is being postponed (Lesthaeghe, 2010). Due to lack of data, the never married were traditionally considered single, but many of them cohabit or have a non-coresidential (LAT) intimate partner while some might be unpartnered. Despite all these changes in partnership behaviours, researchers have not investigated the changing nature of partnerships on a deeper level, especially concerning their satisfaction with intimate life. This thesis contributes to a better understanding of the nature of coresidential as well as non-coresidential (LAT) partnerships and singlehood by comparing the satisfaction with intimate life across partnership types and among those without a partner.

This thesis thus investigates the complexity of partnered and unpartnered intimate lives. 'Intimacy' is a multidimensional construct used by social scientists with little agreement in its meaning and operationalisation. Nonetheless, the concept has been used by social psychologists to refer to either heterosexual or same-sex relationships' feelings of closeness, connectedness, and bonding (Sternberg, 1986; Baumeister and Bratslavsky, 1999; Umberson *et al.*, 2015), with experiences of intimacy being built on expressing acts of affection, mutual appreciation, trust, and self-disclosing to a partner (Helgeson *et al.*, 1987; Baumeister and Bratslavsky, 1999; Sinclair and Dowdy, 2005; Štulhofer *et al.*, 2013; Umberson *et al.*, 2015). Some sociologists have defined intimacy more generally as referring to the quality of the relationship, the sense of deep knowing, and being connected to a partner, this including 'sexual familiarity' as well (Jamieson, 2007; Jamieson, 2011a). Psychologists have developed a complex measure of intimacy which includes dimensions such as emotional, sexual, intellectual, social, spiritual, and recreational intimacy (Schaefer and Olson, 1981).

This thesis uses the term ‘satisfaction with intimate life’ to refer to i) the relationship quality of those partnered and to ii) the satisfaction with being single among those unpartnered (see Figure 1.1, page 3). Although the term intimacy used in this thesis relates to the definition used by sociologists, it departs from existing literature by additionally examining how unpartnered (singles) are satisfied with their intimate life. In this thesis, the term ‘intimate’ means private, personal, familiar, and the definition is based on the Latin word ‘intimus’ which means innermost (Logman Dictionary of Contemporary English, 2020). The relationship quality of those partnered is a multidimensional concept with positive, negative, and sexual dimensions. The positive dimension is represented by the following indicators a) relationship satisfaction/happiness and b) self-disclosure. The negative dimension is represented by c) couple’s conflict frequency whereas the sexual dimension by d) emotional closeness during sex, e) compatibility in sexual interest, f) compatibility in sexual preferences, and g) sexual satisfaction. To make it easier to navigate through the terminology, the last four indicators (d-g) are grouped under the sexual intimacy component. Throughout the thesis sexual intimacy is used interchangeably with the term ‘sexuality’ (see Figure 1.1, page 3).

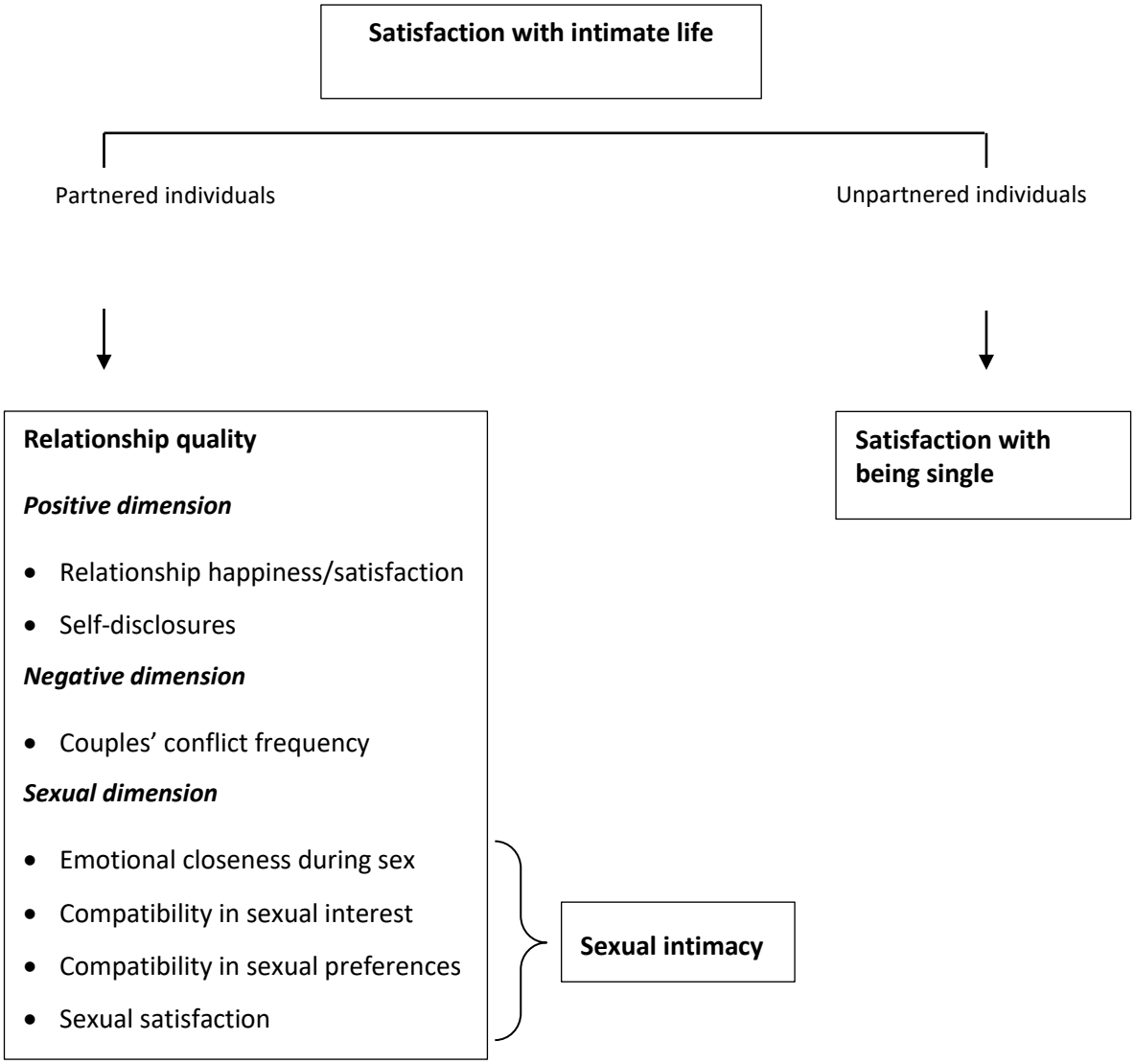

Figure 1.1: Diagram clarifying the concept 'satisfaction with intimate life'; author's diagram

Sexual intimacy/sexuality are conceptualised as part of the overall relationship quality of those who have an intimate partner (Figure 1.1). Demographers have by and large ignored sexuality in their study of the nature of partnerships and yet sexuality is a fundamental part of human and couples' lives. Social psychologists underline that sex is ultimately about intimacy and pleasure, being one of the most important components of any relationship, even at later stages in life (Gott and Hinchliff, 2003; Harvey *et al.*, 2004; DeLamater, 2012; Galinsky and Waite, 2014; Forbes *et al.*, 2017). As theoretical and empirical research underline, sex and love are interrelated and mutually causal (Berscheid, 1988; Regan, 1998; Regan and Berscheid, 1999; Hendrick and Hendrick, 2002; Hendrick and Hendrick, 2004), and it is not surprising that in a couple, sex promotes a stronger and a more positive connection with a partner, contributing to high quality intimate bonds (Baumeister and Leary, 1995; Debrot et al., 2017). Physical attraction is an important trigger to relationship formation (Luo and Zhang, 2009; Swami *et al.*, 2009; Eastwick and Finkel, 2008; Eastwick *et al.*, 2011), and frequent and satisfying sex is an important component of relationship maintenance (Sprecher, 2002; Yeh *et al.*, 2006; Yabiku and Gager, 2009). However, aspects of

sexuality are sometimes a source of conflict in relationships due to a lack of compatibility in sexual desire and preferences (Witting *et al.*, 2008; Lodge and Umberson, 2012; Mitchell and Wellings, 2013). Evidence shows that sexual intimacy conflicts can also reoccur suggesting that some couples face challenges in resolving disagreements about their sexual life (Papp *et al.*, 2013). Given all these aspects, it is surprising how little we know about how sexual intimacy differs within different partnership types.

Traditionally, cohabitation has been compared to married relationships in terms of relationship quality, but comparison studies including LAT relationships are scarce (Tai *et al.*, 2014; Lewin, 2017) and have not considered any sexual aspects of the relationships. This thesis fills in this gap by comparing how married, cohabitating, and LAT relationships in Britain differ with respect to sexual intimacy (defined as emotional closeness during sex, compatibility in terms of sexual preferences, and interest in having sex with a partner) and relationship happiness. Moreover, demographers have limited their understanding of LAT relationship transitions by examining mostly a broad indicator of relationship quality, such as relationship satisfaction (Krapf, 2017; Wagner *et al.*, 2019). In general, relationship quality has been conceptualised by demographers as unidimensional, measured with a global indicator of relationship satisfaction (Tai *et al.*, 2014; Blom *et al.*, 2017; Perelli-Harris *et al.*, 2019). Other studies which focused on LAT relationship transitions have investigated the role of socio-economic aspects (Sassler, 2004; Sassler and Miller, 2011; Sassler *et al.*, 2016), distance and couple's employment status (Krapf, 2017), and of the intention to move in (Régnier-Loilier, 2016). This thesis adds to the literature on LAT relationship transitions in Germany by considering relationship quality as a multidimensional concept, paying attention to indicators such as conflicts, self-disclosure, and sexual satisfaction. Additionally, this thesis also examines how these indicators interrelate with the global indicator of relationship satisfaction in explaining LAT relationship transitions.

The thesis makes an original contribution by providing new insight into the phenomenon of 'lifelong singlehood', which has received little attention in demography (Bellani *et al.*, 2017). Demographers have defined lifelong singlehood by referring at those who 'never experienced a coresidential relationship by the age of 40' (*ibid*, 2017) and gerontologists have defined lifelong singlehood as someone who is never (re)married by the age of 60 (Baumbusch, 2004; Timonen and Doyle, 2013; Band-Winterstein and Manchik-Rimon, 2014). These definitions are problematic since those who never had coresidential relationships are a heterogenous group including a) those who had at least a LAT relationship and b) those who never had any intimate relationships. These conceptual limitations will have implications for how previous findings should be interpreted. This thesis goes beyond these studies by disentangling those who had only non-coresidential (LAT) relationships and those without past intimate relationships. The latter group is

defined as being lifelong single and this thesis is among the first studies to shed light on the socio-economic and demographic characteristics of these individuals.

Single people have usually been the benchmark for comparing marriage and cohabitation on various indicators of well-being (Marks, 1996; Soons and Liefbroer, 2008; Reneflot and Mamelund, 2011; Verbakel, 2012; Wright and Brown, 2017; Perelli-Harris *et al.*, 2018; Ermer and Proulx, 2019). However, most of these demographic studies have not distinguished between those who are unpartnered and those with a LAT partner and considered the legal marital status of 'being never married' (Marks, 1996; Reneflot and Mamelund, 2011; Ermer and Proulx, 2019) or the coresidential aspect of 'living without a partner' (Bellani *et al.*, 2017; Perelli-Harris *et al.*, 2018; Ermer and Proulx, 2019). Studies which have started to define singlehood as those unpartnered are scarce (Soons and Liefbroer, 2008; Liefbroer et al., 2015; Verbakel, 2012; Wright and Brown, 2017). This thesis aligns with these few studies by differentiating individuals with a LAT partner from those who are unpartnered, to define the latter as those who are single. Moreover, no demographic study has analysed how single people feel about not having an intimate partner. This thesis fills in this gap by exploring the satisfaction with being single amongst singletons and comparing the lifelong singles with those who had past intimate relationships.

This work contributes to the demographic literature on the changing nature of intimate relationships and singlehood by examining multiple aspects of satisfaction with intimate life. It is one of the first studies to integrate literature from sociology, gerontology, demography, psychology, and sex research to provide an innovative way of examining the nature of those partnered and unpartnered. This dissertation offers a wider view of the intimate relationship status spectrum by considering those single, in LAT, cohabiting, and married relationships. On the one hand, it aims to investigate the link between different intimate relationships that people have and the relationship quality they experience in these relationships. To do this, new and specific relationship quality aspects, such as sexual intimacy, conflicts, and self-disclosure are investigated. On the other hand, this thesis aims to paint a more detailed picture of singles, who are found at the other end of the intimate relationships spectrum, by considering the satisfaction with not having an intimate partner.

1.2 The changing nature of intimate relationships and singlehood

Over the last six decades, profound changes in Western post-industrialised countries have occurred in partnership behaviour, such as lower marriage rates, higher cohabitation rates, rising separation, and divorce rates, and finding other ways of expressing intimacy outside of coresidence, such as in LAT relationships (Lesthaeghe, 2010; Perelli-Harris, 2015; Stoilova *et al.*, 2014), which are commonly associated with the Second Demographic Transition (SDT; Surkyn and

Lesthaeghe, 2004). The SDT theory argues that these changes are driven by shifts in ideational and value orientations towards greater autonomy, self-actualisation, individual freedom, and weakened normative regulations, which began roughly in the 1960s as a result of economic prosperity (van de Kaa, 1987; Lesthaeghe, 2010). This section provides a critical review of these changes and underlines the gaps in the literature.

1.2.1 Marriage and cohabitation

The rise in cohabitation and divorce coupled with changing gender roles in Western countries over the last five to six decades, altered the meaning and role of the institution of marriage in individuals' lives (Giddens, 1992; Cherlin, 2004). This has happened for several reasons. Firstly, from the 1960s onwards, women's enrolment in higher education and labour market participation increased, which led them to be more financially independent from men (Becker, 1981; Liefbroer and Corijn, 1999; Cherlin, 2004). Secondly, the cultural and value changes from the 1960s shifted the meaning of marriage from the 'companionate' to the 'individualized' marriage (Giddens, 1992; Cherlin, 2004). For example, in the companionate marriage, marital satisfaction was an expression of being good providers, homemakers, and parents whereas, in the individualised marriage, spouses were concerned with self-development, which became an expression of marital satisfaction (Cherlin, 2004). Thirdly, the introduction of effective contraceptives during the early 1960s allowed women to stay longer in education and have pre-marital sexual activities while avoiding pregnancy (Goldin and Katz, 2002). As a result, marriage has become increasingly deinstitutionalised, losing its setting for intimate sexual relationships and childbearing. Fourthly, the legalization and the simplification of divorce requirements permitted more couples to dissolve their marriage, altering the social norms about the permanence of marriage (Lewis, 2001; Cherlin, 2004).

Cohabitation has been increasing since the late 1970s and it is now an individual's normative event in his or her life course in many industrialized countries (Smock, 2000; Liefbroer and Dourleijn, 2006; Beaujouan and Ní Bhrolcháin, 2011). The increase in cohabitation is explained by interlinked economic, social, and ideational changes. For example, social and ideational liberalisation (Giddens, 1992; Lesthaeghe, 2010) underlined shifts in values towards greater autonomy, personal fulfilment, self-actualization, and (sexual) freedom, which led individuals to reject the institution of marriage and choose a more flexible living arrangement such as cohabitation. Cohabitation is also a response to the economic uncertainty and instability present in the last decades due to globalization (Blossfeld *et al.*, 2006), particularly among the least educated (Perelli-Harris *et al.*, 2010; Hiekel *et al.*, 2014). At the macro level, recent evidence has indicated that the diffusion of divorce, with its accompanying change of attitudes and perceptions

about marriage, is another key factor contributing to the increase in cohabitation in most European countries (except France and Sweden; Perelli-Harris *et al.*, 2017).

Evidence from Europe underlines the distinct meaning of cohabitation for different countries depending on the country's traditions and culture (Hiekel *et al.*, 2014), on the life course of the individuals, on the changing meaning of commitment, and the importance of values such as individual freedom (Perelli-Harris *et al.*, 2014; Perelli-Harris and Bernardi, 2015). In most European countries, cohabitation is a trial for marriage, where the compatibility and the commitment between partners are tested before marriage, especially to avoid the high economic and psychological costs of divorce (Perelli-Harris and Bernardi, 2015). However, some cohabitants, especially those in long-term relationships and/or those with children act similarly and share similar values as those married (the UK: Berrington *et al.*, 2015; Norway: Lappegård and Noack, 2015). In this case, cohabitation is a different way of handling the 'foreverness' ideal of marriage rather than being a break from this ideal (Carter and Duncan, 2018). At the same time, the nature of cohabitation is defined by many aspects of freedom and opportunities for self-realisation, freedom to seek out new partners, to travel alone, to move jobs or to keep finances separate, and, ultimately, freedom to choose to marry or not, especially in Poland and Russia (Perelli-Harris and Bernardi, 2015). From this point of view, cohabitation is a feature of individualisation, a reflection of the 'do-it-yourself biography', a relationship type removed from the traditional precepts and external control, providing flexibility and the freedom to leave an unsatisfying relationship (Beck and Beck-Gernsheim, 1995).

The meaning of marriage, however, is, on the whole, different from the meaning(s) of cohabitation, suggesting that these are two different relationships. Marriage is still seen as valuable, representing a willingness for couples to build a long-term future together, involving a higher level of commitment than cohabitation (Perelli-Harris and Bernardi, 2015). This perception exists even in countries with widespread cohabitation, such as Norway, East Germany (Perelli-Harris *et. al*, 2014), and England (Berrington *et al.*, 2015). The high value placed on marriage suggests that individuals still believe in a life-long relationship, want to get married, but more as a cultural ideal or status symbol (Perelli-Harris *et al.*, 2017).

Studies which have examined the nature of marriage and cohabitation with respect to sexual aspects of the relationship have been mostly conducted in the US and have considered indicators such as sexual frequency or sexual satisfaction (Blumstein and Schwartz, 1983; Laumann *et al.*, 1994; Waite and Joyner, 2001; Yabiku and Gager, 2009). These studies show that sexual frequency and satisfaction are higher in cohabiting relationships (Blumstein and Schwartz, 1983; Laumann *et al.*, 1994) and are more important for cohabiting than for married relationship stability (Yabiku and Gager, 2009). Chapter 2 in this thesis goes beyond these studies; firstly, it considers new

indicators of sexual intimacy, such as emotional closeness during sex with a partner, compatibility between partners in terms of sexual interest, and sexual preferences. Secondly, it adds LAT relationships to the comparison of cohabiting and married relationships with regard to sexual intimacy and relationship happiness in Britain.

1.2.2 Living apart together

Non-coresidential relationships, called living apart together (LATs in this thesis) have started to grasp the attention of demographers who investigated the prevalence, the characteristics of LAT individuals, and the meaning of this relationship. Living apart together is usually defined as an intimate relationship between two individuals who live in separate households, and who identify themselves as being in a steady relationship[1] (Haskey, 2005; Haskey and Lewis, 2006; Krapf, 2017; Wagner *et al.*, 2019). About 10% of the population is in a LAT intimate relationship in Australia (Reimondos *et al.*, 2011), Canada (Turcotte, 2003), US (Strohm *et al.*, 2009), the UK (Haskey, 2005; Duncan and Phillips, 2010; Phillips *et al.*, 2013), France (Régnier-Loilier *et al.*, 2009; Régnier-Loilier, 2016) and Sweden (Levin and Trost, 1999). Lower rates of LAT prevalence, between 2% to 5% are found in Eastern Europe as well (Liefbroer *et al.*, 2015; Pasteels *et al.*, 2015).

The meaning of LAT is related to the life-course of individuals. For example, LAT is an "ideal" type of relationship or a relationship state for older individuals and for those divorced, especially those who also have children, with individuals intending to continue their intimate relationship as a LAT (Europe: Liefbroer *et al.*, 2015; Ayuso, 2019). In this case, LAT is conceptualised as an alternative to marriage and cohabitation, where individuals can benefit from intimacy while not allowing the partner to interfere too much with their personal schedule (France: Régnier-Loilier, 2016; UK: Haskey and Lewis, 2006; Coulter and Hu, 2015; Canada: Funk and Kobayashi, 2014). However, LAT relationships are mainly encountered among young individuals (UK: Coulter and Hu, 2015; Europe: Liefbroer *et al.*, 2015; Europe: Pasteels *et al.*, 2015), aged approximately between 20-30 years old. Some of these young individuals decide to move in together; for them, LAT is a stage in coresidential partnership formation (Liefbroer *et al.*, 2015; Pasteels *et al.*, 2015; Régnier-Loilier, 2016). Alternatively, for those who break-up, LAT has been characterised as an experiment (Régnier-Loilier, 2016). Compared with those older and divorced, those younger and never married are more willing to plan to move in together (UK: Haskey and Lewis, 2006, Europe: Liefbroer *et al.*, 2015).

[1] It is important to note that in this thesis some individuals in a LAT relationship are legally married with another person but separated

Most of the existing demographic literature on LAT relationship transitions has focused on a standard set of socio-economic variables including socio-economic background and childhood family structure (US: Sassler *et al.*, 2010, 2016, 2018), intentions to move in (France: Régnier-Loilier, 2016), travel distance to the partner, their labour force status (Germany: Krapf, 2017), and institutionalisation of the relationships (measured by intentions to marry and to have children, and introducing the partner to one's parents; Germany: Wagner *et al.*, 2019). However, no previous research has examined how other indicators of relationship quality such as self-disclosure, conflicts, and sexual satisfaction relate to LAT relationship transitions. This is surprising since partners constantly evaluate the level of personal satisfaction a relationship provides (Giddens, 1992) in deciding whether to continue or not the relationship. Chapter 3 of this thesis fills in this gap, broadening the understanding of LAT intimate relationships and coresidential relationship formation.

1.2.3 Singlehood

Historically, singlehood has been discussed in the context of the West European Marriage Pattern (WEMP) and defined using the legal marital status of being unmarried (Hajnal, 1953a). The rates of those unmarried changed throughout history. For example, the WEMP lasted roughly from the 16th century to the first decades of the 20th century. In this period, people were marrying late (in the mid and late 20s) and a high percentage of women (roughly between 10-20% of women) were not married by the end of their 40s (Hajnal, 1953a). Moreover, as Hajnal notes, three quarters of women in the age group 20-24 were still not married, while east of the line from Trieste to St. Petersburg (Hajnal line) three quarters of the women were married by the age of 24. This marriage pattern gradually changed during the mid 20th century (roughly between 1940 to 1960), when a boom in marriage and births was recorded. During this time, there was a trend towards earlier and more universal marriages (Hajnal, 1953b; Van Bavel and Reher, 2013). However, from the 1960s onwards this trend in early marriage has reversed back to marrying late, with mean ages at first marriage increasing in 2019 to over 30 years old for both men and women in Western and Northern Europe (Eurostat, 2020). In addition, marriage rates have been falling and alternative partnership choices such as cohabiting, being in LAT relationships, or being unpartnered have gradually gained more social acceptance. Currently, partnership behaviours are a reflection of choice and freedom (Giddens, 1992), with people being authors of their own biographies (Beck and Beck-Gernsheim, 2002) by choosing not only to be unmarried but also to remain unpartnered during their life-course.

Official statistics show a rise in the rates of those single never married and of those divorced aged 50 and over, especially in the past three decades (the US: Brown *et al.*, 2014; Eurostat, 2015; UK:

ONS, 2017a, 2017c; Australia, New Zeeland, the US: UN Women, 2019a, 2019b). Consequently, the rates of those unpartnered might be rising at younger ages but also at mid-life. However, the single never married or divorced individuals might cohabit or have a LAT intimate partner. Few surveys collect data on intimate relationships outside of households so the estimates of the unpartnered people are known only for some countries. For example, in Europe, among those aged between 18 and 79 years old, the highest proportions of those unpartnered were found in Lithuania (38.8%) and Hungary (31.4%) whereas the lowest proportion was in Belgium (22.0 %) (Liefbroer *et al.*, 2015). The same study shows that the proportion of those unpartnered is generally higher than those in a LAT and cohabiting relationship. In the US, among those aged between 57 and 85 years old, single people are also more common than those in LAT and cohabiting relationships, indicating the difficulties to find a partner at a later stage in life: 27.7% of the sample was unpartnered while only 5.1% was in a LAT relationship and 2.5% of the sample was cohabiting (Wright and Brown, 2017).

Despite singlehood not being a new phenomenon and the changes in partnership behaviours together with the social and ideational changes towards greater autonomy and personal freedom of post-industrial societies becoming widespread, unpartnered people are subject to controversy. Psychological studies highlight the negative stereotype, discrimination, and social stigma attached to singlehood, which become stronger when singles age (DePaulo and Morris, 2006; Hertel *et al.*, 2007; Morris *et al.*, 2008; Greitemeyer, 2009). Traditionally, single people have been perceived as more immature, lonely, self-centred, and less warm and caring compared to those partnered (DePaulo and Morris, 2005; DePaulo and Morris, 2006; Greitemeyer, 2009; Slonim *et al.*, 2015). However, nowadays single people are more celebrated in public discourse by writers, psychologists, and actors. Moreover, some of them actively aim to remove the social stigma attached to singlehood, in particular among the group who are in their mid-30s, when it is normative to marry (Billari and Liefbroer, 2010).

For example, the writer Cagan (2004) coined the term ‘quirkyalone’ to define this new trend of single people who enjoy being single, accept their relationship status while being happy in their own or friends' and family’s company. Quirkyalone is also an organised grass-roots movement established by online communities who also meet offline at various times. This online community is growing. According to Cagan, quirkyalones value friendship highly, they are not anti-love, indeed they would cherish a romantic relationship were it to happen. Facebook groups such as the ‘Community of Single People’ or blogs such as ‘Single at Heart’, created by social scientists interested in the lives of single people (DePaulo, 2019a; 2019b), aim to facilitate interaction among single people. Celebrities have also started to come up with alternative terms for the term of singlehood. For example, the actor Emma Watson, famous from the Harry Potter series of

movies amongst others, described herself as being happily 'self-partnered' rather than single, criticising the negative stereotype about being unpartnered when approaching the age of 30 (Barr, 2019).

Qualitative sociological research has investigated the meaning of singlehood and their social relationships. Evidence shows that, on the one hand, those unpartnered have generally constructed their single identity in a positive light, where an independent lifestyle is considerably appreciated (Budgeon, 2008, Timonen and Doyle, 2013). On the other hand, some singles, especially those of older age (i.e. over 60), express regret at not having a partner and children, but friendship and family networks help them to feel happy and fulfilled (Sharp and Ganong, 2007; Band-Winterstein and Manchik-Rimon, 2014). Studies have found that families and friends are sources of social support and integration for some singles but, at the same time, for others, they are sources of social stigma and social pressure to partner (Reynolds and Wetherell, 2003; Sharp and Ganong, 2011). However, no demographic study has investigated the experiences of those unpartnered, specifically in terms of their satisfaction with not having an intimate partner. Thus Chapter 4 combines the demographic, gerontological, and sociological literatures and investigates if and how a) past intimate relationships and b) satisfaction with friends, and frequency of contacting family are related to the satisfaction with singlehood.

1.3 Satisfaction with intimate life

In this thesis, I use the overarching concept of satisfaction with intimate life to refer to a) satisfaction with being single among those unpartnered and b) relationship quality among those partnered.

1.3.1 Satisfaction with being single

It is important to study how single people feel without having an intimate partner given all the studies which show the social stigma towards singlehood (DePaulo and Morris, 2006), and the mass media activities which encourage singles to live a fulfilled life despite not respecting the normative behaviour of being in a relationship (Cagan, 2004; DePaulo, 2019a, 2019b). In this thesis, satisfaction with being single reflects single people's assessment when they are asked 'You stated that you are not in a relationship at the moment. How satisfied are you with your situation as being single?' This item is measured on an 11-point scale where 0 is 'Very dissatisfied' and 10 'Very satisfied' (see Chapter 4, section 4.4.2, page 118). To the best of author's knowledge, this is the first investigation in demography on how happy individuals are with not having an intimate partner.

Furthermore, there has always been diversity within those currently single depending on their past relationships: some singles were previously married, some previously had only cohabiting relationships, some had only LAT relationships, some had only sexual relationships and some never had any intimate relationship at all. It is surprising how little we know about the relative size and characteristics of these different groups. Chapter 4 in the thesis takes a life-course approach asking how past intimate relationships are associated with satisfaction with singlehood in mid-thirties, focusing on three types of single people: a) those who had coresidential intimate experiences, b) those who had only non-coresidential (LAT) intimate experiences and c) those who did not have intimate experiences (lifelong singles). The chapter also pays attention to the link between on the one hand, satisfaction with friends and satisfaction with being single, and, on the other hand, between frequency of contacting parents and satisfaction with being single; this investigation is informed by the debate from sociological research on the positive and negative role of social networks on singles' lives (Reynolds and Wetherell, 2003; Budgeon, 2008; Sharp and Ganong, 2011; Band-Winterstein and Manchik-Rimon, 2014).

1.3.2 Relationship quality

There is no consensus in the research literature on the definition of relationship quality and social scientists have used the concepts 'relationship quality' interchangeably with 'relationship happiness' or 'relationship satisfaction' (Funk and Rogge, 2007; Fincham and Rogge, 2010; Blom *et al.*, 2017; Perelli-Harris *et al.*, 2019). In these studies, relationship quality is measured as a subjective, global evaluation of the relationship. Nonetheless, using global indicators such as relationship happiness/satisfaction can obscure other important aspects of relationship quality resulting in oversimplifying our understanding about intimate relationships (Fincham and Rogge, 2010).

In this thesis, relationship quality is considered a multidimensional concept with positive, negative, and sexual dimensions (see Figure 1.1, page 3). Indicators such as relationship happiness/satisfaction and self-disclosure represent the positive dimension, while the indicator measuring the couple's conflict frequency represents the negative dimension of relationship quality. The indicators which gauge emotional closeness during sex, compatibility in sexual interest, compatibility in sexual preferences, and sexual satisfaction capture the sexual dimension of relationship quality.

Studies that have investigated relationship quality as a multidimensional concept usually compared cohabitation and (re)marriage and are based on the US culture. For example, the positive dimension of relationship quality was represented by: a) happiness, b) communication, c) fairness (Brown and Booth, 1996; Skinner *et al.*, 2002; Musick and Bumpass, 2012); and the

negative dimension was represented by d) disagreements d) management of conflicts (Brown and Booth, 1996; Skinner *et al.*, 2002), and e) relationship disillusionment (Brown and Kawamura, 2010). This thesis adds to these studies by providing a multidimensional look at the nature of partnerships in the UK and Germany.

Relationship happiness/satisfaction

In this dissertation, relationship happiness and relationship satisfaction are measured with one global evaluation of the overall relationship happiness/satisfaction. I consider relationship satisfaction and happiness as indicators of relationship quality. However, chapters 2 and 3 expand the approach in studying the link between relationship quality and partnerships, which is why the conceptualisation of relationship happiness/satisfaction is different.

For example, Chapter 2 of this thesis, based on data from Natsal-3 (the National Study of Sexual Attitudes and Lifestyle survey), compares the relationship happiness and sexual intimacy in married, cohabiting, and LAT relationships in Britain. In this chapter, due to data limitation, only the positive and sexual dimension of relationship quality are examined. Sexual intimacy is represented by indicators such as emotional closeness to a partner during sex, compatibility in sexual preferences, and in sexual interest with a partner. In this study, sexual intimacy and relationship happiness indicators are considered as outcomes, and represent measures of the two dimensions of relationship quality, namely the sexual and positive dimensions, congruent with the conceptual framework of the Introduction chapter (see Figure 1.1, page 3).

However, in Chapter 3, based on data from pairfam (Panel Analysis of Intimate Relationships and Family Dynamics) conducted in Germany, relationship satisfaction is used interchangeably with the term relationship quality to denote an over-arching, umbrella concept. More specific indicators such as conflicts, self-disclosure, and sexual satisfaction fall under this umbrella concept (see Figure 3.1, page 68). In this study, conflicts capture the negative dimension of relationship quality, self-disclosure captures the positive dimension of relationship quality, and sexual satisfaction captures the sexual dimension of relationship quality. Chapter 3 shows that these more specific indicators of relationship satisfaction/quality are informative in understanding better the LAT relationship transitions. In this chapter, these relationship quality indicators are considered as independent variables.

Therefore, the conceptual and analytical strategies in these two chapters differ. In the link between relationship quality and partnerships, Chapter 2 considers relationship quality with its positive and sexual dimensions as outcomes whereas chapter 3 considers relationship quality, with its positive, negative, and sexual dimensions as main independent variables.

Conflicts and self-disclosure

Conflicts and self-disclosure are two relationship quality indicators used in this thesis to study LAT relationship transitions to either coresidence or separation relative to continuing the relationship as living apart. These two concepts are traditionally studied in psychology, but not in demography. This thesis aims to bridge the psychological and demographic literatures to shed light on the link between these in-depth concepts and LAT transitions (Chapter 3).

A couple's conflict frequency is defined in this thesis as the partners' degree of disagreeing, quarrelling and of being annoyed or angry with each other. Past research has generally studied the frequency of conflict within the context of marriage. The literature suggests that spouses with higher levels of conflict are more likely to divorce (Kluwer and Johnson, 2007; McGonagle *et al.*, 2016). To the best of the author's knowledge, no demographic study which examined LAT outcomes has employed indicators of conflicts and self-disclosure, using representative data. Chapter 3 aims to fill in this gap, studying the link between relationship satisfaction, conflicts, self-disclosure, and sexual satisfaction and LAT relationship transitions in Germany.

Self-disclosure in a relationship is the process of expressing one's innermost thoughts, feelings, and personal experiences to a partner (Altman and Taylor, 1973; Carpenter and Greene, 2016). Self-disclosure is one of the most important acts of relationship maintenance and it is related to feelings of love (Hendrick *et al.*, 1988), relationship satisfaction, and commitment (Sprecher and Hendrick, 2004). However, few studies have investigated the relationship between self-disclosure and LAT union stability and the results are mixed. One of the studies found that higher self-disclosure was related to partners still being together after four years (Sprecher, 1987), whereas another study found weak support for the association between self-disclosure and later relationship stability (Sprecher and Hendrick, 2004). However, these studies are based on small convenience samples making these results questionable. Moreover, the studies considered the likelihood of dating couples being together as compared to breaking-up, without studying the competing event of moving in with the partner.

Sexual intimacy

Sexual intimacy is defined in this thesis as emotional closeness during sex, compatibility between partners in terms of sexual interest, preferences, and sexual satisfaction. As sexual health researchers argue, these constructs are distinct from one another, tapping into different aspects of a sexual relationship (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013). For example, emotional closeness during sex is related more to the feelings of bond and security between partners during the sexual act (Mitchell *et al.*, 2011). Compatibility in sexual preferences refers to different sexual activities such as oral, anal, vaginal sex, engaging in verbal fantasies, to name a

few, that partners want to practice together (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013). Compatibility in sexual interest refers to partners wanting to have sex with similar frequency. The lack of agreement in sexual preferences and sexual interest is one of the major reasons for stress and discord in a relationship (Witting *et al.*, 2008; Lodge and Umberson, 2012). Moreover, the lack of feelings of closeness could impact partnership stability (Mitchell *et al.*, 2011; Doss *et al.*, 2004). Sexual satisfaction is another important component of one's quality of life and relationships. Higher levels of sexual satisfaction are related to increased levels of individual well-being (Debrot *et al.*, 2017), better health (Brody, 2010; Galinsky and Waite, 2014), and stronger feelings of commitment to and love for a partner (Sprecher, 2002; Štulhofer *et al.*, 2013). It is important therefore to study how these aspects contribute to our understanding of partnerships.

Recent evidence based on data collected from representative samples indicates that sexual lifestyles have changed substantially in the past 60 years in Great Britain, the US and Australia, (Herbenick *et al.*, 2010; Mercer *et al.*, 2013; Rissel, Badcock, *et al.*, 2014). For example, in Britain, the number of heterosexual and homosexual partners, especially for women, has increased for younger cohorts, the age of first sexual encounter, especially for women, has decreased across cohorts, and the proportion of people adopting more diverse sexual practices, such as oral and anal sex, has been growing (Johnson *et al.*, 2001; Mercer *et al.*, 2013). Greater acceptance of non-marital sex, a growing number of sexual partners across cohorts and a more diverse pool of sexual practices have been changes noted in the US (Herbenick *et al.*, 2010; Twenge *et al.*, 2015) and Australia as well (Rissel *et al.*, 2014; Visser *et al.*, 2014). Sex is the prerequisite of any ongoing relationship (Schwartz *et al.*, 2013; Muise *et al*., 2016), and, in general, the purpose of sex in relationships is to create a bond between partners, especially for women (Mitchell *et al.*, 2011; Schwartz *et al.*, 2013). It is important therefore to understand how sexual intimacy relates to different intimate relationships.

This thesis examines whether satisfaction with intimate life differs by gender. Past research suggests gender differences in sexual behaviour, with women being less permissive in their sexual attitudes and behaviours compared to men, including engagement in sexual intercourse, engagement in premarital sex, sexual attitudes, and the number of sexual partners. However, these differences have become less marked for younger cohorts (Petersen & Hyde, 2010; Treger et al., 2013). Three main theoretical approaches explain gender differences in sexual behaviour: socialisation, script, and evolutionary theory. Socialisation or social learning theory posits that gender differences in sexuality emerge from learned gender roles that are socialised during childhood and teenagehood (Bandura, 1977; Petersen and Hyde, 2010). For example, the socialization framework explains that women take a less active role in relationship initiation (e.g., being asked on a date by men) or possess less permissive sexual attitudes (e.g. they are less likely

to approve sex at a first date) because society or culture supports and reinforces such attitudes and behaviours (Peplau *et al.*, 1977). These behaviours are further embedded within various scripts women and men use to act in socially and sexually appropriate ways (e.g., men paying for dates, men initiating the sexual act). The script theory suggests that men and women follow different scripts in their sexual behaviour, which are reinforced by media and television (Simon and Gagnon, 1986; Duran and Prusank, 1997; DeLamater and Hyde, 2004). The evolutionary theorists (Buss, 1995; Buss and Schmitt, 1993) attribute gender differences in sexuality to the differences in the approach of women's and men's investments in relationships and reproduction (i.e. parental investment). Women have greater risks in reproduction, such as a nine-month long pregnancy, birthing, and breastfeeding. Therefore, they are more selective of their mates, preferring long-term relationships. Men, on the other hand, have fewer risks in reproduction, as they only contribute sperm in mating; therefore, men are thought to put more of their energy into and are more permissive of short-term, sexual relationships (DeLamater and Hyde, 2004).

Also, the meaning of sex and the evaluation of sexual aspects are different for men and women. Women are more open and sexually satisfied in committed relationships (Peplau, 2003; Armstrong *et al.*, 2012) rather than in causal short relationships, placing a greater emphasis on the emotional connection during sex than men (Gabb and Fink, 2015). In contrast, men tend not to talk greatly about sex in terms of emotions, equivalising sex with a need, being sexually open in any type of relationship (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013; Gabb and Fink, 2015; Umberson *et al.*, 2015). Chapter 2 sheds light on how women and men in different relationships assess sexual intimacy.

At the same time, some people might not consider sex as a fundamental part of their life. Asexuality (not having a sexual attraction to a partner of either sex) has captured the attention of psychologists whose efforts are directed towards understanding the sexual behaviour and personality of these people (Bogaert, 2004; Brotto *et al*., 2010). While there is still not an agreed definition of asexuality, psychologists acknowledge this as another valid sexual orientation, along with heterosexuality, homosexuality, and bisexuality (Brotto *et al.*, 2010; Brotto and Yule, 2011; Yule *et al.*, 2014). These people can be in a relationship or single. In this thesis, asexuality cannot be measured or controlled for. Nonetheless, the asexuality aspect comes in the discussion part of Chapter 4, which studies single people, by speculating that some lifelong singles can be asexual, underlying, at the same time, a need for new data collection on sexual attraction.

1.4 The country contexts of the thesis

Britain and Germany are two countries characterised by rapid partnership behaviour changes after the 1970s, such as decreased marriage rates, and increased cohabiting and divorce rates, especially at mid-life (UK: ONS, 2015, 2017a, 2017c; 2019a; Germany: UN Women, 2019a). Moreover, Britain and Germany are among the countries with the highest levels of childlessness in Europe, at around 20% (Berrington, 2017; Kreyenfeld and Konietzka, 2017) and the fastest increase in one-person households (Eurostat, 2017; ONS, 2019a), especially among those in the working ages, particularly between the ages of 30 and 64 (see in Sandström and Karlsson, 2019). These demographic changes reflect a change in the intimate lives of people, which are characterised now by having greater freedom from societal norms, autonomy, and flexibility over living one's life as compared to five decades ago. At the same time, these changes show a higher instability of relationships (Giddens, 1992; Beck and Beck-Gernsheim, 2002), which implies that individuals live nowadays more often (and longer) episodes of being unpartnered. However, it is difficult to understand the nature of partnerships and singlehood due to limited data available asking about the intimate lives of those partnered and unpartnered. Apart from their changing partnership behaviours, these two countries were also chosen because two of the most comprehensive data sets on sexual intimacy and relationship quality have been conducted in Britain (the British Study of Sexual Lifestyles and Behaviours, Natsal-3; NatCen Social Research, 2019) and Germany (the German Family Panel, paifam; Brüderl *et al.*, 2018). Moreover, these data are underexplored by demographers despite including questions about the presence of a LAT intimate partner and the experiences of those unpartnered.

1.4.1 Britain

Marriage and cohabitation

Since the 1970s, Britain embarked on a de-standardisation of family life-course driven by decreased marriage rates, delays in childbearing, increased cohabitation, and divorce, causing a rise in the proportions of people who are never married. Starting in the 1970s the prevalence and duration of cohabitation increased, and by the 1990s it became established as a widespread and accepted form of partnering (Carter and Duncan, 2018). Probert (2012) found no popular use or understanding of the term 'cohabitation' before the 1970s. Surveys such as the Family Formation Survey and General Household Survey for the first time started to ask questions on cohabitation history in the late 1970s and the UK census first recognised and documented cohabitation in 1991. Nonetheless, as Murphy (2000) states, none of these early surveys used the term

'cohabitation' but terms such as 'living together before marriage' or 'living together as married' (Carter and Duncan, 2018; Murphy, 2000).

Most marriages nowadays are preceded by a period of cohabitation (Beaujouan and Ní Bhrolcháin, 2011) and childbearing within cohabitation has increased as official statistics show. The number of dependent children living in cohabiting couples grew from 7% in 1996 to 15% by 2017 (ONS, 2017b) and the number of births registered to cohabiting couples increased from 21% in 1996 to 32% in 2016 (ONS, 2016). Nonetheless, many couples marry after the birth of children. At current rates, about 42% of marriages are estimated to end up in divorce (ONS, 2019b) while the dissolution risk of cohabitation is thought to remain high (Beaujouan and Ní Bhrolcháin, 2011). The increase in the number of people never married is one of the fastest changes in the UK (ONS, 2019a) which could signify a high proportion of unpartnered people as well. All these changes in partnership behaviour reflect the uncertainty of partnerships expressed in an erosion of the willingness to create life-long partnerships as the individualisation thesis predicted (Becker, 1981; Giddens, 1992).

However, studies show that cohabitation is similar to marriage in terms of expectations around fidelity, commitment (Duncan and Phillips, 2008; Gabb and Fink, 2015; Carter and Duncan, 2018), and that some cohabiting couples see themselves just as committed to their partner as married spouses (Jamieson *et al.*, 2002; Carter, 2012; Berrington *et al.*, 2015; Carter and Duncan, 2018). For example, cohabitors perceive that personal commitment (the extent to which individuals are willing to stay in the relationship) is similar in married and cohabiting relationships (Berrington *et al.*, 2015). It seems that the gap in commitment between marriage and cohabitation is narrowing since cohabiting couples are changing the meaning of commitment defining it more broadly: they publicly express their commitment through rearing children and joint mortgages (Berrington *et al.*, 2015). At the same time, social scientists drew attention to the heterogeneous meaning of cohabitation in Britain, with some couples just starting their intimate relationships and others having lived together (with or without children) for many years (Berrington *et al.*, 2015; Carter and Duncan, 2018).

Nonetheless, marriage remains an ideal and it is an aspiration for many, a wedding being an important sign of public commitment (Jamieson *et al.*, 2002; Berrington *et al.*, 2015). Marriage is perceived as conveying a higher level of commitment and a greater expectation of permanency but also a greater cost than cohabitation if the relationship ends. In legal matters, married people are more protected by law than cohabiting people. The UK government legislated tax breaks for married people in 2013. Moreover, cohabiting couples have fewer rights compared with married couples upon relationship breakdown. For example, little access to family courts in case of separation is offered to cohabiting couples. In addition, cohabiting couples do not have rights of

inheritance after the death of a partner (Barlow, 2014). Because the legal system is more protective of marriage than cohabitation and the social norms favouring marriage, married individuals may be happier with their relationship than those cohabiting.

However, despite the legal and commitment level differences, recent studies show that in the UK there are no differences in health benefits or subjective well-being between marriage and cohabitation, especially after accounting for childhood selection mechanisms, partnership characteristics, or relationship quality (Perelli-Harris *et al.*, 2018; Perelli-Harris *et al.*, 2019). Nonetheless, women with a low propensity to marry would experience increases in well-being if they marry, even in the presence of control variables (Perelli-Harris *et al.*, 2019). However, when relationship satisfaction is taken into consideration these differences disappear suggesting the importance of the quality of the relationship over the legal safety of marriage for disadvantaged women (*ibid,* 2019). More studies need to be done on how married and cohabiting relationships differ in relationship quality in the UK. Few demographic studies have considered the role of sexual intimacy in understanding partnerships (Laumann *et al.*, 1994; Waite and Joyner, 2001; Yabiku and Gager, 2009) despite sex being an important component in relationships (Muise *et al*., 2016; Schwartz *et al.*, 2013). Chapter 2 fills in this gap by exploring the differences in sexual intimacy and relationship happiness between married and cohabiting relationships, adding also to the comparisons LAT relationships as well.

Living apart together relationships

In her qualitative work on the nature of non-coresidential couples, Roseneil (2006) finds that LATs embrace less the idea of moving in with or marrying their partner, characterising their relationships in terms of uncertainty, fluidity, and as a permanent evaluation about how it responds to their personal needs. The author claims that LATs are moving beyond the traditional construct of family, being a feature of the individualisation theory, resonating with Giddens's (1992) notion of 'pure relationship'[2] and Bauman's (2003) metaphor of 'liquid love'[3] (*ibid,* 2006). Moreover, Roseneil underlines the tendency of those in LAT relationships to de-prioritise sexual/love relationships in favour of friendship and family relations, the former being considered

[2] Both terms, 'pure relationships' and 'liquid love' refer to relationships outside marriage and the conventional family; Giddens (1992) characterises today's intimate relationships as 'pure relationships', which are freely chosen, mutually consensual, constantly subject to self-reflexive examination which continue as long as they are satisfying for both partners.

[3] Bauman (2003) uses the metaphor of 'liquid love' to underline the fragility of human bonds in an intimate relationship; in his view, intimate relationships have a component of 'liquid love' by being focused on individual fulfilment, being characterised by temporary, commodified, and selfish attachments.

risky and not that central in their lives. Nonetheless, many studies oppose the view that LAT relationships are a feature of individualisation thesis, arguing that people who live apart are cautious and conservative, with LATs being just a stage on the route from singledom to cohabitation and marriage (Haskey, 2005; Haskey and Lewis, 2006). More recently, LATs in Britain have been characterised by sociologists in terms of 'flexible pragmatism' (Duncan and Phillips, 2010; Phillips *et al.*, 2013; Duncan *et al.*, 2014; Coulter and Hu, 2015). These authors consider LAT relationships as an expression of social change but also of continuity in personal life. The term 'flexible pragmatism' underlines partners' flexibility to adapt their needs and desires around personal autonomy, couple intimacy, and other family commitments (Carter and Duncan, 2018). Most LATs perceive themselves in terms of being in a monogamous, committed relationship, where marriage remains a strong ideal, and see their partnership as not different from cohabitation with respect to separation risk, emotional security, or closeness (Duncan *et al.,* 2014). However, the same study presents LAT individuals disagreeing with the statement that their relationship made them feel "more emotionally safe and secure" (*ibid*, 2014, page 7). This suggests the ambivalent nature of LAT individuals, the change and continuity this relationship type represents.

LATs are heterogeneous, with people using LAT in different ways and different situations, with different needs and desires. For example, LATs reflect either a temporary stage or a continuing state of a relationship. Duncan *et al.* (2013) find four groups of LAT, underlining that generally, those who see LAT as a stage before cohabitation live apart by (financial) constraints (the group 'Can't') or by preference (the group 'Not Now'). Those who see LAT as a relationship state lived apart by preference (the group 'Won't'). A smaller intermediate category comprises those who prefer LAT (especially lone mothers) but did not want to cohabit because of family obligations (the group 'Oughtn't'); they perceive LAT as a stage on the way to cohabitation. Coulter and Hu (2015) found four groups of LAT distinguished over the life-course. The 'nested young adult' group comprises people under 30 years of age, still living with parents, many of them still being in education (44% of the sample). The 'independent adults' group is older, some had experienced marriage, most live alone but some live with children and are the most highly qualified among all groups (32% of the sample). The 'single parents' group is dominated by mothers who mostly have never been married (11% of the sample). The final group of 'seniors' (13% of the sample) consists of people over 50 years of age, previously married, often with adult children and retired homeowners. These results suggest the ambivalent nature of LAT individuals and the change and continuity in coupledom which is related to the life-course of individuals. Chapter 2 adds new understating on LAT relationships in Britain in terms of sexual intimacy and relationship happiness by comparing LAT with married and cohabiting couples, an approach rarely encountered in the demographic studies on relationships (except for Tai *et al.*, 2014 and Lewin, 2017).

Singlehood

Sociological qualitative studies conducted in Britain have studied how people feel about being single (Reynolds and Wetherell, 2003; Roseneil and Budgeon, 2004; Roseneil, 2006; Reynolds *et al.*, 2007; Budgeon, 2008). It should be noted that those 'single' are defined as those without coresidential experience, but some of these individuals had a LAT partner and others were unpartnered. The literature generally underlines the positive accounts of being unpartnered as a choice, independence, self-actualisation, and personal growth. Despite not having had low-quality romantic relationships, some individuals have adapted quickly to an independent lifestyle after breaking-up, cherishing very much being unpartnered (Budgeon, 2008). Some other participants talked about their journey of self-reconfiguration they embarked on after separation from restrictive relationships, which ultimately, offered greater personal empowerment and freedom (*ibid*, 2008). The same study indicates the scepticism singles express towards the romantic idea of 'foreverness' regarding relationships and the little importance they ascribe to having sexual partners. In contrast, having and maintaining good relationships with friends and neighbours are more important for unpartnered and unmarried people (Roseneil and Budgeon, 2004; Roseneil, 2006; Budgeon, 2008). In light of these findings, singlehood reflects the greater autonomy and agency people have on their lives now, with choices being driven more by individual interests and less by social norms or family interest (Beck and Beck-Gernsheim, 1995).

However, some singles, especially women, have also talked about social exclusion experiences from some of the family members and friends as sanctions of not following the normative family life, which made them feel as outsiders and as having a 'deficit identity' (Reynolds and Wetherell, 2003; Reynolds *et al.*, 2007). Some of these women, especially those in mid-life, felt unhappy with not being married and not having an intimate partner because they were 'not chosen by men', thinking of themselves as 'failures' (Reynolds *et al.*, 2007). All these studies have emphasised the complex feelings of having no intimate partner in a world where it is normative to partner and have children (DePaulo and Morris, 2005, 2006). To the best of the author's knowledge, national representative surveys in Britain did not collect information about singlehood. However, rich data about single individuals and how they feel about not having an intimate partner was collected by pairfam, in Germany. Consequently, Chapter 4 in this thesis aims to shed light on the satisfaction with singlehood among those unpartnered in Germany.

1.4.2 Germany

Marriage and cohabitation

The patterns and the meaning of marriage and cohabitation differ in Eastern and Western Germany, and these differences are related to the socio-political regimes in these two parts of the country. For example, unmarried cohabitation was illegal in former West Germany (the Federal Republic of Germany, FRG) until 1973 (Konietzka and Tatjes, 2014). Here, family policies encouraged the marital male breadwinner model and complementary gender roles through marriage-related benefits and tax allowances, suggesting a model of a family where a woman is a housewife and the main carer for children (Hiekel *et al.,* 2014). In contrast, in former East Germany (the German Democratic Republic, GDR), mothers were encouraged to work full-time after the birth of the child having their job reserved for them (Kreyenfeld and Konietzka, 2017). Childbearing within cohabitation or single parenthood was supported more in the East by offering unmarried mothers 1-year paid maternity leave for their first child (while for married women this was offered for the second child only; Hiekel *et al.*, 2014). Marriage and childbearing were driven by instrumental considerations since the Socialist state was offering access to flats for married couples (Konietzka and Tatjes, 2014). Even couples who had children within cohabitation were given access to housing and interest-free loans after they married (Salles, 2006). Consequently, in East Germany, the age of marriage and childbearing was lower than in West Germany (Kreyenfeld and Konietzka, 2017).

After the unification in 1990, partnership behaviours changed with examples of delay in marriage and childbearing, increases in cohabitation and divorce rates, together with childbearing within cohabitation, especially in Eastern Germany (Salles, 2006; Perelli-Harris *et al.*, 2010; Hiekel *et al.*, 2015; Kreyenfeld and Konietzka, 2017). Most laws in Germany related to health insurance, inheritance, and property regulation favour married couples at the expense of cohabiting, LAT, or single individuals (Perelli-Harris and Gassen, 2012). Currently, in Western Germany, there is a strong normative preference to marry, and cohabitation as a substitute to marriage is more disapproved of in West than in East Germany (Hiekel *et al.*, 2015; Klärner and Knabe, 2017). Consequently, cohabitors in West Germany are more likely to marry than those living in East Germany and see cohabitation as a stage in the marriage process (Hiekel *et al.*, 2015; Klärner and Knabe, 2017). Qualitative evidence suggests that individuals in West Germany view marriage as involving a higher commitment and a more secure environment to raise children than cohabitation (Klärner and Knabe, 2017). In contrast, in East Germany, cohabitation is seen more as a relationship state, as an alternative to marriage (Heuveline and Timberlake, 2004; Hiekel *et*

al., 2015), where cohabitation fulfils the same function of marriage even if children are born (Klärner and Knabe, 2017).

Living apart together relationships

In Germany, 8.6% out of those aged between 18-79 years old were in a LAT intimate relationship compared with 25.9% of singles, as estimates from the 2005 Gender and General Survey shows (Liefbroer *et al.*, 2015). More recent estimates from the German Socio-economic panel collected between 2012/2013, show that in Germany, among couples who are 20 years old, 80% are in LAT relationships. This proportion drops to about 45% among those aged 25 and to about 18% among those aged 30, reaching slightly below 10% for respondents in their mid- 30s (Krapf, 2017 - calculations based on German Socioeconomic panel). Also, the share of people who are in LAT relationships increased across cohorts: for example, about 20% of those aged 25 in 1992/1993 were in a LAT relationship compared to about 45% in 2012/2013. Slightly under 10% of those aged 30 in 1992/1993 were in a LAT relationship compared to about 18% in 2012/2013 (*ibid*, 2017).

The studies of LAT relationship transitions in Germany suggest that long distance travel to the partner is associated with separation rather than still living apart (Krapf, 2017). LAT respondents who were planning to marry and to have children, and who already introduced their partner to their parents were more likely to move in as compared to those who did not (Wagner *et al.*, 2019). These studies have also included relationship quality either as a part of the paper's focus (Wagner *et al.*, 2019) or as a control variable (Krapf, 2017). However, both studies conceptualised relationship quality as unidimensional, measured as the overall subjective feeling of satisfaction in the relationship. Chapter 3 of this thesis extends the understanding of LAT relationship transitions in Germany by conceptualising relationship quality with positive, negative, and sexual dimensions represented by the following indicators: frequency of self-disclosing to a partner, couple's conflict frequency, and sexual satisfaction. Moreover, this chapter investigates if the global indicator of relationship satisfaction would remain important in explaining LAT relationship transitions after accounting for sexual satisfaction, self-disclosure, and couple's conflict frequency.

Singlehood

Singlehood has not been much the focus of demographers, despite this not being a new phenomenon in society. In the WEMP (described in section 1.2.3), singlehood (defined as having been never married) comprised of 10% up to 20% of women aged between 45-49, and in most cases, these women remained childless (Hajnal, 1965). Tracking back the historical data for Germany, the author noticed that during 1896-1897 (at the end of the 19th century) the average

age of marriage in Bavaria was high: 27.4 for men and 24.9 for women (Hajnal, 1965, p. 110; the age of marriage was obtained from non-representative data, by matching the marriage and birth certificates). In Germany, at the beginning of the 20th century, 48% of men and 34% of women were never married in the age group 25-29 (Hajnal, 1965, p. 102). This pattern continued at later ages but with lower rates: 9% of men and 10% of women aged 45-49 had been never married (*ibid*, 1965, p. 102). It is known that in the country, marriage was restricted to those from advantageous social strata from the 16th century until the 20th century, with opportunities to get married improving little over this period (Knodel, 1967; Kreyenfeld and Konietzka, 2017). Moreover, West Germany has had a long history of high rates of childlessness, recorded since the late 19th century, reaching in 2012 a proportion of 24% among women aged 43-47 (in the birth cohort 1965-1969, see Kreyenfeld and Konietzka, 2017, p. 103). Being childless at ages when it is normative to marry and have children might indicate the difficulty of finding a suitable partner, especially for women.

Estimates about unpartnered people are scarce because few surveys include questions about the presence of a LAT partner. However, data from the 2005 Gender and Generation Survey shows that in Germany, 25.9% of the population aged 18-79 years old was single, a higher proportion than those in LAT (8.6%), and in cohabiting relationships (8.6%) (Liefbroer *et al.*, 2015). Demographic studies have underlined the poor well-being of those never married or not in a coresidential relationship compared to those who are in a coresidential relationship (US: Marks, 1996; the Netherlands: Soons and Liefbroer, 2008; Europe: Verbakel, 2012; US: Wright and Brown, 2017; Europe: Perelli-Harris *et al.*, 2018). Chapter 4 goes beyond the studies which investigated the broad concept of well-being, by shedding light on the satisfaction with not having an intimate partner, in Germany. Chapter 4 contributes to the literature on singlehood by offering new insights into the characteristics and heterogeneity of singles according to their past intimate relationships. Also, this work contributes theoretically by refining the definition of lifelong singlehood including those who never had either a coresidential or a LAT intimate relationship during adulthood.

1.5 Chapters' aims and thesis structure

Chapter 2 of this thesis brings together the sex literature and demographic literature on partnership dynamics to shed light on how sexual intimacy and relationship happiness differ across married, cohabiting, and LAT relationships in Britain. Motivated by the changing partnership behaviours in the last decades, this chapter draws on diffusion theory (Liefbroer and Dourleijn, 2006) and on the debates about the nature of LAT in the UK (Roseneil, 2006; Duncan *et al.*, 2014) to frame the research questions and explain the results. The data used are the latest

cross-sectional wave of the British National Study of Sexual Attitudes and Lifestyles (Natsal-3, 2010-2012). Natsal-3 data were chosen because it is one of the richest data set on sexual intimacy and behaviours in the world. The analysis is conducted separately by gender since the social psychological literature indicates gender differences in how people assess their sexual intimacy (Bandura, 1977; Peplau *et al.*, 1977; Simon and Gagnon, 1986). In this chapter, sexual intimacy is conceptualised using three aspects: emotional closeness during sex with a partner, compatibility in terms of sexual preferences, and compatibility in terms of sexual interest. Relationship happiness is measured as self-reported overall happiness with the partnership. Since individuals define a 'good' sex life by feeling emotionally connected to their partner during sex, being compatible with their partner in the interest in having sex, and sexual preferences (Mitchell *et al.*, 2011), it is important to investigate how these aspects contribute to our understanding about the nature of partnerships. Few demographic studies have compared these relationships in terms of relationship quality (Tai *et al.*, 2014; Lewin, 2017), and none has considered the sexual aspects of relationships. Chapter 2 asks the following research question:

'How do sexual intimacy and relationship happiness differ for married, cohabiting, and living apart together relationships, net of other covariates?

Chapter 3 of the thesis examines LAT relationship transitions to coresidence or separation relative to continuing in a LAT in Germany. This work builds on the studies of Krapf (2017) and Wagner and colleagues (2019), by focusing on how relationship quality relates to these transitions. This work goes beyond these two studies which considered relationship quality as unidimensional, by engaging with multiple dimensions of relationship quality. Positive, negative, and sexual dimensions are represented by indicators of self-disclosure, couple's conflict frequency, and sexual satisfaction. This study conceptualises relationship satisfaction as an umbrella concept where sexual satisfaction, self-disclosure to a partner, and couple's conflicts are important specific indicators falling under this umbrella. The chapter argues that both general concepts such as relationship satisfaction as well as specific concepts such as sexual satisfaction, self-disclosure, and conflicts are important in understanding LAT relationship outcomes. Parts of the Social Exchange theoretical framework (Thibaut and Kelly, 1959) are used to frame the research questions and to explain the results. This work contributes to the literature on the nature of LAT relationships. The paper uses the longitudinal prospective design of the German Panel Analysis for Intimate Relationships and Family Dynamics (pairfam, waves 1-4 collected between 2008-2012) because this data measures relationship quality as a multidimensional concept, with many indicators. The following research questions are asked:

'Is relationship satisfaction associated with a LAT relationship transition to coresidence or separation, net of other control variables? How are sexual satisfaction, self-disclosure, and couple's conflict frequency related to a LAT relationship transition, net of other control variables? Is relationship satisfaction still an important indicator after accounting for sexual satisfaction, self-disclosure, and couple's conflict frequency in explaining a LAT relationship transition?'

Chapter 4 of the thesis considers a less investigated group in demography, namely single people. This chapter investigates how satisfied individuals are with not having an intimate partner, an approach less encountered in demography. This study draws on demographic, psychological, and sociological literatures, which examined the link between break-ups and people's well-being, to form hypotheses about the differences in satisfaction with being single among those ever-partnered and lifelong singles. The chapter additionally examines the link between the satisfaction with and frequency of contacting social networks and satisfaction with singlehood, contributing to the debate on the role of friends and family in the lives of those unpartnered (Budgeon, 2008; Sharp and Ganong, 2011; DePaulo, 2019b). The results of this work show the importance of considering the satisfaction with and the frequency of contacting social networks in explaining the association between past intimate relationships and singles' satisfaction with not having an intimate partner. Guided by the mixed results from the literature of well-being differences between divorced men and women (Amato and Hohmann-Marriott, 2007; Andreß and Bröckel, 2007; Leopold, 2018), this chapter also examines if gender moderates the link between past intimate relationships and evaluations of satisfaction with singlehood. The study contributes also theoretically by refining the definitions of singlehood and lifelong singlehood. Firstly, it disentangles those truly unpartnered from those with a non-coresidential intimate (LAT) partner, providing a more refined definition of singlehood, aligning to those few studies with a similar approach (Soons and Liefbroer, 2008; Verbakel, 2012; Liefbroer *et al.*, 2015; Wright and Brown, 2017). Secondly, to the best of the author's knowledge, this is the first study that tracks the singles' relationship histories of having had LAT relationships and of not having had any intimate relationships during adulthood. Those who never had any intimate relationship are defined as lifelong singles. Furthermore, this chapter offers the first insights into the characteristics of lifelong singles discussing potential selection mechanisms. The first wave of the German Family Panel pairfam survey (collected between 2008-2009) is used because it has rich data on those currently unpartnered, including how they feel about not having an intimate partner, and on coresidential and non-coresidential relationship histories. Therefore, this paper departs from other studies where lifelong singlehood is defined as never having had a coresidential relationship during adulthood (Bellani et al. 2017). The research questions addressed in this chapter are:

'Are there any differences in the satisfaction with being single between lifelong singles and those who either had a past intimate LAT or coresidential relationship, net of other control variables? Among singles, is satisfaction and frequency with social networks associated with the satisfaction with being single, net of past intimate relationships and other control variables?; Does gender moderate the association between past intimate relationships and satisfaction with being single?'.

Chapter 5 summarises the main results, reflects on how they contribute to the literature, discusses the study limitations, and how this thesis can lead forward to future work.

All in all, this thesis encompasses intimate relationships and singlehood in its study of satisfaction with intimate life. This dissertation contributes to the discussion about the nature of partnerships by considering a less studied aspect, which at the same time is sensitive, but important, sex. Moreover, by employing concepts from psychology the dissertation contributes to the understanding of LAT outcomes and coresidential partnership formation. The dissertation sheds light not only on the characteristics of single people but also their satisfaction with not having a partner, which is a less traditional approach in demography, where the focus has long been on the relationship satisfaction of those partnered.

Chapter 2 Sexual Intimacy and Relationship Happiness in Living Apart Together, Cohabiting, and Married Relationships: Evidence from Britain

2.1 Introduction

Sexuality is woven into the formation and maintenance of many close romantic relationships, and the literature suggests that sex generally strengthens the bonds of relationships (Schwartz *et al.*, 2013; Debrot *et al.*, 2017). According to social psychologists, various dimensions of sexuality, such as sexual frequency or sexual satisfaction are related to relationship satisfaction and stability (Muise *et al.*, 2016; Sprecher and Cate, 2004; Yeh *et al.*, 2006). However, prior research has paid less attention to aspects such as emotional closeness during sex, compatibility between partners in terms of sexual interest, and preferences. These aspects are considered central in defining a fulfilling sex life (Mitchell *et al.*, 2011) and are important because they reflect different facets of both sexual difficulties (King *et al.*, 2007; Witting *et al.*, 2008) and relationship quality (Cordova *et al.*, 2005; Štulhofer *et al.*, 2013; Yoo *et al.*, 2014). The lack of feelings of closeness (Doss *et al.*, 2004) and sexual incompatibility could also impact partnership stability. In addition, they might differ by partnership type. Sex research and demographic literatures have recently begun to look closely at partnerships but have focused mostly on sexual frequency (Yabiku and Gager, 2009; Schröder and Schmiedeberg, 2015) or sexual satisfaction (Laumann *et al.*, 2006; Schmiedeberg and Schröder, 2016). This paper represents the first attempt to bring together these literatures to understand how different dimensions of sexuality are related to partnerships. For conciseness, I adopt the term sexual intimacy in partnerships to refer to emotional closeness with a partner during sex, compatibility between partners in sexual interest, and in sexual preferences. This chapter focuses on sexual intimacy and relationship happiness as pieces in the puzzle of understanding differences across partnership types.

The past decades have witnessed profound changes in partnership behaviour, which are exemplified by later marriages, higher cohabitation rates, and other ways of expressing intimacy, such as outside of coresidence, in 'Living Apart Together' relationships (LAT) (Lesthaeghe, 2010; Stoilova *et al.*, 2014; Perelli-Harris and Bernardi, 2015). At the same time, the definition of sexual health has changed from a reproductive perspective to one based on pleasure and safety, especially after the introduction of contraception (WHO, 2010). It is argued that sexual pleasure underpins relationship maintenance (Giddens, 1992; Muise *et al.*, 2016; Debrot *et al.*, 2017). Giddens (1992) coined the term 'plastic sexuality' to denote the malleability and flexibility of

individual sexual needs and desires, as a way of expressing intimacy. Sexual intimacy aspects such as sexual compatibility between partners have previously been examined in terms of their association with sexual dysfunction (Witting *et al.*, 2008; Mercer *et al.*, 2013; Mitchell *et al.*, 2013; Graham *et al.*, 2017). However, the sexual dimension of relationships has not been greatly studied by family demographers. Since the definitions of 'commitment' and 'partnerships' are continuously changing and being redefined by both researchers and couples themselves (Perelli-Harris *et al.*, 2014; Berrington *et al.*, 2015) and given the importance of sex beyond its scope of reproductive function (WHO, 2006), there is a gap and need for understanding how sexual intimacy differs across different intimate partnerships.

Studies, most of which are conducted in the US, indicate differences in cohabitation and marriage by sexual frequency (Blumstein and Schwartz, 1983; Laumann *et al.*, 1994; Waite and Joyner, 2001) with cohabiting couples enjoying a higher frequency of sex, being characterised as a 'sexier' living arrangement (Blumstein and Schwartz, 1983). Moreover, low sexual frequency has a stronger influence on relationship dissolution for cohabiting than for married couples (Yabiku and Gager, 2009). However, these studies are based on old data capturing a time when cohabitation was a premarital, not a long-term arrangement. More recent studies conducted in Europe, show that being in a cohabiting or married relationship was not associated with changes in sexual frequency and sexual satisfaction over time (for Germany see Schröder and Schmiedeberg, 2015; Schmiedeberg and Schröder, 2016). It is still not clear how other aspects of sexual life are related to partnerships in other contexts than the US or Germany.

In the UK, cohabitation has become the normative pathway within partnership formation, and the country is characterised by high rates of marriages that start with premarital cohabitation (Beaujouan and Ní Bhrolcháin, 2011). The high level of cohabitation pervasiveness might suggest that cohabitors assess sexual intimacy aspects in a similar way to married individuals. LAT relationships, on the other hand, are characterised by 'flexible pragmatism' (Duncan and Phillips, 2010), which allows the partners to adapt their needs and desires around personal autonomy, couple intimacy, and other family commitments. However, LAT partners might spend less time together doing joint household activities and keep a less interconnected personal schedule compared with cohabitors and marrieds, who live under the same roof. Consequently, LATs might invest less in the relationship and have more space for autonomy and independence. Therefore, they might differ in their evaluation of sexual intimacy as compared to married and cohabiting couples.

Most studies which compared marriage and cohabitation on relationship quality were conducted in the US (Bumpass *et al.*, 1991; Brown and Booth, 1996; Skinner *et al.*, 2002; Brown, 2004; Lee and Ono, 2012; Musick and Bumpass, 2012), where cohabitation is of shorter duration than in the

UK (Kiernan, 2001; Kiernan, 2003; Cherlin, 2009). In the UK, one recent study has shown that well-being differences between marriage and cohabitation persist for women but not for men (Perelli-Harris *et al.*, 2019). However, more studies are needed to understand relationship happiness differences between marriage and cohabitation. Moreover, studies which compared LAT relationships to those cohabiting and married on relationship quality are scarce (Tai *et al.*, 2014; Lewin, 2017). This chapter fills in this gap, shedding light on relationship happiness and sexual intimacy differences in three types of partnerships: married, cohabiting, and LAT.

2.2 Background

2.2.1 The meaning of sexual intimacy

Emotional closeness during sex with a partner, the compatibility between partners in terms of sexual interest, and preferences are important 'ingredients' in enjoying ideal, 'good' sex according to a qualitative study conducted in Britain (Mitchell et al., 2011). In theory, emotional closeness during sex is related to the feelings of bond, love, and security between partners during the sexual act (Mitchell *et al.*, 2011). Ideal sex is defined in terms of feeling wanted, confident, comfortable, and free from pressure, where trust, communication, and familiarity with a partner are important factors (*ibid*, 2011, p 547). The lack of feelings of closeness during sex could lead to the end of a relationship, especially for women (*ibid*, 2011). Compatibility in sexual preferences refers to different sexual activities such as oral, anal, vaginal sex, or engaging in verbal fantasies, to name a few, that partners want to practice together (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013). Whenever one partner desired activities that the other found offensive (for example, anal sex) (Mitchell and Wellings, 2013, p. 24), the future of the relationship was threatened. Compatibility in sexual interest refers to partners wanting to have sex at a similar frequency. Some participants have discussed the feeling of guilt which they had when they wanted less sex than their partner while others have articulated the fear of being left (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013). In general, the lack of agreement in sexual preferences and sexual interest is one of the major reasons for arguments and stress in a relationship (Mitchell *et al.*, 2011; Witting *et al.*, 2008; Pandey and Elliott, 2010; Lodge and Umberson, 2012).

Given the importance of these aspects in people's intimate lives, it is surprising how little we know about the nature of partnerships relative to sexual intimacy. In this thesis, emotional closeness during sex, compatibility with a partner in terms of sexual interest, and preferences tap into the overarching concept of satisfaction with intimate life discussed in Chapter 1 (see Figure 1.1, page 3). This study goes beyond Mitchell's et al. work (2011), aiming to understand better the

complex nature of married, cohabiting, and LAT relationship types relative to sexual intimacy and relationship happiness in Britain.

2.2.2 Comparing marriage and cohabitation

Sexual intimacy

Cohabiting couples may share similar levels of sexual intimacy as married couples, especially in societies where cohabitation is more prevalent and accepted. Since the 1970s, the UK has witnessed an increase in the prevalence and duration of cohabitation, and in 2004-07, 80% of all marriages started with a period of premarital cohabitation with a duration of about four years (Beaujouan and Ní Bhrolcháin, 2011). Also, childbearing in the UK is no longer necessarily only related to marriage. The number of dependent children to those living in cohabitation grew from 7% in 1996 to 15% by 2017 (ONS, 2017b), and the number of births registered to cohabiting couples has increased from 21% in 1996 to 32% in 2016 (ONS, 2016). Nonetheless, many couples marry after the birth of children. All these characteristics indicate that cohabitation has become more socially accepted and similar to marriage as a way to start coresidential partnerships and as a setting in which to have children. However, it should be noted that cohabitation remains a heterogenous relationship type with some couples having just initiated their intimate relationships perhaps to test the relationship, and others having coresided, with or without children, for many years (Berrington, *et al.*, 2015; Carter and Duncan, 2018).

The diffusion theory posits that the selection of cohabitation declines as it becomes more socially accepted and practiced, and rises in societies where it is universally practiced, making those who do not cohabit a distinct group (Liefbroer and Dourleijn, 2006). Some quantitative studies have shown that the benefits of cohabitation are similar to marriage with regard to self-rated health (in Germany, Norway, the UK, and the US: Perelli-Harris *et al.*, 2018), and psychological well-being (the US: Musick and Bumpass, 2012). Studies show that cohabiting partners share similar economic (US: Kenney, 2004; US: Eickmeyer *et al.*, 2019) and social resources as married partners (US: Musick and Bumpass, 2012); cohabiting couples are as likely as those married to pool their incomes and the amount of interaction with friends and family does not differ in married and cohabiting relationships. Qualitative research conducted in Britain underlines that people perceive marriage and cohabitation as being similar relationship types (Duncan and Phillips, 2008; Carter and Duncan, 2018) and cohabiting couples see themselves as committed as married couples (Gabb and Fink, 2015; Carter and Duncan, 2018). Moreover, similar to married couples, cohabiting couples share one household and may have interlinked daily schedules. In light of this evidence, I expect that cohabiting couples will evaluate aspects of sexual intimacy with a partner in a similar way to married couples.

Relationship happiness

Despite similarities between marriage and cohabitation noted in the literature, a large body of research has also underlined that cohabitors often differ from married couples. For example, in Britain, marriage is still perceived as conveying a greater expectation of permanency and a higher commitment than cohabitation (Berrington *et al.*, 2015). A wedding is perceived as a sign of public commitment not shown by cohabitation (Jamieson *et al.*, 2002; Berrington *et al.*, 2015). Moreover, in legal matters, those married are more protected by law than cohabiting and LAT individuals. For example, married partners benefit from legal rights regarding inheritance, housing and rights to the matrimonial home, financial support, and pension schemes, whereas those cohabiting or in LAT relationships do not enjoy most of these rights (Duncan *et al.*, 2012). Furthermore, the UK government legislated tax breaks for married people in 2013. In contrast, cohabiting couples are offered little access to family courts in case of separation and neither do they have rights of inheritance after the death of a partner (Barlow, 2014). Given the higher commitment and legal safety of marriage over cohabitation, it might be that those married will be happier with their relationship than those cohabiting. However, a recent study conducted in the UK shows no subjective well-being differences between marriage and cohabitation, particularly for men (Perelli-Harris *et al.*, 2019). Given these conflicting results, the current research does not provide a definitive direction for a specific hypothesis to be formulated on the differences in relationship happiness between marriage and cohabitation.

2.2.3 Comparing LAT with marriage and cohabitation

Sexual intimacy

Sexual fidelity is an important characteristic of LAT relationships, being the central element in defining commitment. Many studies underline that commitment in LAT relationships is mostly expressed by being sexually exclusive (Duncan and Phillips, 2010; Duncan *et al.*, 2014; Carter *et al.*, 2016; Carter and Duncan, 2018). Qualitative literature suggests that any slight departure from the promise of sexual exclusivity would mean the end of the relationship (Carter *et al.*, 2016; Carter and Duncan, 2018). For example, some individuals expect their LAT partners to publicly declare their sexual exclusivity by changing their Facebook relationship status (Carter *et al.*, 2016). A mixed-method study, with the quantitative data coming from a national probabilistic sample of individuals in LAT relationships, supports the results from the qualitative literature, with 87% of LATs agreeing that sex outside of a relationship was always or mostly wrong, compared to 89% for coresidential relationships (Duncan *et al.*, 2014). Thus, quantitative and qualitative studies in Britain claim that most individuals in LAT relationships perceive themselves as being

monogamous, committed to their partner, and sexually exclusive (Duncan *et al.*, 2014; Carter and Duncan, 2018).

In light of these findings, sexual intimacy could be a very important aspect in defining a LAT relationship. This might also be because LAT partners lack the combined social and economic resources characteristic of married and cohabiting relationships (Waite, 1995; Umberson and Montez, 2010; Eickmeyer *et al.*, 2019). Moreover, pooling incomes to pay a mortgage, raising children together, sharing finances to pay household bills are considered important structural investments in coresidential relationships that are usually avoided in LAT relationships (Carter *et al*., 2015). Therefore, sex might be considered an important (and perhaps the only) resource (and investment) of a LAT relationship. Furthermore, those in LAT relationships may invest greater efforts than those in coresidential relationships in meeting their partner's emotional needs and sexual expectations. Some interviewees talked about the need for putting more effort to maintain a non-coresidential relationship, 'you have to work at it [LAT relationship]. You have to want it. You have to make the effort. When you're living (..) in a house together (…) it's like you are lumped together, (…) you don't have to work at anything, it's already there' (Carter *et al.*, 2016, p.587). Given this literature, I expect that LAT individuals will be emotionally closer to their partner during sex and more compatible with their partner in terms of their interest in having sex and sexual preferences compared to married or cohabiting individuals.

At the same time, sex might not universally be a very important aspect of defining LAT relationships. Roseneil (2006, p. 10) claims that LATs can even change 'the meaning of coupledom, by moving away from the couple relationship de-prioritising sexual/love relationship in favour of the friendship relations'. The narratives of Roseneil's interviewees suggested that a sexual partner is less important in order to have a secure and happy life than friends are. Moreover, recent evidence highlights that living apart is also a way of keeping an emotional distance from a partner and control over one's life, especially if the other partner has a very different lifestyle or their own children (Carter and Duncan, 2018). Furthermore, some individuals have admitted that being in a LAT relationship requires less commitment and lacks a certain amount of emotional and sexual intimacy as compared to being in a cohabiting or married relationship (Duncan and Phillips, 2010; Carter *et al.*, 2016). Hence, it might be that LAT couples will enjoy less sexual intimacy compared to coresidential couples.

Relationship happiness

In Britain, those in LAT relationships might experience less relationship happiness than those in coresidential relationships. A few studies examined LAT couples by comparing them with those married and cohabiting to assess relationship happiness differences (France, Germany, Australia,

and Russia: Tai *et al.*, 2014; the US: Lewin, 2017), and show that, overall, LAT relationships enjoy lower levels of relationship quality than those married or those cohabiting. For example, Tai and colleagues (2014), paid importance to the intention to marry among cohabitors, and intentions to move in together or marry among those in LAT relationships. They found that, across countries, those in LAT relationships with plans to move in together have lower relationship satisfaction compared to married and cohabiting couples with plans to marry (but they do not differ from cohabiting couples without plans to coreside). LATs without coreseding plans were the least happy in their relationships compared to those married and cohabiting (with and without plans to marry). According to the authors, higher levels of commitment, represented by intentions and legal status, are related to being happier in a relationship (ibid, 2014). Lewin (2017) found that, in the US, LATs are less happy than those married, but they did not differ from cohabitors. LATs were found to receive less support from their partner (defined as the amount of talking to a partner about one's worries and of relying on a partner in times of need) than both married and cohabiting respondents (ibid, 2017). All these findings indicate that LAT relationships are be less supportive or committed than coresidential relationships. In Britain, LAT individuals do not have any legal rights compared to those married or cohabiting, despite some of them wanting legal protection similar to marriage in terms of inheritance and child maintenance upon divorce (Duncan *et al.*, 2012). Therefore, it may be that the lack of legal protection fosters a parallel lack of sense of security, which would, in turn, affect LATs' relationship happiness. In light of all the above studies, I expect that LAT individuals will be less happy with their relationship as compared to cohabiting and married individuals.

However, it should be noted that LAT, cohabiting, and married relationships can reflect different stages in the life-course. Moreover, LAT and cohabiting relationships can be stages on the way to marriage. Therefore, sexual intimacy and relationship happiness are expected to change throughout the life-course.

2.2.4 Gender, sexual intimacy, and relationship happiness

Previous literature has found that the sexual behaviour of men and women differ, and this has been mainly explained by socialisation, script, and evolutionary theory (see in Chapter 1, sub-section Sexual intimacy, page 15 for more details on these theories and other types of sexual behaviour than the ones reviewed in this chapter). For example, women are thought to 'romanticise' the experience of sex by placing importance on being in a committed relationship (Regan and Berscheid, 1999, p. 75), equating sex with expressing emotions and love to a partner (Mitchell *et al.*, 2011; Mitchell and Wellings, 2013; Gabb and Fink, 2015; Umberson *et al.*, 2015). For women, the aim of the sexual act is pair-bonding (Hughes *et al.*, 2007; Hughes and Kruger,

2011) while men describe sex as being more a need, with no emphasis on feelings (Gabb and Fink, 2015). Therefore, for women, the best context for satisfying sex is a long-term, monogamous relationship because they feel safer, more comfortable, familiar, and emotionally connected with their partner as compared to how they feel in casual sexual (or less committed) relationships (US: Peplau, 2003; Armstrong *et al.*, 2012).

Evidence from a national probabilistic sample shows that women in dating relationships[4] are less sexually satisfied than those married (but cohabiting and married women report similar levels of sexual satisfaction; US: Waite and Joyner, 2001). In contrast, sexual satisfaction does not differ according to men's partnership status (*ibid*, 2001). Moreover, women report having orgasms more often (Armstrong *et al.*, 2012), and being sexually more open (Peplau, 2003) in committed relationships (defined as dating or cohabiting relationships) than in hook-ups (defined as 'sexual activity, ranging from kissing to intercourse, outside of an exclusive relationship'; Armstrong *et al.*, 2012, p. 435). This has been attributed to men being less willing to ask about women's sexual desires and to please them in a hook-up as compared to a committed long-term relationship (Armstrong *et al.*, 2012). In contrast, women have shown willingness to sexually please their hooking-up partner (*ibid*, 2012). Other work shows that even in more committed relationships such as in marriages, women compromise and comply more in sex than men to match their partner's fantasies and sexual desires, as a proof of their love. However, this was not the case for men, who had strong expectations from women to adjust their sexual needs and preferences to theirs (US: Impett and Peplau, 2003; US: Elliott and Umberson, 2008; Britain: Gabb, 2019).

Given that men's and women's experiences of emotions and sexual intimacy are different, and guided by the literature on gender differences in sexual behaviour (see Chapter 1, sub-section Sexual intimacy), I will conduct the analysis separately for women and men. Two general research expectations on the link between men's and women's partnership type and sexual intimacy are formulated in this chapter;

Given the greater sensitivity of women's sexuality compared to that of men, (Research Expectation 1)*: I expect that sexual intimacy will differ by women's partnership type*.

(Research Expectation 2): *Among men, I expect that sexual intimacy will not differ between those in married, cohabiting, and LAT relationships*

However, the expectations around the associations between women's partnership type and sexual intimacy are not straightforward. On the one hand, women in LAT relationships may report less sexual intimacy compared to women in married and cohabitating relationships, since they

[4] Those dating were defined as singles, in a sexual relationship.

enjoy sex more in committed relationships (Regan and Berscheid, 1999, Waite and Joyner, 2001; Peplau, 2003), and LAT involves less commitment than cohabitation or marriage (Carter *et al*., 2016). Women in cohabiting relationships may also report less sexual intimacy as compared to married women since qualitative evidence from Britain underlines that marriage is generally associated with a higher commitment than cohabiting relationships (Berrington *et al.*, 2015). On the other hand, as stated in section 2.2.3, sex might be an important resource for LAT individuals in the absence of other pooled material investments characteristic of coresidential couples. Therefore, it may well be that women in LAT relationships will report higher sexual intimacy than those in coresidential relationships. To further complicate matters, the reader is reminded that sexual intimacy indicators are different concepts that tap into different aspects of sexual life (see section 2.2.1). Thus, it may be that women in LAT relationships will report feeling more (or less) emotionally close to their partner during sex, but lower (or higher) levels of compatibility in sexual interest, and preferences with their partner than those in coresidential relationships. Acknowledging the complex directions in the associations between partnership type and women's evaluations of sexual intimacy, no specific hypotheses are formulated about these links.

Research which examined gender differences in relationship quality comparing those married and cohabiting offer mixed findings. It was shown that married men report higher levels of relationship satisfaction than cohabiting men, both in the US and Europe (US: Brown and Kawamura, 2010; Europe: Stavrova *et al.*, 2012). The link between relationship type and relationship quality did not differ for women in the US, but in Europe married women are more happy in their relationship than cohabiting women (Stavrova *et al.*, 2012). In the UK, subjective well-being is lower for cohabiting women than for married women, but cohabiting and married men did not differ on subjective well-being (Perelli-Harris *et al.*, 2019). Given the contradicting findings, no hypotheses are formulated with respect to how relationship happiness differs among men and women in married, cohabiting, and LAT relationships.

2.3 Research question

This study examines the following research question:

1. How do sexual intimacy and relationship happiness differ for married, cohabiting, and living apart together relationships, net of other covariates?

2.4 Data and methods

2.4.1 Data and analytical sample

The data used for this study come from the 2010-2012 National Study of Sexual Attitudes and Lifestyles (Natsal-3). Natsal-3 is a cross-sectional nationally representative survey carried out on 15162 residents in Britain, aged 16-74 years old with the aim to study people's sexual and reproductive behaviours (NatCen Social Research, 2019). This data is used in this chapter to study sexual intimacy and relationship happiness in couples. A multistage, clustered and stratified probability sample design was used and participants were interviewed in their homes. A combination of computer-assisted personal interviews and computer-assisted self-interviews (CASIs) for the most sensitive questions (including those of relevance to this chapter) was applied. After weighting to adjust for unequal probabilities of selection and to match the British population in terms of age, gender, and geographical region, the Natsal-3 sample was broadly representative of the population living in Britain as described by the 2011 Census (Erens *et al.*, 2013).

Natsal-3 applies specific filters to capture a subsample of sexually active individuals eligible to respond to items about sexual function. Sexual intimacy and relationship happiness items, the focus of this chapter, are part of the sexual function module in the questionnaire. Therefore, to analyse these concepts, Natsal-3 restricts the analytical sample to people whose last sexual act with any of their last three sexual partners was in a 'living together/married' or 'steady' sexual relationship, and whose relationship is ongoing (Natsal-3 defines an 'ongoing relationship' if the respondents are willing to have sex with that partner again). Out of the sexually active respondents, I included individuals who declared only one sexual partner in the last year before the interview to be able to identify the respondents who have sex only with their married or cohabiting partner. I focused on the sexual relationship that is characterised as the 'most recent'. LATs are identified in Natsal-3 as steady sexual relationships where individuals had been together for at least one year and the relationship is ongoing. The sample size was reduced to 6572 cases, of which 3985 are women and 2587 are men who were asked the relevant questions about sexual intimacy and relationship happiness. Individuals in a same-sex relationship who have been sexually active in the past year, monogamous and could have been in the analytical sample are excluded. On the one hand, their number is too small to be included in a distinct category or in a separate analysis (91 individuals in the total sample) and, on the other hand, the sexual and relationship behaviours, and sexual evaluations among LGBT population are likely to differ from those of heterosexuals (Green, 2010, 2012).

Individuals excluded from the sample include those not sexually active in the last year before the interview[5] (3030), those who reported having had concurrent sexual relationships in the last year before the interview (877), those who had serial monogamous sexual relationships in the last year before the interview (781), those with more than two sex partners in the last year, but who do not remember if the partners were concurrent or not (914), those with an unknown number of partners in the last year (493). Other people who were sexually active in the past year with a monogamous partner are excluded as well due to either further filters of Natsal-3, data inconsistencies, or other reasons. Other reasons include, for example, that they were in a legal same-sex relationship[6] and had a same-sex partner in the year before the interview (91). Individuals whose last sexual act was in any type of casual sexual relationships defined by Natsal-3 ('recently met', 'used to be in a steady relationship but not at the time', 'known each other for a while but not in a steady relationship', 'just met for the first time') (310) and 19 other data inconsistencies are also not part of the analytical sample. A detailed picture of those excluded from the analytical sample can be found in Appendix A.1, Table A.1.

Due to Natsal-3 filters, the analytical sample does not capture everyone in a marriage, cohabitation, or LAT union. First, people not sexually active, as well as those sexually active but with more than one sexual partner in the last year, are not captured in the present analysis. Secondly, the analytical sample does not include individuals who have been together, cohabited, or married for less than one year before the interview. Thirdly, the present subsample excludes people who do not provide an answer about the date of first sex with their current coresident or living apart partner. It might be that they had forgotten the exact moment when they had sex for the first time with their partner. Although this is a small number (130) and would not bias very much the results, it remains one of the data limitations. The study limitations are further discussed in the section 2.7 Limitations and future research recommendations.

[5] This includes respondents who had reported neither a homosexual, nor a heterosexual partner in the last year before the interview.

[6] I refer here at those in a registered same-sex civil partnership, to surviving civil partners (their partner having died), and to those separated but still legally in same-sex civil partnership; these people are monogamous, and their recent sexual intercourse with their partner was within the past year (29 respondents).

2.4.2 Dependent variables

Measuring sexual intimacy and relationship happiness in Natsal-3

The focus of this chapter is on four outcomes: three dependent variables which measure aspects of sexual intimacy within partnerships, and the fourth measuring the overall relationship happiness. All of the dependent variables are measured on ordinal scales and one common problem with this type of measurement is small cell sizes within some response categories. One recommendation in the statistical literature (Arminger, 1995) practiced by researchers (Waite and Joyner, 2001) is to combined categories to have at least 5% of the sample in each category. As the analysis is run separately by gender, I collapsed the response categories with less than 5% of males and females. Moreover, having a bigger cell size within each response category allows us to test for model assumptions[7].

Emotional closeness during sex[8] is introduced in the questionnaire by asking the respondents to rate the item 'I feel emotionally close to my partner when we have sex together' on a 5-point Likert response scale of frequency, where 1 means 'always' and 5 'hardly ever'. For this study, the response categories 3 ('sometimes'), 4 ('not very often'), and 5 ('hardly ever') are collapsed into a new response category 'not often'. The scale measurement is recoded into the response categories 1 "Not often", 2 "Most of the times", and 3 "Always".

Compatibility in sexual interest[9] is operationalised by asking the participants to rate the item 'My partner and I share about the same level of interest when having sex' on a 5-point Likert response scale of agreement, where 1 means 'agree strongly' and 5 'disagree strongly'. I have collapsed the response categories 4 ('disagree') and 5 ('strongly disagree') into a new response category 'generally disagree'. The scale measurement is recoded into the categories 1 "Generally Disagree", 2 "Disagree", 3 "Agree", and 4 "Agree strongly".

The variable compatibility in sexual preferences[10] is introduced by asking the respondents to rate the item 'My partner and I share the same sexual likes and dislikes' on a 5-point Likert response

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[7] The model assumptions are tested based on un-weighted data as the weights for complex survey design do not allow to check for regular model assumptions.

[8] The terms 'emotional closeness to partner during/when having sex' or simply 'emotional closeness' are used interchangeably in this chapter.

[9] The terms 'compatibility between partners in sexual interest', 'similar sexual interest as partner', 'compatibility in sexual interest' or simply 'sexual interest' are used interchangeably in this chapter.

[10] The terms 'compatibility between partners in sexual preferences', 'compatibility in sexual preferences', 'sharing the same sexual preferences as partner' or simply 'sexual preferences' are used interchangeably in this chapter,

scale of agreement, where 1 means 'agree strongly' and 5 'disagree strongly'. The response categories 4 ('disagree') and 5 ('strongly disagree') are collapsed into a new response category 'generally disagree'. The scale measurement is recoded into the categories 1 "Generally Disagree", 2 "Disagree", 3 "Agree", and 4 "Agree strongly".

Finally, the fourth dependent variable measures overall relationship happiness with a partner on a 7-point Likert response scale (where 1 means 'Very happy' and 7 'Very unhappy'). This response scale is reversed so that higher scores correspond to higher levels of relationship happiness.

The highest correlation among these four indicators, $r = 0.52$, was between compatibility in sexual preferences and compatibility in sexual interest, and most intercorrelations varied around 0.30 suggesting they are measuring different dimensions of relationship quality (see Appendix A.1, Table A.6).

2.4.3 Independent variables

Partnership type

The main independent variable is partnership type, which refers to married, cohabiting, and living apart couples. This variable is derived according to the sexual past of respondents. In the analytical sample, I only included the heterosexual respondents whose last sexual act was in a 'living in/married' or 'steady' relationship. Those whose last sexual act was in casual sexual relationships are excluded (see section 2.4.1 for the detailed steps in deriving the analytical sample). Those in a non-coresidential 'steady' sexual relationship are considered as being in a LAT partnership. Using the sexual relationship status, and the legal and mixed de-facto partnership status I classified respondents into a) married; b) cohabiting, and c) LAT. Finally, the small number of inconsistencies (18 married individuals whose last sexual act was with a 'steady' sexual partner and 1 respondent without coresidential status whose last sexual act was with a 'living in/married' partner) are not included as it is difficult to ascertain their circumstances.

Individual characteristics: age and education

In the multivariate analysis, I control for factors that may explain sexual intimacy and relationship happiness and may also reflect selection into different types of relationships.

If we are to compare sexual intimacy across partnership type it is important to control for age of respondents since previous studies have shown that this covariate affects sexual aspects of relationships. For example, consistent findings across numerous studies suggest that age is associated with decreased sexual frequencies and sexual desire, with lower rates for women than for men (Laumann *et al.*, 1994; DeLamater and Moorman, 2007; Fisher, 2009; Kontula and

Haavio-Mannila, 2009; Waite and Das, 2010). For women, biological aspects of the aging process, such as menopause, which can make the sexual act uncomfortable or painful, may explain this decreased trend (Dennerstein *et al.*, 2006; Fisher, 2009; Kontula and Haavio-Mannila, 2009). Nonetheless, even if it is less frequent, sex is still practiced and enjoyed at older ages (Gott and Hinchliff, 2003), as people reinvent their sexual life when adult children leave the parental home (Gabb, 2019). Qualitative research underlines that sexual wisdom (i.e. the acquisition of sexual knowledge, skills, and preferences during life) explains the high levels of sexual quality among those who are older (Forbes *et al.*, 2017).

Age is categorised in groups: 16-29, 30-39, 40-49, 50-59, and 60+ years old. While there is no specific threshold for categorising ages into life-course sequences, each age group broadly represents peoples' life stages. The first age group[11] is larger than the other age groups because few individuals are married and have children at young ages. This first group roughly captures adolescence and the 'emerging adulthood' period of life. The 'emerging adulthood' period generally covers the ages 18 to 25 (Arnett, 2000), where people explore their identity and experiment. Those in the age group of 30-39 could also be generally viewed as young adults. In the UK, Stone *et al.* (2014) defined individuals aged between 16 and 34 years old as 'young adults' by arguing that in the UK transitions to adulthood (leaving education, entry into the labour market) are being postponed to later ages. The age groups of 40-49 and 50-59 mark broadly the start of menopause for women, and, in general, they represent those in mid-life. The last age group represents older adults who are at a life-stage when they generally experience the empty nest (i.e. their adult children leave the parental home) and become grandparents.

Education is considered a proxy for the socio-economic status of the respondent. Research has shown that people with higher education are more likely to marry (Kalmijn, 2013) and stay married (Matysiak *et al.*, 2014). In the UK, highly educated individuals tend to value marriage more than cohabitation (Berrington *et al.*, 2015). They want to get married and have children after they marry while those less well educated see cohabitation and childbearing within cohabitation as customary (*ibid*, 2015). The UK educational system is divided into four main parts: primary, secondary, further, and higher education (InternationalStudent.com, 2018). In this chapter, the variable respondent's educational attainment measures the highest academic qualification the respondent holds and has the following categories: a) 'degree level qualification' (includes are people with higher education, holding at least a Bachelor degree), b) 'other higher

[11] This age group might be heterogenous in experiences of sexual intimacy and relationship happiness; as a sensitivity analysis I took out those younger than 20 years old and results did not change very much, therefore I kept in the adolescents to have a bigger sample size (results not shown, available upon request).

and Advanced level' (individuals with further education, who have completed their secondary compulsory education and hold other advanced qualifications), c) 'GCSE, O-level/equivalent/other' (includes those with only secondary education), d) 'none' (captures respondents who did not pass any exams or do not have any qualification; these individuals may have secondary education, but their studies are not formally recognised).

Partnership characteristics: Relationship duration and children

Findings for the association between relationship duration and various aspects of sex are mixed. Some studies suggest that relationship duration is not associated with sexual frequency, sexual desire, or sexual satisfaction (Ventegodt, 1998; Sprecher and Cate, 2004; Kontula and Haavio-Mannila, 2009). Other studies show a negative association between relationship duration and sexual frequency (Klusmann, 2002) and sexual satisfaction (Schröder and Schmiedeberg, 2015). Sex researchers have explained this association in terms of 'habituation effect': the loss of interest or novelty of a sexual partner which gradually instils in a relationship (Klussmann, 2002). Alternative explanations refer to the loss of passion over the course of a relationship that the psychologists talk about (Baumeister and Bratslavsky, 1999). However, another study on married couples aged 40-70 reveals that sexual satisfaction increases with relationship duration (Heiman *et al.*, 2011). The results are explained by the possibility of keeping a high sex drive even at older ages because of improvements in sexual health (i.e. Viagra, lubricants) and having fewer burdens and distractions of parenting since children are growing. Demographic studies generally show that relationship happiness declines with relationship duration (Skinner *et al.*, 2002; Brown, 2003; Brown *et al.*, 2017). In this chapter, relationship duration measures the time in years since the respondent began their current sexual relationship[12].

In addition, having children is known to negatively affect both sexual and relationship satisfaction (Doss *et al.*, 2009; Schlagintweit *et al.*, 2016; Umberson *et al.*, 2010). This happens because parents have been found to dedicate less time to their partner and more time, energy, and financial resources to their child(ren) as compared to childless couples (White *et al.*, 1986; O'Brien and Peyton, 2002). Couples who had their first child reported lower relationship quality, greater stress, and conflicts as compared to the period when they were childless (Doss et al., 2009), especially if children are young and dependent. In this work, the number of children is a categorical variable, with the largest category having 3 or more children.

[12] Natsal-3 measures the relationship duration as month and year of first sex with respondents' most recent sex partner.

Respondents' prior experiences: health problems in the past year, the number of sex partners, sex abuse attempts without respondent's will

Poor physical health, such as spinal cord injury (Bender, 2012) or chronic pain (Schlesinger, 1996), and disease such as cancer negatively affect a person's capacity for sexual interest and relationship happiness (Martinez, 2009; Nack, 2011; Galinsky and Waite, 2014). Graham and colleagues (2017) underline that British individuals in poor health (as a self-reported measure), those who had much difficulty walking upstairs, those with a long-lasting medical condition, those who were diagnosed with depression are more likely to report lacking interest in sex. In this thesis, the respondent's health is a dummy variable indicating if, in the last year, the respondent has had any health condition or disability which affected his/her sexual activity or enjoyment in any way.

Earlier romantic and sexual experiences might be related to current sexual intimacy and relationship happiness (DeLamater & Carpenter, 2012). For example, having experienced sexual abuse is related to behavioural and mental health outcomes (Jones *et al.*, 2015) and may affect sexual intimacy and relationship happiness as well. In this work, respondents' experiences of sex against their will are measured by a dummy variable (yes/no).

Having had multiple sexual partners before marriage as compared to having had sex with only the (future) spouse is associated with lower marital quality, for women (Rhoades and Stanley, 2014). Another study highlights that having had more sexual partners is associated with decreased levels of sexual satisfaction for men but not for women (Heiman *et al.*, 2011). It is thought that by having more (sex) partners people have more experiences that form a standard against which they compare the current relationship (Thibaut and Kelly, 1959). People who had no (sex) partners before the current relationship have no comparison standard, a reason why the relationship satisfaction (for women; Rhoades and Stanley, 2014) and sexual satisfaction (for men; Heiman *et al.*, 2011) was rated significantly higher than for those more experienced. A recent British study based on the National Study of Sexual Attitudes and Lifestyles reveals that women with three or more sex partners in the past year are more likely to report low sexual interest than those with only one sex partner. For men, there is no association between the number of sex partners and low sexual interest (Graham *et al.*, 2017). In this study, the number of heterosexual and homosexual partners the respondent ever had is a categorical variable, topped up at more than five lifetime sex partners.

2.4.4 Analytical strategy

Descriptive analyses are undertaken to examine how sexual intimacy and relationship happiness vary by partnership type and gender (see Descriptive Results, Table 2.1 and Table 2.2).

Additionally, the relationship between outcomes is tested to check how interrelated they are[13], and the results are shown in Appendix A.1, Table A.6. Subsequently, I run a proportional odds model (POM) – sometimes called the cumulative logit model or ordered logit model – for all the outcome variables (Multivariate regression findings section, Table 2.3 and Table 2.4). Because the four outcomes are measured on Likert ordinal response scales for frequency and agreement, the proportional odds model is the most suitable type of regression analysis.

Let us explain first the notion of cumulative probability on which the POM is based (Agresti, 2010, p. 180). Let Y be the dependent variable, and J denoting the number of categories for Y. Let $\{\pi_{1,\dots,}\pi_J\}$ denote the response probabilities, satisfying $\sum_j \pi_j = 1$. The cumulative probability of a response category less than or equal to j is:

$$P(Y \leq j) = \pi_1 + \cdots + \pi_j, \qquad j = 1, \dots J \qquad (1)$$

Equation 1 suggests that 'a cumulative probability for Y is the probability that Y falls at or below a particular point' in the response scale (Agresti, 2010, p. 180). The cumulative probabilities reflect the ordering, with $P(Y \leq 1) \leq P(Y \leq 2) \leq \cdots \leq P(Y \leq J) = 1$.

The cumulative logit model with proportional odds is represented with the following formula (Agresti, 2010, p. 180).

$$logit[P(y \leq j)] = log\frac{[P(y \leq j)]}{[1 - P(y \leq j)]} = \log\frac{[\pi_1 + \cdots + \pi_j]}{[\pi_{j+1} + \cdots + \pi_J]} = \alpha_j + \beta x,$$

$$j = 1,2 \dots . J - 1; \qquad (2)$$

where, as stated above, Y is the dependent variable, j is a response category of Y, and x represents the value of the independent variable. The intercept of the model is denoted by α_j and each equation has a different intercept (called cutpoint or threshold), but *a common slope* β. The parameter β describes the effect of a 1-unit change in x on the log odds of being in a particular category of the dependent variable or lower, denoted by $P(y \leq j)$, rather than in a higher category, $1 - P(y \leq j)$ (Agresti, 2007, p. 180). The key assumption in the ordinal regression model is that the effects of any explanatory variables are consistent or proportional across the different thresholds, hence this is usually termed the assumption of proportional odds. As Agresti points out, 'therefore, the model assumes that the effect of x is identical for all $j - 1$ cumulative logits' (Agresti, 2007, p. 180). The effect of each explanatory variable is the same whether we compare category 1 versus categories 2…, J or categories 1 and 2 versus categories 3,… J. In short, the POM model describes 'a less than or equal' versus 'more' comparison (*ibid*, 2007, p. 180).

[13] In order to understand better how interrelated the outcomes are, Pearson correlation coefficients have been calculated. In this case, the variables are considered metric.

The models are run in Stata statistical software. It is important to note that in Stata, equation (2) is written with a negative sign in front of β, so that $\beta_j > 0$ has the usual interpretation of a positive 'effect' on the outcome (i.e. a positive β value corresponds to 'Y being more likely to fall at the high end of the scale as x increases' Agresti, 2007, p. 181). Exponential coefficients ($\exp(-\beta'_x)$) are interpreted as cumulative odds ratios (sometimes referred to as simply odds ratios) for being in higher rather than lower categories of the dependent variable (Agresti, 2007). In other words, higher levels of x are associated with increased odds of being in higher categories of the response variable rather than in lower categories.

One proportional odds model is estimated for all four outcome variables where the effects of predictors are allowed to differ by gender[14]. The multivariate model includes partnership type as the key independent variable controlling for age, partnership characteristics (relationship duration, parenthood status), respondents' health and disability status affecting sexual life and enjoyment in the last year, number of sex partners, attempts of sex without respondents' will, and level of education[15].

As none of the independent variables have more than 1% of missing cases, the missing data are treated in a listwise deletion fashion.

A series of robustness checks were carried to check whether the proportional odd assumptions were violated. Another series of analyses were run to check for the consistency of the results when other model specifications were used, or other variable specification considered (i.e. relationship duration). These are discussed in detail in the subsections Other statistical approaches and Results from sensitivity analysis.

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[14] Interaction terms between partnership type and gender were estimated in the models of sexual intimacy and relationship happiness (Appendix A.3, Table A.11) and confirm significant gender differences in the effect of partnership type on sexual intimacy, but not on relationship happiness. However, the results for relationship happiness outcome are presented separately by gender because past research suggests that partnership status affects well-being differently for men and women (Coombs, 1991; Brown and Kawamura, 2010; Stavrova et al., 2012; Perelli-Harris et al., 2019).

[15] Previous analyses examined if the associations between partnership type and sexual intimacy, and relationship happiness change when control variables are included. Previous model building strategy involved four models: Model 1 included partnership type and age; Model 2 added to Model 1 education; Model 3 added to Model 2, relationship duration and number of children; Model 4 added to Model 3 respondents' health and disability status affecting sexual life and enjoyment in the past year, number of sex partners, and attempts of sex without respondents' will. Another analytical strategy involved adding education as the last variable in the step-wise model building (results not shown, upon request of author). The regression coefficients from the associations of partnership type and the outcomes did not change greatly in size, direction, and significance across these models, reason why one full model which includes partnership type and all the control variables is presented in this chapter for each outcome.

2.5 Results

2.5.1 Descriptive Results

The weighted distribution of the dependent variables by partnership type and by gender and the estimated probability values of the design-based Rao-Scott F statistic, which is the corrected Pearson chi-square of independence test based on weighted data (Rao and Scott, 1984), is displayed below (Table 2.1).

Table 2.1: Distribution of dependent variables by partnership type; Natsal-3 (2010-2012)

Emotional closeness	**Marrieds**	**Cohabitors**	**LATs**	**P (Chi-square test)**
Not often	8.7	9.0	9.6	0.228
Most of the time	31.0	30.5	26.2	
Always	59.8	60.4	63.9	
Not answered	0.4	0.2	0.3	
Compatibility in sexual interest				
Generally Disagree	26.9	26.2	16.3	0.000
Neither agree or disagree	15.5	13.5	9.1	
Agree	38.2	37.3	40.6	
Agree strongly	19.1	22.8	33.7	
Not answered	0.4	0.2	0.3	
Compatibility in sexual preferences				
Generally Disagree	8.5	8.2	6.5	0.000
Neither agree or disagree	14.2	11.9	11.0	
Agree	53.3	53.0	48.5	
Agree strongly	23.7	26.7	33.6	
Not answered	0.4	0.2	0.3	
Relationship happiness				
1. Very unhappy	8.2	6.1	7.3	0.000
2	7.2	9.5	7.7	
3	6.3	7.7	10.7	
4	3.0	4.7	5.6	
5	8.3	8.6	10.4	
6	19.7	22.9	20.8	
7. Very happy	46.8	40.4	37.2	
Not answered	0.3	0.2	0.3	
N (unweighted)	3386	1352	1384	6572
Total %	100	100	100	100

Notes: Natsal-3, own computations, weighted results; the Chi-square tests of independence (with Rao-Scott correction) suggest that there is a significant relationship between gender and the indicators for compatibility in sexual interest and preferences, and relationship happiness at $p < 0.001$.

The distribution of *emotional closeness during sex* with a partner does not vary much by partnership type. The majority of marrieds, cohabitors, and LATs place themselves at the extreme ends of the Likert frequency scale, declaring they 'always' feel emotionally close to their partner when having sex. Interestingly, individuals in LAT relationships have a higher proportion of

agreement with the statement 'My partner and I share about the same level of interest when having sex' compared to those married and cohabiting; specifically, LATs 'agree' and 'agree strongly' (40.6% and 33.7%) more than married individuals (38.2% and 19.1%) and cohabitors (37.3% and 22.8%) about being compatible with their partners in terms *of sexual interes*t. More married (26.9%) and cohabiting individuals (26.2%) than LATs (16.3%) 'generally disagree' about being compatible with their partner *in sexual interest*. Similarly, across all three partnership types, higher proportions of married people 'generally disagree' about being compatible with their partners *in sexual preferences* (8.5%) compared to those cohabiting (8.2%) and in LAT relationships (6.5%). At the same time, more LATs than marrieds or cohabitors place themselves at the highest extreme of the response scale, sharing the most similar *sexual preferences* as their partners (i.e. 'agree strongly'; 33.6% vs. 26.7% and 23.7%).

The largest proportions of married (46.8%), cohabiting (46.8%), and LAT individuals (37.2%) are the happiest with their relationship (i.e. 'very happy'). The probability values of corrected the Pearson chi-square tests of independence suggest that there is no statistically significant relationship between partnership type and participants' reporting of emotional closeness, but there is a statistically significant relationship between partnership type and the other two sexual intimacy variables and between partnership type and relationship happiness. I further look at how the dependent variables vary by gender and the results are presented in Table 2.2 below.

Table 2.2: Distribution of dependent variables by gender; Natsal-3 (2010-2012)

Emotional closeness	**Female**	**Male**	**P (Chi-square test)**
Not often	10.1	7.6	0.000
Most of the time	31.9	28.7	
Always	57.6	63.3	
Not answered	0.4	0.3	
Compatibility in sexual interest			0.021
Generally Disagree	27.2	23.6	
Neither agree or disagree	13.2	15.5	
Agree	37.3	39.3	
Agree strongly	21.9	21.3	
Not answered	0.3	0.3	
Compatibility in sexual preferences			0.000
Generally Disagree	7.1	9.3	
Neither agree or disagree	11.5	15.3	
Agree	53.2	52.0	
Agree strongly	27.8	23.0	
Not answered	0.4	0.3	
Relationship happiness			0.001
1. Very unhappy	8.8	6.7	
2	8.1	7.2	
3	7.9	6.3	
4	3.9	3.3	
5	8.5	8.8	
6	18.4	22.4	
7. Very happy	44.0	45.0	
Not answered	0.4	0.3	
N (unweighted)	3985	2587	
Total %	100	100	

Notes: Natsal-3, own computations, weighted results; the Chi-square tests of independence (with Rao-Scott correction) suggest that there is a significant relationship between gender and the all key indicators, at $p < 0.05$.

The distribution of the dependent variables varies by gender. As the probability values for the corrected Pearson chi-square tests of independence show, there is a statistically significant relationship between all four outcomes and gender. The majority of males and females report feeling 'always' (63.3% and 57.6%) emotionally close to their partners when having sex. However, more females (10.1%) than males (7.6%) declare they do 'not often' feel emotionally close to their partners when having sex. A large proportion of women 'agree' (37.7%) they are compatible with their partners in terms of sexual interest. However, women 'generally disagree' in a slightly higher proportion (27.2%) than men (23.6%) about sharing similar levels of sexual interest as their

partners. More males (9.3%) than females (7.1%) 'generally disagree' about sharing the same sexual preferences as their partners. It seems that more females (8.8%) than males (6.7%) declare that they are 'very unhappy' with their relationship. Since theory and empirical research suggest men and women experience sexuality in different ways (Peplau, 2001; Diamond, 2008a), the regression models are run separately by gender.

Further bivariate descriptive results comparing all the independent variables by gender are shown in Appendix A.1, Table A.3. First of all, there are more females than males in the Natsal-3 sample, which is the reason why also the unweighted analytical sample has more females (60%) than males (40%). Men are also much less common at younger age groups (results not shown, upon request of author). Nonetheless, after applying the weights to account for the complex survey design, the share of men and women is very similar and the share of men at younger ages is closer to that of women at young ages (see Appendix A.1, Table A.3). The results show that fewer men report being in a LAT relationship (10.9%) than women (14.2%), and slightly more men report being in a cohabiting relationship (18.1%) than women (16.8%). The share of men who are childless is higher (29.4%) than for women (22.0%), and more females (19.0%) than males (15.6%) report health and disability problems affecting their sexual activity or enjoyment in the past year. More women (23.8%) than men (14.5%) have had just one sex partner in their lifetime, and more men (61.2%) than women (44.4%) have had five or more sex partners in their lifetime, these results being consistent with the literature on gender differences in sexual behaviour (Petersen and Hyde, 2010; DeLamater and Carpenter, 2012). Considerably more females (20.7%) than males (3.7%) have experienced sex attempts without their will. The highest proportion of males have a degree level qualification (32.7%) while the highest proportion of females hold just a GCSE, O-level/equivalent/other qualification (36.4%); more females (9.3%) than males (7.4%) have no formal qualification.

Bivariate relationships between independent variables and partnership type (Appendix A.1, Table A.4) show that about half of those in LAT relationships (50.1%) and the highest share of those cohabiting (37.7%) are aged between 16 and 29. The highest share of those married are aged between 40 and 49 (28.5%). In the analytical sample, those married have been together, on average, for a longer period of time (21 years) than those cohabiting and in LAT relationships (8.2 and 5.4 years, respectively). More than half of those in LAT relationships (56.9%) and the highest share of cohabitors are childless (44.8%). In contrast, among those married, the proportion of those childless is the lowest (15.3%). More married (22.9%) than cohabiting (8.0%) and LAT individuals (14.3%) have had only one sex partner in their lifetime. More cohabiting (69.7%) than LAT (57.1%) or married (47.6%) individuals had five or more sex partners in their lifetime. Most of those married, cohabiting, and in LAT relationships have had no health and disability problems

affecting their sexual activity or enjoyment in the past year, and have not experienced any sex attempts without their will. The highest share of those married have a degree level qualification (32.6%) while the highest share of those cohabiting (36.5%) and in LAT relationships (33.6%) have just a GCSE, O-level/equivalent/other qualification.

2.5.2 Multivariate regression findings

The regression analyses are conducted separately for men and women and are shown below (Table 2.3 and Table 2.4). The results are presented in proportional odds ratios, which are the exponentiated coefficients from the ordinal regression models.

For categorical predictors in a proportional odds model (POM) - an odds ratio coefficient greater than 1 indicates that being in that category of the independent variable (relative to the baseline category) increases the likelihood of being in a higher category relative to a lower category of the dependent variable, given that all the other variables are held constant. Conversely, an odds ratio coefficient lower than 1 indicates that being in that category of the independent variable (relative to the baseline category) decreases the likelihood of being in a higher category relative to a lower category of the dependent variable, given that all the other variables are held constant (Waite and Joyner, 2001; Sanders, 2012; Heeringa *et al.*, 2010, p. 285). For continuous predictors, we can interpret a cumulative odds as the multiplicative effect of a one-unit increase in the predictor variable x on the odds of being in a higher response category of the dependent variable (Heeringa *et al.*, 2010, p.248).

The reader is reminded that, in the POMs, the effect of the predictors on the odds of an event occurring in every subsequent category of the dependent variable is *the same* for every category. For example, considering the outcome *emotional closeness during sex*, the effect of the predictors on the odds of being in the category 'always' vs. ('most of the time or not often') is *the same* as the odds of being in the category ('always or most of the time') vs. 'not often'. For ease of interpretation, Agresti suggests reading a cumulative odds ratio greater than 1 as a *tendency* towards higher values on the ordinal scale while a cumulative odds ratio lower than 1 as a *tendency* towards lower values on the scale (Agresti, 2007, p. 185).

For these multiple regression models, LAT and cohabiting relationships are compared to those married in Tables 2.3 and 2.4, and the differences in sexual intimacy and relationship happiness between those in LAT and married relationships relative to those in cohabiting relationships are shown in Appendix A.4, Table A.12 (the referenced category is switched). In this section, I present the results on all partnership types comparisons. The cutpoints from the tables are shown here to reflect the specificity of the POM ($J-1$ categories calculated).

Table 2.3: Proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness for females

Females

	Proportional Odds Model (POM)	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.87	1.03	0.90	0.60***
LATs	0.77*	1.37**	0.92	0.57***
Age groups (ref. 16-29)				
30-39	0.85	0.95	1.04	0.95
40-49	0.87	1.03	1.13	0.77*
50-59	1.33	1.65***	1.35*	0.81
60+	2.08***	1.77**	1.40	0.88
Relationship duration	0.96***	0.98***	0.98***	0.99*
Number of natural children (ref. 0)				
1	0.70**	0.80*	0.80*	0.74**
2	0.78*	0.84	0.94	0.76**
3+	0.81	0.99	1.02	0.71**
Health and disability problems (ref. No)				
Yes	0.68***	0.47***	0.69***	0.86+
No. of sexual partners in life (ref. 1)				
2	0.86	0.76*	1.04	0.86
3-4	0.70**	0.69***	1.03	0.83
5+	0.70**	0.63***	1.01	0.79*
Attempt sex without respondent's will (ref. No)				
Yes	0.63***	0.68***	0.76**	0.84*
Educational attainment (ref. None)				
Degree level qualification	0.78	0.57***	0.78	0.93
Other higher and Advanced level	1.05	0.67**	0.96	0.89
GCSE, O-level/equivalent/other	0.97	0.84	0.90	0.99
Intercepts from POM models				
cutpoint 1	0.03***	0.11***	0.04***	0.03***
cutpoint 2	0.20***	0.21***	0.12***	0.07***
cutpoint 3	-	1.20	1.44*	0.12***

Females

	Proportional Odds Model (POM)	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
cutpoint 4	-	-	-	0.14***
cutpoint 5	-	-	-	0.22***
cutpoint 6	-	-	-	0.47***
cutpoint 7	-	-	-	-
N	3940	3941	3940	3940

Notes: NATSAL-3 data, own computations; weighted data; N – number of subpopulation analysed (females); Models 1, 2, 3, 4 include: partnership type, age groups, relationship duration, number of children; respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment; the results are presented as odds ratios;

Model 1, label for cutpoint 1: 'not often vs. (most of the times or always)'; Model 1, label for cutpoint 2: 'Not often or most of the times vs. always';

Model 2, label for cutpoint 1: 'generally disagree vs. (neither agree or disagree, agree, or agree strongly)'; Model 2, label for cutpoint 2: 'either generally disagree or neither agree or disagree vs. (agree or agree strongly)'; Model 2, label for cutpoint 3: 'either generally disagree, neither agree or disagree, or agree vs. agree strongly'; The labels for the cutpoints in Model 3 are the same as in Model 2 because the outcomes in these models are measured on the same Likert response scale; similarly, For Model 4, the cutpoints 1-6 represent the (next) lowest category versus all higher categories of the outcome, which is relationship happiness (e.g. label for cutpoint 6: 'either very unhappy, 2, …, or 6 vs. very happy'). In this model, cutpoint 7 denotes the highest response category on the response scale, Jth, and acts as the reference category (i.e. very happy).

POM: proportional odds model;

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

Table 2.4: Proportional odds regression models of emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness for males

Males

	Proportional Odds Model (POM)	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.86	0.99	1.07	0.79[a]
LATs	1.04	2.10***	1.52**	0.55***
Age groups (ref. 16-29)				
30-39	0.71*	0.99	0.86	0.84
40-49	0.88	1.06	1.22	0.81
50-59	0.77	1.45*	1.36+	0.83
60+	1.15	2.19***	1.66**	1.01
Relationship duration	1.02	0.98***	0.98***	0.99
Number of natural children (ref. 0)				
1	1.48**	1.02	1.26	1.02
2	1.04	0.85	0.99	0.93
3+	1.01	0.79	0.96	0.85
Health and disability problems (ref. No)				
Yes	0.80	0.69**	0.75*	0.73**
No. of sexual partners in life (ref. 1)				
2	0.73	0.77	0.71	0.89
3-4	0.73	0.69*	0.78	0.59**
5+	0.64**	0.70**	0.72**	0.64**
Attempt sex without respondent's will (ref. No)				
Yes	0.85	0.82	0.94	0.75
Educational attainment (ref. None)				
Degree level qualification	0.74	0.52***	0.69*	0.58**
Other higher and Advanced level	0.79	0.79	0.78	0.65*
GCSE, O-level/equivalent/other	0.85	0.80	0.93	0.63*
Intercepts from POM models				
cutpoint 1	0.04***	0.12***	0.05***	0.02***
cutpoint 2	0.28***	0.26***	0.17***	0.04***
cutpoint 3	-	1.63*	1.80**	0.07***

Males

	Proportional Odds Model (POM)	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*	*Proportional Odds Model (POM)*
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
cutpoint 4	-	-	-	0.08***
cutpoint 5	-	-	-	0.13***
cutpoint 6	-	-	-	0.33***
cutpoint 7	-	-	-	-
N	2561	2561	2561	2562

Notes: NATSAL-3 data, own computations; weighted data; N – number of subpopulation analysed (males); Models 1, 2, 3, 4 include: partnership type, age groups, relationship duration, number of children; respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment; the results are presented as odds ratios;

Model 1, label for cutpoint 1: 'not often vs. (most of the times or always)'; Model 1, label for cutpoint 2: 'Not often or most of the times vs. always';

Model 2, label for cutpoint 1: 'generally disagree vs. (neither agree or disagree, agree, or agree strongly)'; Model 2, label for cutpoint 2: 'either generally disagree or neither agree or disagree vs. (agree or agree strongly)'; Model 2, label for cutpoint 3: 'either generally disagree, neither agree or disagree, or agree vs. agree strongly'; The labels for the cutpoints in Model 3 are the same as in Model 2 because the outcomes in these models are measured on the same Likert response scale; For Model 4, the cutpoints 1-6 represent the (next) lowest category versus all higher categories of the outcome, which is relationship happiness (e.g. label for cutpoint 6: 'either very unhappy, 2, …, or 6 vs. very happy'). In this model, cutpoint 7 denotes the highest response category on the response scale, Jth, and acts as the reference category (i.e. very happy).

POM: proportional odds model;

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$., a = 0.051.

Model 1 investigates the link between partnership type and emotional closeness during sex. This outcome is not associated with partnership status for males, but it is for females. Females in LAT relationships tend to report lower emotional closeness to their partners as compared to those married. More specifically, the odds of being in a higher rather than in a lower category of the emotional closeness outcome are about 23% lower among women in LAT relationships than among those in married relationships. There are no differences between cohabiting and married women in emotional closeness during sex. There are also no differences between women in LAT and those cohabiting on this outcome (Appendix A.4, Table A.12).

In model 1, only the age group of 60+ is statistically significantly different to the reference group (16-29 years). Older age is positively associated with women's evaluation of emotional closeness during sex. For men, the only age group significantly different to the baseline is 30-39 years; young adult men as compared to those aged 16 to 29 are more likely to report lower levels of emotional closeness. Relationship duration is negatively associated with the outcome emotional closeness for women, but relationship duration is not associated with emotional closeness for men. Among both men and women, those with one child as compared to those childless tend to report lower emotional closeness to their partners during sex. For women only, having two children is associated with low emotional connection to their partners.

In model 1, women who experienced health and disability problems affecting their sexual activity in the past year, sex attempts without their will, and those who had three or more sex partners express a reduced emotional connection with their partners as compared to those who did not experience these events. For men, only the number of sexual partners is related to emotional closeness during sex: having had five or more sex partners as compared to having had only one sex partner is associated with lower rather than higher levels of emotional connection; Education is not associated with either men's or women's reports of emotional closeness during sex.

Model 2 investigates the link between partnership type and respondents' reported compatibility in sexual interest with their partners. This outcome is associated with partnership type for both females and males. Men and women in LAT relationships tend to report significantly more similar sexual interest as their partners as compared to those married and cohabiting (Appendix A.4, Table A.12). Among men, the odds of those in LAT relationships reporting higher rather than lower compatibility in sexual interest with their partner are more than double (OR = 2.10) than those of married men. Similarly, the odds of those in LAT relationships reporting higher rather than lower compatibility in sexual interest with their partner are more than double (OR = 2.11; Appendix A.4, Table A.12) than those of cohabiting men.

Among women, the odds of those in LAT relationships reporting higher rather than lower compatibility with their partner in terms of sexual interest are about 37% and 33% higher than

those of married and cohabiting women respectively. Cohabiting women are no different to married women in their compatibility with their partner in terms of sexual interest.

In model 2, men and women aged over 50 report higher compatibility in sexual interest with their partner as compared to those aged 16-29 years. For both males and females, the compatibility in sexual interest with a partner tends to be lower at later stages of relationships (the odds of being more compatible in sexual interest with their partner decrease by approximatively 2% for men and women for each additional year of relationship length, holding constant all the other variables). For women, having one child is associated with lower rather than higher levels of compatibility in sexual interest while for men parenthood status is not associated with this outcome.

Model 2 shows that for females, having had any health or disability affecting the sexual activity or enjoyment in the past year, having had more than one sex partner in life, and having experienced sex attempts without their will are associated with lower levels of compatibility in sexual interest. For men, having had health and disability problems affecting their sexual activity or enjoyment in the past year, and having had three or more sex partners are associated with perceptions of low compatibility in sexual interest with their partners. More educated females (those with further and high education) are more likely to express low compatibility in sexual interest than those with no formal education; men with a degree level qualification as compared to those with no formal education are more likely to report low compatibility in sexual interest with their partner.

Model 3 investigates the link between partnership type and compatibility in sexual preferences with a partner. The outcome is associated with partnership type for males, but not for females. Men in LAT relationships tend to report being more compatible with their partner in terms of sexual preferences than married and cohabiting men (Appendix A.4, Table A.12). More specifically, the odds of reporting higher levels of compatibility in sexual preferences among men in LAT relationships are about 52% and 42% higher than among married and cohabiting men respectively. Cohabiting men are no different than married men in their reports of compatibility in sexual preferences.

In model 3, men aged 60 and over and women between 50-59 report higher rather than lower compatibility in sexual preferences as compared to those in the youngest age category. For both genders, compatibility in sex preferences tends to decrease with relationship duration. For women, having just one child reduces the compatibility in sexual preferences as compared to being childless; this outcome is not related to the number of children men have.

Model 3 shows that women's compatibility in sexual preferences is negatively associated with having had health and disability problems affecting sexual activity or enjoyment in the last year

and having experienced sex attempts without their will. For men, having had health and disability problems and having had five or more sexual partners in life are associated with low compatibility in sexual preferences with their partners as compared to those who have had only one sex partner. Education is not related to either men's or women's compatibility in sexual preferences.

Model 4 investigates the link between partnership type and relationship happiness. This outcome is related to partnership status in a similar way for both men and women. Those in LAT and cohabiting partnerships are significantly less happy in their relationship as compared to those married. Among men, the odds of those in LAT relationships reporting higher (rather than lower) levels of relationship happiness are about 45% lower than those of married men. Similarly, the odds of those cohabiting reporting higher (rather than lower) levels of relationship happiness are about 21% lower than those of married men. Men in LAT relationships also tend to be less happy in their relationship than cohabiting men but this is not seen for women (Appendix A.4, Table A.12).

Among women, the odds of those in LAT relationships reporting higher (rather than lower) levels of relationship happiness are about 43% lower than those of married women. Similarly, the odds of those cohabiting reporting higher (rather than lower) levels of relationship happiness are 40% lower than those of married women. These findings confirm the literature, which broadly suggests that married people are happier than those cohabiting and in LAT relationships (Tai *et al.*, 2014).

In model 4, age is not associated with men's relationship happiness, whereas for women being in the age groups 40-49 and 60+ is associated with lower levels of relationship happiness. Women's relationship duration is negatively associated with relationship happiness. There is no statistically significant association between men's relationship happiness and relationship duration. For women, having children is associated with low relationship happiness as compared to being childless while having children is not associated with men's reports of relationship happiness.

Model 4 shows that women's relationship happiness is lower for those who had five or more sex partners as compared to those who had only one lifetime sex partner, and is also lower for those who experienced sex attempts without their will. Education is not associated with women's reports of relationship happiness. For men, lower levels of relationship happiness are related to having had any health and disability problems affecting sex activity or enjoyment in the last year and having had three or more sex partners in their lifetime. Education is not associated with women's reports of relationship happiness. Men with any formal education are more likely to be happier in their relationship than those with no formal education.

Taken together, the results support the general expectation, posited in section 2.2.4., that sexual intimacy would differ by women's partnership status (Research expectation 1), showing

significant associations with two sexual intimacy indicators: emotional closeness during sex and compatibility in sexual interest (but not with compatibility in sexual preferences). The results do not support Research Expectation 2, that sexual intimacy would not differ by men's partnership status, showing significant associations with two sexual intimacy indicators: compatibility in sexual interest and preferences (but not with emotional closeness during sex).

2.5.3 Additional analyses

Other statistical approaches

The assumption for the POM is violated for both males (for relationship happiness) and females (for all four outcomes). The test for the parallel lines assumption was estimated on unweighted data, as the Brant test cannot be calculated with survey weights (Appendix A.4, Table A.17, Table A.18). Since the Brant test indicated model violation for all the outcomes for females and relationship happiness for males, multinomial models are estimated, applying also the weights for the complex survey design (Appendix A.2, Table A.7, Table A.8, Table A.9, Table A.10). In general, the size, the significance, and the direction of the coefficients from the main independent variable do not vary to a great extent in any of the models. The POM is thus chosen to keep the ordinal nature of the response scales (Long and Freese, 2014). Moreover, it is common to find that at least one variable violates the assumption, and, for example, that one variable out of 11 is enough for the Brant test to indicate model violation (Long and Freese, 2014, p. 331; Williams, 2016).

Results from sensitivity analysis

A series of sensitivity analyses for all the outcomes modelled with POM is run for multiple purposes. First, I checked if and how the regression coefficients for partnership status change in their association with the dependent variables when the relationship duration is grouped (Appendix A.4, Table A.13, Table A.14). In this way, I also account for the possible nonlinear relationship between partnership duration and the four outcomes. There are no major differences between the models with relationship duration grouped and linear, and this suggests the tendency that as the relationship unfolds people evaluate more negatively the sexual intimacy aspects, especially females. A slight difference emerges between these models for females, for relationship happiness outcome: in the model with relationship duration grouped, the relationship duration is not associated with relationship happiness. The model which treats relationship duration as linear shows a negative association with relationship happiness. However, the coefficient is close to 1 so the result has to be interpreted with caution.

The second sensitivity analysis shows that the coefficients for partnership status do not greatly change when the response categories for the outcomes are not combined (Appendix, A.4, Table A.15, Table A.16). However, combine the lower response categories to achieve a distribution of a minimum of 5% to avoid any numerical instability of the parameter estimates and to successfully run the Brant test.

Lastly, another series of sensitivity analysis shows there are no major differences in the regression coefficients for partnership type across the dependent variables between the models with weights and the ones without (Appendix A.4, Table A.17, Table A.18). Even if the regression models include some controls already in the weights such as gender and age, the weighted models are presented to account for the oversampling of young people (16-34), for those living alone, and for geographical regions.

All of the above-mentioned series of different analytical approaches and sensitivity checks reassures the reader that the POM using the complex survey design weights are the best models to answer to this chapter's research questions.

2.6 Discussion

This study investigated how sexual intimacy and relationship happiness compares across marital, cohabitating, and living apart together partnerships. The empirical results provide new insights, suggesting that sexual intimacy and relationship happiness differ across partnership types, even in the presence of control variables.

Firstly, this research suggests that the nature of LAT is defined more by the sexual dimension of the relationship compared to married or cohabitating relationships; both men and women in LAT are more compatible with their partners in terms of their sexual interest as compared to those married and cohabiting. Moreover, men in LAT relationships also share more similar sexual preferences with their partner than married and cohabiting men. However, it should be noted that LAT, cohabiting and marriage are not demographic categories with distinct boundaries, representing rather relationship stages. Individuals usually start their relationship by dating, a period which may be followed by moving in together and eventually marriage. Therefore, it is expected that sex will be more important in the first stage of the relationship development as sex is a 'glue' for relationships, promoting bonding, security, and reinforcing the feeling of happiness, love, and commitment (Sprecher and Cate, 2004; McNulty *et al.*, 2016; Debrot *et al.*, 2017). Perhaps the 'glue' will gradually be replaced with non-sexual aspects such as sharing or buying a house, having joint finances or children which are more commonly a characteristic of coresidential relationships. Nonetheless, contrary to Roseneil's (2006) conclusion that LATs share

'a pronounced tendency to de-prioritise sexual/love relationships and to place far more importance on friendship' (*ibid*. p. 10), the results indicate the importance LATs place on the sexual aspect of the relationship. LATs' high sexual compatibility with their partner might reflect the partners' flexibility and adaptability around personal autonomy and couple intimacy, these results supporting more Duncan's and Phillips's research (2010), where LATs are characterised in terms of 'flexible pragmatism'.

Being more sexually compatible than coresidential couples might reflect LATs' greater efforts in sexually pleasing their partner. Individuals in LAT relationships have commented that their non-coresidential relationships require constant effort to be maintained and to prove one's commitment compared to coresidential relationships, where it is easier to show love and fidelity (Carter *et al.*, 2016). Moreover, coresidential relationships involve joint investments such as buying a house, maintaining a home, having children, or joint efforts in monitoring each other's health habits (Musick and Bumpass, 2012; Perelli-Harris *et al.*, 2012; Eickmeyer *et al.*, 2019). LAT couples, conversely, are more cautious about such investments, which are avoided or postponed (Carter *et al.*, 2016; Carter and Duncan, 2018), promoting sex as an important investment and resource of the relationship compared to coresidential relationships with many other resources. This claim is supported by the qualitative studies which have underlined that sexual fidelity is the central element in defining commitment in LAT, and any departure from the promise of sexual exclusivity was seen as a transgression with the potential to end the relationship (Carter *et al.*, 2016; Carter and Duncan, 2018).

Secondly, the present analysis reveals that cohabiting relationships are similar to married relationships in their sexual intimacy, for both men and women. Whilst previous sex research studies have found significant differences between marriage and cohabitation: cohabitors report higher sexual *frequency* than marrieds (Laumann *et al.*, 1994), being characterised as a 'sexier' living arrangement (Blumstein and Schwartz, 1983). This not the case when looking beyond sexual frequency. Nonetheless, some other recent studies reveal no significant differences between cohabitation and marriage in sexual frequency and sexual satisfaction changes over time (in Germany: Schmiedeberg & Schröder, 2016; Schröder & Schmiedeberg, 2015). The findings from this chapter add to these latest studies conducted in Germany. The lack of difference might indicate that both types of partnerships provide a similar social and emotional context for expressing intimacy and evaluating sexual aspects. This finding might be attributed to the theory of diffusion which stipulates that as cohabitation is more accepted and spread in society, the narrower the differences between these two relationship types (Liefbroer and Dourleijn, 2006). Moreover, this paper adds to those studies conducted in Britain, which claim that cohabiting and married relationships are similar in terms of fidelity and commitment (Gabb and Fink, 2015;

Carter and Duncan, 2018), by suggesting that those in cohabitation and marriage evaluate in a similar way aspects of sexual intimacy. However, this is not the same with respect to the outcome of relationship happiness.

Thirdly, this study found that cohabiting individuals report lower levels of relationship happiness than married individuals. The findings for this outcome do not support the diffusion theory, but are partially in line with recent findings underlining that marriage is associated with higher subjective well-being than is cohabitation for women in the UK (but not for men; Perelli-Harris *et al.*, 2019). In general, the findings of this chapter support the literature on the differences in relationship happiness between marrieds and cohabitors, underscoring the idea that marriage provides more benefits than cohabitation (Bumpass *et al.*, 1991; Brown, 2004; Lee and Ono, 2012; Musick and Bumpass, 2012). The fact that cohabiting couples are less happy than those married might be explained by the findings from the qualitative research conducted in Britain (Berrington *et al.*, 2015); participants stressed that marriage signals a more committed relationship than cohabitation and conveys a greater expectation of permanency (*ibid,* 2015). Moreover, the results of this study might mirror the different legal treatment of marriage and cohabitation in Britain; as marriage is more protected by law than cohabitation (Barlow, 2014), married couples might feel more secure and, consequently, are happier than cohabiting couples.

Fourthly, British individuals in LAT relationships also report lower levels of relationship happiness than those married. These results are consistent with those two studies on the differences in relationship happiness between LAT and coresidential couples (France, Germany, Australia, and Russia: Tai *et al.*, 2014: US: Lewin, 2017). These results reflect the higher security and commitment endorsed by marriage, underlined by qualitative research, where participants saw marriage as a promise for life-long love and partnership (Berrington *et al.*, 2015). At the same time, the results might be related to the differences in legal protection of married and LAT relationships. One study underlines that some LAT partners wish to have at least some of the same legal rights offered to married couples (Duncan *et al.*, 2012). Since LAT couples do not enjoy any legal rights, they may feel less secure than married couples, which, in turn, reflects on the lower levels of LATs' relationship happiness. However, these findings also suggest that marriages are more selective of happy relationships as compared to LAT relationships.

Interestingly, men in LAT relationships feel less happy in their relationships than those in cohabiting ones. One study has found that LATs receive less support from their partner (defined as the amount of talking to a partner about one's worries and of relying on a partner in times of need) than both married and cohabiting respondents (Lewin, 2017). Compared to LAT relationships, cohabitation involves living together, and it may be that it offers to men more support and better health, social and emotional benefits. Consequently, cohabitation might be

perceived by men as a more secure type of relationship. However, since the interaction terms between gender and partnership type on relationship happiness were not significant, these findings have to be interpreted with caution.

Married women more often reported being emotionally close during sex to their partner than women in LAT relationships. It is also known that women enjoy sex more in committed relationships (Regan and Berscheid, 1999, Waite and Joyner, 2001; Peplau, 2003) because they feel more comfortable, secure and emotionally attached to their partner (US: Peplau, 2003; Armstrong *et al.*, 2012). Given that LAT relationships can involve less commitment than coresidential relationships (Carter *et al*., 2016) the result suggests that marriage provides a more secure and comfortable context for women to express their emotional side during sex. At the same time, this result reflects the independent nature of LAT relationships found in other studies; living apart allowed some women to intentionally keep an emotional distance from men while enjoying their own space, especially if the men's lifestyle was very different (Carter and Duncan, 2018). This study also shows that men's feelings of closeness during sex did not differ between all three relationship types.

The results of this study demonstrated the usefulness of considering relationship quality as a multidimensional concept where the same relationship type differs across different dimensions of relationship quality. Interestingly, LAT couples report higher sexual compatibility with their partner than coresidential couples but LAT couples are, overall, less happy than coresidential couples. Finally, this work suggests that experiences of sexual intimacy are different among men and women in the same relationship type. More research is needed on other sexual aspects of relationships to understand better the nature of partnerships.

Concerning age, it is interesting that women over 60 years old are more likely to feel emotionally close to their partner when having sex and to be more compatible with their partner in sexual interest than the youngest women (16-29 years). It might be that women at later stages of life have become more emotionally mature and have a more nuanced understanding of intimacy and emotions as compared to the youngest. The results also suggest that men aged 60 and over are more likely than the youngest men (16-29) to report higher levels of compatibility in sexual interest and preferences with their partners. This might be explained by the 'sexual wisdom' accumulated over the years (Forbes *et al.*, 2017). Sexual wisdom is a term coined by Forbes et al. (2017) to explain why in their study later ages were associated with high sexual quality of life: it is the acquisition of knowledge, skills, and preferences during life (sexual wisdom). Moreover, Gabb (2019) found that despite body capabilities had changed, couples at an old age embraced these changes and enjoyed sexual intimacy, especially if their adult child had left the parental home. Considering the findings of this study, it might also be that individuals at later life stages are going

through a new phase of rediscovering and accepting themselves and their partner. Furthermore, the current results support the evidence that older persons are sexually active (DeLamater, 2012) and consider sexual activities as important in their life (Gott and Hinchliff, 2003). However, more research needs to be done to understand the effect of different age groups on sexual intimacy indicators such as emotional closeness during sex and sexual compatibility.

This study also found that having had more sex partners is associated with reduced relationship happiness for both genders. Even if the sample consists of only those sexually active, people with a high number of sexual partners might compare the present partner with those in the past in terms of communication, sexual skills, dating style, and conflict management, amongst other factors, as social psychologists underline (Kelly and Thibaut, 1978). More experience means having more awareness of alternative partners which has been found to make it difficult to stay committed and maintain high levels of satisfaction with the partner one already has (*ibid,* 1978). It might be more complex for these persons to delimit the present from the past. This result is in line with Rhoades and Stanley's (2014) research which underlines that having more relationships before marriage and engaging in sex with numerous partners is associated with depressed relationship quality, especially for women. The authors explain that a history of multiple relationships means more experience in breaking-up, and possibly a bitter view of love and partnerships

2.7 Limitations and future research recommendations

There are several limitations to this study. First of all, there is a sample selection bias caused by Natsal-3 filters for sexual intimacy and relationship happiness outcomes. To respond, individuals needed to be in an ongoing (married, cohabiting, LAT) relationship and sexually active in the last year before the interview. Therefore, the sample might be selective of those more (sexually) satisfied in their relationship, and perhaps of those with greater sexual intimacy than those who are not sexually active. While this might not be a considerable limitation for studying sexual intimacy, as individuals need to be sexually active for a certain amount of period to be able to assess aspects such as emotional connection when having sex with a partner or sexual compatibility, it might raise concerns for studying relationship happiness. It would be interesting to compare the present results for relationship happiness with results from a sample including non-sexually active respondents. Furthermore, besides being sexually active in the past year, Natsal-3 adds another restriction to the sample: individuals have to be in a sexual relationship for at least one year. This leaves out relationships of shorter duration and limits the generalisability of the results. However, this chapter's results confirm the broad literature on partnership

differences in relationship happiness, underling the positive benefits of marriage (Bumpass *et al.*, 1991; Brown, 2004; Lee and Ono, 2012; Musick and Bumpass, 2012).

Secondly, Natsal-3 has a particular way of defining the start of the relationship, by looking at the beginning of *sexual* relationships. This is an advantage since it allows us to capture the relationship length of LAT individuals, but it may have caused unrealistic reports of relationship duration for people who do not remember very clearly the month and year of first sex with their current partner. This, in turn, might affect the results on the association between relationship length and, for example, relationship happiness: this chapter suggests that relationship length is not associated with relationship happiness for males. This specific result is not aligned with the literature on relationship happiness, which shows that relationship happiness declines with relationship duration for both genders (Skinner *et al.*, 2002; Brown, 2003; Brown *et al.*, 2017). Nonetheless, the results show that as relationship duration unfolds, men and women tend to report less similar sexual interest and preferences as their partners.

Unobserved differences such as personality traits or sexual attitudes may affect the outcomes: for example, those more sexually liberated might be more likely to be in LAT relationships and this might be, in turn, reflected in LAT couples' higher compatibility in sexual preferences and interest with their partners as compared to those married. It would be useful if future data collection would include personality traits or sexual behaviour attitudes items which would potentially help in disentangling the link between partnerships and sexual intimacy.

Demographers might argue that married, cohabiting, and LAT participants are not measured conventionally within Natsal-3 and this might bias the results on the four outcomes. The four outcomes refer to the most recent sex partner in a 'living in/married' or 'steady relationship'. However, by further restricting the analysis to monogamous people in the last year before the interview and by matching the sexual partner with the married and cohabiting partner reported at the variables measuring the legal marital and de-facto relationship status, I identified data inconsistencies and deleted them from the sample. Other studies had a similar approach (Sassler *et al.*, 2016). It would useful for demographers if Natsal-3 would ask the sexual intimacy questions to the specific partners who are reported when measuring the marital or relationship status.

Lastly, given the cross-sectional nature of Natsal-3, the analysis is merely descriptive. It would be interesting if longitudinal data would be available to test if the outcomes would change over time in the same way for all three partnerships, and what would be the potential predictors for these changes. I acknowledge that these results capture a snapshot in time. LAT partnerships represent a heterogeneous group. Some couples will move in together, either to cohabit or marry whereas some of them might break up. Cohabiting individuals might well have recently moved in together so the answers to sexual intimacy and relationship happiness could change over time.

Despite these limitations, this study represents an important contribution to the understanding of how sexual intimacy and relationship happiness differ for married, cohabiting, and LAT partnerships, using a unique database which asks about emotional closeness and sexual compatibility, aspects which are understudied by family demographers, especially with national representative data. The present findings are useful as an initial framework to begin, on the one hand, to examine more in-depth the intersection between couples and sexual intimacy, and on the other hand, to consider more dimensions of relationship quality. This study contributes to the literature on the nature of partnerships, confirming the evidence about the benefits of being in a marriage rather than just cohabiting for relationship happiness. While cohabitation and marriage offer seemingly similar contexts for expressing intimacy and sexuality, LAT offers a distinct context where the non-coresidential aspect seems to have a positive impact in the bedroom, even if LATs are less happy with their relationship.

Chapter 3 Relationship Quality Indicators and Living Apart Together Relationship Transitions

3.1 Introduction

Demographers and sociologists use the term living apart together (LAT)[16] to define an intimate relationship between unmarried partners, not living together, but who identify themselves as being in a steady relationship (Haskey and Lewis, 2006; Levin, 2004). LAT is an important dating period, where partners get to know each other and acquire information about the quality of their relationship. Relationship quality is associated with increased general well-being and relationship stability (Rusbult, 1983; Umberson *et al.*, 2006), and it might be important in understanding LAT relationship transitions, which are defined in this chapter as either moving in with or breaking-up from a partner. Relationship quality has been generally defined in two ways a) as a multidimensional concept, reflecting positive or negative aspects in the relationship compared to what is expected (Brown and Booth, 1996; Skinner *et al.*, 2002; Brown, 2003; Brown and Kawamura, 2010; Brown *et al.*, 2017) and b) as the overall subjective feeling of satisfaction in the relationship (Wiik *et al.*, 2009; Wiik *et al.*, 2012; Blom *et al.*, 2017; Wagner *et al.*, 2019). Existing research on the link between relationship quality and LAT relationship transitions is sparse (in Germany: Krapf, 2017; Wagner *et al.*, 2019), and has conceptualised relationship quality as unidimensional. As in these two studies, this chapter uses the words relationship quality and relationship satisfaction interchangeably. However, this work goes beyond them by considering relationship quality as an umbrella concept, where aspects such as sexual satisfaction, couple's conflict frequency, and self-disclosure are considered specific indicators of the umbrella concept. This paper asks how sexual satisfaction, conflicts, and self-disclosure are related to LAT relationship transitions in Germany. In addition, this chapter investigates if relationship satisfaction would remain an important indicator in explaining LAT relationship transitions after accounting for sexual satisfaction, self-disclosure, and couple's conflict frequency.

Self-disclosure in a relationship is the process of expressing one's own innermost thoughts, feelings, and personal experiences to a partner (Altman and Taylor, 1973; Carpenter and Greene, 2016). Self-disclosure has been conceptualised as one important positive aspect of relationship

[16] This chapter uses the acronym LATs, dating, non-coresidential relationships, or living apart together relationships interchangeably.

quality (US: Brown and Booth, 1996; Skinner *et al.*, 2002; Brown, 2003). Social psychologists have underlined the positive link between self-disclosure and love (Hendrick *et al.*, 1988; Rubin *et al.*, 1980), relationship satisfaction, commitment (Sprecher, 1987; Sprecher and Hendrick, 2004; Meeks *et al.*, 1998), and sexual satisfaction (Byers and Demmons, 1999; Cupach and Comstock, 1990). On the other end of the relationship quality spectrum, conflicts were conceptualised as a negative aspect of relationship satisfaction (Europe: Van der Lippe *et al.*, 2014). The frequency of conflicts (the Netherlands: Kluwer and Johnson, 2007; US: McGonagle *et al.*, 2016), the form of the conflicts (hitting, arguing, avoidance), and how people respond to conflict (constructively or confrontational; US: Camara and Resnick, 1989; Orbuch *et al.*, 2002) are important for marital dissolution. Self-disclosure and couple's conflict frequency might be related to LAT relationship transitions to moving in together or separating. The literature on the link between self-disclosure (US: Sprecher, 1987; Sprecher and Hendrick, 2004) or conflicts (the Netherlands: Ha *et al.*, 2012, 2013; Israel: Appel and Shulman, 2015) and LAT relationship outcomes comes from psychology, offering mixed findings. These studies are based on small convenience samples of either dating university students or of adolescents, making it hard to generalise from the findings. Moreover, these studies have considered the likelihood of dating couples staying together as compared to breaking-up without considering the competing event of moving in with the partner. Furthermore, most of these studies considered short follow-ups of these couples, of three, six, or twelve months after the survey (Sprecher and Hendrick, 2004; Ha *et al.*, 2012; Appel and Shulman, 2015).

Sex is an important aspect of relationships, sexual satisfaction being related to increased levels of well-being (Debrot *et al.*, 2017), intimacy, commitment (Sprecher, 2002; Štulhofer *et al.*, 2013), and better health (Brody, 2010; Galinsky and Waite, 2014). To the best of the author's knowledge, there is only one previous study which used nationally representative data to investigate how sexual satisfaction is related to whether LAT couples separate, cohabit, marry, or keep dating. In Italy, sexual satisfaction was not related to LAT respondents' decision to cohabit or marry (Meggiolaro, 2010). However, compared to those sexually satisfied, less sexually satisfied couples were more prone to breaking up relative to continuing to date. Other studies based on non-representative data show that high levels of sexual satisfaction were related to dating couples being together one year after the survey (US: Sprecher, 2002). This chapter takes one step further and brings together positive, negative, and sexual dimensions of the overall relationship quality to explain LAT relationship transitions in Germany. Moreover, specific attention is given to how sexual satisfaction, self-disclosure, and couple's conflict frequency interrelate with relationship satisfaction in explaining LAT relationship outcomes.

Most of the demographic literature on LAT relationship transitions has focused on the individual or maternal socio-economic background, the type of family the respondent lived in during teenagehood (i.e., stepfamily, single parent or dual-parent family; US: Sassler *et al.*, 2010, 2016, 2018), the intention to move in (France: Régnier-Loilier, 2016), the travel distance to the partner, the labour force status of each partner (Germany: Krapf, 2017), and institutionalisation of the relationship (defined as intentions to marry and have children, and introducing the partner to one's parents; Germany: Wagner *et al.*, 2019). This chapter extends the literature on LAT relationship transitions by bridging the psychological and demographic literature to shed light on how relationship quality, as an umbrella concept, is related to LAT relationship transitions in Germany. Sexual satisfaction represents the sexual dimension of relationship quality, couple's conflict frequency represents the negative dimension, and self-disclosure frequency represents the positive dimension of relationship quality.

This chapter uses the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam), waves 1-4 to model the LAT transition for two groups: one group of young adult respondents and a second group consisting of those approaching midlife (two birth cohorts 1981-1983 and 1971-1973 respectively). Discrete-time competing risk models are used to estimate a) the transition to coresidence and b) separation, relative to the baseline of continuing to live apart together. The analyses show that low relationship and sexual satisfaction, disclosing less to a partner, and having frequent conflicts are related to LAT respondents' decisions to separate. Relationship satisfaction is positively related to LAT respondents' decisions to move in together, but mainly through the self-disclosure and conflict indicators. Disclosing more often to a partner and having fewer conflicts are important aspects on which the decision to move in is taken. Surprisingly, sexual satisfaction is not associated with LAT respondents' decisions to move in with their partner. In addition, this chapter reflects on the nature of LAT relationships by discussing the implications of these results.

3.2 Theoretical perspectives and past research on the link between relationship quality and LAT outcomes

This chapter conceptualises relationship satisfaction/quality as a multidimensional, umbrella concept where sexual satisfaction, self-disclosure to a partner, and couple's conflicts are important in-depth indicators falling under this umbrella, as Figure 3.1 below shows.

Figure 3.1: The conceptualisation of relationship satisfaction; author's figure

Parts of the Social Exchange framework are used as mechanism links to explain how LAT partners evaluate the relationship and sexual satisfaction, conflicts, and self-disclosure, and how these evaluations might, in turn, explain decisions to move in, separate, or still live apart together. The aim of using this theory is not to specifically test it but to set the expectations between relationship quality and LAT outcomes, as well as contextualise the results of this chapter.

3.2.1 Relationship satisfaction and LAT outcomes

Social exchange theory[17] stipulates that a romantic relationship is an exchange relationship that involves the negotiation of a distribution of resources, rewards, and costs between partners (Thibaut and Kelly, 1959; Nye, 1982). According to the social exchange models, relationship satisfaction is increased to the degree that within the partners' interaction rewards are high, costs are low, the difference between rewards and costs compares favourably with a comparison

[17] 'the social exchange theory/framework' is used as singularly to refer to a group of theories (models) which explain that human behaviour is based on judgements of costs and rewards.

level[18], and there is perceived fairness in the partners' contributions to and gains from the relationship (Sprecher, 2001; Sabatelli, 1988; Rusbult, 1983; Rusbult *et al.*, 1998). The theory stipulates that partners engage in interpersonal exchanges to maximise the rewards (such as companionship, praise, emotional support, sex) and to minimise the costs (such as stress, conflicts, compromises, time commitments; Foa and Foa, 1980). Social exchange theory also suggests that relationship decisions to continue a relationship or to separate are based on cost and benefit considerations of each partner. Rewards refer to positive evaluations of relationships, being defined as exchanges that are positive, pleasurable, and gratifying to the individual. Costs can be seen as negative evaluations of the relationships, and are defined as anything that inflicts pain, embarrassment, anxiety, sadness, or requires mental or physical efforts as a result of the interpersonal exchange (Thibaut and Kelly, 1959, p. 12).

Evidence based on married couples shows that when costs, such as compromising, putting up with fights, and bad habits are frequent, and when rewards, such as companionship, emotional support, friendship, and physical affection are few, married people are more likely to divorce (in the US: Levinger, 1979; Previti and Amato, 2003). Evidence on LAT relationship transitions shows that high levels of relationship satisfaction are associated with the transition to coresidence, whereas low levels of relationship satisfaction are associated with the transition into separation (in Germany: Krapf, 2017; Wagner *et al.*, 2019). Qualitative evidence, employing arguments from the Social Exchange framework, underlines that experiencing high levels of relationship satisfaction is important for LAT individuals in deciding to continue their relationship (in the Netherlands: van der Wiel *et al.*, 2018). The respondents have defined the rewarding aspects of their relationship in terms of positive qualities of or enjoying intimacy with their partner. These aspects are mentioned as part of their motivation to continue the LAT relationship. Relationship costs, such as partners' negative qualities (e.g. a controlling partner) were part of the motivation to end the relationship (van der Wiel *et al.*, 2018). Similar to the LAT relationship transitions

[18] The rewards minus costs are conceptualised as outcomes or gains (Kelly and Thibaut, 1978; Sabatelli, 1988). According to social exchange theory, partners have different expectations about what a rewarding relationship is, which are formed based on primary and secondary socialisation, observation of others or on personal experiences. These expectations form a comparison level (Kelly and Thibaut, 1978), which represents what individuals feel they deserve (Nye, 1979; Sabatelli, 1984). Partners weigh these gains against their comparison level (i.e. expectations about what a rewarding relationship is) and continue the relationship as long as the gains they get from the current relationship are above the comparison level, or alternative options do not appear to offer higher gains (Sabatelli, 1984; Sabatelli et al., 2018). Alternative options to being in a relationship are either being single or being in another relationship.

literature (in Germany: Krapf, 2017; Wagner *et al.*, 2019) and in line with the Social Exchange Framework, I expect that:

(Hypothesis 1a) *Individuals in LAT relationships with higher levels of relationship satisfaction will be more likely to move in together rather than to keep dating* and (Hypothesis 1b) *those with lower levels of relationship satisfaction will be more likely to separate relative to keep dating*.

3.2.2 Sexual satisfaction and LAT outcomes

The Interpersonal Model of Sexual Satisfaction[19] (IMESS, Lawrence and Byers, 1995) stems from the social exchange models of relationship satisfaction (Thibault & Kelly, 1959), and explains sexual satisfaction in terms of rewards and costs. Sexual costs are defined as anything that creates anxiety, physical or mental effort, pain, or other negative effects, and generally, this indicates the negative aspect of sexual satisfaction. Sexual rewards are exchanges evaluated as positive and pleasurable to the individual and generally, sexual rewards refer to the positive aspect of sexual satisfaction. There is no specific list as to what sexual rewards or costs are but past research has shown that many aspects of sex which are related to high levels of sexual satisfaction are defined as rewards. On the other hand, many aspects which are related to low levels of sexual satisfaction are defined as costs (MacNeil and Byers, 1997; Byers, 1999, p. 199). According to the Interpersonal Model of Sexual Satisfaction (IEMSS), the most satisfying sexual relationship is one in which the level of sexual rewards exceeds the level of sexual costs, the perceived level of sexual rewards and costs meets the expectations of the individual, and relationship satisfaction is high (Lawrence and Byres, 1995).

Since high levels of sexual satisfaction are related to sexual rewards such as sexual compatibility, affection, and frequent orgasms (Byers and Demmons, 1999; Štulhofer *et al.*, 2013; Frederick *et al.*, 2017), I assume that high levels of sexual satisfaction will be associated with LATs decision to move in with their partner rather than continuing to date. Moreover, as LAT relationships are characterised by the lack of (or having fewer) structural investments, such as joint mortgages, joint household investments, or children compared to coresidential couples (UK: Carter *et al.*, 2016; Carter and Duncan, 2018), LAT partners might put more emphasis on the sexual aspects of their relationship. For example, commitment is defined by LAT partners in terms of sexual fidelity

[19] The difference between the IMESS and the social exchange theory is that the first focuses on how people evaluate their sexual satisfaction while the latter on how people evaluate their relationship satisfaction; both theories assume people evaluate and decide to continue their (sexual) relationships based on rational judgements of costs and rewards.

(UK: Carter *et al.*, 2016; Carter and Duncan, 2018), and sex might be an important aspect in LATs' assessment to move in or separate. Qualitative research in the Netherlands underlines that respondents who greatly enjoy sexual intimacy with their partners are willing to continue their LAT relationships (van der Wiel *et al.*, 2018). For these individuals, experiences of high levels of sexual intimacy are defined in terms of 'rewards' they would get from the relationship. Consequently, I expect that:

(Hypothesis 2a) *LAT individuals who experience high levels of sexual satisfaction will be more likely to move in with their partner (rather than to keep dating) than those with low or moderate levels of sexual satisfaction.*

Low levels of sexual satisfaction might be perceived by LAT individuals as costs to continue the relationship and might be associated with the decision to break-up. According to IMESS, low levels of sexual satisfaction are associated with sexual costs such as: low orgasm consistency, low pleasure, dissimilar level of sexual desire (leaving one partner with a higher sexual desire), incompatibility in sexual preferences (engaging in sexual acts that one partner may dislike but the other enjoy), lack of self-disclosure, low quality of communication, and low emotional intimacy (MacNeil and Byers, 1997; Byers, 1999, p. 199; Byers and Demmons, 1999; Štulhofer *et al.*, 2013; Frederick *et al.*, 2017). Studies have found that a sexual cost such as sexual incompatibility is related to low psychological well-being (Witting *et al.*, 2008; Klapilová *et al.*, 2015), and is a reason for discord in marriage (Elliott and Umberson, 2008; Lodge and Umberson, 2012). As sex promotes bonding in a relationship (Muise *et al.*, 2016; Debrot *et al.*, 2017) and as commitment symbolizes sexual fidelity for LATs (Carter *et al.*, 2016), it might be that low levels of sexual satisfaction reflect a lack of bonding between partners and may even account for infidelity on the part of one of the partners. Therefore, I expect that:

(Hypothesis 2b) *LAT individuals who experience low levels of sexual satisfaction will be more likely to separate (rather than to keep dating) than those with moderate or high levels of sexual satisfaction.*

To the best of my knowledge, only one previous study used nationally representative data to investigate how sexual satisfaction is related to whether LAT partners cohabit, marry, or separate (in Italy: Meggiolario, 2010). Meggiolario characterised sexually satisfied couples as those where both partners reached orgasms and the less sexually satisfied couples as those where one partner never or sometimes reached orgasm. The findings suggest that sexual satisfaction is not related to LAT decisions to cohabit or to marry, but it is related to LAT decisions to separate. The less sexually satisfied couples as compared to those sexually satisfied are more likely to separate than

to still be in LAT. However, the author used proxy variables for sexual satisfaction such as frequency of orgasm (Meggiolario, 2010), without acknowledging that sexual satisfaction is not always defined by just orgasm frequency (especially for those with sexual health problems; Pascoal *et al.*, 2013, 2014; Kontula and Miettinen, 2016; Frederick *et al.*, 2017). Moreover, the experience of orgasm is diverse, especially among females (Lousada and Angel, 2011; Singer and Singer, 1972; Opperman *et al.*, 2014). Furthermore, the results of Meggiolario's study (2010) might be affected by recall bias since the assessments about the frequency of intercourse, and orgasm were collected retrospectively. This suggests that the individuals' reports could be less accurate than data collected prospectively (Dex, 1995).

3.2.3 Self-disclosure and LAT outcomes

Self-disclosure reflects the openness between partners and is one of the most important 'ingredients' that keeps a relationship going (Hendrick *et al.*, 1988; Rubin *et al.*, 1980). Psychological studies have indicated that the process of disclosing one's innermost feelings, thoughts, and secrets to a romantic partner helps to build emotional intimacy (feelings of closeness and connectedness between partners) in a relationship (Reiss and Shaver, 1988; Sinclair and Dowdy, 2005). The social exchange framework stipulates that relationships develop more rapidly if there are positive self-disclosure experiences (rewards). Conversely, relationships do not develop quickly, or at all, if too many perceived costs exist (Taylor and Altman, 1987, p. 264). Rewards are operationalised as the positive experiences one partner gets from the social interaction and communication with the other partner, such as agreeing on some values, enjoying the topic of discussion, and developing the same habits, which are indicators of being compatible with that partner. Costs are defined as negative experiences such as disliking the way a partner is, disagreeing with him/her, or having tense discussions, which are indicators of high incompatibility between partners (Taylor and Altman, 1987, p. 265). In line with the social exchange theory on self-disclosure, I assume that:

(Hypothesis 3a) *LAT individuals who disclose more frequently to their partner as compared to those who disclose less frequently are more likely to move in together with their partner than to keep dating*. Additionally, (Hypothesis 3b), *LAT individuals who disclose less frequently to their partner as compared to those who disclose more frequently to their partner are more likely to separate than to continue dating*.

Few studies have investigated the relationship between self-disclosure and LAT partnership stability, and have offered mixed results. Sprecher (1987) argues that self-disclosure is related to LAT partners still being together four years after the survey. Sprecher studied 50 dating university couples and measured the amount of self-disclosing to their partner with single-item scales on topics such as feelings about the partner, political views, feelings about friends and parents, personal strengths and fears. Those who remained together had had a higher initial self-disclosure level than those who broke-up. However, a later study by Sprecher and Hendrick (2004) on 101 dating university couples, found limited support for the association between self-disclosure and LAT relationship stability. The amount of self-disclosure was not associated with LAT couples being together four years after the survey. However, self-disclosure was related to relationship stability over a six-month period: women who perceived higher levels of partner self-disclosure were less likely to break-up within six months after the survey than those who perceived lower levels of partner self-disclosure. Self-disclosure was measured with multiple-item scales, which assessed the extent of disclosure in 10 topic areas (such as 'my personal habits' and 'my deepest feelings'). The different sample sizes and the different ways self-disclosure was measured might explain why the results from these two studies are different. Nonetheless, these studies are based on small convenience samples, making it difficult to generalise from findings.

3.2.4 Conflicts and LAT outcomes

Conflict among couples is defined in different ways in different studies. Some studies have conceptualised conflict using multiple-item scales capturing the frequency of disagreements (Kluo wer and Johnson, 2007; McGonagle *et al.*, 2016), the frequency of arguing and fighting with a partner (Kluwer and Johnson, 2007), or indicators of verbal abuse such as yelling at the partner, launching personal attacks, or being angry with the partner (Gottman and Levenson, 2002). Psychologists who have studied married couples have categorised conflict behaviours as destructive, constructive, or withdrawal (Oggins *et al.*, 1993; Kurdek, 1995; Pasch and Bradbury, 1998). Some examples of destructive conflict include negative reactions such as getting angry with the partner, yelling, insulting, or criticising the partner. Constructive behaviours include positive reactions such as taking into consideration the partner's view on the subject of the dispute and actively listening. Withdrawal behaviours imply avoiding discussion of the conflict, including leaving the situation or keeping quiet (Gottman and Levenson, 1992; Gottman and Levenson, 2002; Kurdek, 1995).

Social exchange theory (Kelly and Thibaut, 1978) views frequent conflicts as potentially occurring from interactions in which the balance between investments (inputs) and outcomes[20] (outputs) is unequal/unfair across partners. Fair relationships exist when the ratio of investments to outcomes is equal for both partners or when the relationship outcomes meet or are above a partner's comparison level (expectations about what a rewarding relationship is). In the absence of a fair relationship, a partner feels a sense of injustice, which, in turn, causes marital conflicts (Stafford and Canary, 2006; DeMaris, 2007; DeMaris, 2010).

Frequent conflicts in a relationship are associated with feelings of anger, anxiety, and sadness (Feeney, 2004; Caughlin *et al.*, 2009), which, in turn, are associated with partners being less motivated to continue the relationship (Ogolsky and Gray, 2016; Stanley *et al.*, 2002). Relationship conflicts are shown to disrupt relational harmony, to cost time and energy (Fincham and Beach, 1999), being associated with depression (Beach *et al.*, 1998) and poor health (Burman and Margolin, 1992). The absence of an agreement following a first conflict may cause future eruptions of the same conflict (Karney and Bradbury, 1995; Gottman and Levenson, 2002), that ultimately disrupt partnerships (Wilmot and Hocker, 2001; Laursen and Hafen, 2010). Much of the literature regarding conflict and satisfaction in relationships include married couples, establishing that high amounts of conflict are associated with marital dissatisfaction (Christensen and Walczynski, 1997), divorce (Carrère *et al.*, 2000; Gottman and Levenson, 2002; Birditt *et al.*, 2010; McGonagle *et al.*, 2016), and low relationship satisfaction (Cramer, 2000).

Most studies which have investigated the link between conflict and dating relationship outcomes come from psychology and offer mixed results. Some studies show that conflict is not associated with dating couples' dissolution (in Netherlands: Ha *et al.*, 2012; Ha *et al.*, 2013) while others show a positive link between conflicts and LAT likelihood of still being together at later time points (in Israel: Appel and Shulman, 2015). The different results might be explained by different methodologies and ways of measuring conflicts, or sample sizes. For example, Ha and colleagues (2012; 2013) define conflict by investigating the couple's behaviour. They have used multiple scales to capture dimensions such as the degree of partners' launching personal attacks, the ability to find solutions to conflicts, and withdrawing from the conflict. These dimensions are not important in explaining the probability of couples' being together after one year (Ha *et al.*, 2012) or four years since the survey (Ha *et al.*, 2013). Appel and Shulman (2015) define conflicts as disagreements between partners in different domains, frequency of conflicts and emotional tone

[20] Outcomes are defined as rewards derived from the relationship minus costs of being in that relationship (Sabatelli, 1988).

while discussing disagreements, and have investigated how partners behave during the conflict. The authors have used factor analysis to capture constructive and negative behaviours. Items measuring the frequency of confrontational and tense interactions between partners, the extent to which partners were critical, and the degree to which partners' view was taken into consideration when negotiating the conflict loaded on the 'constructive interaction' factor. Their findings show that a more constructive interaction during conflicts was associated with couples' remaining together six months after the survey rather than breaking up.

However, these studies considered a dating relationship by looking only at adolescents aged between 13-19 years old, and are based on small convenience samples. Moreover, these studies considered couples who remained together relative to those who broke-up and did not consider the transition to coresidence.

At present, the author knows of no previous study which investigates how conflict frequency is associated with LAT outcomes to coreside or to separate, despite the large amount of evidence on how detrimental conflicts are for marriage stability (Christensen and Walczynski, 1997; Carrère *et al.*, 2000; Gottman and Levenson, 2002; Laursen and Hafen, 2010; McNulty and Russell, 2010; Overall and McNulty, 2017). Given that frequent conflicts are a sign of unresolved problems (Karney and Bradbury, 1995; Gottman and Levenson, 2002), I assume that a high frequency of conflicts will be seen as a cost for LATs to continue the relationship. Consequently:

(Hypothesis 4) *the higher the conflict frequency, (a) the less likely the LAT couples will be to move in together, (b) and the more likely they will be to break-up rather than to continue dating.*

The psychological literature underlines that relationship and sexual satisfaction, conflicts, and self-disclosure are interrelated at various degrees. Conflicts are related to relationship satisfaction (Kurdek, 1995; Christensen and Walczynski, 1997; Kluwer and Johnson, 2007; Caughlin *et al.*, 2009), self-disclosure is related to both sexual and relationship satisfaction (Meeks *et al.*, 1998; Byers and Demmons, 1999; Sprecher and Hendrick, 2004; Frederick *et al.*, 2017; Lee *et al.*, 2019), and sexual satisfaction is related to relationship satisfaction (MacNeil and Byers, 1997; Sprecher, 2002a; Sprecher and Cate, 2004; Byers, 2005; Peck *et al.*, 2005). This chapter goes beyond the psychological research paying attention to how the specific aspects of relationship quality, sexual satisfaction, self-disclosure, and conflicts, are interrelated with the global measure of relationship satisfaction in explaining LAT relationship transitions (see Figure 1.1 for how relationship satisfaction is conceptualised and section 3.5.2 for how these inter-relationships are examined). No specific speculations on how these aspects are interrelated in explaining LAT decision-making are formulated.

3.3 Research Questions

The research questions guiding this study are:

1. Is relationship satisfaction associated with a LAT relationship transition to coresidence or separation, net of other control variables?
2. How are sexual satisfaction, self-disclosure, and couple's conflict frequency related to a LAT relationship transition, net of other control variables?
3. Is relationship satisfaction still an important indicator after accounting for sexual satisfaction, self-disclosure, and couple's conflict frequency in explaining a LAT relationship transition?

3.4 Data and Methods

3.4.1 Pairfam

The data are taken from the German Family Panel pairfam (Panel Analysis of Intimate Relationships and Family Dynamics)[21], release 9.1 (Brüderl *et al.*, 2018), a nationwide random sample of German-speaking respondents born in 1971-1973, 1981-1983 and 1991-1993. The survey began in 2008 with a representative sample of 12,403 focal participants (referred to as anchors) who are followed annually. Pairfam is an ongoing multi-disciplinary, longitudinal study focused on intimate partnerships, parenthood, and family development.

The anchor response rate for the initial wave was 37% overall, with some differences between cohorts: 49% for the youngest cohort, 33% for the middle group, and 32% for the oldest (Brüderl *et al.*, 2017). Even if these response rates are low, evidence suggests they are not very selective (Hiekel *et al.,* 2015; Huinink et al. 2011). Firstly, response rates below 40% are currently common in Germany (Brüderl et al., 2018, p. 8). Secondly, the frequency distributions of gender, age, federal states, urban agglomeration type BIK[22], marital status, and respondents' number of children in the German Family Panel do not differ substantially from those in the Mikrozensus 2007, which is a compulsory survey for a 1% sample of the population (Huinink *et al.*, 2011). The

[21] This paper uses data from the German Family Panel pairfam, coordinated by Josef Brüderl *et al.* (2018). Pairfam is funded as long-term project by the German Research Foundation (DFG).

[22] Urban conglomeration type BIK divides the settlement structure into 10 categories depending on the type of territory (city centre, periphery, smaller regions) and number of inhabitants.

respondents are called ‘anchors’ because they are asked every year for permission to interview their partner, parents, and children above age 8, being a multi-actor approach panel. The present study analyses data only from the anchor respondents who are in wave 1 and at least one subsequent wave, using the first four pairfam waves (wave 1 was collected between 2008-2009; wave 2 between 2009-2010; wave 3 between 2010-2011, and wave 4 between 2011-2012).

3.4.2 Sample selection

The most important aspect of defining a LAT partnership in this study is that the respondents have an intimate partner who lives in a separate household, and have never coresided with their current partner before. This definition is similar to that of Haskey and Lewis (2006) where LAT is referred to as ‘having a regular partner but living in separate household’ (2006, p. 37). In this chapter, the term LAT relationship refers to all partnerships in which the main respondent (the anchor) identified him/herself as being in a steady relationship and not living with his/her current partner. The main question posed in wave 1 is: ’In the following, I’ll ask you about intimate relationships. Do you currently have a partner in this sense’? (answering categories are yes, no, don’t know, no answer). Respondents who answered yes and who confirmed that they do not live together with their partner are included in the analysis. Unlike the NATSAL survey, pairfam imposes no filters for LAT relationship duration. These particular respondents are part of the response category ‘LAT’ in the anchor’s relationship status variable derived by the pairfam team in wave 1.

The sample is further restricted to those who have never coresided with this current partner since the focus of this chapter is to assess how the relationship quality indicators are related to a first-time coresidence or separation from the current LAT relationship. In 2008/2009, the time when wave 1 was collected, those in the youngest birth cohort (born in 1991-1993) were aged 15-17 years old. This age span corresponds to the one of adolescence, a period characterised by experimentation, instability, and identity-exploration, making it less likely for them to progress into a coresidential partnership in Germany (Konietzka and Tatjes, 2014). Since the focus of this chapter is on relationship transitions, including the formation of a coresidential relationship, only individuals who responded in wave 1 in the older birth cohorts 1981-1983 (25-28 years old in wave 1) and 1971-1973 (35-38 years old in wave 1) are included. Information about relationship histories is gathered by asking about event changes since the last interview and their timing. Pairfam uses a graphic event history calendar (EHC) to collect this information, where a timeline is presented to respondents with preloaded information from the last wave as a starting point. Respondents are helped by the interviewer to enter information about their relationship histories

over the last year or two years in case of temporary drop-outs (those who re-enter the sample after a one year gap, see section 3.4.3 Attrition rates). The pairfam team provides a dataset of the partnership histories in episode format (*biopart*). The analytical sample is derived from combining information from this dataset with the information provided in the interviews (anchor datasets).

In this chapter, I initially investigated all LAT relationships ongoing in wave 1 and followed them across all the 9 waves, irrespective of their sexual identity, whether they previously coresided with their current partner or not, or whether they have item non-response to the variables of interest. This is the *total subsample* of all LAT relationships found in wave 1 (1102 respondents). On this subsample, I investigated the pattern of response and attrition, which are described in the section below. After I had a better understanding of the data, I went on to build the *initial subsample* of LAT relationships by deleting individuals in a same-sex LAT partnership[23] and those who had various data inconsistencies in the event history file (see Appendix B.1, Figure B.1). The *initial subsample* dropped at 1001 respondents. On this subsample, I calculated the cumulative probabilities of entrance into coresidence or separation since wave 1 (see Appendix B.1, Figure B.2). Based on this analysis, I decided to censor the analyses at three years after wave 1 since there are few events after 36 months since wave 1. I further excluded those with item non-response in wave 1, as Figure B.1 in Appendix B.1 shows. All these data decisions led to the *analytical sample* which consists of 921 LATs in wave 1 followed across three years, which corresponds to the first four waves of pairfam (see Appendix B.1, **Steps in deriving the analytical sample**). The analytical sample consists of 83.5% out of the total sample of LAT individuals.

3.4.3 Attrition rates

Pairfam team uses a non-monotonic design for anchor persons in order to increase the panel stability. As Brüderl and colleages explain, 'starting with wave three, respondents who dropped out in the previous wave because of ''soft refusals'' (due to temporary time restrictions or no-contact) are re-contacted in the subsequent wave' (Brüderl *et al.*, 2017, p. 6). A 'temporary drop out' is defined as a person who drops out one wave but re-enters the survey, responding at a later wave. According to the panel design, the person can have wave non-response in more than one wave, but never in two consecutive waves (otherwise the person is discarded from the

[23] There are only 24 individuals in a LAT same-sex relationship, which consists of 2.17% of the total subsample of LAT individuals (1102 individuals), too few to be included in the analysis as a separate category. Furthermore, research indicates that the sexual and relationship behaviours of individuals in same-sex relationships are likely to be different than those of heterosexuals (Green 2010, 2012).

address pool; Brüderl *et al.*, 2018). Consequently, pairfam has a non-monotonic design with a maximum gap of one wave. This is important to note because it has implications for the way wave non-response and attrition rates are calculated (for the attrition rates by wave 9 for all pairfam respondents, in all three birth cohorts, see Appendix B.1, Table B.3).

The attrition rate is calculated on the *total subsample* presented above (1102 individuals; homosexual and heterosexual LAT partnerships in the two birth cohorts in wave 1 followed across all the 9 waves). Permanent dropouts (or attritors) are those who continuously participated for some waves and then left the panel, never coming back. In the initial sample, the attrition rate by wave 9 is 58.4%. In the total sample, 29.9% attrit between waves 1 and 2. Attrition by wave 2 is particularly important for the analytical sample because we only know about their relationship status at the time of wave 1 interview, and I can only allow these people to contribute with just one month in calculating their LAT relationship transitions.

The wave 1 characteristics of those attrited by wave 2 in terms of gender, cohort, education, and employment status are similar to all the others remaining in at least one subsequent wave (Appendix B.1, Table B.5). This indicates that even if this attrition rate is not negligible, it does not indicate a strong selection effect for those who remain in the subsequent waves. Consequently, the LAT relationships lost due to attrition by wave 2 are affecting the sample size more than its composition.

The percentage of temporary drop outs is 15.9% out of the *total LAT subsample* in wave 1 (Appendix B.1, Table B.4). I included the temporary drop outs because pairfam surveyed them with a longer version of the Event History Calendar, which retrospectively covers the complete timespan since the last interview. It is important to note that I also included in the analysis those who attrited by wave 2 because I can calculate a contribution of one month in the event history models, defining them as censored.

3.4.4 Analytical strategy and outcome variable

I fit a discrete-time multinomial event-history model, where respondents contribute person-months to the data until they experience one of the following events, either moving in with their partner (coresidence), splitting up from their partner (separation), or being censored (e.g. because they attrit from the survey, or because they reach the end of the 36 month observation window).

The discrete-time competing-risk hazard model takes the following functional form (Alison, 1984; Sassler et al., 2018):

$$\log\left[\frac{p_{ijt}}{1-p_{ijt}}\right] = \alpha_{ij} + \sum_{m=1}^{M}\beta_m X_{mij} + \sum_{n=1}^{N}\beta_n X_{nij(t-1)}, \qquad (1)$$

where P_{ijt} is the conditional probability of experiencing coresidence or separation ($j = 1$ for coresidence, or $j = 2$ for separation; $j = 0$ for censored cases) for individual i at month t, given that he/she has not experienced yet an event or been censored before month t. α_{ij} is a set of dummy variables to control for time dependence (in yearly increments). After exploring other specifications of duration, I opted for the yearly interval measure because this was found to be optimal, and has the best model fit (using six-months interval yielded a higher Bayesian information criterion (BIC) when compared to the yearly interval function of duration, see Appendix B.3, Table B.11; furthermore, there were few events between the 30th-36th month interval). The discrete-time competing-risk hazard model assumes that censoring is non-informative. This suggests that those censored are not a selective subgroup and that the process governing censoring and occurrence of events are independent of one another (Steele and Washbrook, 2013).

A set of M time-constant variables as well as N time-varying variables (measured at time t-1) are included in the model. Among the key variables of interest, all are considered time-varying. I assume that the outcomes are distinct events[24] influenced by different underlying mechanisms (Allison, 1984).

The individuals in a LAT relationship in wave 1 are followed for 36 months because most of the events happened within that period (see Appendix B.1, Figure B.2 for the cumulative proportion of people who experienced the transition to coresidence or separation out of the *initial LAT subsample*). All individuals in a LAT relationship enter the risk set for transition to either of the destination states in wave 1. The duration variable is time (in months) in LAT since wave 1 until event occurrence. It is preferable to have the duration variable in months since the outcome is measured on months even if the covariates are updated at the time of the annual interview. Because the data are measured in months, the current approach is quite similar to a continuous-time hazard model (Allison, 1984).

This chapter estimates and reports the relative risk ratios coefficients which are the exponentiated values of the multinomial regression coefficients. Relative risk ratios show the

[24] The assumption of a multinomial logit model is the independence of irrelevant alternatives (IIA) and in the context of competing risks, it 'implies that the probability of one event relative to ''no event'' is independent of the probabilities of each of the other events relative to ''no event'' (Steele and Washbrook, 2013, p.115).

change in the relative risk of entering coresidence (or separation) related to a one-unit increase, or category change, in the value of the covariates. The relative risks of each of the possible transitions are competing risks relative to the reference category, which is the absence of any transition (still being in a LAT relationship at the end of the observation window).

3.4.5 The relationship quality measures

The key explanatory variables are: relationship satisfaction, sexual satisfaction, couples' conflict frequency, and respondents' frequency of disclosing to a partner. These variables are asked in every wave of parifam. As previously mentioned, those with item non-response for these variables in wave 1 have been excluded. For example, out *of the initial subsample* of 1001 LAT respondents in wave 1 (see Appendix B.1, Figure B.1), the item non-response proportions are: 1.2% for the variable relationship satisfaction (12 people), 1% for respondent's self-disclosure (10 people), and 1.4% for couple's conflict frequency (14 people). The item non-response proportion for sexual satisfaction was higher (6.4%) and is discussed in more detail below.

All respondents in a current relationship are asked to rate their satisfaction in the current relationship by answering the question 'All in all, how satisfied are you with your relationship'?. The variable is measured on an 11-point scale (from 0 - Very dissatisfied to 10 Very satisfied).

In pairfam, sexual satisfaction is measured by asking the participants: 'How satisfied are you with your sex life?' measured on an 11-point scale (where 0 is Very dissatisfied and 10 Very satisfied). Because the distribution of the data is right skewed, I chose to group the points 0-6 into low, 7-8 into moderate, and 9 to 10 into high sexual satisfaction. The 'no answer' category of sexual satisfaction includes those who did not know and those who did not want to answer. An additional response category is constructed for these respondents as their number is too large to exclude them from the analysis. The people who report not knowing how sexually satisfied they are might have just recently begun their sexual life with that particular partner and they need more time to assess it. These respondents might also share conservative religious values and norms which discourage them from disclosing private matters in social surveys. The same conservative religious values and norms could explain why some of the respondents do not want to answer the question. Also, there is a certain degree of missingness at random that this variable might have. Ideally, since these two types of refusals are different, I should have created two different categories but the proportion of those who do not know how to answer is too low to be considered in a different category (0.2%). Hence, I collapsed the two types of refusals into one

category 'No answer' (6.4% in wave 1 in the analytical sample; see Table 3.1, in section 3.5.2 Sample characteristics at interview).

Respondents' level of self-disclosure to a partner and couples' conflict frequency were measured using instruments adapted from the 'Network of Relationships Inventory (NRI)' (Furman and Buhrmester, 1985). To limit the volume of the data collected, pairfam reduced the individual scales from three to two items each. The response scales of each indicator of the concepts self-disclosure and conflicts are recorded on a 5-point Likert scale that reflects frequency (1 – Never to 5 – Always).

The couple's conflict frequency is measured on a two-item scale and it is operationalised by asking the respondent: 'How often do you and your partner disagree and quarrel?', and 'How often are you and your partner annoyed or angry with each other?'. The response scales of each indicator are recorded on a 5-point Likert scale that reflects frequency (1 – Never to 5 – Always). Because the Spearman rank correlation coefficient was high (ρ= 0.63), mean scores were computed, and responses ranged from 1 (never) to 5 (always).

The level of self-disclosure to a partner is measured by the item: 'How often do you tell your partner what you're thinking'? Responses ranged from 1 (never) to 5 (always). Pairfam suggests another item from the same Network of Relationships Inventory operationalised asking the respondents 'How often do you share your secrets and private feelings with your partner?' measured on the same 5-point Likert scale. Because these two items are moderately correlated in wave 1 (Spearman rank correlation coefficient ρ= 0.41), I chose to analyse the item that suggests the general level of respondent's self-disclosure. Preliminary analysis shows that this second item is not related to LAT partnership transitions (results not shown, upon request of author).

3.4.6 Additional control variables

The existing literature examining the outcome of LAT relationships points to the importance of social class (Sassler *et al.*, 2016), the intention to move in, or to marry (Régnier-Loilier, 2016; Wagner *et al.*, 2019), the socio-economic condition of the couple and the travel distance between the partners (Krapf, 2017), and the cost of already having a child (Krapf, 2017; Wagner *et al.*, 2019). In the US, the decision to move in together is associated with a young age, low maternal education, poorer socio-economic background, and the experience of parental separation (Sassler *et al.*, 2010; Sassler *et al.*, 2016; Sassler *et al.*, 2018). In France, LAT couples who do not intend to move in with their partner, or who are unsure about their moving in intention, are more likely to still live apart than to enter into coresidence (Régnier-Loilier, 2016). The same study shows that

French individuals who meet their partner several times per year as compared to those who meet their partner several times a week are more likely to separate rather than still live apart (Régnier-Loilier, 2016). In Germany, a long travel distance to the partner is associated with separation rather than still living apart (Krapf, 2017). In Germany, Wagner et al. (2019) underline the link between institutionalised LAT relationships and their transition to a coresidential partnership: LAT respondents who were planning to marry and to have children, and who already introduced their partner to their parents were more likely to move in as compared to those who did not.

The intention to move in with a partner might be endogenous to the LAT outcomes and thus is not included in this analysis; the intentions to move in or separate might be too closely related to the outcome. However, this study controls for most of these demographic and socio-economic variables which were found to be important in explaining LAT outcomes: cohort (life-stages), gender, relationship duration from the beginning of the partnership (in months), LAT relationship after wave 1 (in months), respondent's educational attainment, couple's employment status, the travel distance between partners (in hours), a dummy variable indicating if respondents have children, a dummy variable indicating if respondents live in East Germany, and the urban conglomerate. The last two variables are used in the computation of the post-stratification weights[25] and they are included to account for the disproportionately stratified[26] sample in the first wave.

Gender and cohort are dummy variables indicating being a female (male = 0/female = 1) and belonging to the youngest cohort (1971-73 = 0/1981-83 = 1). Respondents' educational attainment is a categorical variable based on the International Standard Classification of Education (ISCED 97) and is divided into low, medium, and high educational attainment. The couple's employment status is a categorical variable indicating whether both partners are employed, one is employed or neither is employed. This is the only couple-level variable that I used because the other variables had a high non-response rate from the partner. I control also for the travel distance to partner and whether the respondent has children on not. Respondents' children can be from a previous partner, a current partner, from mixed partners (from the

[25] Since the sample of the first wave is a disproportionately stratified sample, I include in the model all the variables used by pairfam team in the calculation of the post-stratification weight with the aim to correct for systematic non-responses; these variables are federal states, age, gender, urban agglomeration type, marital status, and whether the respondent has children (Brüderl *et al.*, 2018, pp. 49-50).

[26] The three birth cohorts in pairfam panel are of about equal size but 'the proportions in the respective population are different across the cohorts. Therefore, the sample of the first wave is a disproportionately stratified sample. Within the birth cohorts, however, the sample is random' (Brüderl *et al.*, 2018, p. 49).

previous and current partner), adopted, or fostered. These children can be coresidential or not. Guided by previous work (Krapf, 2018, Wagner *et al.*, 2019), the travel time distance to partner is categorised so as it captures short (less than one-hour travel time) and long-distance relationships (one hour or more travel time).

All the variables are time-varying except for gender, cohort, and relationship length before the first wave. The cohort represents the different life-stages of LAT respondents and including variables such as life-stages, duration of relationship before wave 1, education, employment, and having children aims to account for selection effects into different type of LAT relationships.

3.4.7 Sensitivity analyses and model selection

Time-varying variables, such as relationship satisfaction, self-disclosure, conflicts, and levels of education had some missing values either because the individuals experienced wave non-response after wave 1 or because they participated in each survey wave but did not answer these particular questions after wave 1 (item-missing). In both of these cases, I used the most recent value of the covariate (Singer and Willet, 2003, p. 553). A sensitivity analysis was carried on a complete case approach (including people to the point when they dropped out from the panel) where all individuals with wave or item non-response are excluded. Because the coefficients for the relationship quality indicators are similar in size and significance (see Appendix B.3, Table B.19), I opted to show the model with the imputation approach since it has more observations.

Other sensitivity analyses included taking out the number of non-responses at the variable sexual satisfaction in the competing risk discrete-time event-history analyses of LAT relationship transitions. The results hardly changed with respect to the direction and significance of the coefficients of the key independent variables and LAT relationship outcomes (Appendix B.3, Table B.13). Therefore, I decided to keep the category of non-responses for the variable sexual satisfaction to have more observations.

Another series of sensitivity analyses are run to test if the narrative of the chapter changes at different steps of including relationship satisfaction, sexual satisfaction, self-disclosure, and couple's conflict frequency in the model. First, the association between each key independent variable and LAT outcomes was assessed separately, in 4 models. In general, the direction and the significance of the coefficients in the model with the independent effects of sexual satisfaction, self-disclosure, and couple's conflict frequency on LAT outcomes (Appendix B.3, Table B.15 and Table B.16, M2-M4) do not differ to a great extent from those in a model where these three variables are included together (Appendix B.3, Table B.15 and Table B.16; M5). Therefore, I

decided to show in the main chapter the effects of the indicators for sexual satisfaction, self-disclosure, and couple's conflict frequency on LAT relationship outcomes in one single model (Table 3.3, Model 2). The second sensitivity analysis involved the assessment of relationship satisfaction with each of the sexual satisfaction, self-disclosure, and conflict indicators in separate models. In this way, I test how the direction and significance of relationship satisfaction coefficients are changed in the presence of these indicators (see Appendix B.3, Table B.17 and Table B.18). Overall, the more detailed models do not change the main narrative of this chapter. Therefore, the models with relationship satisfaction and all three specific indicators are shown in the main chapter (Table 3.3, Model 3).

The last series of sensitivity analysis checked if the effect of relationship quality on LAT relationship transitions differs across life-stages and gender. Firstly, those in LAT at a later life-stage are a more select group of people because most individuals in the age group 35-38 have entered into a coresidential partnership (specifically, 76.1% out of the sample in wave 1 are either married or cohabiting, see Appendix B.2, Table B.7). Thus, the effect of relationship quality on LAT outcomes might differ across life-stages. Nonetheless, the interaction terms between relationship quality variables and cohort were not significant (results not shown, available upon request). The lack of significance might be because of small sample sizes, particularly in terms of those aged between 35 and 38 (see Appendix B.2, Table B.6). Secondly, despite some evidence that women and men define and rate sexual satisfaction in different ways (Salisbury and Fisher, 2014) and that sex has different meanings for men and women (Meston *et al.*, 2004; Garcia *et al.*, 2014; Gabb and Fink, 2015), the interaction terms between sexual satisfaction and gender are not statistically significant, possible because of the small sample size (see Appendix B.4, Table B.20). Therefore, the data provided no evidence to reject the hypothesis that the effect of sexual satisfaction on LAT outcomes is similar across gender.

3.5 Results

3.5.1 LAT transitions and partnership duration analysis

Since few LAT partnerships are at risk after month 36 (approximatively 15%) as the cumulative probabilities of entry into coresidence or separation depicted in Appendix B.1 Figure B.2 shows, I decided to look at the transitions within three years since wave 1.

After restricting the time at three years since wave 1, deleting data inconsistencies and item non-responses in wave 1 (80 individuals; see Appendix B.1, Figure B.1 which shows data cleaning

steps), and re-calculating the LAT transitions within this time window, duration analyses were re-estimated on the analytical sample (921 LAT) as cumulative incidence functions. Figure 3.2 below presents the cumulative proportions of entry into coresidence and separation. Approximately 50% remained in LAT, 18% of LAT separated while 32% coresided by the end of year 1 since wave 1. Approximately 30% remained in LAT, 25% separated, and 45% coresided by year 2 since wave 1. Approximately 17% of LAT kept dating, approximatively 30% of LAT separated, and approximatively 53% coresided by the end of three years since wave 1.

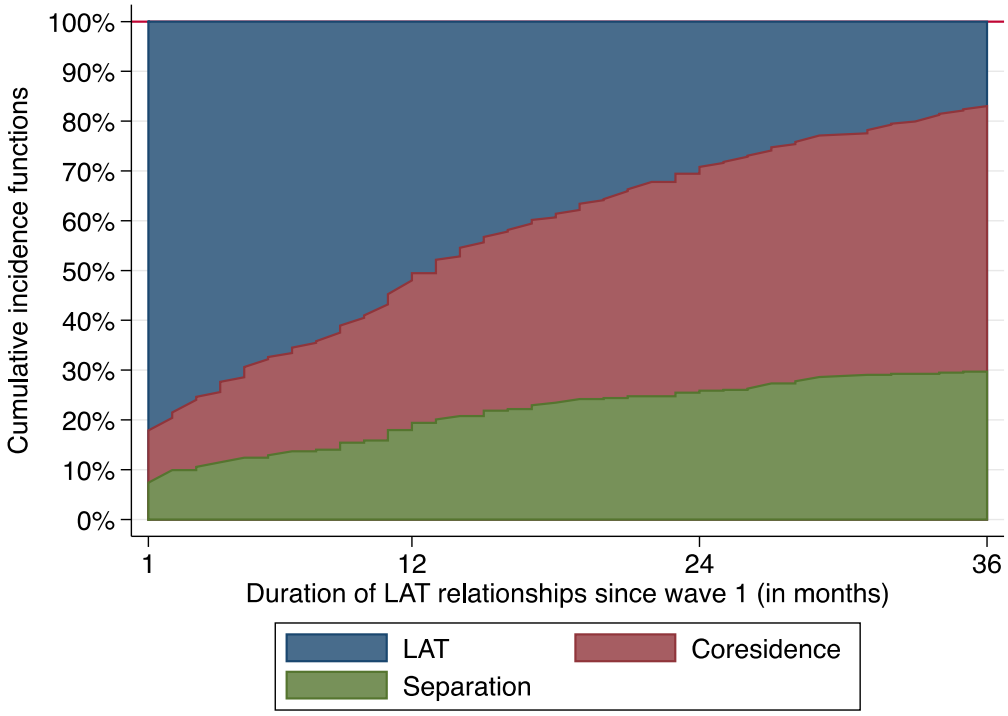

Figure 3.2: Duration of LAT relationships since wave 1 until transitions in the analytical sample; pairfam

In the analysis, I consider 8884 relationship-months from 921 LAT partnerships. Figure 3.2 above suggests that LAT relationships are a stage in the formation of the coresidential relationships since a high proportion of the sample moved in together with their partner by the end of the 36 month observation window (approximatively 53%).

For 26 individuals in the sample, the month of marriage was the same as the month of the start of coresidence (2.8% out of the analytical sample) (results not shown, available upon request). This finding suggests that direct marriage is an isolated phenomenon among young adults and those in midlife in Germany and that the vast majority of the respondents prefer to cohabit.

To account for the duration of LAT after wave 1, three categories have been created: < 13 months, 13-24 months, 25-36 months. To account for the duration of LAT before wave 1 four categories have been created: < 6 months, 6-11 months, 1-3 years, and 4+ years. Summary statistics of LAT relationship duration before wave 1 indicates the presence of a select group of LAT respondents with longer durations at wave 1 (see Appendix B.3, Table B.12). For example, half of those LAT in wave 1 had been together for at least 20 months before wave 1 (1.6 years); 75% of those LAT in wave 1 had been together for at least 46 months before wave 1 (3.8 years) and 25% of the sample had been together for 7 months before wave 1.

3.5.2 Sample characteristics at interview

The relationships between all key independent variables are shown in Appendix B.2, Figure B.3, Table B.9, and Table B.10. Although all the variables are interrelated, it is difficult to fully understand how much these variables are related due to their different level of measurement. However, if I consider all variables continuous, the highest correlation, $r = 0.33$, is between relationship satisfaction and sexual satisfaction, while the other coefficients are lower, indicating that these variables tap into different dimensions of relationship quality (Appendix B.2, Table B.8).

The distributions of all key variables measured in wave 1 are shown in Tables 3.1 and 3.2 below.

Table 3.1: Distribution of sexual satisfaction and self-disclosure at wave 1; pairfam

Variables	**%**
Sexual satisfaction	
No response	6.4
Low	21.1
Moderate	28.7
High	43.9
Self-disclosure	
Not often	4.30
Sometimes	16.0
Often	53.4
Always	26.3
Total	100

Notes: pairfam data, own calculations; unweighted percentages; sexual satisfaction and self-disclosure are measured in wave 1.

In wave 1, the highest proportion of LAT individuals declared high levels of sexual satisfaction (43.9%), this proportion being followed by those who declared moderate (28.7%) and low levels of sexual satisfaction (21.1%). Only a minority (6.4%) of the sample did not respond to this

question. Just over half of LAT individuals disclosed 'often' to their partner (53.4%), followed by those who disclosed 'always' (26.3%) and 'sometimes' (16%) to their partner. A minority of LAT disclosed 'not often' to their partner in wave 1 (4.3%).

Table 3.2: The means (and standard errors) of relationship satisfaction and couple's conflict frequency at wave 1; pairfam

Variables	Mean (S.E.)	S.D.
Relationship satisfaction (0-10)	8.18 (0.06)	2.12
Couple's conflict frequency (1-5)	2.43 (0.02)	2.43

Notes: pairfam, own calculations; relationship satisfaction and couple's conflict frequency are measured at wave 1; S.E. – standard errors; S.D. – standard deviation; unweighted results.

In wave 1, the mean of relationship satisfaction among all LAT respondents was relatively high (mean = 8.18) and the mean of conflicts was relatively low (mean = 2.43), indicating that LAT individuals were overall satisfied with their relationship and had relatively few conflicts in wave 1.

Descriptive statistics of the analytical sample in wave 1 are shown in Appendix B.2, Table B.6. There are more LATs in the 1981-83 birth cohort (78.4%) than in the 1971-73 birth cohort (21.6%), and this is consistent with the literature that LAT is most often encountered at younger ages (Coulter and Hu, 2015; Liefbroer *et al.*, 2015; Schnor, 2015). Slightly more males (52.7%) than females (47.3%) are in LAT in wave 1. Most LAT respondents have medium education (53.4%), are employed and their partner is employed (57.7%), live less than one-hour travel distance to partner (80.8%), do not have children (80.9%), and live in West Germany (81.8%). About a quarter (24.9%) live in a periphery (defined as a region with a number of people between 50,000-500,000), and about a third of LAT individuals had been together for 4 years or more before wave 1 (32.6%).

3.5.3 Multivariate results

The risk ratios of entering coresidence or separation relative to continuing in a LAT relationship are presented in Table 3.3, in three sequential models. The first model (Model 1) examines the association between relationship satisfaction and the LAT transitions with only the control variables included and responds to the first research question, which asks whether relationship satisfaction is related to LAT relationship transitions. The second model (Model 2) includes the indicators for sexual satisfaction, self-disclosure, and couple's conflict frequency, and the control variables, but excludes the indicator of the overall relationship satisfaction, responding to the second research question; this question asks whether sexual satisfaction, self-disclosure, and

couple's conflict frequency are related to LAT relationship transitions. Model 3 includes back the indicator of the overall relationship satisfaction and responds to the third research question which asks whether relationship satisfaction would still be an important indicator for explaining the LAT relationship transitions after accounting for sexual satisfaction, self-disclosure, and couple's conflict frequency. Model 3 represents the full model.

These three models are nested, and caution must be used in interpreting the change in the coefficients across nested models when the outcome is non-linear due to rescaling (Mood, 2010). Rescaling arises in logit models because estimated coefficients depend on the error variance of the model, which, in turn, depends on other variables in the model. However, one way to account for this problem is to calculate average marginal effects (AME) (Mood, 2010), an approach often used in demography (Visser *et al.*, 2016; Krapf, 2017). The direction and significance between the models with AME (Appendix B.2, Table B.14) and risk ratios do not differ. Consequently, the models with competing risk ratios are presented in the chapter for ease of interpretation[27].

[27] The AME coefficients are close to zero due to data set-up (in months).

Table 3.3: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transitions

	Separation vs. LAT			Coresidence vs. LAT		
	M1	M2	M3	M1	M2	M3
Variables	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)						
13-24 months	0.52***	0.55**	0.54**	0.88	0.85	0.86
25-36 months	0.58*	0.51*	0.51*	0.85	0.83	0.85
Relationship satisfaction	0.87***	-	0.92*	1.10**	-	1.05
Sexual satisfaction (ref. Low)						
No response	-	1.17	1.31	-	1.37	1.31
Moderate	-	0.55**	0.60*	-	0.88	0.84
High	-	0.63*	0.73	-	0.97	0.90
Self-disclosure (ref. Not often)						
Sometimes	-	1.95+	2.17+	-	3.07+	2.92+
Often	-	0.90	1.01	-	2.69+	2.51
Always	-	0.59	0.70	-	3.76*	3.42*
Couple's conflict frequency	-	1.36**	1.27*	-	0.78**	0.81*
Cohort (ref. 1971-1973)						
1981-1983	1.65*	1.57*	1.64*	1.21	1.27	1.25

	Separation vs. LAT			Coresidence vs. LAT		
	M1	M2	M3	M1	M2	M3
Variables	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Time in LAT before w1 (ref. 4+ years)						
< 6 months	2.28***	2.66***	2.63***	1.12	1.09	1.1
6 - 11 months	1.59+	1.70*	1.70*	1.87***	1.80***	1.80***
1-3 years	1.12	1.18	1.15	1.25	1.21	1.23
Gender (ref. Male)						
Female	0.99	1.08	1.09	1.25+	1.22	1.22
R.'s level of education (ref. Low)						
Medium	0.95	1.12	1.18	0.75	0.85	0.85
High	0.93	1.11	1.20	0.94	1.07	1.06
Couple's combined labour force status (ref. Both employed)						
Both non-employed	0.7	0.75	0.76	0.82	0.82	0.82
One employed	0.83	0.81	0.83	0.92	0.95	0.95
Travel duration to partner (ref. < 1 h)						
>1 h	1.47*	1.60**	1.61**	0.98	0.96	0.96
R. has children (ref. no)						
1 or more children	1.67*	1.70*	1.69*	0.99	1.04	1.04

	Separation vs. LAT			Coresidence vs. LAT		
	M1	M2	M3	M1	M2	M3
Variables	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Living in East Germany (ref. No)						
Yes	0.82	0.80	0.83	0.97	1.01	0.99
Urban conglomerate (ref. Region < 20.000)						
City Centre 500,000+	1.68*	1.80*	1.90*	1.17	1.21	1.18
Periphery 500,000+	0.71	0.69	0.73	1.07	1.08	1.05
City Centre 50,000-500,000	0.62	0.63	0.64	1.01	0.98	0.98
Periphery 50,000-500,000	0.90	1.04	1.06	0.83	0.79	0.79
Region 20,000-50,000	0.78	0.87	0.86	0.91	0.85	0.85
N (person-months)	8884	8884	8884	8884	8884	8884
Log-likelihood	-2237.23	-2212.03	-2208.52	-2237.23	-2212.03	-2208.52
AIC	4558.47	4532.07	4529.04	4558.47	4532.07	4529.04

Notes: pairfam, own computation; unweighted results; LAT- living apart together relationships; ref – reference category; AIC- Akaike Information Criteria;

R – respondent; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10.

The relative risk ratios on the *transition to separation* are presented in the left column of Table 4. Model 1 includes all the covariates and relationship satisfaction. Model 1 shows that the higher the relationship satisfaction the less likely LAT respondents are to separate relative than to continuing their relationship as living together apart. Model 2, includes sexual satisfaction, self-disclosure, and conflicts, and shows that they are associated with LAT risk of separation relative to continuing to date. Those who report moderate or high levels of sexual satisfaction as compared to those who report low levels of sexual satisfaction are less likely to break-up relative to continuing to date. LATs who disclose to their partner 'sometimes' compared to 'not often', and those who have frequent conflicts are more likely to separate rather than to keep dating. Finally, in Model 3, when relationship satisfaction is included, it is noticed that a) relationship satisfaction is still negatively associated with LAT transitions to separation (as Model 1 shows), and b) sexual satisfaction, self-disclosure, and conflicts remain significant in explaining LAT transitions to separate, with coefficients in the same direction (as Model 2 shows). However, the statistically significant difference between high and low levels of sexual satisfaction disappears, leaving those LATs with moderate levels of sexual satisfaction less likely to separate than those with low levels of sexual satisfaction. All in all, Model 3 reveals that the risk of separation is associated with low levels of relationship and sexual satisfaction, less self-disclosure, and more conflicts.

The model building strategy shows that those who experience lower levels of relationship satisfaction are more likely to break-up rather than continuing to date, supporting hypothesis 1b (Models 1 and 3). The results from Models 2 and 3 generally supports hypothesis 2b, which posited that LAT individuals who experience low levels of sexual satisfaction would be more likely to separate (rather than to keep dating) than those who experience moderate or high levels of sexual satisfaction. However, hypothesis 3b, which posited that LAT individuals who disclose less frequently to their partner as compared to those who disclose more frequently would be more likely to separate relative to continuing to date, is not supported by the data; results from both Models 2 and 3 suggest that telling the partner 'sometimes' compared to 'not often' the thoughts one has is associated with the decision to separate, but the results are marginally significant (Model 2: p-value = 0.095, RRR = 1.95; Model 3: p-value = 0.055, RRR = 2.17). Hypothesis 4b, which stated that the higher the conflict frequency, the more likely the LAT couples would be to break up, is supported by the data (Models 2 and 3).

The effect sizes and significance of control variables do not change much across these three models, which is why I focus on the findings from Model 3. In Model 3, which is the full model

(with all the relationship quality variables and covariates) and also has the best fit[28], some covariates are found to be important for the risk of separation. For example, in terms of relationship duration, those who have been together more than one year after wave 1 are less prone to separate than those who have been together only one year after wave 1. Similarly, those who have been together for less than one year before wave 1 are more prone to separate compared to those who have been together four years or more before wave 1. This may reflect that the longer LAT relationships before wave 1 are more selected than those formed less than a year or one year before wave 1.

Those in young adulthood (born in 1981-1983) compared to those in midlife (born in 1971-1973) are more prone to separate. This could suggest the fact that being younger is related to higher chances of repartnering if one does not like his/her partner. Additionally, the younger cohort might be in an exploratory phase of the life-course as compared to the older cohort. Studies investigating remarriage shows that the pool of single persons at younger ages is larger compared to midlife ages and that the social opportunities to meet a spouse/partner declines with age (de Graaf and Kalmijn, 2003; Schimmele and Wu, 2016). The travel distance to the partner and having at least one child are associated with the risk of LAT couples' separating, consistent with the literature in Germany (Krapf, 2017). Moreover, living in the city centre compared to a region with fewer than 20,000 inhabitants is associated with LAT transition to separation. Gender, education, couple's combined labour force status, and the region where individuals live are not associated with LAT transition to separation.

For the *competing risk of coresidence*, Model 1 shows that higher levels of relationship satisfaction are associated with LAT respondents' decision to move in with their partner relative to continuing to date. In Model 2, which contains the specific indicators of relationship quality, no evidence was found to suggest that sexual satisfaction is important for LATs' decision to move in with their partner relative to continuing their non-coresidential relationship. Model 2 also shows that LATs who disclose to their partner 'always', 'often' or 'sometimes' as compared to disclosing 'not often' are more likely to move in with their partner rather than continuing to date. Also, LATs who have fewer conflicts with their partner are more likely to move in with this partner than to keep dating. Finally, in Model 3, when relationship satisfaction is included, it is noticed that a) relationship satisfaction is not associated with LAT transitions to coresidence (as it was in Model 1) and b) the coefficients of sexual satisfaction, self-disclosure, and conflicts do not change very

[28] Both model fit parameters of Log-likelihood and Akaike Information Criteria are the smallest in Model 3 compared to the other two models.

much in size, direction, or significance across Models 2 and 3. All in all, Model 3 reveals that the risk of coresidence is associated with more frequent self-disclosure, and fewer conflicts.

Cumulatively, this model building strategy shows that relationship satisfaction is important for LAT respondents' decision to move in with their partner, indicating support for hypothesis 1a. However, the results suggest that the association works through the self-disclosure and couple's conflict frequency indicators, which indicates that hypothesis 1a is supported until these indicators are included (Models 1 and 3). Models 2 and 3 show that sexual satisfaction is not related to LATs' decision to move in with their partner, suggesting that hypothesis 2a is not supported by the data. Hypothesis 3a, which posited that LAT individuals who disclose more frequently to their partner relative to those who disclose less frequently would be more likely to move in together with their partner rather than to continue dating, is confirmed by the data; in Models 2 and 3, disclosing 'always' or 'sometimes' as compared to 'not often' is related with the transition into coresidence. Having fewer conflicts is another important indicator for LATs' decision to move in with their partner rather than to continue dating (Models 2 and 3), these results indicating support for hypothesis 4a.

Other covariates associated with the start of coresidece include being together between 6-12 months before wave 1 as compared to being together for at least 4 years before wave 1. This result could be related to relationship satisfaction. The positive relationship between LAT relationship duration before wave 1 and the likelihood of coresidence could result from a selection effect of those who are happier with their relationship. At the same time, those who are in long-term relationships may have other reasons for not moving in together, such as coresidential children or placing more value more on an independent lifestyle.

Time in LAT after wave 1 is not associated with people's decision to move in together. The cohort, gender, respondent's education, couples' combined labour force status, the presence of children, the region where people live, or urban conglomerate are also not associated with the transition to establish a joint household. Contrary to the literature in the field (Krapf, 2017), the travel duration to the partner, having children, and couple's combined employment status are not important for these respondents' risk of coresidence. Krapf (2017) underlines that those LAT who reported travel durations to their partner longer than one hour, having more than 1 child, and couples with both partners non-employed as compared to those where partners are employed were less likely to move in with their partner (relative to still dating). One reason why the results differ in the current research may be related to how the sample is constructed: this paper follows those LAT existing in wave 1 across 3 years while Krapf investigated all LAT relationships formed between waves 1 and 7. There may be different results for different samples, different lengths of follow-up, and different ways of categorising other variables in the study.

Predicted probabilities for the transitions into coresidence and separation between statistically significant key variables and LAT outcomes, with categorical covariates set constant at baseline and continuous covariates at mean values are shown in Appendix B.5, Figure B.4-Figure B.7.

3.6 Discussion

This chapter analysed the LAT relationship transitions to either moving in with a partner or breaking-up relative to still dating in Germany. The focus of this study was on how sexual satisfaction, self-disclosure, and couple's conflict frequency, as specific indicators of relationship quality, relate to LAT relationship transitions. This chapter also investigated the importance of the global indicator of relationship satisfaction by examining whether the previously mentioned indicators attenuated the link between relationship satisfaction and LAT relationship outcomes. In this way, this work went beyond those studies which conceptualised relationship satisfaction as a global indicator of relationship quality in studying LAT transitions (Krapf, 2017; Wagner *et al.*, 2019), contributing to a better understanding of the nature of non-coresidential relationships. In the empirical analysis, competing risk discrete-time event-history models on LAT relationship transitions were assessed. These results have implications for our understanding of the outcomes of non-coresidential relationships.

This study shows that LAT is a temporary stage in coresidential partnership formation since more individuals move in together rather than separate by the end of three years since wave 1. The model building strategy reveals that relationship satisfaction is important for LAT respondents' decision to separate, even in the presence of self-disclosure, sexual satisfaction, and conflict indicators. The lower the level of relationship satisfaction the more likely LAT couples are to separate relative to keep dating, consistent with hypothesis 1b. This finding supports the exchange theory argument that low relationship satisfaction is defined by partners as an important cost, which is associated with the decision to break-up (Thibaut and Kelly, 1959). These findings are consistent with previous studies in Germany that found a link between low relationship satisfaction and LAT relationship transition to separation (Krapf, 2017; Wagner *et al.*, 2019).

Relationship satisfaction is related to LAT respondents' decision to move in with their partner, but this association is attenuated by the self-disclosure and conflict indicators. This finding partially supports hypothesis 1a. In the model without sexual satisfaction, self-disclosure, and conflicts, higher levels of relationship satisfaction were significantly associated with the likelihood of LAT transition to coresidence. However, self-disclosure and conflict frequencies accounted for the association between the overall relationship satisfaction and LAT respondents' decision to move in with their partner. Caution is needed when interpreting these changes as the effect sizes did

not change much across models. Nonetheless, these findings show the importance of going beyond the global indicator of relationship satisfaction in disentangling LAT relationship outcomes. Demographers have underlined the importance of relationship satisfaction for the transition from a LAT to a coresidetial partnership (Krapf, 2017; Wagner, 2019), which is supported in this research as well. However, this research emphasises that relationship satisfaction is an umbrella concept and looking under the umbrella is informative in disentangling the link between in-depth relationship satisfaction indicators and LATs' decision to move in with their partner. I recommend that future work should consider more specific indicators of relationship satisfaction when studying the formation of coresidential relationships.

In the multivariate regression analysis, sexual satisfaction was not related to LAT partnership transitions to coresidence as I had hypothesised (hypothesis 2a). This is surprising since high levels of sexual satisfaction are associated with frequent orgasms, sexual compatibility, and intimacy (Štulhofer *et al.*, 2013; Frederick *et al.*, 2017), which are important aspects in any relationship (Muise *et al.*, 2016; Debrot *et al.*, 2017). Nonetheless, the findings of this chapter are in line with a study which shows that sexual satisfaction is not important to explain LAT transitions into coresidence or marriage (Italy: Meggiolario, 2010). The results of this chapter provide a tentative indication that people do not take their decision of moving in together based on how rewarding their sexual life is but rather on other aspects such as being more open to a partner and having fewer conflicts.

On the other hand, sexual satisfaction was related to the outcome of separation: those with low sexual satisfaction as compared to those with moderate levels of sexual satisfaction are more prone to break-up, consistent with hypothesis 2b. According to the social exchange perspective, low sexual satisfaction is a negative evaluation of the sexual interaction and is associated with perceiving more costs than rewards from having sex with that partner (i.e. low emotional connection with a partner, few orgasms, sexual incompatibility). Moreover, these results align with Meggiolaio's paper (2010) which shows that less sexually satisfied couples as compared to those sexually satisfied are more prone to break-up relative to keep dating in Italy. Despite using different data and different indicators to capture sexual satisfaction, Meggiolario investigated individuals in a LAT relationship in a similar age range as this study: between 18-26 years old in 2006 when the survey was collected (corresponding to the birth cohorts 1980-1988) and 27-36 years old (corresponding to those born in the cohorts 1970-1979). The results from these two studies can be used by future research to compare and contrast the importance of sexual satisfaction in the decision to break-up among LAT couples who are in the same or even later life-stages, in other countries.

This chapter shows that LAT individuals' decision to move in together with their partner is influenced by how frequently their partner shares his/her private thoughts. LAT individuals who disclose more frequently to their partner as compared to those who disclose less frequently are more likely to move in together with their partner rather than to keep dating, consistent with hypothesis 3a. Psychological research indicates that frequent self-disclosure is associated with feelings of love and respect for the partner (Hendrick and Hendrick, 2004; Sprecher and Hendrick, 2004), and increases feelings of being familiar and connected to a partner (i.e intimacy; Reiss and Shaver, 1988). It might be that these aspects are mechanisms underlying the association between self-disclosure and decisions to coreside. The results provide no support for the hypothesis that LAT individuals who disclose less frequently to their partner as compared to those who disclose more frequently to their partner are more likely to separate than continuing to date (hypothesis 3b). The findings for the link between self-disclosure and LAT transition to separation suggests that telling a partner the thoughts one has just 'sometimes' compared to 'not often' is associated with the decision to separate. The frequency of 'sometimes' may indicate uncertainty or even cognitive dissonances about the future of the partnership. Studies have shown that some LATs expressed uncertainty about the longer term of their relationship, which sheds light on the fragility of this type of relationship (van der Wiel *et al.*, 2018).

The fewer conflicts the couple has, the more likely they are to move in together rather than to keep dating. Additionally, the more conflicts a couple has, the more likely they are to separate rather than keep dating. These findings are in line with what I had hypothesised (hypotheses 4a and 4b). Past studies found a positive link between the frequency of conflict and divorce (Carrère *et al.*, 2000; Gottman and Levenson, 2002; McGonagle *et al.*, 2016), and this chapter extends this literature, showing that conflicts matter also for the decision to break-up among those in LAT relationships. According to the social exchange theory, having frequent conflicts is an indicator of imbalanced social exchanges between partners, where one partner invests more in and has fewer outcomes from the relationship than the other partner (Thibaut and Kelly, 1959). It may be that those in LAT relationships who experienced more conflicts found themselves to be in an unfair relationship and eventually broke-up. These findings may also reflect unresolved conflicts. Unresolved conflicts were found to lead to future eruptions about the same conflict (Karney and Bradbury, 1995), which ultimately disrupted relationships (Wilmot and Hocker, 2001; Laursen and Hafen, 2010). Future research on the role of conflicts and LAT transitions could investigate more in-depth on how LAT couples reach agreements and experience same-conflict eruptions, and how this is related to relationship transitions, for example.

3.7 Limitations and suggestions for future work

This work has some limitations. First, the social exchange framework has some important drawbacks. The theory assumes that people are rational beings who assess their relationship quality and take decisions whether to continue their relationships or not based on costs and rewards, subtracting costs from rewards and evaluating the gains they get from the relationships. This may not be the case for all LAT respondents and for some people other aspects might be important for relationship decisions. For example, more religious people might want to marry their partner despite not being very happy in the relationship. The social exchange framework cannot easily explain either why some people stay in abusive relationships despite the little rewards and overwhelming costs. Moreover, the data does not have indicators to directly capture the rational calculations stipulated by the theory. Another weakness is that there are no standard examples of costs and benefits and this may even vary by gender (Byers, 1999; Byers and Cohen, 2017). In addition, a cost for some couples can be perceived as a benefit for others and people can change their perceptions of what a cost or a reward is in a relationship. This paper did not aim to test what a cost or a benefit is but rather used this theoretical framework to set expectations and explain the results between relationship quality and LAT outcomes.

The analysis has several limitations. First, despite this research being longitudinal, causal effects between relationship quality variables and LAT outcomes cannot be assumed. Secondly, the results are not representative for the entire population who could be in a LAT relationship because the chapter includes two cohorts: 1981-1983 (25-28 years old in wave 1) and 1971-1973 (35-38 years old in wave 1), leaving out people aged between 20-24 and 29-34 years old, and those older than 38 years old. Moreover, the relatively small sample size did not allow for significant interaction effects between gender, cohort, and relationship quality variables on LAT outcomes. Perhaps a bigger sample size would reveal different results. Thirdly, this chapter has a short follow-up of LAT transitions, within three years since the survey date. Nonetheless, about 20% of the sample was left by the end of the third year since wave 1, implying that most of the sample had already experienced a transition by that time. Therefore, the results on the key independent variables and LAT outcomes are unlikely to significantly change if longer follow-ups were used.

Fourthly, individuals born between 1971-1973 and still in LAT are selective since most respondents in this cohort in wave 1 are married (Appendix B.1, Table B.7). However, in the analysis, I control for background characteristics of the people that would be in LAT at this later life stage, such as employment, education, and the number of children. Moreover, the LAT relationships in wave 1 are a selective sample of those relationships which were ongoing at wave

1. In other words, the sample is selective of relationships that are of longer duration and might have better relationship quality.

This analysis also has conceptual limitations that are related to a) how LAT is defined and b) how sexual satisfaction is defined. Respondents are asked if they have an intimate partner with whom they are not living (Appendix B.1.,Table B.1). We do not know what people think when they answer this question as 'intimate relationships' or 'intimate partner' are not defined in the pairfam survey. It may be that respondents considered a non-coresidential intimate partner as a casual sex partner. It would be useful if surveys would start to (re)define more narrowly LAT relationships, intimate relationships, and document these definitions in the survey so that when individuals read the questions they can disentangle a casual sexual partner from a more committed LAT partner.

Since sexual satisfaction is measured broadly by asking the participants how satisfied they are with their sex life, the results have to be interpreted with caution. Because the wording of this question lacks the expression 'with the partner', the answers could reflect different sex practices that lead to satisfaction. One of the sexual practices sex therapists talk about is solitary sex behaviour (i.e. masturbation; Carvalheira and Leal, 2013; Mercer *et al.*, 2013). Since the question of sexual satisfaction does not read 'with the partner', it might be that some of the participants based their answers on solitary sex behaviour or sex with other partners. Moreover, these answers can include sexting or sending intimate pictures (Del Rey *et al.*, 2019; Ouytsel, 2020). I recommend that pairfam or any demographic survey should include a more specific indicator measuring sexual satisfaction 'with the partner'. This is important because these people have a relationship at distance and therefore they may more often practice solitary sex behaviours, might send more intimate pictures, or have more opportunities to cheat on their partner as compared to coresidential couples.

It would be useful if future research can look at the link between constructive/destructive conflict behaviour and LAT relationship outcomes with national representative data. Partners who discuss conflicts with less or no verbal aggression and try to resolve conflicts by actively listening to each other's views are less likely to divorce (Camara and Resnick, 1989; Gottman and Levenson, 1992; Gottman and Levenson, 2002; Orbuch *et al.*, 2002). LAT partners with a more constructive way of resolving conflicts were more likely to be together at later points in time (Appel and Shulman, 2015). Pairfam has multiple-item scales that measure verbal aggression and constructive behaviour during conflicts, and future research can use these indicators to deepen the understanding between conflicts and LAT transitions. The current research did not include these items because it is likely that these are correlated with the frequency of conflicts. Moreover,

because of the small sample size in this chapter, it is unlikely that the constructive behaviour or verbal aggression indicators would bring additional information to explain LAT transitions.

Lastly, it would be useful if future research could also include the partner's assessments of relationship quality if these are available in surveys. A more complete dyadic perspective could help to explain how couples decide to navigate their relationship. This chapter could not use the partner's accounts for relationship and sexual satisfaction, which are asked in pairfam, due to a high proportion of item non-responses to questions asking about relationship and sexual satisfaction (between 10-20%).

All in all, this research underlines the need to go beyond the global measure of relationship satisfaction in understanding better LAT relationship outcomes, emphasising the importance of investigating positive, negative, and sexual dimensions of relationship satisfaction.

Chapter 4 Satisfaction with Being Single: How do Lifelong Singles Differ from the Ever-Partnered Singles?

4.1 Introduction

The rates of those single never married and divorced have been increasing, especially in the past three decades, as marriage is being postponed and the divorce rates for those aged 50 and over are rising (UK: 2017a; 2019c; Eurostat, 2015; Australia, New Zealand, and the US: UN Women, 2019a). This trend might suggest that the rates of those unpartnered are increasing as well, particularly at younger ages but also at mid-life. Nonetheless, some of these individuals might have a cohabiting or LAT partner. In terms of studying singlehood, demographers have underlined that the single never married experience poorer well-being than those partnered (US: Marks, 1996; the Netherlands: Soons and Liefbroer, 2008; Europe: Verbakel, 2012; US: Wright and Brown, 2017; Europe and Australia: Perelli-Harris *et al.*, 2018; US: Ermer and Proulx, 2019) but better well-being than those divorced and widowed (US: Pearlin and Johnson, 1977; Pudrovska *et al.*, 2006; Norway: Reneflot and Mamelund, 2011). However, these past findings have either been based on old data and descriptive results (Pearlin and Johnson, 1977), on non-representative data (Pudrovska *et al.*, 2006), on a sample of people who could have had a LAT partner (Pearlin and Johnson, 1977; Pudrovska *et al.*, 2006; Reneflot and Mamelund, 2011; Perelli-Harris *et al.*, 2018), or a cohabiting partner (Pudrovska *et al.*, 2006; Ermer and Proulx, 2019). Sociologists have deepened the study of singlehood by examining how these individuals feel about not having a partner. Their studies, based on qualitative data, reveal that singlehood is generally constructed around a positive identity and singles live happy and fulfilled lives without a partner (US: Stein, 1975; Canada: Davies, 2003; Britain: Budgeon, 2008). However, even in these studies some of the interviewees had a LAT partner. This chapter goes beyond the demographic studies which investigated singles' well-being, by focusing on the satisfaction with not having an intimate partner (i.e. satisfaction with being single) among those who currently are not in an intimate relationship, either coresidential or LAT. This paper combines demographic and sociological literatures in examining differences in satisfaction with being single between those who never had an intimate partner in adulthood (defined as lifelong singles) and those with either past LAT or coresidential relationships, using representative data for Germany.

This study contributes theoretically and empirically, providing a) a more refined definition of both concepts i.e. lifelong singlehood and singlehood, b) new insight into the characteristics of these individuals by investigating their past intimate relationships and c) new evidence on how

satisfaction with not having an intimate partner differs between lifelong singles and those who had intimate relationships. For example, in demography, only one study has used the term 'lifelong singlehood' to define individuals who never experienced a coresidential relationship by the age of 40 (Europe: Bellani *et al.*, 2017). The gerontological literature considers a lifelong single someone who never (re)married (and is childless) over the age of 60 (Canada: Baumbusch, 2004; Irland: Timonen and Doyle, 2013; Israel: Band-Winterstein and Manchik-Rimon, 2014). These definitions from both literatures are limited since these people had previous intimate coresidential and/or non-coresidential (LAT) relationships. Not distinguishing between these two intimate relationship histories might paint a blurred picture of the characteristics and the experiences of lifelong singles.

A lifelong single is defined in this study as someone unpartnered who never had any intimate coresidential or LAT relationship experience in their adulthood. This person can live alone or in a multiple-person household and may be childless but not necessarily so. Some lifelong singles are lone parents who may never have lived with the other parent of their child or could have children through adoption, artificial insemination, or forced sex. This definition is a unique contribution to the literature and it is based on rich data on retrospective relationships history, which allows us to move beyond the general categories of marital status. The group of those who never had a coresidential relationship, but had only past LAT relationships has not received attention in the demographic literature either. Moreover, this chapter defines singles as those who do not have either an intimate coresidential or a LAT partner, aligning to those few studies which adopted the same definition (the Netherlands: Soons and Liefbroer, 2008; Europe: Verbakel, 2012; US: Wright and Brown, 2017).

In addition, the paper examines the role of social networks in how single individuals feel about not having a partner. Social networks are defined in terms of satisfaction with friends and social contacts, and frequency of contacting parents. Friends and family are found to be very important in replacing the absence of an intimate partner, in terms of social support, social belonging, and emotional bond in singles' lives (US: Loewenstein *et al.*, 1981; Britain: Zajicek and Koski, 2003; Britain: Roseneil, 2006; Ireland: Simpson, 2006; Britain: Budgeon, 2008). However, friends might not be always valued by single people. Other studies have indicated the dissatisfaction of singles with their family and friends who stigmatize them for being unpartnered (Canda: Davies, 2003; Britain: Reynolds and Wetherell, 2003; US: Sharp and Ganong, 2011). Given the contradictory results of the role of friends and family in singles' lives, this study contributes to the literature by shedding light on the complex role of social networks on satisfaction among unpartnered people in their mid-thirties with being single.

Studying singlehood is important from a policy perspective too. For example, governments are making assumptions that the family will provide care for old generations but those who remained single throughout adulthood have no family to provide care for them. Evidence from the UK warns about the potential socio-economic adversities that childless men living alone in late mid-life, without any coresidential relationship, not owner-occupier, and lone mothers without house equity would face when entering subsequent life stages (Demey *et al.*, 2013). Some studies have underlined a negative educational gradient for men's and a positive educational gradient for women's likelihood of 'remaining single' (people without coresidential experience by the age of 40; in the Netherlands: Dykstra and Poortman, 2010; in Norway: Wiik and Dommermuth, 2014; in Europe: Bellani *et al.*, 2018). All these studies indicate that low educated men might be at risk of benefitting from individual pension entitlements and the state needs to meet their care and financial needs. However, this might be changing. One study reveals that in the Netherlands, university-educated men were as likely to remain single as those with only primary education (Dykstra and Poortman, 2010). This suggests that, at old ages, they might be more financially independent and not need the help of the state. This chapter also sheds light on the characteristics of single people underlining who might be selected into lifelong singlehood in Germany. According to the best of the author's knowledge, this is the first study anywhere in Europe on the characteristics of lifelong singlehood defined as having had no intimate relationship experience in adulthood.

Germany is one of the countries with the highest share of one-person households among those aged 30-50 in Europe, together with Sweden and the Netherlands (Sandström and Karlsson, 2019). In Germany, the mean age of marriage for women increased from 25.9 years in 1990 to 31 years in 2014, and for men, it increased from 28.4 in 1990 to 33.7 years in 2014 (UNECE Statistical Database, 2019). This suggest that people spend now more years as being never married and living alone compared to three decades ago. These never married people could have had at least one previous relationship experience with a cohabiting or LAT partner. Recent research has noted the existence of serial cohabitation (for West Germany) for a small proportion of people in their mid-thirties (Hiekel and Fulda, 2018). This demonstrates that today there are more single people with past cohabitation experience only, a phenomenon that barely existed half a century ago. It is also possible that some of those currently single have never had an intimate relationship at all. All these demographic changes indicate a more diversified pool of singles, with different intimate LAT and coresidential relationship experiences or no intimate relationship experience at all. It is remarkable though how little we know about this diversity of single people, especially in their mid-thirties, when it is socially normative for people to have formed a couple (Europe: Billari and Liefbroer, 2010). This chapter aims to broaden the knowledge about the characteristics and experiences of single people with different past intimate experiences.

4.2 Background

4.2.1 Pathways to singlehood and lifelong singlehood

Previous research that has investigated the characteristics of lifelong singlehood has underlined the importance of gender and socio-economic variables. For example, historical demographers show that more women than men were never married at the end of their 40s in WEMP (this is sometimes referred to as 'permanent celibacy'; see also section 1.2.3 Singlehood from the Introduction chapter for more details about WEMP; Hajnal 1953a). The pathways into permanent celibacy for men and women are further stratified by education. Studies based on population registers and census data from the 19th to the first half of the 20th centuries show that highly educated women and low educated men were more likely to remain unmarried (Europe, Asia, and English speaking nations: Dixon, 1971; US: Havens, 1973; UK and US: Freeman and Klaus, 1984). This is explained by the few economic benefits high-resource women have in marriage and the high economic costs low-resource men face in marriage (Oppenheimer, 1988). The gerontological qualitative studies on the experiences of those never married who were born before the Second World War support these findings from the quantitative studies. The interviewees, especially men, have explained the constraints in their choice of marrying in terms of their low socio-economic conditions and cultural-normative factors prohibitive of marriage among those who are poor (US: Baumbusch, 2004; Ireland: Timonen and Doyle, 2013).

In terms of those remaining with no coresidential experience by the age of 40, in some countries such as Germany, France, Switzerland, Belgium (Bellani *et al.*, 2017), Netherlands (Dykstra and Poortman, 2010), and Norway (Wiik and Dommermuth, 2014) more women than men have experienced no coresidential partnership by the age of 40. Similarly to the pathways into permanent celibacy during WEMP, the negative socio-economic gradient for men's and the positive socio-economic gradient for women's likelihood of being without coresidential experience has been noted in these studies as well (Dykstra and Poortman, 2010; Wiik and Dommermuth, 2014; Bellani *et al.*, 2018). However, nowadays this is likely to be changing. For instance, one study conducted in the Netherlands underlines that the most highly educated men (those university-educated) are as likely as those with a low level of education (up to primary school-educated) to experience no coresidential partnership by the age of 40 (Dykstra and Poortman, 2010). The authors explain that highly educated men without coresidential experience might be a select group of those who hold progressive attitudes, being open to and able to afford to live a non-conformist lifestyle, or who have high standards for a coresidential partner.

Given the existing studies on the selection into remaining without coresidential experience in adulthood, this chapter investigates the characteristics of those who remained lifelong single in

adulthood in terms of gender, education, and employment, controlling also for these characteristics in explaining the satisfaction with being single.

Choice vs constraints in being single

Satisfaction with singlehood can differ according to people's reasons for being single. The qualitative sociological literature has divided singlehood by 'choice' and 'circumstance' (sometimes referred to as 'constraint'). This division is made in line with people's narratives of their marital history at the time of interview since they tended to talk about either the unfortunate circumstances or the choices they had made which resulted in their remaining unmarried across their adult lives (Stein, 1975; Baumbusch, 2004; Budgeon, 2008; Timonen and Doyle, 2013; Band-Winterstein and Manchik-Rimon, 2014). For those who chose to be single, singlehood was equated with happiness, independence, and freedom to manage their self-identity and to organise their social relationships (Sharp and Ganong, 2007; Davies, 2003). The advantages of being single in these people's narratives might have been also a process of rationalization whereby people reduced their cognitive dissonance[29] (Festinger, 1957; Band-Winterstein and Manchik-Rimon, 2014).

However, some people, especially those for whom singlehood was the result of external circumstances might suffer from not having an intimate partner. Some singles by circumstance expressed concerns about caregiving when their health deteriorated. Others had a slight regret and seemed nostalgic about having lost the opportunity to marry and have children, especially men (Timonen and Doyle, 2013). Some individuals even admitted that having been married and having had children and grandchildren would fill in the loss they occasionally felt (Band-Winterstein and Manchik-Rimon, 2014). The lack of a sexual partner was mentioned as a disadvantage of singlehood, especially by females (Loewensteine *et al.*, 1981; Baumbusch, 2004). This study acknowledges the potential link between the reasons to be single and happiness with one's singlehood. Nonetheless, due to data limitation, this chapter does not test for people's reasons for being single but rather uses this literature in speculating about the link between past intimate relationships and satisfaction with singlehood.

[29] A cognitive dissonance is the psychological discomfort which arises from facts that reality contradicts people's beliefs and ideals (Festinger, 1957). Therefore, to reduce their mental discomfort of having being single some people might have changed their attitude about singlehood during their life-course.

4.2.2 Mechanisms linking past intimate relationships and satisfaction with singlehood

The evidence for the link between break-ups and people's well-being shows, on the one hand, that past relationships are related to a decrease in individuals' well-being and, on the other hand, that break-ups are related to an increase in individuals' well-being. Consequently, in this chapter, two competing hypotheses (H1a and H1b) are outlined with regard to the link between past intimate relationships and satisfaction with being single.

The stress/crisis theory stipulates that break-ups, especially divorces, are major stressful life events that affect the well-being of individuals (Wiseman, 1975). This theory argues that decreased levels of well-being arise from the stress accompanied with the loss of economic, social, and emotional resources (considered benefits as well) usually experienced in relationships (US: Bloom *et al.*, 1978; US: Booth and Amato, 1991; Netherlands: Soons and Liefbroer, 2008; Europe: Verbakel, 2012). Firstly, a coresidential break-up can result in economic distress since partners do not benefit anymore from pooled incomes (US: Umberson *et al.*, 1992; Netherlands: Kalmijn and van Groenou, 2005). Moreover, following separation, individuals are likely to move out to temporary accommodation, smaller dwellings, and dwellings of lower quality (in the UK: Feijten, 2005; Feijten and Ham, 2010), dividing a house and material possessions. Secondly, research indicates that the loss of joint (marital) social networks following a divorce can affect well-being because people who were in a couple find fewer things in common with their coupled friends (Greif and Deal, 2012). Former friends may also take the side of one of the partners to provide support (Johnson and Campbell, 1988; Wallerstein *et al.*, 2000; Terhell *et al.*, 2004; McDermott *et al.*, 2013), leaving the other partner isolated. Moreover, the loss of a spouse who had the social role of a best friend for the other partner might reduce the latter's well-being (Grover and Helliwell, 2019). Thirdly, the loss of sexual intimacy, the companionship, and emotional support that an intimate partner provides is associated with emotional turmoil (Perilloux and Buss, 2008). Psychologists underline that break-ups are usually accompanied with difficulty adjusting to the loss and 'letting go' (Mearns, 1991; Belu *et al.*, 2016). Studies have found that those who separate from either a married (Øygard *et al.*, 2000; Määttä, 2011), cohabiting (Rhoades *et al.*, 2011), or LAT partner (Sprecher *et al.*, 1998; Sbarra and Emery, 2005) feel high levels of stress, sadness, and anger.

As those single ever-partnered experienced the economic, social, emotional, and sexual intimacy benefits to having an intimate partner, their level of satisfaction for their current singlehood may stem from this loss of benefits. Therefore, singles who had an intimate partner might be less satisfied with their singlehood compared to lifelong singles. This can be the case especially if people have invested a lot in the relationship (i.e. had children, or bought a house together, or have a mortgage). Evidence from the Netherlands emphasises that single individuals who had

previously been in a coresidential relationship compared to those without coresidential relationships expressed more positive attitudes towards being in a relationship relative to being single (Poortman and Liefbroer, 2010). They explain that those with past coresidential experience may have become used to living with a partner and may have more problems being on their own. Conversely, those lifelong single do not experience any of the economic, social, or emotionally stressful events characteristic of the dissolution of coresidential or LAT relationships since they never had intimate partners (i.e it is hard to miss something you never had). Since no spouse or partner existed to provide social support, companionship, and sexual intimacy, lifelong singles might generally be more self-reliant (Dalton, 1992) (i.e. they may rely only on their economic resources and they might have developed throughout life skills and resources that facilitate being unpartnered). Guided by the above mentioned literature, I expect that:

(Hypothesis 1a) *Singles with past (coresidential) relationships will be less satisfied being single as compared to lifelong singles.*

On the other hand, some studies show that a break-up may reduce stress and could increase well-being (Tashiro and Frazier, 2003), especially for the initiators of the break-up who were not happy in the relationship (Sprecher, 1994; Sprecher *et al.*, 1998; Kamp Dush *et al.*, 2008). Being involved in a low-quality romantic relationship provides more negative (health) well-being outcomes than being single (Holt-Lunstad *et al.*, 2008). Qualitative evidence underlines the feelings of personal empowerment after a break-up that some individuals experienced and the positive identity they constructed around their (newly) single relationship status (Budgeon, 2008). Moreover, a quantitative study shows that having had multiple coresidential relationships has decreased the chances of repartnering compared to those who never had any coresidential relationship (in the Netherlands: Poortman, 2007), suggesting that a history of relationships might reflect an accumulation of disappointments over the life-course. These disappointments may cause a bitter view about being in a relationship and a more positive view of being single. This literature leads to the competing hypothesis that:

(Hypothesis 1b) *Singles with past (coresidential) relationships will be more satisfied being single compared to lifelong singles.*

4.2.3 Social networks and satisfaction with being single

In this paper, social networks are defined by the quality of friends and social contacts (measured by the degree of satisfaction; Amati et al., 2018), and the frequency of contacting parents.

The association between satisfaction with friends together with contacting parents and satisfaction with singlehood is not straightforward. The evidence on the role of social networks in

singles' lives shows, on the one hand, that social networks are sources of social support and integration (Simpson, 2006; Budgeon, 2008; Band-Winterstein and Manchik-Rimon, 2014) but, on the other hand, social networks are sources of stress and social stigma for singles (Byrne, 2003; Sharp and Ganong, 2007; Sharp and Ganong, 2011). This leads to the formulation of three hypotheses (H2, H3a, and H3b), among which two are competing hypotheses (H3a and H3b) on the link between social networks and satisfaction with singlehood.

On the one hand, friends and family might be beneficial in how single people feel without an intimate partner. According to the social resource perspective, friends and family provide individuals with important resources such as information and company (time spent together by being involved in amusement activities, and having dinners together, for instance; Turner *et al.*, 1971; Stein, 1975). Moreover, friends and family provide emotional (love and advice about various problems) and instrumental support (economic assistance, helping with groceries, house-keeping) (Chappell, 1991; Gifford and Cave, 2012). Studies have underlined that friends are a source of identity building for singles, especially after a break-up (Stein, 1975; Budgeon, 2008). In their qualitative studies on singlehood, scholars have noted that friendships emerged as being more important in their life than an intimate partner (US: Loewenstein *et al.*, 1981; Britain: Zajicek and Koski, 2003; Britain: Roseneil, 2006; Ireland: Simpson, 2006; Britain: Budgeon, 2008). Spending time with friends and family, participating in social activities, and attending group meetings, where singles create interpersonal bonding with others, are important emotional investments for those single (Loewenstein *et al.*, 1981; Budgeon, 2008). Moreover, singles, especially those at older ages, have mentioned that frequent involvement with their extended family (by either spending evenings, weekends or holidays together, having dinners, and attending social events) is a source of fulfilment and happiness (Ireland: Timonen and Doyle, 2013; Israel: Band-Winterstein and Manchik-Rimon, 2014).

On the other hand, friends and family can be a negative influence on singles' lives by being sources of stress and stigma providing little social support for singles and failing to integrate them into their social networks. For example, some women have talked about the social stigma from friends, parents, and co-workers, who were repeatedly asking when they would be getting married, their reasons for not being married, or expressing pity for them being unpartnered (Sharp and Ganong, 2011; Byrne, 2003). One study has underlined the dissatisfaction of single women aged between 28-34 years at seeing their social circle shrinking when one of their friends marries and starts to spend less time with them (Sharp and Ganong, 2011). Single people also felt disappointed and sad that their (newly) partnered friends did not invite them anymore to social gatherings being afraid of mate poaching (i.e. romantically attracting someone who is already in a relationship; Reynolds and Wetherell, 2003). In addition, some women felt 'invisible' in their

families of origin because they did not respect the normative behaviour to marry (Byrne, 2003). Indeed, women with families less supportive of their single status even avoided contact with their families, more so than women with families who were more supportive (Byrne, 2003; Sharp and Ganong, 2011). The social stigma and negative feelings were even more accentuated if the married sibling was younger than the single sibling (Byrne, 2003; Sharp and Ganong, 2011).

Given this body of research, I expect a positive association between satisfaction with friends and social contacts and satisfaction with singlehood. Therefore, I would expect that:

(Hypothesis 2) *The higher the satisfaction with friends and social contacts, the higher the singles' satisfaction with singlehood*.

For the indicator of contacting family, two competing hypotheses are formulated;

(Hypothesis 3a): *Singles who contact their family more frequently will feel more satisfied with their singlehood as compared to those who contact their family less frequently*; (Hypothesis 3b) *Singles who contact their family more frequently will feel less satisfied with their singlehood as compared to those who contact their family less frequently.*

Despite family and friends defining one's social networks, it is important to acknowledge their different nature and the potential different association they may have on satisfaction with being single. Evidence shows that social interactions with families are characterised by a stronger degree of obligation as compared to social interactions with friends (Roberts, 2010). Family is not voluntarily entered but friendships are (i.e. we chose our friends but not our family). Despite one not being satisfied with the relationships they have with their own family and kin, there is a strong expectation to stay in contact with and help them whereas friendships can be terminated if individuals are not happy with them (Jeske, 1998). At the same time, it is shown that families provide more unconditional support than friends (Roberts and Dunbar, 2011). In light of this evidence, it is important to consider both family and friends in explaining the satisfaction with singlehood among singles in mid-life.

4.2.4 Gender differences in the consequences of past relationships on well-being

The demographic literature examining gender differences in the effects of break-ups on well-being offers mixed results and has focused mostly on the effects of divorce. On the one hand, men experience larger health declines and lower subjective well-being than women after divorce (US: Stack and Eshleman, 1998; Germany: Andreß and Bröckel, 2007; US: Shor *et al.*, 2012). One explanation for these differences is that men benefit more from marriage than women in terms of health, social, and emotional support (US: Umberson and Williams, 2005). A second explanation is related to behavioural differences in the pre-divorce period. Studies show that women are more

likely to initiate the divorce after they unsuccessfully tried to make their relationships work (Brinig and Allen, 2000; Kalmijn and Poortman, 2006). The decision to divorce might take men by surprise and they might become more distressed when the marriage falls apart. However, recent evidence from Germany explains that the gender differences in life satisfaction disappear after a couple of years following a divorce, suggesting that the adverse effect of divorce on men's life satisfaction is short-lived (Leopold, 2018). Aside from the negative effect of divorce on men's well-being, some psychological studies show that a break-up from a LAT relationship has also more negative impact on men's emotions than women's emotions (the US: Sprecher, 1994; Choo *et al.*, 1996; Sprecher *et al.*, 1998). Since men benefit more than women in marriage (Umberson and Williams, 2005), I assume that lifelong single men will be less satisfied with not having an intimate partner than lifelong single women. Given this evidence, I expect that:

(Hypothesis 4a) *Single men who had past intimate relationships will be less satisfied with singlehood compared to single women who had past intimate relationships*. Similarly, (Hypothesis 5) *lifelong single men will be more likely to be less satisfied with their singlehood than lifelong single women.*

On the other hand, some other studies have suggested that divorced women experience lower well-being than men (the US: Simon and Marcussen, 1999) and others have found no gender differences (Norway: Mastekaasa, 1994; Canada: Strohschein *et al.*, 2005; the US: Amato and Hohmann-Marriott, 2007; Germany: Leopold, 2018). Evidence on the experience of a LAT relationship break-up on men's and women's well-being underlines that women experience more sadness and self-reflection than men (US: Mearns, 1991; Perilloux and Buss, 2008). However, these results are based on non-representative data on adolescents and young adults. Nonetheless, this body of research leads to the competing hypothesis that:

(Hypothesis 4b) *Single men who had past intimate relationships will be more satisfied with singlehood compared to single women who had past intimate relationships.*

4.3 Research questions

This chapter examines the following research questions:

1. Are there any differences in the satisfaction with being single between lifelong singles and those who either had a past intimate coresidential or LAT relationship, net of other control variables?
2. Among singles, is satisfaction and frequency with social networks associated with the satisfaction with being single, net of past intimate relationships and other control variables?
3. Does gender moderate the association between past intimate relationships and satisfaction with being single?

4.4 Data and methods

4.4.1 Data and analytical sample

The data are taken from wave 1 (collected in 2008/2009) of the German Family Panel pairfam (Panel Analysis of Intimate Relationships and Family Dynamics), release 9.1 (Brüderl *et al.*, 2018), a nationwide random sample of German-speaking respondents born in 1971-1973, 1981-1983 and 1991-1993. The survey began in 2008 with a representative sample of 12,403 focal participants (referred to as anchors) who are followed annually. Pairfam is an ongoing multi-disciplinary, longitudinal study focused on intimate unions, parenthood, and family development.

For the current analysis, I selected unpartnered respondents born in 1971-1973, aged 35 to 38 at the interview (in Wave 1 collected between 2008 and 2009, n = 695). I excluded those younger than 35 years old (i.e. those born in the other two birth cohorts 1991-1993 and 1981-1983) to allow the respondents sufficient time to have had intimate relationship experiences. In the survey, pairfam asks is: 'In the following, I'll ask you about intimate relationships. Do you currently have a partner in this sense'? (answering categories are yes, no, don't know, no answer). Those who do not have an intimate partner are defined as those single/ unpartnered. Due to about 1.6% of item non-responses in both the dependent and some independent variables, the analytical sample drops to 684 unpartnered individuals. Lifelong singles are defined as those who have never experienced any important intimate relationship. This definition of lifelong singlehood does not match the exact age composition in the definition of lifelong singlehood in demography (i.e. those who had never had a coresidential relationship **by the age of 40)** (Bellani *et al.*, 2017)**.** It is possible that a few of them who had not yet had an intimate relationship might have one by the

age of 40. However, I consider that most people will have had an intimate relationship by the age of 35.

It is important to note that the sample contains unpartnered individuals who would prefer an opposite-sex partner (632), a same-sex partner (24), who are unsure about the sex of their prospective partner (15) and who do not want to answer (13). Pairfam measures the sexual orientation by using a proxy indicator named 'preferred sex of a prospective partner', asking those unpartnered 'Assuming you would be looking for a partner would you be looking for a male or female partner?' However, the variable 'preferred sex of a prospective partner' might not capture sexual orientation. Psychologists underline that it is difficult to assess perfectly the sexual orientation in surveys and all measures have different limitations. It is suggested that the questions asking about the sexual orientation of the respondent with response categories (1) 'straight/heterosexual', (2) 'lesbian/gay', (3) 'bisexual', (4) 'don't know/not sure' are somewhat clearer in terminology than questions asking about the desired sex of a future partner (Sell, 1997; Wolff *et al.*, 2017). Bearing in mind this limitation, I included everyone in the analytical sample because those confused about their sexual orientation or those who are homosexual, transsexual, or bisexual may be more likely to be single. I also included these singles to increase the number of observations in the sample.

Out of all those unpartnered in wave 1 in the birth cohort 1971-1973, which consists of 695 individuals, 11 individuals with item non-responses on either the dependent or independent variables were deleted (1.58%). Out of these 11 individuals, 9 either did not want to respond, or did not know about their satisfaction with being single, 1 did not want to answer how often he/she contacts their mother and father, and 1 did not know to answer about his/her health status in the last week. The analytical sample of this chapter consist of 684 unpartnered people, aged between 35-38.

4.4.2 Dependent variable

The dependent variable in this study is satisfaction with being single. In the following discussion, the term satisfaction with being single is used interchangeably with the terms satisfaction with relationship status, satisfaction with being unpartnered, and satisfaction with singlehood. This variable is operationalized in pairfam by asking those unpartnered: 'You stated that you are not in a relationship at the moment. How satisfied are you with your situation as single?'. The variable is measured on an 11-point scale, where 0 is 'Very dissatisfied' and 10 'Very satisfied'. Out of the initial sample of 695 single people in wave 1, 1.3% of the sample did not answer or did not know what their satisfaction with being single is (9 item non-responses). These item non-responses are deleted. The distribution of the variable is shown in Appendix C.1, Figure C.2.

4.4.3 Independent variables

Past intimate relationships

Pairfam asks the respondents to reflect on all the past relationships they had since they were 14 years old. A past relationship is defined as an 'important' relationship that lasted longer than 6 months, 'or that in which the respondent lived with their partner, or that which led to the birth of a child, or that which was important for the respondent for other reasons' (pairfam Group, 2018, wave 1, p. 11). I chose to define these relationships as 'intimate' since pairfam previously had asked the participants if they are in 'an intimate relationship with a partner' (see in section Limitations and future research suggestions a discussion about how different terminology might have created confusion among survey participants). Based on these relationship histories, I derived the variable labelled as 'past intimate relationships' with categories: no past intimate relationship, past LAT relationships, past coresidential relationships, and no information about past relationship(s). Those with no past intimate relationships are lifelong singles. The category 'past LAT relationship' refers to those past relationships with a LAT partner only. The 'past coresidential relationships' category refers to those respondents who had a previous coresident partner.

The variable 'past intimate relationships' was derived in multiple steps, using different variables. In identifying past relationships pairfam asks the respondents to indicate the name and sex of any past partner. The variable about the sex of the partner was used in retrieving all past relationships because more respondents indicated the sex of a past partner than the names of those partners. This variable had the original response categories: male, female, no past partner before the current one, no answer, I don't know. I grouped the single respondents as follows: 1) those who provided the sex of a past partner or who don't know about it were considered as having had at least one past relationship; 2) those who did not have a past partner are considered as having had no intimate relationship; 3) those who did not mention the sex of any past intimate partners are those who provided no information about past intimate relationships. It may be that these people are shy and did not want to acknowledge that they had had no intimate relationship at all. I further intersected this variable with another variable indicating if any of these past relationships were coresidential. This is how the categories 'no past intimate relationship', 'past LAT relationships', 'past coresidential relationships', and 'no information about past relationship(s)' were formed.

It is important to note that among those who had past coresidential relationships, some people had multiple past relationships with different types of partners. Some individuals had a history of both LAT and cohabiting partners without having experienced marriage. Other individuals had a

cohabiting partner, a married partner, and a LAT partner until their mid-thirties (in multiple orders, partners could or could not the same). Due to the complexity of relationship histories of these people I collapsed everyone who had previously lived with a cohabiting or married partner into the category 'past coresidential relationship'.

Social networks

Within this study, the social networks variables measure satisfaction with friends and social contacts, and the frequency of contacting biological parents. Respondents had to rate on a scale from 0 (Very dissatisfied) to 10 (Very satisfied) how satisfied they were with friends and social contacts ('How satisfied are you with the friends and social contacts in your life?').

The frequency of contacting biological parents is a variable composed of two other variables: frequency of contacting biological mother and frequency of contacting biological father. Pairfam asks respondents 'And how often are you in contact with your biological mother, adding up all visits, letters, phone calls, etc.?' The same question is asked for a biological father. The original response categories for the two variables are: 1 'Daily', 2 'Several times per week', 3 'Once per week' 4 '1-3 times per month' 5 'Several times per year' 6 'Less often' and 7 'Never' and -3 'Does not apply', which indicates that the parent is not alive anymore. I assume that respondents whose parents died when they were very young were adopted or sent to foster home. Unfortunately, parifam does not have any question measuring if the respondent is adopted or fostered. Therefore, I consider that category -3 'Does not apply' indicating no biological mother or father.

For both of these variables, response categories 'Daily', 'Several times per week', and 'Once per week' are collapsed into one category 'At least once per week'. The category '1-3 times per month' is relabeled 'At least once per month'. Original response categories 'Several times per year', 'Less often', and 'Never' are grouped into the category 'Several times per year or never'. The value of -3 'Does not apply' is relabeled as 'Both parents died'. In the next step, I intersected these two variables to create one single variable measuring the frequency of contacting biological parents with the following categories 'At least once per week', 'At least once a month', 'Several times per year or never', and 'Both parents died'. There was only 1 person who refused to answer ('No answer') at both variables measuring the frequency of contacting biological mother and father and this person was excluded.

Control variables

Among the control variables, I included gender, educational attainment, employment status, religiosity, household composition, self-rated health status, and country of birth. Gender is the modifier variable in the model with the interaction term. These variables have been used in

investigating the correlates of having had no coresidential experience by age of 40 in the existing demographic studies (Bellani *et al.*, 2017; Dykstra and Poortman, 2010; Wiik and Dommermuth, 2014) and in studies which examined the effect of divorce on subjective well-being (Booth and Amato, 1991; Dush and Amato, 2005).

The education variable is based on the International Standard Classification of Education (ISCED 97) and is divided into 3 categories. The category 'low education' includes all respondents who have no or lower secondary school degrees, 'medium education' refers to upper secondary and post-secondary (but non-tertiary) education. Those in the 'high education' category had a university or college degree, or had earned a doctorate. Rather than deleting those with incomplete data at education (6 people which signifies 0.9% from the initial sample of 695 singles), I assigned them into having at least low educational attainment not to reduce further the sample size.

The employment status is a dummy variable indicating if the respondent is employed. Those still in education (27), economically inactive (86), and unemployed (101 individuals) are grouped to form one category denoting those not employed[30]. The household composition has the categories a) living alone, b) living with parents or with others (other relative,s or siblings, friends, housemates), c) living with children only, and d) not clear with whom but not alone. Because a few of these unpartnered people live with siblings, friends or housemates only this category is collapsed with the one indicating living with parents or other relatives. The aim of including this variable is to test the differences in the satisfaction with being single between those living alone and those living with parents (or others), or those living with children. Self-rated health during the past 4 weeks reads in pairfam 'How would you describe your health status during the past 4 weeks?' and it is measured on a 5-point Likert scale from 1 'Bad' 2 'Not so good' 3 'Satisfactory' 4 'Good' to 5 'Very good'. I collapsed the first two categories into one category indicating 'poor' health and the last two categories into one indicating 'good or very good' health. Therefore, self-rated health has 3 categories, poor, satisfactory, and good or very good. The country of birth of the respondent is included to control for the potential differences in satisfaction with being single between those born in The Federal Republic of Germany (West Germany) and the German Democratic Republic (East Germany). The cohorts born after 1950 have a different family

[30] For the variable education, the categories of those still in education and economically inactive were initially grouped into one category to differentiate them from the category of unemployed. The regression coefficients from the association between education and the outcome did not differ much from a model where I grouped those in education, economically inactive, and unemployed into a new category 'unemployed'. Therefore, I present in this chapter the more parsimonious model, where education has fewer response categories.

behaviour pattern in the two parts of the country (Kreyenfeld and Konietzka, 2017) due to different socio-political regimes that promoted distinct family values. Those born between 1971-1973 lived their childhood and teenagerhood under two different socio-political regimes. For example, in East Germany, the social and family policy facilitated early motherhood, with the State offering extensive childcare facilities outside of home offering mothers the opportunity to work full-time as well. Moreover, the women born in East Germany were socialized to believe that marriage and motherhood combined with full-time paid work, which offered financial independence, were key to their self-identity (Pfau-Effinger and Smidt, 2011). In West Germany, the State promoted a male breadwinner model and complementary gender roles through marriage-related benefits and tax allowances, suggesting a model of a family where a woman is a housewife and the main carer for children. The different socialization in the two parts of the country could impact people's choices to stay single or the satisfaction with being single. Moreover, research shows that there the female childlessness rates are higher in West (about 24%) than in East Germany (about 10%) and this might reflect on the difficulty in finding a partner (Kreyenfeld and Konietzka, 2017). The variable has the categories 'East Germany' 'West Germany' and 'Other', the latter being a proxy also for ethnicity as people born in another country are likely to be immigrants.

4.4.4 Analytical strategy

Ordinary least square regression models (OLS) of satisfaction with being single are used. The OLS model takes the functional form (Powers and Xie, 2000, p. 19):

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \cdots \beta_K x_{iK} + \varepsilon_i$$
$$= \sum_{k=0}^{K} \beta_k \, x_{ik} + \varepsilon_i. \qquad (1)$$

The $\beta_k (k = 0, \dots K)$ terms are unknown regression coefficients. β_0 is the intercept and can be interpreted as the mean of y when all other variables are zero. The partial regression coefficients $\beta_k (k = 1, \dots K)$ reflect the expected change in the conditional mean of y for a one-unit change in x_{ik}, while holding all the other variables constant. The unobservable error term (residual) is denoted by ε_i, accounting for the failure of data to lie on the straight-line, representing the difference between the true and observed value of y (Powers and Xie, 2000).

Since the dependent variable does not have an exact normal distribution, a robustness check of the results was conducted by running a multinomial regression analysis on satisfaction with being single as a categorical variable (Appendix C.2, Table C.5). Because the direction and the significance of the coefficients did not significantly change, the results of the OLS regression analysis are presented for ease of interpretation. No multicollinearity was found in the data (VIFs

coefficients are low; Appendix C.3, Table C.6) and other assumptions of the OLS regression (normality of residuals) are generally met (Appendix C.3, Figure C.3).

Sensitivity analysis on a model without those who prefer a future same-sex partner and those who do not answer or do not know the sex of a future partner (n = 52) reveals that past relationship histories are not associated with satisfaction with singlehood (results not shown, available upon request of author). However, another sensitivity analysis on a model where a different, random 52 observations are deleted from the data reveals similar results, suggesting that they may well be related to the smaller sample size (results not shown, available upon request of author).

All the analyses are weighted using the post-stratification weight for wave 1 (Brüderl *et al.*, 2018). To estimate the model fit it would be ideal to present the adjusted R^2. However, the assumptions behind many model fit estimators are violated with survey designs (Williams, 2015). Hence, I present a Wald test for each model to show the significance of the added variable. I present first the distributions of the dependent and independent variables in the sample and by gender (Table 4.1). I also present the distribution of satisfaction with being single, of social network variables, and the control variables by past intimate relationships (Table 4.2 and 4.3).

4.5 Results

4.5.1 Descriptive results

Among all the key independent variables, only the variable satisfaction with friends and social contacts is positively correlated with the dependent variable, satisfaction with being single ($r = 0.25$; Appendix C.1, Figure C.1). Bivariate analyses between all key independent variables underline that satisfaction with friends and social contacts is related to frequency of contacting biological parents (one-way Anova test on unweighted sample and univariate regression analysis with post-stratification weights). The analyses show that the means of satisfaction with friends and social contacts are significantly lower among those who contact their parents several times per week (mean = 6.19) and once a month (mean = 6.48) as compared to those who contact their parents once a week (mean = 7.57) (see Appendix C.1, Table C.3).

Table 4.1 below shows the distribution of satisfaction with being single, past intimate relationships, social network and control variables at the moment of the interview (wave 1). The distribution is shown for the full sample as well as within each gender. Weighted percentages and means, as well as unweighted cases, are presented. In addition, Table 4.2 shows the distribution of both satisfaction with being single and social network variables by past intimate relationships

for the whole sample. Table 4.3 shows the distribution of the demographic and socio-economic control variables by past intimate relationships for the full sample. Table C.1 and Table C.2 from Appendix C.1 show how satisfaction with being single, social network and control variables by past intimate relationships vary by gender.

Table 4.1: Characteristics of those unpartnered in mid-thirties at wave 1, pairfam. Weighted percentages and means (standard errors), and unweighted cases

Variables	Male		Female		Full sample	
	Weighted % or mean (SE)	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**
Past intimate relationships (% distribution)						
Lifelong singlehood	***26.4***	***81***	***8.1***	***26***	18.5	107
Past relationship with a LAT partner	***30.0***	***91***	***24.4***	***69***	27.6	160
Past relationship with a coresident partner	***35.4***	***136***	***61.5***	***238***	46.7	374
No information about past relationship(s)	***8.1***	***20***	***6.0***	***23***	7.2	43
Satisfaction with being single	5.92 (0.51)	-	6.13 (0.16)	-	6.01 (0.11)	-
Satisfaction with friends, social contacts	7.22 (0.16)	-	7.57 (0.15)	-	7.37 (0.11)	-
Frequency of contacting biological parents (% distribution)						
Both parents died	4.5	16	3.1	12	3.9	28
At least once a week	80.1	265	78.0	274	79.2	539
At least once a month	9.3	26	8.2	27	8.8	53
Several times per year or never	6.1	24	10.7	40	8.1	64
Educational attainment (% distribution)						
Low	8.7	35	11.5	53	9.9	88
Medium	58.4	209	56.1	208	57.4	417
High	32.9	87	32.4	92	32.7	179
Labour force status (% distribution)						

Variables	Male		Female		Full sample	
	Weighted % or mean (SE)	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**
Employed	77.2	251	66.5	219	72.6	470
Not in labour force	10.0	33	18.8	80	13.8	113
Unemployed	12.8	47	14.7	54	13.6	101
Religiosity (% distribution)						
Without religious background	63.1	203	66.2	222	64.4	425
With religious background	36.9	128	33.8	131	35.6	259
Household composition (% distribution)						
Living alone	***75.6***	***236***	***47.7***	***116***	63.6	352
Parents or others (relatives, siblings, friends, housemates, children could live as well)	***19.7***	***73***	***12.2***	***32***	16.4	105
Children only	***3.8***	***18***	***33.3***	***168***	16.6	186
Not clear with whom, but not alone	***0.9***	***4***	***6.8***	***37***	3.4	41
Self-rated health in the past 4 weeks (% distribution)						
Poor	***14.2***	***53***	***19.8***	***74***	16.7	127
Satisfactory	***21.3***	***74***	***28.4***	***98***	24.4	172
Good or very good	***64.4***	***204***	***51.8***	***181***	59.0	385

Variables	Male		Female		Full sample	
	Weighted % or mean (SE)	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**	**Weighted % or mean (SE)**	**Unweighted N**
Country of birth (% distribution)						
East Germany	72.5	225	68.6	216	70.8	441
West Germany	16.6	75	18.6	77	17.4	152
Other	10.9	31	12.9	60	11.7	91
Total	100	331	100	353	100	684

Notes: pairfam, wave 1, own calculations; weighted results; SE- standard error; N- number of cases; italic and bold numbers indicate that the specific variable is associated with gender at 5% significance level (according to a χ^2 test of association).

Table 4.1 suggests that, in wave 1, most of those unpartnered aged 35-38 have had a past coresidential relationship (46.7%), followed by those who have had a past LAT relationship (27.6%). The lifelong single composes 18.5% of the sample, not a negligible proportion. The mean of the satisfaction with being single is 6.01, suggesting rather medium satisfaction. Among the social network variables, the mean of satisfaction with friends and social contacts is 7.37, and most of the sample contact their parents at least once a week (79.2%). This suggests that most unpartnered people in their mid-thirties benefit from good quality and frequent interactions with parents. Most of the unpartnered people have medium education (57.4%), are employed (72.6%), without religious background (64.4%), live alone (63.6%), their self-rated health in the past 4 weeks has been good or very good (59%) and were born in East Germany (70.8%).

In terms of gender, there are more men (56.8%) than women (43.2%) who are single in the sample (see Table 4.3). These results are generally in line with those showing that in Germany childless men are more likely than women to be single at the age of 40 while women are more often married (Raab and Struffolino, 2019). Interestingly, more men than women who are unpartnered are lifelong single (26.4% vs 8.1%).

Table 4.2 below presents the distribution of both satisfaction with being single and social networks among those lifelong single, those who had only past LAT relationship(s), and those who had past coresidential relationship(s).

Table 4.2: Distribution of main variables of interest by past intimate relationships, pairfam, wave 1. Weighted means (standard errors) and weighted percentages

Main variables of interest	Past intimate relationships			
	Lifelong singlehood	**Past LAT relationship**	**Past coresidential relationship**	**No information provided about past intimate relationships**
Satisfaction with being single	6.24 (0.27)	5.96 (0.21)	5.86 (0.15)	6.61 (0.47)
Satisfaction with friends	6.98 (0 24)	7.50 (0.23)	7.37 (0.16)	7.86 (0.34)
Frequency of contacting biological parents				
Both parents died	3.3	3.4	4.1	5.8
At least once a week	82.1	78.0	78.7	80.0
At least once a month	10.1	11.2	7.5	4.8
Several times per year or never	4.5	7.4	9.7	9.4
Total (weighted) %	100	100	100	100
Total (unweighted N)	107	160	374	43

Notes: pairfam, wave 1, own calculations; weighted results; SE- standard error; N- number of cases; weighted univariate regression analysis and χ^2 tests of association suggest no statistically significant associations between these variables.

Table 4.2 suggests that the highest mean for satisfaction with being single variable is among those who did not provide information about past intimate relationships (6.61) and among lifelong singles (6.24), followed by those who had LAT relationships (5.96) and those with past coresidential relationships (5.86). This already suggests that lifelong singles are more satisfied with their relationship status than those ever-partnered. The highest mean of satisfaction with friends and social contacts is among those who did not provide information about past intimate relationships (7.86), followed by those who had only LAT relationships (7.50) and those who had past coresidential relationships (7.50). The lowest mean of satisfaction with friends and social contacts is among lifelong singles (6.98). Most respondents within each category of past intimate relationships variable contact their biological parents at least once a week. It should be noted, however, that none of the associations between these variables are statistically significant.

Table 4.3 below shows how the other socio-economic control variables differ among those lifelong single, those who had only past LAT relationships, and those who had past coresidential relationships.

Table 4.3: Distribution of control variables by past intimate relationships; pairfam, wave 1

Control variables	Past intimate relationships				
	Lifelong singlehood	**Past LAT relationship**	**Past coresidential relationship**	**No info. about past intimate relationships**	**Total**
Gender					
Male	***81.1***	***61.8***	***43.1***	***64.0***	56.8
Female	***18.9***	***38.2***	***56.9***	***36.0***	43.2
Educational attainment					
Low	8.9	6.2	12.3	11.8	9.9
Medium	51.0	58.7	59.1	57.6	57.4
High	40.1	35.1	28.7	30.6	32.7
Labour force status					
Not employed	16.8	21.3	23.9	35.2	22.7
Employed	83.2	78.7	76.1	64.8	77.3
Religiosity					
Without religious background	69.3	66.5	61	66	64.4
With religious background	30.7	33.5	39	34	35.6
Household composition					
Living alone	***72.5***	***73.3***	***54.7***	***60.7***	63.6
Parents or others (relatives, siblings, friends, housemates, children could live as well)	***23.8***	***19.5***	***11.6***	***17.2***	16.4
Children only	***3.7***	***4.9***	***28.5***	***17.3***	16.6
Not clear with whom, but not alone	***0.0***	***2.3***	***5.3***	***4.8***	3.4
Self-rated health in the past 4 weeks					
Poor	***5.9***	***15***	***22.3***	***14***	16.7
Satisfactory	***30.3***	***25.3***	***21.3***	***25.4***	24.4
Good	***63.8***	***59.6***	***56.4***	***60.6***	59.0
Country of birth					
East Germany	68.7	77.9	68.2	65.5	70.8
West Germany	19.2	14.6	18.1	19.3	17.4
Other	12.0	7.5	13.6	15.3	11.7
Total (weighted) %	100	100	100	100	100
Total (unweighted N)	107	160	374	43	84

Notes: pairfam, wave 1; own calculations; weighted results; SE- standard error; N- number of cases; numbers in italics and bold indicate that the specific variable is associated with past intimate relationships at 5% significance level (according to a χ^2 test of association).

Among lifelong singles and those who had past LAT relationships, there are more males than females (lifelong singlehood: 81.1% vs. 18.9%, for past LAT relationships: 61.8% vs. 38.2%). Among those with past coresidential relationships, there are more females than males (56.9% vs. 43.1%). Also, among those who do not provide information about past intimate relationships, there are more males than females (64% vs. 36%). Among lifelong singles, a high proportion has medium educational attainment (50.0%), followed by those who have high education (40.1%), and most are employed (83.2%). Also, lifelong single may be more likely to be highly educated (40.1%) than those who had only LAT partners (35.1%), and coresidential partners (28.7%). This suggests that lifelong singlehood might be more selected of those with better socio-economic characteristics. Most lifelong singles have no religious background (63.9%), live alone (72.5%), have good health (63.8%), and were born in East Germany (68.7%).

Table C.1 and Table C.2 from Appendix C.1 present the main independent variables and control variables by past relationship status for males and females, respectively. On average, lifelong single women are less satisfied with being single than women with past LAT relationships (means = 6.13 vs. 6.37). In contrast, the lifelong single men are more satisfied with being single as compared to those who had LAT relationships (means = 6.27 vs. 5.71). Both lifelong single women and men are more satisfied with their relationship status than those with past coresidential relationships (means = 6.13 and 6.27 vs. 5.94 and 5.75). Nonetheless, these mean differences are not statistically significant between the groups of past intimate relationships (according to univariate regression analysis with post-stratification weights; results not shown, available upon request of the author).

Lifelong single men and women have the lowest mean of satisfaction with friends and social contacts compared to single ever-partnered men and women. Among men, those lifelong single and who had past LAT relationships contact their parents somehow more frequently than those with past coresidential relationships. Among women, only those lifelong single tend to contact their parents more frequently than those with past intimate relationships. For example, most lifelong single men and women contact their parents once a week (83.0% and 78.1%), and this proportion is followed by contacting parents at least once per month (9.0% and 14.7%), and several times per year or never (4.6% and 4.1%). The majority of single men who had past LAT relationships contact their parents once per week (75.0%), followed by those contacting them once a month (15.7%) and after that several times per year or never (4.6%). This trend is different among men who had past coresidential relationships: the majority contact their family once per week (82.4%), but this proportion is followed by those who contact their parents several times per year or never (7.2%), and after that by those who contact their parents once a week (4.3%). It may be that lifelong single men and those who had past LAT relationships need more the social

support of their family compared to those single with past coresidential relationships. Most single women who had LAT or coresidential relationships contact their parents once a week (81.2% and 76%), this proportion being followed by those who contact their parents several times per year or never (11.9% and 11.7%), and after that one a month (3.9% and 9.8%). It should be noted however that all these differences are not statistically significant most probably due to the small sample sizes.

The highest proportions of lifelong single men and women have medium (52% and 46.8%) and high education (39.7% and 42%), and are employed (85.2% and 74.7%). This indicates that lifelong singlehood might be selective in terms of education and employment for both genders. The bivariate analyses suggest that in Germany better educated women and men may be more likely than those low educated to be lifelong single.

4.5.2 Multivariate results

Table 4.4 presents the OLS regression models on satisfaction with being single. The results are presented as unstandardized coefficients. Model building strategy involves 3 main steps: Model 1 contains only the effect of the past intimate relationships and the control variables, and it is designed as the starting model. Model 2 adds to Model 1 the satisfaction with friends and social contacts, and Model 3 adds to Model 2 the frequency of contacting biological parents[31]. Model 3 is the full model where all the main independent variables and the controls are included. The first research question which asks how satisfaction with singlehood differs between lifelong singles and singles ever-partnered, net of control variables is answered in all three models. The second research question which asks how social networks are related to satisfaction with being single is answered in Models 2 and 3.

Initially, the model building strategy consisted of 4 models, the fourth model containing the additional interaction terms between past intimate relationships and gender. This model responds to the third research question of this study, which asks whether gender moderates the association between past intimate relationships and satisfaction with being single. However, since

[31] A separate model which includes the indicator for frequency of contacting biological parents and the control variables, but excludes the indicator of satisfaction with friends and social contact was estimated (results not shown, upon request of author). This model shows that frequency of contacting parents is not significantly associated with satisfaction with singlehood. However, this association becomes statistically significant when I control for the indicator satisfaction with friends and social contacts, suggesting that these two variables are interrelated.

none of the interaction terms is significant, this model (Model 4) is presented in Appendix C.4 Interaction effects, Table C.7, page 223.

The model building strategy shows that the answers to the research questions and the discussion about the hypotheses posited in this chapter are more nuanced, showing the importance of considering singles' social networks in explaining the link between past intimate relationships and satisfaction with singlehood.

Table 4.4: Linear regression models on satisfaction with being single

	Satisfaction with being single		
Variables	**M1 Unstand. Coeff.**	**M2 Unstand. Coeff.**	**M3 Unstand. Coeff.**
Past intimate relationship(s) (ref. No past intimate relationship)			
Past LAT relationship	-0.43	-0.55+	-0.55+
Past coresidential relationship	-0.52	-0.63*	-0.61+
No information provided about past relationship(s)	0.35	0.08	0.12
Satisfaction with friends and social contacts		0.24***	0.25***
Frequency of contacting biological parents (ref. At least once a week)			
Both parents died			0.04
At least once a month			0.62*
Several times per year or never			-0.10
Gender (ref. Male)			
Female	0.57*	0.42+	0.42+
Educational attainment (ref. Low)			
Medium	-0.11	-0.21	-0.25
High	-0.50	-0.60	-0.67+
Labour force status (ref. Employed)			
Not employed	-0.26	-0.08	-0.08
Religiosity (ref. Without religious background)			
With religious background	0.08	0.16	0.15
Household composition (ref. Living alone)			
Parents and/or others	-0.05	-0.05	-0.04
Children only	-0.44	-0.36	-0.34
Not clear with whom, but not alone	0.30	0.57	0.54
Health status (ref. Good or very good)			
Poor	-0.61*	-0.38	-0.44
Satisfactory	-0.75**	-0.57*	-0.56*
Country of birth (ref. East Germany)			
West Germany	-0.29	-0.46	-0.47
Other	-0.66*	-0.51	-0.52+
Constant	6.84***	5.17***	5.12***
N	684	684	684
p-value from Wald test	-	0.000	0.239
R^2	0.05	0.10	0.10

Notes: pairfam, wave 1; own computations; weighted results; unstand. coeff. – unstandardized coefficients; N – number of cases; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10.

Model 1 includes only past intimate relationships and the covariates, being the start model of this analysis. The results suggest that people who had a past relationship are less satisfied with being single than lifelong singles, but these differences have not reached significance. These results don't support either hypotheses 1a or 1b. Among control variables, unpartnered females are more likely to be satisfied with being single compared to their male counterparts. Those with poor or satisfactory self-rated health are less likely to be satisfied with being single compared to those with good or very good self-rated health. People born in East Germany are more likely to be satisfied with being single compared to those born in another country.

Model 2 additionally includes satisfaction with friends. Interestingly, controlling for satisfaction with friends and social contacts, the difference between those who had either a LAT or coresidential relationship and the lifelong singles becomes significant. Firstly, those who experienced an intimate relationship relative to those lifelong singles are less likely to be satisfied with being single, indicating support for hypothesis 1a. Secondly, the higher the satisfaction with friends and social contacts, the higher the satisfaction with being single, supporting hypothesis 2. Even if the coefficients between Model 1 and 2 do not change much, there appears to be a suppressor effect[32] of this third variable, satisfaction with friends and social contacts for past intimate relationships. Additional analyses show that this is because of, on the one hand, the positive association between satisfaction with friends and social contacts and satisfaction with being single (seen in the bivariate correlation analysis in Figure C.1, Appendix C.1 and in the multivariate analysis in Table 4.4, Model 2). On the other hand, those who had past intimate relationships are on average more satisfied with their friends compared to lifelong singles (this is seen in the bivariate relationship shown in Table C.4, Appendix C.1). This, in turn, explains why having controlled for satisfaction with friends leads to a slightly stronger effect of having had past LAT and coresidential relationships on satisfaction with being single.

In Model 2, gender is still an important indicator of satisfaction with being single, with females being more satisfied with their relationship status than men. In this model, the statistically significant difference between poor and good or very good self-rated health disappears. Only those with satisfactory health are less satisfied with being single compared to those with good or very good health. Model 2 shows that past intimate relationships and satisfaction with friends are important indicators in explaining satisfaction with being single.

[32] '(…) a situation in which the magnitude of the relationship between an independent variable and a dependent variable becomes larger when a third variable is included indicate suppression' (MacKinnon et al., 2000, p. 3).

Model 3 adds to Model 2 the frequency of contacting parents, as the last social network variable. There are no big differences between Model 2 and Model 3 with respect to the size, direction, and significance of the coefficients of a) past intimate relationships and of b) satisfaction with friends and social contacts. The results suggest that those with a past LAT or coresidential relationship compared to lifelong singles are less satisfied with being single; however, this evidence is weak, since the associations are significant at 10% significance level. Therefore, the results partially confirm hypothesis 1a.

Satisfaction with friends remains positively associated with satisfaction with being single in Model 3, the result being consistent with hypothesis 2. Contacting parents at least once a month compared to at least once a week is significantly associated with increased satisfaction with being single. Contacting parents less frequently, such as several times per year or never compared to at least once a week decreases (but not significantly) the satisfaction with being single[33]. Similarly, contacting parents several times per year or never decreases (but not significantly) the satisfaction with being single as compared to those who contact their parents once a month (results not shown, available upon request of author). Taken together, these results suggest that hypothesis 3b, in which I expected that singles who contact their family more frequently would be less satisfied with their singlehood as compared to those who contact their family less frequently, is partially confirmed (because those who contact their partners once a week as compared to once a month report significantly lower satisfaction with singlehood). Consequently, these results suggest that hypothesis 3a, which stated that singles who contact their family more frequently would feel more satisfied with their singlehood as compared to those who contact their family less frequently, is not supported by the data.

Among control variables in Model 3, females are more likely to be satisfied with being single than men. Those with high educational attainment are less satisfied with being single compared to those with low educational attainment. It could be that these highly educated singles have the socio-economic resources to live a happy life, affording to travel and engage in various social activities, but they are unsatisfied engaging in these without a partner. Having satisfactory self-rated health compared to good or very good self-rated health, and being born in another country compared to East Germany are associated with less satisfaction with being single.

[33] A series of sensitivity analysis checked if the association between the variable frequency of contacting parents and satisfaction with singlehood changes if the response categories 'both parents died' and 'several times per year or never' are collapsed into a new category named 'very rare or never'. The analysis suggests that those who contact their parents 'very rare or never' are less happy with being single than those who have weekly contact, but the difference is not statistically significant, indicating similar results as Model 3, thus confirming partially Hypothesis 3b (results not shown, available upon request).

Table C.7 in Appendix C.4 shows the interaction terms between gender and past intimate relationships on satisfaction with being single. The data provided no evidence to reject the hypothesis that the effect of past intimate relationships on satisfaction with being single is similar across gender. This might be related to the small sample size of those unpartnered. Therefore, hypotheses 4a, 4b, and 5 are not confirmed by the data.

To sum up, these analyses show that the association between past intimate relationships and satisfaction with singlehood is more nuanced than initially predicted by hypotheses 1a, which stated that those with a past LAT or coresidential relationship compared to lifelong singles would be less satisfied with being single. This hypothesis is not supported by the results in Model 1. However, when social network variables are included in the additional model(s) (Models 2 and 3), the association between past intimate relationships and satisfaction with singlehood becomes marginally significant ($p < 0.10$), the results thus providing partial support to hypothesis 1a.

4.6 Discussion

This study analysed how past intimate relationships and social networks of those single in their mid-thirties are associated with satisfaction with being single. Using rich data from the Germany Family Panel (pairfam) on intimate relationship histories, this study disentangles those single with past LAT relationships from those with past coresidential relationships, offering new insights into their characteristics. Moreover, to the best of the author's knowledge, this is the first study that defines and identifies lifelong singlehood as those single without any past intimate relationship. At the same time, this chapter aimed to shed light on the pathways into lifelong singlehood, paying particular attention to gender and socio-economic variables. In addition, this study adds to those few studies which started to define those single as those unpartnered (Poortman and Liefbroer, 2010; Verbakel, 2012; Wright and Brown, 2017). The results show weak effects of past intimate relationships on satisfaction with being single, but a strong effect of the satisfaction with social networks on the satisfaction with being single.

Firstly, this study shows that more males than females who are unpartnered are lifelong single and had a LAT relationship only. However, more unpartnered females than males had a coresidential relationship. This result indicates that men might be more likely than women to be single and experience lifelong singlehood. This result is in line with Raab and Struffolino's (2019) study which underlines that childless men are more likely than women to be single by the age of 40 while women are more likely to be married. This chapter also suggests that lifelong singlehood might be selective in terms of socio-economic status for both genders since the highest share of lifelong single males and females have medium to high education, and are employed. From a

policy perspective, this would indicate that the state might need to support less these people at an old age (i.e. pension) since they might have enough economic resources.

Secondly, the results show that those with past LAT and coresidential relationships may be more dissatisfied with being single compared to lifelong singles, net of all covariates. These findings have to be interpreted with caution; the coefficients were not statistically significant at 5% conventional significance level, but at 10% significance level, indicating a rather weak association and partial support for hypothesis 1a. However, the lower level of satisfaction for being single among those with past intimate relationships as compared to lifelong singles may stem from the loss of benefits with which a partner is usually associated (Wiseman, 1975; Booth and Amato, 1991; Verbakel, 2012). For example, having experienced a pooled income to pay rent, sexual and emotional intimacy with an intimate partner, or having accessed a larger social network via a partner's friends, might create the need to have that in a new relationship. Moreover, these results support Poortman's and Liefbroer's (2010) argument that those who had past coresidential experiences might face difficulties being on their own and perhaps miss having a partner and want a new relationship as compared to those who never had a coresidential relationship. Their claim is supported by the results which show that singles who had been in a coresidential relationship evaluated more positively being in a (new) relationship than being single as compared to those without a past coresidential relationship.

Thirdly, this study underlines the importance of friends and social contacts on the one hand, and of the family on the other hand, for singles' satisfaction with being unpartnered. The fact that a higher satisfaction with friends and social contacts is associated with higher satisfaction of being single is consistent with hypothesis 2, and mirrors the discussion from the qualitative studies about friends providing the basic human need to belong (Loewenstein *et. al.*, 1971, Budgeon, 2008). Spending time with friends and doing activities together help singles to create a fulfilling and meaningful life (Timonen and Doyle, 2013; Band-Winterstein and Manchik-Rimon, 2014). Studies have underlined the personal growth singles experience as they attend group meetings (Stein, 1975), and are involved in various social activities with friends (Loewenstein *et. al.*, 1971, Budgeon, 2008). Therefore, friends may help single people feel less marginalised in a world where personal fulfillment is defined as having a long-term relationship with an intimate partner (DePaulo and Morris, 2005). Additionally, being in contact with family increases satisfaction with being single. However, higher levels of satisfaction with being single are associated with contacting biological parents once a month relative to once a week, indicating support for hypothesis 3b. This may indicate a certain distance that singles keep from parents. It may be that as they age, parents pressure their single adult children to (re)partner (Sharp and Ganong, 2011). The social pressure to marry and parents' discriminative behaviour towards the single adult may

be reasons to contact family less frequently (Reynolds and Wetherell, 2003) and this, in turn, to keep high the satisfaction with being single.

Fourthly, the greater satisfaction with being single among lifelong singles compared to those ever-partnered might suggest that these individuals have chosen to stay single. This speculation is based on the qualitative literature, which points out that individuals who have chosen to be single evaluated that a relationship would be too restrictive for them (Timonen and Doyle, 2013; Byrne, 2003; Budgeon, 2008). Benefits such as freedom to organise one's personal schedule and finances, to pursue higher education and future career goals, to build friendships with whom they want, and not compromising with a partner were reasons for not choosing to be in a relationship. In the sample, large proportions of lifelong singles live alone, are employed, and are medium and highly educated. This suggests that they have accumulated resources such as personal autonomy, self-reliance, and economic independence that would support the decision to be single (in case they took it) and would facilitate a single lifestyle. It may also be that the lifelong singles have postponed being in a relationship to focus on a career. At the same time, the higher satisfaction of being single compared to that of those ever-partnered might be explained by a process of rationalization, where lifelong singles (despite perhaps not choosing to be single) accepted their singlehood and learnt to focus on the independence and benefits the single lifestyle brings (Dalton, 1992; Davies, 2003; Band-Winterstein and Manchik-Rimon, 2014).

Fifth, lifelong singles appear to experience worse quality of friendships and social contacts compared to those who had intimate relationships, as shown by bivariate differences. Moreover, the multivariate analysis revealed a suppressor effect of the satisfaction with friends and social contacts on satisfaction with being single via past intimate relationships. It may be that lifelong singles are less socially integrated. The mean age of marriage in Germany in 2008, at the time of the survey, was 30 years for females and 33 years for males (UNECE Statistical Database, 2019). Given that lifelong singles in this study are past the normative age of marriage in Germany (as they are aged between 35-38 years old), they might have fewer single friends to spend time with, which could negatively impact the quality of their social networks. Qualitative studies have shown that single people close to their 30s complain about 'losing' their single friends who started to spend less time with them once they had married (Sharp and Ganong, 2011). Moreover, low satisfaction with friends and social contacts may also suggest that these lifelong singles are isolated from their partnered friends, who are afraid of mate poaching, perhaps thinking that their lifelong single friend is 'desperate' to be in a relationship (Reynolds and Wetherell, 2003). Lastly, it may be possible that these people are more introverts or shy and face difficulties in making or keeping friends.

4.7 Limitations and future research suggestions

This study has some data and analysis limitations. The data limitations are related to the operationalisation of some concepts in the pairfam questionnaire. Firstly, different respondents can have different understandings about their satisfaction with being single ('You stated that you are not in a relationship at the moment. How satisfied are you with your situation as single?'). Secondly, in collecting data about current and past relationships, pairfam uses the words 'partnerships', 'intimate relationship', 'important relationship', and 'partner' interchangeably, without precise distinctions. For example, pairfam uses the words 'intimate relationship' when asking about current partnership status (In the following, I'll ask about **intimate relationships**. Do you currently have a partner in this sense?'). In the next section of the questionnaire, pairfam collects information about 'past partnerships' but asks people with whom they had 'an 'important relationship'. Pairfam asks respondents to report their 'past important relationships' since the age of 14, which 'lasted for 6 months, or those in which the respondent lived with their partner, or those that led to the birth of a child, or those that were important' for the respondent 'for other reasons' (pairfam codebook, p. 11, wave 1, Brüderl *et al.*, 2018). We do not know how 'important' and 'intimate' relationships differ from casual sexual relationships, and the respondents could have reported partners with whom they were engaged romantically but not sexually or sexually and not romantically (casual sex partners). The inconsistency in terminology in the questionnaire confuses therefore both the respondent and the researcher. The author had to spend time thinking conceptually about the distinctions of having had an 'intimate non-coresidential (LAT) partner', 'an important partner', and at distinctions between 'partnerships' and 'intimate relationships'. This chapter recommends that in future data collection, researchers have to be consistent in defining what 'intimate' and 'important relationships' are and how they differ from casual sexual relationships.

In terms of analysis limitations, the sample was restricted to those in their mid and late thirties and I have defined those who have not yet had an intimate partner as lifelong singles. However, some may have a partner at a later age. Moreover, the sample of lifelong singles living in private households and therefore eligible for interview in pairfam may not be representative of the overall population of lifelong singles in Germany. Many lifelong singles might be members of the clergy, or in prison, mental institutions, and hospitals. Moreover, the results might reflect social desirability bias: singles might have given high scores in evaluating the satisfaction with being single, being afraid not to be perceived as very dissatisfied and 'desperate' to have a partner.

Data limitations refer to the fact that pairfam does not ask about the sexual life of those single. Therefore, the single people in this sample may have casual sexual partners. Also, pairfam does

not have questions to measure asexuality (not having a sexual attraction to a partner of either sex) (Bogaert, 2004; Brotto *et al.*, 2010) or personality traits, such as introversion, which may be related to singlehood. As a result, some selection effects are omitted since I could not control for these aspects.

This study does not include time since break-up because lifelong singles have by definition no time since break-up. Future research may investigate the association between time since break-up and satisfaction with being single among those single ever-partnered by comparing more in-depth those who had been in cohabiting and LAT relationships. It would be useful also to know if the effect of past intimate relationships on satisfaction with being single differs by time.

More research is needed to understand the role of friends in lifelong singles' lives. It would be interesting if future research could investigate how 'losing' friends (i.e. having more married friends who spend less time with single friends) changes the decisions of single people to be partnered. Despite the small sample, future research could make use of pairfam longitudinal data to investigate when lifelong singles will have a partner. It would be also informative if, for example, future research can track those single in their 20s to study the transitions from singlehood to dating or coresidential relationships as we do not know about transitions from singlehood to being in a relationship.

All in all, this study points that lifelong singles are less dissatisfied with being single than those ever-partnered (however this evidence is weak) and the higher the satisfaction with friends and social contacts, the higher the satisfaction with singlehood is. This chapter is a broad-brush image of the characteristics and satisfaction with the relationship status of singles and calls for more research in understanding the intimate lives of these people.

Chapter 5 Conclusions and Discussion

5.1 Introduction

The overarching aim of this thesis was to explore the changing nature of partnerships and singlehood with respect to satisfaction with intimate life. Satisfaction with intimate life is a broad concept used to refer more generally to a) the relationship quality among those partnered, and b) satisfaction with being single among those unpartnered (see Figure 1.1, Introduction Chapter). Relationship quality refers to sexual intimacy and relationship happiness (in Chapter 2), and to relationship satisfaction, couple's conflict frequency, self-disclosure, and sexual satisfaction (in Chapter 3).

This thesis used a quantitative approach to understand a) how sexual intimacy and relationship happiness differed by relationship type in Britain, b) how relationship satisfaction, sexual satisfaction, conflicts, and self-disclosure were related to LAT relationship transitions into coresidence or separation in Germany, c) how singles' past intimate relationship(s), satisfaction with and frequency of contacting social networks were related to satisfaction with not having a partner in Germany, and d) how gender moderated the link between past intimate relationships and satisfaction with singlehood in Germany.

In this chapter, I summarise the main findings of each of the three empirical chapters and also discuss these findings by relating them to the existing literature and theories (section 5.2). This is followed by the discussion of the contributions of the thesis (section 5.3) and limitations (section 5.4). Finally, suggestions for future data collection and research are presented (section 5.5).

5.2 Summary and discussion of key findings

5.2.1 The nature of marriage, cohabitation, and LAT relationships in Britain

Chapter 2 examined how emotional closeness during sex, compatibility in sexual interest, and preferences with a partner differ across married, cohabiting, and LAT relationships in Britain. These sexual aspects of relationships were defined as sexual intimacy. This chapter additionally investigated how relationship happiness differs by relationship type. Ordinal logistic regression analyses were applied to test these associations. This study contributed to the discussion about the nature of married, cohabiting, and LAT relationships in terms of a) sexual aspects of the relationship, but also of b) relationship happiness in Britain. At the same time, it showed the importance of investigating not only the positive dimension of relationship quality (i.e.

relationship happiness) but also the sexual dimension of relationship quality because the same relationship type can differ across these dimensions. Also, within the sexual dimension of relationship quality, partnership types differed and some of these differences diverged by gender.

Relationship happiness and sexual intimacy in marriage and cohabitation

First, examining the differences in relationship happiness and sexual intimacy between marriage and cohabitation revealed that cohabiting individuals share the same levels of sexual intimacy as those married, but they are less happy in their relationship than those married.

Most studies that compared marriage and cohabitation with regard to relationship quality were conducted in the US and showed that married couples have higher quality relationships than those cohabiting (Brown and Booth, 1996; Skinner *et al.*, 2002; Brown, 2004; Musick and Bumpass, 2012). In the UK, scholars have noticed a gap in subjective well-being between marriage and cohabitation, but only for women (Perelli-Harris *et al.*, 2019). Chapter 2 contributed to this literature by confirming a gap in the overall relationship happiness between marriage and cohabitation in Britain, among both men and women. This gap may be explained with the findings from a British qualitative study: participants talked about marriage as being a more committed and secure relationship than cohabitation, conveying a greater expectation of permanency (Berrington *et al.*, 2015). Moreover, since marriage is more protected by law than cohabitation is (Barlow, 2014), married couples may be happier than cohabiting couples because of feeling more secure. Also, since married couples had already publicly expressed their commitment, they might feel more supported and accepted by society and family, which might, in turn, increase feelings of happiness with their relationship as compared to cohabiting couples, who had not (yet) expressed their public commitment.

As pre-marital sex permissiveness has increased in Britain (Johnson *et al.*, 2001; Mercer *et al.*, 2013), it may be that cohabitation and marriage offer similar contexts for expressing sexuality. Both cohabiting and married couples have the common characteristic of sharing a household, which implies that partners see each other every day, they wake-up and go to bed together, having similar daily schedules. This finding might also be attributed to the theory of diffusion, which stipulates that as cohabitation is more accepted and spread in a society, the narrower the differences between these two relationships become (Liefbroer and Dourleijn, 2006). Nowadays, in the UK, cohabitation is a widespread relationship type, being also an accepted form of parenting (Carter and Duncan, 2018). Moreover, some studies in Britain have emphasised that cohabiting couples do not see themselves as different from married couples in terms of expectations around sexual fidelity (Duncan and Phillips, 2008; Gabb and Fink, 2015; Carter and Duncan, 2018), and some cohabitors perceive themselves just as committed to their partner as

married couples (Jamieson *et al.*, 2002; Carter, 2012; Carter and Duncan, 2018). Berrington and colleagues (2015) have found that cohabitors perceived their personal commitment to their partner (i.e defined as how attracted an individual is to the partner or the extent to which individuals want to stay in a relationship) as being the same as in a marriage. Chapter 2 adds to these studies by showing the similar nature between British married and cohabiting couples in expressing sexuality.

The complex nature of LAT relationships

Chapter 2 showed that in Britain, LAT couples are less happy with their relationship than married couples. At the same time, LAT couples are more compatible in terms of sexual preferences and interest with their partner than married and cohabiting couples. The findings from this study support the existing literature on the relationship happiness differences among married and LAT relationships (Europe: Tai *et al.*, 2014; the US: Lewin, 2017). The fact that British married couples are happier than LAT couples might reflect the different degrees of commitment and emotional security these two types of relationships entail. Qualitative studies in Britain have underlined that LAT relationships are seen by some as lacking the strong commitment, emotional, and sexual intimacy a cohabiting or married relationship entails (Duncan and Phillips, 2010, Carter *et al.*, 2016) whereas marriage is generally perceived as involving the ultimate commitment, being a promise for a life-long partnership (Berrington *et al.*, 2015). Additionally, the findings may also reflect the differences in the legal treatment of married and LAT relationships. Since LAT couples do not benefit from any legal rights, they may feel less secure in their relationship compared to married couples. The lack of legal protection against the risks of joint investments in case of dissolution may, in turn, explain the lower levels of LATs' relationship happiness. However, these findings may also suggest a selection effect of those who are happier with their relationships into marriages.

Also, given that LAT couples are more sexually compatible with their partner but less happy in their relationship than married couples makes us question the role of physical distance. Is it that LAT couples are less happy in their relationship than those married due to distance? Or is distance (and not living together) a reason for LAT couples to enjoy their sexual life more than married couples?. This thesis does not answer these questions due to data limitations but leaves them as a suggestion for future work.

LATs' higher sexual compatibility with their partner as compared to coresidential relationships might be related to the flexibility and adaptability around personal autonomy and couple intimacy which are more characteristic of this type of relationship (Carter and Duncan, 2018). Consequently, sex might be a highly valued resource and an investment in LAT relationships as

compared to coresidential relationships, where additional types of resources and investments are more common. For example, coresidential couples enjoy increased economic resources because of the economies of scale and the possibility to pool incomes to pay rent, utilities, and groceries (US: Kenney, 2004; US: Eickmeyer *et al.*, 2019), and increased social resources by having direct access to the social support offered by a partner and his/her friends and family (US: Umberson and Montez, 2010). At the same time, coresidential partners show their (structural) commitment through joint investments such as buying a house, paying the mortgage together, and having children (Berrington *et al.*, 2015). These types of resources and investments are not characteristic of LAT relationships (Carter *et al.*, 2016; Carter and Duncan, 2018). For LAT though, sexual fidelity is central in defining commitment; if the promise of sexual exclusivity were broken, the relationship would end (Carter *et al.*, 2016; Carter and Duncan, 2018). Therefore, sex may be a more important investment and resource for LATs than for coresidential couples.

Sexual intimacy, relationship happiness, partnerships, and gender

Chapter 2 revealed that married women report more often being emotionally close during sex to their partner than LAT women. These results suggest that marriage offers women a more secure context in which to connect emotionally to their spouse during sex than a LAT relationship. In theory, emotional closeness during sex is related to feelings of safety and bond between partners (Mitchell *et al.*, 2011a), and studies have shown that the meaning of sex for a woman is to express emotions and love to a partner (Mitchell *et al.*, 2011a; Mitchell and Wellings, 2013; Gabb and Fink, 2015; Umberson *et al.*, 2015). Moreover, women prefer long term committed relationships to casual sexual relationships or short dating relationships to express sexual intimacy because in the former they feel more protected and secure (Peplau, 2003). It is known that in Britain marriage entails the romantic view of a life-long relationship with ''the one'' and represents the ''eternal commitment'' (Berrington *et al.*, 2015, p. 336-337), which offers important emotional and psychological security (*ibid*, 2015). In contrast, LAT relationships have not been characterised by such a high level of commitment, but by greater autonomy, space, and freedom as compared to coresidential relationships, benefits which were more often reported by women (Duncan *et al.*, 2014). For example, living apart allowed some women to intentionally keep an emotional distance from men while enjoying their own space (Carter and Duncan, 2018). Consequently, LAT relationships may be seen by women as riskier and more unstable compared to marriage to bond emotionally with their partner.

Chapter 2 showed that relationship happiness differs according to men's partnership status. This thesis provided new evidence, that, among men, those in LAT feel significantly less happy in their relationship than those cohabiting. Because cohabitation involves living together, it may be that cohabitation offers more health, social, and emotional benefits than LAT relationships, being a

more secure type of relationship for men. These findings do not support those of Perelli-Harris and colleagues (2019) who found no link between subjective well-being and men's partnership type. However, the interaction terms between gender and partnership type were not significant, so caution is needed when interpreting these findings. Future (qualitative) research is needed to shed light on how the meaning of a cohabiting relationship differs from that of a LAT relationship in terms of love, security, and health among men.

In discussing these results, the reader is reminded that these three relationship types are not static demographic categories. LAT (and cohabiting) relationships can be a stage on the way to cohabitation (and to marriage) and those who are married may choose LAT or cohabitation after divorce. Therefore, sexual intimacy and relationship happiness can change over the life-course.

5.2.2 The nature of LAT relationships in Germany

Like most Western European countries, Germany is characterised by decreased marriage rates, increased cohabitation, and divorce rates (Salles, 2006; Perelli-Harris *et al.*, 2010; Hiekel *et al.*, 2015; Kreyenfeld and Konietzka, 2017). Partnership and family formation behaviour differs between the previously divided Eastern and Western Germany (see Introduction chapter, section 1.4.2 for a short historical overview). Western Germany has one of the highest rates of female childlessness in Europe, about 24%, and the country is characterised by one of the fastest increases in single-person households among the age group 30-64 in Europe (Sandström and Karlsson, 2019). Evidence from West Germany also shows that a small proportion of people in mid-life (aged between 35 and 45) has experienced more than one cohabiting union (i.e. serial cohabitation) (Hiekel and Fulda, 2018). In addition, since 1990, the share of LAT relationships has increased across cohorts in the whole country, especially for those in their twenties but also for those in their thirties (Krapf, 2017). The numbers of unpartnered people might also be increasing since marriage is being postponed and divorce rates have been increasing among those aged 50 and over (UN Women, 2019a). All these changes in partnership dynamics have been explained by economic changes towards a more gender egalitarian society with women's increased education and labour force participation, and ideational and value changes towards self-fulfilment and self-development (Surkyn and Lesthaeghe, 2004). As a result of these shifts in society, people nowadays experience not only more than one relationship in their lifetime but also multiple types of relationships, with or without children, and with repeated periods of being single between repartnering. Chapters 3 and 4 of the thesis add to this demographic literature by having investigated the satisfaction with intimate life among those in LAT relationships and those single in Germany.

Chapter 3 studied how relationship quality is related to LAT relationship transitions into coresidence or separation in Germany. In that chapter, sexual satisfaction, self-disclosure, and couple's conflict frequency were conceptualised as specific indicators of the relationship quality umbrella. Relationship satisfaction was used interchangeably with the term relationship quality. The chapter applied discrete-time competing risk hazard models on LAT relationship outcomes to coresidence or separation. Three nested models were built to test if relationship satisfaction would still be an indicator of LAT relationship transitions in the presence of sexual satisfaction, self-disclosure, and conflicts (see Chapter 3, section 3.5.3). The results are summarised and discussed below. The analysis suggests that family demographers might go beyond the global indicator of relationship satisfaction in their studies of coresidential relationships formation, by engaging with more dimensions of relationship quality.

First, Chapter 3 confirmed the fact that in Germany, LAT is a temporary stage in coresidential relationship formation among young adults (Krapf, 2017; Wagner *et al.*, 2019). The results from Chapter 3 showed that individuals in the birth cohorts 1981-83 and 1971-73 more often move in together by the end of three years since wave 1 rather than separate.

Secondly, the chapter brought new evidence and contributed theoretically to our understanding of LAT relationships by underlining the importance of the positive and negative dimensions of relationship quality for the decision to move in with a partner. The results underlined that being more open to a partner and having fewer conflicts were associated with the decision to form a coresidential relationship. Psychological literature has indicated that disclosing one's innermost feelings, thoughts, and secrets increases the feelings of intimacy in a relationship (Reiss and Shaver, 1988; Sinclair and Dowdy, 2005). Moreover, more frequent self-disclosure has been found to decrease stress (Ditzen *et al.*, 2008), and has been associated with feelings of love and respect for the partner (Hendrick and Hendrick, 2004; Sprecher and Hendrick, 2004). In contrast, those who have experienced more frequent conflicts report more stress, anger, anxiety, sadness (Feeney, 2004; Caughlin *et al.*, 2009), or depression (Beach *et al.*, 1998). Taking these aspects into consideration, it may be that those who moved in together might have experienced stronger feelings of intimacy and love in their relationships and fewer feelings of sadness or anxiety.

Thirdly, Chapter 3 showed that sexual satisfaction is not associated with the decision to move in together with a partner, a finding consistent with a study on the link between sexuality and LAT transitions in Italy (Meggiolario, 2010). Also, higher levels of relationship satisfaction are positively related to LAT individuals' decisions to form a household; however, this association was attenuated by self-disclosure and couple's conflict frequency, underscoring the importance of these two specific indicators of relationship satisfaction in understanding the formation of coresidential relationships.

Fourthly, low relationship and sexual satisfaction, less frequent disclosures to the partner, and having more conflicts with the partner were associated with breaking-up relative to still dating. According to the social exchange theory, evaluations of low relationship quality are considered as costs (i.e. negative aspects of the relationship) which result from partners' interactions (Thibaut and Kelly, 1959). The findings of Chapter 3 generally supported the argument that couples for whom maintaining a relationship where costs are higher and rewards are lower are generally more likely to break-up. These results are in line with those studies on the link between relationship quality and divorce that used this theory and investigated indicators such as the frequency of conflicts between spouses, together with the degree of emotional support, affection, and companionship (Levinger, 1979; Gottman and Levenson, 1992, 2002; Previti and Amato, 2003).

Lastly, no differences were found in LAT relationship transitions among those born in West or East Germany. This may be surprising since the partnership behaviours and the cultural values differ in these two parts of the country. In West Germany, a traditional male-breadwinner family model prevails, with a specific gender division of work and care; moreover, marriage and having children in marriage are central to individuals' lives (Hiekel *et al*., 2014). In contrast, East Germany is characterised by a more liberal system of values around sexual behaviour and intimate relationships where short term-relationships with multiple partners, cohabitation, and childbearing outside of marriage are more accepted and practiced (Klärner, 2015; Kreyenfeld and Konietzka, 2017). However, these differences may be gradually narrowing for those who are born after the 1970s since they experienced their 20s after German unification (in 1990), being exposed to the same political regime, economy, and a more similar system of values (Kreyenfeld and Konietzka, 2017). This might be the reason why no differences in LAT relationship transitions were found according to region.

5.2.3 The nature of singlehood in Germany

Chapter 4 compared the satisfaction with being single of lifelong singles and those single ever-partnered. Additionally, this chapter examined the role of social networks on satisfaction with singlehood. Chapter 4 also investigated if gender moderates the link between past intimate relationships and evaluations of satisfaction with singlehood. The results based on linear regression analysis indicated the importance of having high quality social networks for feeling more satisfied with being single. The findings offered new insights also into the characteristics of singles and discussed potential selection mechanisms into lifelong singlehood.

Qualitative sociological literature emphasises how much friends and family provide the basic human emotional need to belong in singles' lives (Stein, 1975; Budgeon, 2008; Band-Winterstein

and Manchik-Rimon, 2014) acting as sources of support and social integration (Amati *et al.*, 2018). Chapter 4 provided evidence on the positive association between satisfaction with friends (and social contacts) and satisfaction with being single in Germany. However, more frequent contact with family (visiting, writing letters, phone calls, etc.), such as at least once per week, decreased the satisfaction with being single as compared to contacting one's family at least once per month. I speculate that the mechanism link which may explain this result is related to parents being a source of social stigma and stress for their adult children, especially at an age when it is normative to be partnered (Sharp and Ganong, 2011). The social pressure to be in a partnership and parents' unsupportive behaviour towards their single adult child may be reasons to contact family less frequently (Byrne, 2003; Sharp and Ganong, 2011), which may, in turn, increase the feelings of being happy without having an intimate partner.

The results of chapter 4 revealed that lifelong singles are less satisfied with their friends and social contacts compared to those single ever-partnered (bivariate and multivariate associations), suggesting that they may be less socially integrated than those ever-partnered. Firstly, it is possible that lifelong singles are more likely to be introverted or shy, facing difficulties in making or keeping friends. Secondly, given their age, I speculate that lifelong singles have fewer (single) friends to spend time with, which may affect the quality of their friendships. Evidence from qualitative research on singles around the age of 30 shows that newly partnered friends spend less time with their single friends once the former had married (Sharp and Ganong, 2011). Lifelong singles in this study are aged between 35-38 years, suggesting they have gone beyond the normative age of marriage in Germany (in 2008, the mean age at first marriage for women was 30 and for men 33; UNECE Statistical Database, 2019). In addition, weakened relationships with friends and social contacts among lifelong singles compared to that of singles ever-partnered may stem from the former being isolated from their partnered friends. A qualitative study has underscored that some old friends started to avoid their single friends, being afraid of mate poaching, thinking that their single friends are 'desperate' to be in a relationship (Reynolds and Wetherell, 2003). It is important, therefore, that (lifelong) single people are supported in their families, communities, and society. For example, online communities such as the 'Community of Single People', 'Single at heart' (DePaulo, 2019a, 2019b), or 'quirkyalone' (Cagan, 2004) have been created with the aim for singles to connect with each other. However, maybe not everyone has access to the Internet and it is important that governments or NGOs create, for example, social clubs where these people meet and find new friends.

This chapter showed that more men than women are lifelong single and both men and women who are lifelong single seem to have a relatively high socio-economic status (unadjusted associations). From a policy perspective, this would indicate that the state might need to support

less these people at an old age (i.e. pension) if they have enough economic resources. Some studies showed a positive educational gradient for women's likelihood to be without any coresidential experience at the age of 40 and a negative educational gradient for men's probability to remain without coresidential experience at the age of 40 (Dykstra and Poortman, 2010; Wiik and Dommermuth, 2014; Bellani *et al.*, 2017). The descriptive results from Chapter 4 tentatively indicated that the selection process into lifelong singlehood is becoming similar for men and women in terms of socio-economic conditions. Germany is characterised by a male breadwinner model and a medium degree of gender equity, where women are expected to be main carers for children and leave their career ambitions, while males are expected to be full-time provides (Kreyenfeld and Konietzka, 2017). Therefore, it may be that highly educated women have chosen to be lifelong single or have postponed entering a relationship. Among men, it may be that those with higher socio-economic resources have adopted a more independent, non-conformist lifestyle preferring to be single (and perhaps to have casual sexual relationships) or it may be that they have high standards for a long-term partner and struggle to find a suitable one. Being highly educated has been associated with displaying more liberal attitudes and being more open to new experiences (Myers and Booth, 2002). Research from the Netherlands found that university-educated men were as likely as those with primary education to remain without coresidential experience by the age of 40, the authors suggesting that a new type of bachelor, representing a cultural elite, may emerge along with the traditional type of bachelor consisting of low educated men (Dykstra and Poortman, 2010). More research is needed to understand the determinants of being lifelong single (defined as having had no intimate partner during adulthood) in Germany, using multivariate analysis.

Generally, those with past coresidential and LAT intimate relationships were found to be happier being single than lifelong singles, but these associations are weak. It may be that those with past relationships miss the economic, social, sexual, and emotional resources they once had shared with a partner and they might want to have those again, in a new relationship (Poortman and Liefbroer, 2010). I speculate that the higher satisfaction with the relationship status of lifelong singles as compared to the ever-partnered might also point to the fact that the first had chosen to be single. Qualitative sociological literature has underlined that benefits, such as the freedom to organise one's personal schedule and finances, to pursue higher education and future career goals, to build friendships with whom they want, and not compromising to the demands of a partner, were reasons for choosing not to be in a relationship (Byrne, 2003; Budgeon, 2008; Timonen and Doyle, 2013). The results also showed that the link between past intimate relationships and satisfaction with singlehood did not differ between men and women.

5.3 Contributions of the thesis

This thesis contributes to the literature in several ways. First, this thesis has an interdisciplinary approach, bringing together sex research, psychological, sociological, gerontological, and demographic literature to shed light on the nature of different relationships and singlehood. Concepts and theories which are discipline-specific are knitted together to combine the study of those in relationships but also that of singles with respect to their satisfaction with intimate life.

By adding the sex research literature into the discipline of demography, this thesis broadens the perspective in investigating how marriage, cohabitation, and LAT relationships differ. This is important because, on the one hand, the sex research literature has examined multiple dimensions of sexual intimacy but mostly with regard to married couples (Cupach and Comstock, 1990; Laumann *et al.*, 1994; Call *et al.*, 1995; Lodge and Umberson, 2012; Kornrich *et al.*, 2013; Carlson *et al.*, 2016). On the other hand, little demographic research has investigated the nature of partnerships comparing LAT, cohabiting, and married couples (Tai *et al.*, 2014; Lewin, 2017). These two studies focused on broad indicators of relationship quality, without engaging with the sexual dimension of relationships. The first two chapters of this thesis bridged the sex research and the demographic literature to shed new perspectives on the understanding of marriage, cohabitation, and LAT relationships (Chapter 2) and new insights on the outcomes of a LAT relationship (Chapter 3).

The interdisciplinary approach of the thesis is also reflected in the use of psychological theories (The Social Exchange Theory) and concepts in broadening the understanding of coresidential partnership formation. Most demographic studies on LAT relationship formation overlooked the role of the relationship quality aspect (Sassler and Miller, 2011; Régnier-Loilier, 2016; Sassler *et al.*, 2016, 2018). In Germany, studies on LAT relationship outcomes have broadly considered the relationship quality aspect but have used a global evaluation of relationship satisfaction (Wagner *et al.*, 2019), sometimes as a control variable (Krapf, 2017). This has limited the understanding of LAT transitions in terms of other positive and negative dimensions of relationship quality, such as conflicts and self-disclosure. For example, the psychological literature on divorce highlighted the detrimental effect of experiencing frequent disagreements and negative reactions such as getting angry with the partner, shouting at, or criticising him/her (Gottman and Levenson, 2002; Birditt *et al.*, 2010; McGonagle *et al.*, 2016). Psychologists argue that self-disclosure is one of the most important 'ingredients' of a relationship (Hendrick *et al.*, 1988; Rubin *et al.*, 1980). Intimacy (i.e. how much partners are connected and have a deep sense of knowing each other) develops in a relationship based on how much the members of the couple share their thoughts and secrets (Reis and Shaver, 1988). Chapter 3 contributed to the literature on LAT relationship transitions by

showing the importance of investigating indicators such as self-disclosure and couple's conflict frequency and of considering these as part of the multidimensional concept of relationship satisfaction.

Furthermore, this thesis puts forward not only a new conceptualisation about lifelong singlehood but also a refined definition of the term singlehood itself. Only one demographic study investigated the experiences of those lifelong single but it had defined the concept by referring to individuals who had never had coresidential relationships by the age of 40 (Bellani *et al.*, 2017). Gerontologists defined lifelong singles as those never married (or remarried) by the age of 60 (Baumbusch, 2004; Timonen and Doyle, 2013; Band-Winterstein and Manchik-Rimon, 2014). All these definitions have limitations in that those who never had coresidential relationships are a heterogeneous group of people consisting of a) those who never had an intimate partner, and b) those who had only LAT partners. Combining these two categories might paint a blurred picture of the characteristics of lifelong singles. This thesis departs from these studies by defining a lifelong single as someone who never had either a coresidential or a LAT intimate relationship. Consequently, these people never had intimate relationships during their adulthood (see Chapter 4, pp. 107-104 for more details). This is a novel definition based on rich data regarding retrospective relationships asking about people's coresidential and non-coresidential intimate relationships since the age of 14. As stated above, this thesis has refined the definition of singlehood. More precisely, it defines those single as being unpartnered and disentangles those single from those with a LAT partner, aligning to those few studies with a similar approach (Soons and Kalmijn, 2009; Verbakel, 2012; Wright and Brown, 2017).

Moreover, this thesis adds new insights into the nature of singlehood. The approach of Chapter 4 is conceptually different than the traditional approach in demography where single people have been compared to those in married, cohabiting, and LAT relationships regarding aspects of well-being (Marks, 1996; Soons and Liefbroer, 2008; Verbakel, 2012; Wright and Brown, 2017; Perelli-Harris *et al.*, 2018). Chapter 4 focused only on unpartnered people and how they think about their situation of being single, considering their past and present intimate lives. This study has engaged with the qualitative sociological literature, which warns about the complex role of friends and family in singles' lives (Davies, 2003; Reynolds and Wetherell, 2003; Budgeon, 2008; Sharp and Ganong, 2011), and has contributed to a better understanding of the link between social networks and satisfaction with not having a partner.

Additionally, in terms of data used, this thesis emphasises the importance of going beyond the simple marital status in constructing relationship histories. To the best of the author's knowledge, this is the first attempt to differentiate those who had past coresidential relationships from those who had only non-coresidential LAT relationships. Having retrospective relationship histories and

not just coresidential histories is unique and helps to think about what concepts such as lifelong singlehood mean. Lastly, this thesis used rich data regarding the sexual intimacy of those partnered, engaging with an epidemiological survey on sexual behaviours, and encouraging researchers to go beyond their disciplinary boundaries in their conceptualisation of partnerships in order to engage with the sexual dimension of relationships.

All in all, this thesis draws attention to demographers not to separate singles, LATs, cohabitors, and marrieds in their study of intimacy but rather suggests they consider intimate lives in a more general way.

5.4 Limitations

The studies in this thesis have some limitations. The limitations of each of the three papers are discussed in detail in each chapter. This section summarises the general limitations of the thesis by focusing on data, conceptual, and analysis limitations and discusses their implications in terms of sample selection and results.

5.4.1 Data limitations

Despite not aiming to compare Britain and Germany, a data limitation of this thesis is that these two data sets identify LAT differently. Since Natsal-3 is an epidemiological survey with a focus on sexual behaviours, non-coresidential relationships are identified in the context of the most recent sexual intercourse. In particular, LAT relationships are defined in Chapter 2 as 'steady relationships,' where partners had been sexually active in the past year, in the relationship for at least one year, and willing to continue the relationship. In contrast, pairfam asks if respondents have an intimate partner with whom they do not live, without constraints on relationship duration or sexual activity. Nonetheless, in both datasets, LATs are measured respecting the more general definition as 'having a regular partner but living in separate households' where partners identify themselves as being in a relationship (Haskey and Lewis, 2006, p. 37).

In terms of country contexts, I was limited by data to investigating sexual intimacy differences between partnerships only in Britain. To the best of my knowledge, pairfam, or any other demographic representative survey (i.e. Gender and Generation Survey) does not include the indicators of sexual intimacy that Natsal-3 includes. Because pairfam is the only data which has retrospective information not only about coresidential histories but also about LAT relationship histories, and information about singles, I was thus restricted to investigating the intimate lives of those unpartnered in the context of Germany. I was limited to studying the link between relationship quality and LAT relationship transitions in Germany because pairfam has rich data on

both LAT partnerships and relationship quality, the latter being considered as a multidimensional concept, with single and multiple-item indicators for positive, negative and sexual dimensions.

Pairfam does not ask about singles' current or past sexual partners. Therefore, I could not disentangle singles who practice casual sex from those who do not. This has implications for the definition of those single (or lifelong single), which are discussed in more detail in Chapter 4, section 4.7. Moreover, pairfam does not have specific questions asking about sexual attraction so we do not know if some of the single people are asexual or not (Brotto *et al.*, 2010). Furthermore, pairfam introduced questions about personality types (i.e. introvert-extrovert) from the second wave, so selection effects on personality or sexual attraction are omitted.

Lastly, the sample sizes in all these chapters (especially those of individuals who are in LAT relationships and single) are small. This questions how much the results can be generalised. Also, the small sample sizes limited the study of moderator variables such as gender on the outcomes. If the data had had a bigger sample, I would have examined more carefully the gender differences in the outcomes.

5.4.2 Conceptual limitations

Terms such as 'unions', 'relationships', 'partnerships', 'intimate relationships', or 'important relationships' have not been clearly defined by demographers. The lack of clear conceptualisation of these terms is reflected also in surveys. For example, in collecting data about current and past partnerships, pairfam uses the words 'partnerships', 'intimate relationship', 'important relationship' interchangeably, without precise distinctions. In their responses, respondents might have indicated relationships from their past where they were just romantically but not sexually involved or the other way around, and it is important to distinguish between these nuances. In building the past relationship histories, the author had to spend time thinking conceptually about the distinctions of having had a coresidential relationship, an intimate non-coresidential (LAT) relationship, an important relationship, an intimate relationship, and if these relationships involve sex. This thesis recommends that in designing surveys, researchers have to be careful and define more precise terms such as 'intimate' and 'important relationship' as well as 'partnerships' and specify how they differ.

Some of these terms differ by discipline as well. For example, in demography, the words 'partnerships' or 'unions' have been used mainly to refer to marrieds, cohabitors, and LATs, whereas the sociological literature has preferred the term 'intimate relationship' to denote a (partner) relationship based on mutual feelings of connection, love, and trust (Jamieson, 1999, 2011). In working with pairfam and Natsal-3 data, and in reviewing sociological, psychological, and demographic literature on partnerships, I asked myself: Do 'intimate relationships' include more

feelings of love and bonding with a partner than ‘partnerships’ or ‘important relationships’? Do ‘intimate relationships’ include sex compared to ‘important relationships’ or ‘partnerships’? Are ‘partnerships’ referring to more committed relationships compared to ‘intimate’ or ‘important relationships’? The inconsistency in terminology in the questionnaires may confuse both the respondent and the researcher. It would be ideal if future work would design survey questions that will have consistent meaning across individuals and countries (especially in post-industrialised countries where partnership changes such as decreased married rates and increased rates of those single never-married, cohabiting, divorced, or living alone have been noted).

The two country contexts of Britain and Germany are fairly similar with respect to relationship, sexual, and family formation behaviours, being characterised by the demographic and economic changes associated with the Second Demographic Transition (for more details see Introduction Chapter, section 1.2). However, the results of this thesis may not be relevant to other parts of the world, such as sub-Saharan Africa, where most countries are within their early demographic transitions, characterised by high fertility rates and declining (infant) mortality rates, with rapid population growth (Canning *et al.*, 2015). Moreover, Sub-Saharan African countries are characterised by the highest adolescent fertility and highest share of girl and women outside of school caused by poverty, poor infrastructures, cultural norms, and violence (UNESCO, 2016). Early marriage and large families are also characteristic of many African countries unlike most of European post-industrialised countries (Lesthaeghe, 2010; Canning *et al.*, 2015).

The Natsal-3 questionnaire does not explain the meaning of sexual intimacy items. The lack of conceptual definitions for the items ‘emotional closeness during sex’ and sharing the ‘same sexual likes and dislikes’ (defined as ‘compatibility in sexual preferences’, see Chapter 2, section 2.4.2) might have confused the respondents who may have wondered what was being asked of them. The conceptual basis for these indicators comes from qualitative research conducted previously by members of the Natsal team, where participants who were in a relationship were asked to define the ‘ideal’ sex (Mitchell *et al.*, 2011a; Mitchell and Wellings, 2013; see Chapter 2, sections 2.2.1 and 2.4.2 for more details about the meaning of these items). Moreover, researchers not familiar with the sex research literature would need to spend a lot of time thinking about how to conceptualise these measures, especially in relation to different partnerships. Having a clear definition of these indicators also allows us the opportunity to ask the same questions in different countries and conduct comparative research.

5.4.3 Analyses limitations

The main limitation of this thesis is that this work is mostly descriptive. In none of the chapters can specific causality be accounted for. Only one paper investigates with a longitudinal approach the transition from LAT relationships into coresidence or separation (Chapter 3). However, the issue of causality is still difficult to assess. First, the time window for LAT transitions is relatively short and relationship quality might not change so much in this period. Second, there are many possible observable and unobservable variables that might influence LAT transitions and that were not accounted for in this study, either due to data or time limitations. Another limitation of this thesis is that it cannot completely account for the selection into being single, a lifelong single, or into one type of intimate relationship (married, cohabiting, LAT). Also, selection and many other observable and unobservable factors can be related to the outcomes. Nonetheless, in each paper, I controlled for variables related to both the outcome and to key independent variables to account for selection effects.

5.5 Suggestions for future work

We are living in a new social system that challenges researchers in their investigation of people's intimate lives. The changes in partnership and sexual behaviours are recorded in national surveys and explained by the Second Demographic Transition (Surkyn and Lesthaeghe, 2004; Lesthaeghe, 2010), or individualisation theories (Giddens, 1992; Beck and Beck-Gernsheim, 1995). People are less socially sanctioned now than in the past to be the authors of their own biographies, having greater freedom to choose not only the type of relationship they want but also not to be in an intimate relationship. People's sexual lives have become more complex; those in the younger cohorts start their sexual lives earlier than those in the older cohorts did, have a higher number of casual sexual partners and experience more often being in a same-sex relationship than those in the older cohorts (Herbenick *et al.*, 2010; Mercer *et al.*, 2013; Rissel, *et al.*, 2014). In light of these changes, we need new conceptualisations about a) what type of intimate and sexual relationships people engage in, b) what it means to be single or lifelong single, and c) what it means to be satisfied with one's intimate life. This requires new theoretical development and data collection.

Demographers need to talk more about the satisfaction with intimate life as a multidimensional concept to investigate not only the lives of those partnered but also of those unpartnered. This implies having an interdisciplinary approach and engaging with other literature than the demographic one. This thesis represents a step in this direction. Future data collection on relationship quality and intimate relationships and research ideas are suggested below.

5.5.1 Future data collection on intimate relationships and singlehood

If we are to understand better the intimate lives of those partnered and unpartnered new data should be collected by going beyond the marital or coresidential status of relationships, starting to ask more questions to identify LAT, casual sexual relationships and single people as well. Firstly, if more demographic surveys asked about both the presence of a LAT partner and whether people are unpartnered, we would have more data about those unpartnered (single), by going beyond the simple marital status of the respondents.

Secondly, it would be useful if more surveys would include questions about LAT partners using the same wording. Perhaps one single standard question should be included in demographic surveys, which would allow the opportunity to do comparative research about the nature of LAT relationships. For example, surveys could ask: 'Do you have an intimate partner you are not living with?', followed by the definition of what an intimate partner is. An intimate partner can be defined as a partner to whom the respondent feels a strong emotional connection and feelings of bonding, similar to the sociologists' definition (Jamieson, 1999, 2007). The immediate question should ask if the respondent is already engaged in sexual intercourse with this partner. In this way, the survey will capture LAT relationships where partners feel connected and bonded, both a) those who are sexually active, and b) those who are not sexually active. Researchers who want to understand in greater depth the nature of LAT relationships will benefit from this distinction. Additionally, the length of LAT relationships should start to be standardised by measuring it using a marker such as the first date, first kiss, or first sexual intercourse so that more comparative research can be done.

Thirdly, in collecting data on current relationships, it would be useful for researchers if pairfam or any other demographic survey would start to ask about the existence of casual sexual relationships as well. By asking about the presence of casual sexual partners would help in identifying a) those single who are sexually active, and practice 'hooking-up', and b) those singles who are not sexually active. This category would help in redefining singlehood as those without any sexual relationships. At the same time, data on casual sexual relationships would bring more understanding of people's sexual experiences across the life-course. For example, we do not know what may be associated with the tempo and decisions of people to progress from sexual relationships to more bonded LAT relationships, and from LAT to cohabitation or marriage (apart from studies in the US: Sassler *et al.*, (2016, 2018)). This is important in the context of the changing sexual lives of people. For example, Natsal-3 asks about the 'relationship type' in which people had their last sexual intercourse; some of the response categories are: 'used to be in a steady relationship but not at the time', 'known each other for a while but not in a steady relationship', 'recently met', 'just met for the first time'. Some of these categories (or all) can be

used in demographic surveys to collect data on other non-traditional intimate relationships people have.

Fourthly, questions measuring asexuality should be included in future data collections as well. This will help to understand better the selection into being single (and lifelong single). Other questions related to personality traits such as being introverted, extroverted, or to health items such as social anxiety could enrich our understanding of single people. Furthermore, more questions should be asked about the quality of social networks, the social activities of single people, and if singles feel that they are part of a community and society. Questions identifying if friends and family are discriminating or pressing them to partner would bring more nuances in understanding the role of the family in singles' lives. It would be useful if surveys would collect data to capture those single by choice or circumstance identified in the sociological literature. If the numbers of single people grew, governments would need to work to improve their life by implementing measures to de-stigmatise singlehood, to strengthen their social networks, and to create communities or places where they could practice their hobbies and make other friends.

Fifth, more panel datasets should have retrospective relationship history and not just coresidential history to understand better people's intimate relationships. This implies that we would have more data on the history of non-coresidential LAT relationships which would help us to understand better the nature and prevalence of this type of relationship. By having relationship histories, we would also understand how long people had stayed single between two LAT relationships, for example. To go even further, it would be very useful if more demographic panel data would include relationship histories with casual sexual partners. In this way, researchers would disentangle those single who had been sexually active from those truly single, who had not (ever) been sexually active. Identifying the latter group would refine even more the definition of lifelong singlehood. All these granular distinctions could help in understanding the changing intimate lives of people, especially in an era where mass media encourages single people to live a rewarding and meaningful lifestyle (i.e. online communities such as quirkyalone; Cagan, 2004; Single at heart; DePaulo, 2019b), and where apps such as Tinder offer opportunities to easily meet sexual partners.

Sixth, it would be useful if the Natsal surveys would ask questions such that it is possible to identify more easily which partner the respondent is referring to when discussing sexual intimacy. The reports on sexual intimacy with the most recent sexual partner might refer to other casual sex partners (i.e. 'recently met') and not to the married or cohabiting partner a respondent has previously indicated elsewhere in the questionnaire when he/she was asked about the legal marital and de-facto relationship status. At the same time, the definitions of sexual intimacy items should be provided in the Natsal-3 questionnaire so that respondents know their meaning, by

adding a few sentences such as ‘sexual likes and dislikes are defined as sexual practices such as anal, oral, and vaginal sex, and can refer to sexual fantasies as well’; Emotional closeness during sex is defined as feelings of love, bond, and connection with a partner as well as feeling comfortable and free from pressure during the sexual act’.

Moreover, demographic surveys, in general, and pairfam, in particular, should always include the words ‘with the partner’ when asking about sexual intimacy otherwise the answers might be based on sex with other partners. Moreover, asking how sexually satisfied people are, without a reference to the partner, might also capture the satisfaction derived from solitary sex behaviour, also called ‘solo sex’ (i.e masturbation; Carvalheira and Leal, 2013; Mercer *et al.*, 2013) instead of the satisfaction derived from the relationship with one’s partner. Sex researchers are careful in distinguishing ‘solo sex’ and ‘partnered sex’ when they design survey questions. This approach can be adopted by demographers in their future data collection. Lastly, demographic surveys should start to ask more questions which measure sexual intimacy, such as ‘How sexually compatible are you with your partner’? ‘How often do you have sex with your partner’, ‘How often do you and your partner hug and kiss each other?’.

5.6 Concluding remarks

All in all, given the changes in sexual and partnership behaviour, together with the diversity of those partnered and unpartnered, I believe that this thesis provides a valuable contribution to the literature and a useful reference point for further demographic research. This thesis argued that we need to consider the intimate lives of the unpartnered and those partnered. In studying the concept of satisfaction with intimate life, it also showed the importance of drawing on an interdisciplinary approach. Moreover, having (sexual) relationships and remaining (lifelong) single are likely to become more complex phenomena. Therefore, it is important to knit together parts of demographic and other bodies of literature together with discipline-specific concepts and theories, and thus engage with multiple dimensions of satisfaction with intimate life in our quest to understand the nature and the life-course of those partnered and unpartnered.

Appendix A Chapter 2

A.1 Descriptive results

Table A.1: Natsal-3 (2010-2011) sample broken down in categories which are not part of the analytical sample due to filters

Category of respondents	Freq.	Percent
Sexually inactive in the past year	3030	19.9
Sexually active in the past year but r. had 2 or more sex partners		
Serial monogamous partners	781	5.1
Concurrent partners	877	5.7
R. does not remember if these partners were concurrent or not	914	6.0
Unknown number of partners	493	3.2
Sexually active in the past year and monogamous respondents but not in analytical sample		
Not willing to have sex again with partner/no answer	746	4.9
Same sex relationships (official and unofficial)	91	0.6
Data inconsistency with respect to being sexually active in the past year	480	3.1
No information for the start of relationship	130	0.8
Married, cohabiting or LAT relationships, but less than one year	719	4.7
Casual sexual relationships ongoing	310	2.0
Data Inconsistency	19	0.1
Analytical sample	6572	43.3
Total	15162	100

Notes: Natsal-3, own computations; unweighted sample; This table presents a detailed picture of the respondents who are not part of the analytical sample; Natsal-3 does not ask the sexual intimacy and relationship happiness questions to those sexually inactive in the past year before the interview (3030; 19.9% of all respondents). I further excluded from the analytical sample those with 2 or more sex partners in the past year (3065; 20.2% of all respondents). Other individuals who were sexually active and monogamous in the past year could have been part of the analytical sample but due to further Natsal-3 restrictions or other data inconsistencies, they are not in the analytical sample (2495 respondents; 16.6% of all respondents). 56.7% of the Natsal-3 sample are excluded from the analysis of Chapter 2.

'Sexually inactive in the past year' refers to people who reported 0 sex partners in the last year before the interview (homosexual and heterosexual); 'Serial monogamous partners' refers to people who had at least 2 serial monogamous sex partners in the last year; 'Concurrent partners' refers to respondents who had at least 2 concurrent (overlapping) partners in the last year before the interview; 'R. does not remember if these partners were concurrent or not' refers to those respondents who do not know/remember if they

had overlapping sexual relationships with more than one person; 'Unknown number of partners' refers to respondents who cannot remember about the number of sex partners in the last year before the interview;

'Not willing to have sex again with partner/no answer' refers to people who do not answer, do not know or who simply do not want to engage in sex again with their partner; this category is part of the 2495 sexually active respondents eligible to answer to the outcomes but who cannot be in the analytical sample due to missing information about continuation of current sexual relationship;

'Same sex relationships (official and unofficial)' refers to people who reported a same sex partner in the last year and to those in official same sex relationships (in registered same-sex civil partnerships and living with partner, surviving civil partner, and separated but still legally in same-sex civil partnerships); they are part of the 2495 sexually active in the last year with a monogamous partner; these respondents cannot be in the analytical sample since they have a same sex partner.

'Data inconsistency with respect to being sexually active in the past year' refers to people who reported elsewhere being sexually active in the past year but as having their most recent sexual intercourse with their monogamous partner more than 1 year before the interview; they are part of the 2495 sexually active individuals in the past year with a monogamous partner but are not part of the analytical sample because of this data inconsistency (Natsal-3 ask the outcomes to those whose most recent sexual intercourse was in the past year);

'No information about the start of relationship' refers to people who did not indicate the month and year of first sex with their partner; they are part of the 2495 sexually active individuals with a monogamous partner, but they cannot be in the analytical sample since there is missing information about the start of their relationship.

'Married, cohabiting, or LAT relationships but less than a year' refers to those whose sexual partner was a married, cohabiting or "steady" partner, but their relationship started within the year of interview; they cannot be in the analytical sample since they do not respect the Natsal-3 criteria to answer to the outcomes of interest.

'Casual sexual partnerships ongoing' refers to people in ongoing sexual relationships, such as 'we used to be in a steady relationship, but were not at that time', 'we had known each other for a while, but were not in a steady relationship', 'we had recently met', 'we had just met for the first time'; they are part of the 2495 sexually active participants but they cannot be in the analytical sample since their sex partner is not a married, cohabiting, or LAT partner;

'Data inconsistency' refers to 18 respondents who are legally married and living with their spouse but their most recent sexual intercourse was in a 'steady' (LAT) type of sexual relationship, and to 1 respondent who did not indicate his/her legal marital status but his/her most recent sexual intercourse was in a 'living in/married' type of sexual relationship; these individuals are not in the analytical sample because it was hard to match their legal relationship status with their most recent type of sexual relationship; 'Analytical sample' refers to the analytical sample in the chapter.

Table A.2: Distribution of the dependent variables in the analytical sample; Natsal-3 (2010-2011)

Dependent variables	weighted %
Emotional closeness during sex	
Not often	8.9
Most of the time	30.3
Always	60.4
Not answered	0.3
Compatibility in sexual interest	
Generally disagree	25.4
Neither agree or disagree	14.3
Agree	38.3
Agree strongly	21.6
Not answered	0.3
Compatibility in sexual preferences	
Generally disagree	8.2
Neither agree or disagree	13.4
Agree	52.6
Agree strongly	25.4
Not answered	0.3
Relationship satisfaction	
1. Very unhappy	7.8
2	7.7
3	7.1
4	3.6
5	8.6
6	20.4
7. Very happy	44.5
Not answered	0.3
Total	100

Notes: Natsal-3, own computations, weighted percentages.

Table A.3: Distribution of independent variable by gender; Natsal-3 (2010-2011)

Variables	Female	Male	Total
Partnership type			
Marrieds	69.0	71.0	70.0
Cohabitors	16.8	18.1	17.4
LAT	14.2	10.9	12.6
Age groups			
16-29	19.3	15.2	17.3
30-39	23.4	24.1	23.7
40-49	25.4	24.9	25.2
50-59	18.9	18.8	18.8
60+	13.0	17.0	14.9
Relationship duration (weighted mean)	(17.2)	(16.4)	(16.7)
No. of natural children			
0	22.0	29.4	25.7
1	17.2	16.8	17.0
2	36.2	32.3	34.3
3+	24.1	21.1	22.6
Not answered	0.5	0.4	0.4
Health and disability problems affecting sexual activity or enjoyment in the past year			
No	80.8	84.3	82.6
Yes	19.0	15.6	17.4
Not answered	0.1	0.1	0.1
Attempt sex without respondent 's will			
No	79.3	96.2	87.7
Yes	20.7	3.8	12.3
No. of sex partners in life			
1	23.8	14.5	19.2
2	11.3	8.4	9.9
3-4	20.0	15.6	17.8
5+	44.4	61.1	52.6
Not answered	0.5	0.4	0.4
Educational attainment			
Degree level qualification	29.8	32.7	31.2
Higher education/A-level/equivalent	24.2	30.6	27.4
GCSE, O-level/equivalent/other	36.4	29.1	32.8
None	9.4	7.5	8.4
Not answered	0.2	0.1	0.2
N (weighted)	3907	3811	7718
N (unweighted)	3985	2587	6572
Total	100	100	100

Notes: Natsal-3, own computations; weighted percentages and means.

Table A.4: Distribution of independent variables by partnership type; Natsal-3 (2010-2011)

	Partnership type		
	Marrieds	**Cohabitors**	**LATs**
Age groups			
16-29	6.3	37.7	50.1
30-39	24.1	29.7	13.7
40-49	28.5	18.3	16.2
50-59	22.3	9.0	13.0
60+	18.7	5.4	7.0
Gender			
Female	49.9	48.7	57.1
Male	50.1	51.3	42.9
Relationship duration (weighted mean)	(21.0)	(8.2)	(5.4)
No. of natural children			
0	15.3	44.8	56.9
1	16.6	21.2	13.5
2	40.9	21.5	14.7
3+	26.8	12.3	14.1
Not answered	0.4	0.2	0.8
Health and disability problems			
No	81.7	85.2	83.6
Yes	18.2	14.8	16.2
Not answered	0.1	0.0	0.2
No. of sexual partners in life (homosexual and heterosexuals)			
1	22.9	8.0	14.3
2	11.0	6.2	8.9
3-4	18.2	15.5	19.0
5+	47.6	69.7	57.1
Not answered	0.4	0.6	0.6
Attempts of sex without respondent's will			
No	89.0	85.3	83.4
Yes	11.0	14.7	16.6
Educational attainment			
Degree level qualification	32.6	29.5	26.2
Other higher and Advanced level	27.1	26.3	30.7
GCSE, O-level/equivalent/other	31.7	36.5	33.6
None	8.5	7.7	9.3
Not answered	0.2	0.0	0.2
N (weighted)	5403	1346	969
N (unweighted)	3386	1352	1384
Total	100	100	100

Notes: Natsal-3, own computations, weighted percentages and means.

Table A.5: Distribution of partnership type and gender by age groups; Natsal-3 (2010-2011)

	Age groups				
Variables	**16-29**	**30-39**	**40-49**	**50-59**	**60+**
Partnership type					
Marrieds	25.7	70.9	79.3	83.0	87.8
Cohabitors	3.08	21.8	12.6	8.3	6.3
LATs	36.3	7.2	8.1	8.7	5.9
Gender					
Female	56.6	49.8	51.1	50.7	44.0
Male	43.4	50.2	48.9	49.3	56.0
N (weighted)	1335	1832	1944	1453	1153
N (unweighted)	2123	1649	1161	852	787
Total	100	100	100	100	100

Notes: Natsal-3, own computations, weighted percentages.

Table A.6: Correlation matrix between the dependent variables in chapter 2; Natsal-3 (2010-2011)

	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
Emotional closeness	1			
Compatibility in sexual interest	0.34 (0.000)	1		
Compatibility in sexual preferences	0.35 (0.000)	0.51 (0.000)	1	
Relationship happiness	0.23 (0.000)	0.16 (0.000)	0.17 (0.000)	1

Notes: Natsal-3, own computations; Pearson correlation coefficients are calculated to see how related the variables are. In this specific case. the ordinal response categories of variables are considered as continuous. The highest correlation is between the pairs of variables compatibility in sexual interest and sexual preferences. This stronger correlation is somehow expected since these items reflect an overall measure of sexual compatibility. However, since this correlation is not extremely high, these two items are treated as separate indicators in the chapter; correlations estimated with survey weights.

A.2 Other statistical approaches

Table A.7: Relative risk ratios (RRR) from multinomial regressions on emotional closeness and relationship happiness, females

Females

Multinomial Regression		**Multinomial Regression**
M1		**M2**
Emotional closeness		**Relationship happiness**
Most of the time vs. Not often		**Moderate vs. Low**
	RRR	**RRR**
Partnership type (ref. Marrieds)		
Cohabitors	1.13	0.90
LATs	0.85	1.62*
Age groups (ref. 16-29)		
30-39	0.88	1.35
40-49	0.77	1.28
50-59	0.94	0.97
60+	1.38	0.86
Relationship duration	1.01	1.01
No. of natural children (ref. 0)		
1	0.97	1.10
2	0.87	1.08
3+	0.94	0.95
Health and disability problems (ref. No)		
Yes	0.71*	1.59**
No. of sexual partners in life		
2	0.77	1.03
3-4	0.90	1.07
5+	0.79	1.42
Attempt sex without respondent's will		
Yes	0.60***	1.10
Educational attainment (ref. None)		
Degree level qualification	1.44	1.52
Other higher and Advanced level	1.52	0.99
GCSE, O-level/equivalent/other	1.18	1.46
Emotional closeness		**Relationship happiness**
Always vs. Not often		**High vs. Low**
Partnership type (ref. Marrieds)		
Cohabitors	0.92	0.55***
LATs	0.68*	0.68*
Age groups (ref. 16-29)		
30-39	0.78	1.12
40-49	0.73	0.83
50-59	1.30	0.84
60+	2.74**	0.81

Females

Multinomial Regression		Multinomial Regression
M1		**M2**
Emotional closeness		**Relationship happiness**
Relationship duration	0.96***	0.99
No. of natural children (ref. 0)		
1	0.67	0.69*
2	0.71	0.74
3+	0.77	0.65*
Health and disability problems (ref. No)		
Yes	0.54***	1.03
No. of sexual partners in life		
2	0.71	0.90
3-4	0.63*	0.85
5+	0.59*	0.97
Attempt sex without respondent's will		
Yes	0.46***	0.88
Educational attainment (ref. None)		
Degree level qualification	1.06	1.36
Other higher and Advanced level	1.37	1.04
GCSE, O-level/equivalent/other	0.76	1.25
N	3940	3940

Notes: NATSAL-3 data, own computations; weighted data; *** p < 0.001, ** p < 0.01, * p < 0.05;

Model includes: partnership type, age groups; relationship duration, number of children, respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment;

All dependent variables are grouped in 3 response categories and the reference category is the lowest level on the Likert response scale; For emotional closeness the low frequency categories "not very often", "hardly ever" and "sometimes" are collapsed into "not often". Therefore, the response categories for emotional closeness are "not often", "most of the time" and "always". Relationship happiness is collapsed into three categories: "generally happy" (6, 7) "moderate happy" (3-5), "generally unhappy" (1, 2). The results are presented in relative risk ratios for both outcomes; N: the number of subpopulation analysed (females).

Table A.8: Relative risk ratios (RRR) from multinomial regressions on compatibility in sexual interest and sexual preferences, females

Females

Multinomial Regression		**Multinomial Regression**
M3		**M4**
Compatibility in sexual interest		**Compatibility in sexual preferences**
Neither agree or disagree vs. Mostly disagree		**Neither agree or disagree vs. Mostly disagree**
	RRR	**RRR**
Partnership type (ref. Marrieds)		
Cohabitors	1.31	1.51
LATs	1.25	1.65
Age groups (ref. 16-29)		
30-39	0.96	0.84
40-49	1.01	0.48*
50-59	1.21	0.57
60+	0.97	0.45
Relationship duration	1.02	1.03**
No. of natural children (ref. 0)		
1	1.19	0.78
2	0.95	0.89
3+	1.03	1.00
Health and disability problems (ref. No)		
Yes	0.66**	0.91
No. of sexual partners in life		
2	0.71	0.89
03-Apr	0.75	1.04
5+	0.61*	1.15
Attempt sex without respondent's will		
Yes	0.81	0.72
Educational attainment (ref. None)		
Degree level qualification	0.78	1.65
Other higher and Advanced level	0.84	1.42
GCSE, O-level/equivalent/other	1.47	1.70
Mostly agree vs. Mostly disagree		**Mostly agree vs. Mostly disagree**
Partnership type (ref. Marrieds)		
Cohabitors	1.08	1.28
LATs	1.51**	1.27
Age groups (ref. 16-29)		
30-39	0.95	1.04
40-49	0.99	0.70
50-59	1.86***	0.98
60+	2.30**	1.06
Relationship duration	0.98**	1.00

Appendix A

Females

Multinomial Regression		Multinomial Regression
M3		**M4**
Compatibility in sexual interest		**Compatibility in sexual preferences**
No. of natural children (ref. 0)		
1	0.80	0.63*
2	0.79	0.80
3+	0.89	0.88
Health and disability problems (ref. No)		
Yes	0.41***	0.61**
No. of sexual partners in life		
2	0.59**	1.10
3-4	0.56***	1.34
5+	0.47***	1.22
Attempt sex without respondent's will		
Yes	0.57***	0.48***
Educational attainment (ref. None)		
Degree level qualification	0.46***	1.04
Other higher and Advanced level	0.53***	1.01
GCSE, O-level/equivalent/other	0.79	1.03
N	3941	3940

Notes: NATSAL-3 data, own computations; weighted data; *** p < 0.001, ** p < 0.01, * p < 0.05;

Model includes: partnership type, age groups; relationship duration, number of children, respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment;

All dependent variables are grouped in 3 response categories and the reference category is the lowest level on the Likert response scale; The compatibility in sexual preferences and sexual interest have the original response categories of "strongly disagree" and "disagree" collapsed into "generally disagree", and the response options "agree" and "agree strongly" in "generally agree". Therefore, these two outcomes have the following response categories: "generally disagree", "neither agree or disagree" and "generally agree"; The results are presented in relative risk ratios for both outcomes; N: the number of subpopulation analysed (females).

Table A.9: Relative risk ratios (RRR) from multinomial regressions on emotional closeness and relationship happiness, males

Males

Multinomial Regression		**Multinomial Regression**
M1		**M2**
Emotional closeness		**Relationship happiness**
Most of the time vs. Not often		**Moderate happy vs. Low**
	RRR	**RRR**
Partnership type (ref. Marrieds)		
Cohabitors	0.84	1.58
LATs	0.74	1.80*
Age groups (ref. 16-29)		
30-39	1.05	1.38
40-49	1.29	1.13
50-59	2.13*	0.72
60+	3.36*	0.53
Relationship duration	0.98	1.01
No. of natural children (ref. 0)		
1	1.27	1.15
2	0.90	1.14
3+	0.75	1.20
Health and disability problems (ref. No)		
Yes	0.93	1.96**
No. of sexual partners in life		
2	0.60	1.27
3-4	0.88	1.32
5+	0.71	1.27
Attempt sex without respondent's will		
Yes	0.99	0.63
Educational attainment (ref. None)		
Degree level qualification	0.87	1.02
Other higher and Advanced level	0.96	1.14
GCSE, O-level/equivalent/other	0.78	0.91
Emotional closeness		**Relationship happiness**
Always vs. Not often		**High vs. Low**
Partnership type (ref. Marrieds)		
Cohabitors	0.76	1.07
LATs	0.84	0.75
Age groups (ref. 16-29)		
30-39	0.73	1.01
40-49	1.07	0.83
50-59	1.32	0.61*
60+	2.84*	0.63
Relationship duration	0.98	1.01

Appendix A

Males

Multinomial Regression		**Multinomial Regression**
M1		**M2**
Emotional closeness		**Relationship happiness**
No. of natural children (ref. 0)		
1	1.78*	1.08
2	0.97	1.06
3+	0.83	0.95
Health and disability problems (ref. No)		
Yes	0.75	0.98
No. of sexual partners in life		
2	0.51	1.20
3-4	0.67	0.82
5+	0.50*	0.79
Attempt sex without respondent's will		
Yes	0.83	0.60
Educational attainment (ref. None)		
Degree level qualification	0.66	0.84
Other higher and Advanced level	0.76	0.88
GCSE, O-level/equivalent/other	0.70	0.72
N	2561	2562

Notes: Natsal-3, own computations; weighted data; *** p < 0.001, ** p < 0.01, * p < 0.05;

Model includes: partnership type, age groups; relationship duration, number of children, respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment;

All dependent variables are grouped in 3 response categories and the reference category is the lowest level on the Likert response scale; For emotional closeness the low frequency categories "not very often", "hardly ever" and "sometimes" are collapsed into "not often". Therefore, the response categories for emotional closeness are "not often", "most of the time" and "always". Relationship happiness is collapsed into three categories: "generally happy" (6, 7) "moderate happy" (3-5), "generally unhappy" (1, 2). The results are presented in relative risk ratios for both outcomes; N: the number of subpopulation analysed (males).

Table A.10: Relative risk ratios (RRR) from multinomial regressions on compatibility in sexual interest and preferences, males

Males

Multinomial Regression		**Multinomial Regression**
M3		**M4**
Compatibility in sexual interest		**Compatibility in sexual preferences**
Neither agree or disagree vs. Mostly disagree		**Neither agree or disagree vs. Mostly disagree**
	RRR	**RRR**
Partnership type (ref. Marrieds)		
Cohabitors	0.94	0.68
LATs	1.34	0.72
Age groups (ref. 16-29)		
30-39	1.39	1.26
40-49	1.75*	1.43
50-59	1.72	1.61
60+	3.65***	2.04
Relationship duration	0.99	0.98
No. of natural children (ref. 0)		
1	1.06	0.69
2	0.84	0.86
3+	0.98	1.09
Health and disability problems (ref. No)		
Yes	0.97	1.45
No. of sexual partners in life		
2	0.97	0.58
3-4	1.04	1.00
5+	0.73	0.87
Attempt sex without respondent's will		
Yes	0.56	0.71
Educational attainment (ref. None)		
Degree level qualification	0.53	0.95
Other higher and Advanced level	0.75	0.79
GCSE, O-level/equivalent/other	0.91	0.82
Mostly agree vs. Mostly disagree		**Mostly agree vs. Mostly disagree**
Partnership type (ref. Marrieds)		
Cohabitors	0.99	0.89
LATs	2.73***	1.19
Age groups (ref. 16-29)		
30-39	1.22	1.03
40-49	1.22	1.47
50-59	1.82**	1.84
60+	3.74***	2.55*
Relationship duration	0.98**	0.97*

Appendix A

Males

Multinomial Regression M3 Compatibility in sexual interest		Multinomial Regression M4 Compatibility in sexual preferences
No. of natural children (ref. 0)		
1	1.04	1.04
2	0.76	0.90
3+	0.73	1.05
Health and disability problems (ref. No)		
Yes	0.64**	0.95
No. of sexual partners in life		
2	0.72	0.47*
3-4	0.66	0.73
5+	0.59**	0.60*
Attempt sex without respondent's will		
Yes	0.68	0.71
Educational attainment (ref. None)		0.67
Degree level qualification	0.40***	0.59
Other higher and Advanced level	0.71	0.75
GCSE, O-level/equivalent/other	0.69	0.69
N	2561	2561

Notes: Natsal-3, own computations; weighted data; *** p < 0.001, ** p <0 .01, * p < 0.05;

Model includes: partnership type, age groups; relationship duration, number of children, respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment;

All dependent variables are grouped in 3 response categories and the reference category is the lowest level on the Likert response scale; The compatibility in sexual preferences and sexual interest have the original response categories of "strongly disagree" and "disagree" collapsed into "generally disagree", and the response options "agree" and "agree strongly" in "generally agree". Therefore, these two outcomes have the following response categories: "generally disagree", "neither agree or disagree" and "generally agree. The results are presented in relative risk ratios for both outcomes; N: the number of subpopulation analysed (males).

A.3 Interaction effects

Table A.11: Odds ratios from proportional odds models on sexual intimacy and relationship happiness. Models with interaction terms between gender and partnership type

All sample	Proportional Odds Model **Emotional closeness**	Proportional Odds Model **Compatibility in sexual interest**	Proportional Odds Model **Compatibility in sexual preferences**	Proportional Odds Model **Relationship Happiness**
Variables	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	1.05	1.03	0.95	0.64***
LATs	1.01	1.40**	0.97	0.60***
Gender (Female)				
Male	1.33***	0.98	0.67***	1.10
Age groups (ref. 16-29)				
30-39	0.75***	0.98	0.95	0.89+
40-49	0.82+	1.05	1.17+	0.78**
50-59	0.96	1.56***	1.34**	0.81+
60+	1.47*	2.01***	1.55***	0.94
Relationship duration	0.98***	0.98***	0.98***	0.99**
Number of natural children (ref. 0)				
1	1.03	0.9	1.01	0.87+
2	0.94	0.85*	0.98	0.85*
3+	0.94	0.9	1.01	0.79**
Health and disability problems (ref. No)				
Yes	0.74***	0.56***	0.72***	0.82**
No. of sexual partners in life (ref. 1)				
2	0.82+	0.75**	0.89	0.88
3-4	0.74**	0.69***	0.93	0.73**
5+	0.69***	0.66***	0.87+	0.73***
Attempt sex without respondent's will (ref. No)				
Yes	0.68***	0.68***	0.81*	0.82*
Educational attainment (ref. None)				
Degree level qualification	0.82+	0.54***	0.75**	0.77*
Other higher and Advanced level	0.96	0.73**	0.88	0.80+
GCSE, O-level/equivalent/other	0.94	0.82*	0.92	0.82

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All sample	Proportional Odds Model **Emotional closeness**	Proportional Odds Model **Compatibility in sexual interest**	Proportional Odds Model **Compatibility in sexual preferences**	Proportional Odds Model **Relationship Happiness**
Variables	Model 1	Model 2	Model 3	Model 4
Interaction terms				
Cohabitors*Male	0.69*	0.98	1.06	1.15
LATs*Male	0.78	1.46**	1.49**	0.85
P-value Wald test	0.024	0.018	0.025	0.154
N	6501	6502	6501	6502

Notes: Natsal-3, own computations, weighted results; *** p < 0.001, ** p < 0.01, * p < 0.05; The results are presented in odds ratios;

Model 1 includes: partnership type, age groups, relationship duration, number of children, respondent's health and disability status in the last year, number of sexual partners (heterosexual and homosexual) in life, if someone attempted sex without respondent's will, educational attainment; Model 2 adds to Model 1 the interaction term between partnership type and gender;

P value is the probability value of the Wald test for the overall interaction effect;

POM: proportional odds model; N the number of cases.

A.4 Sensitivity analysis

Table A.12: Odds ratios from proportional odds regression models for key independent variables with response categories switched

	Proportional Odds Model (POM)			
Key variables	**Emotional closeness**	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
Females				
Partnership type (ref. Cohabiting)				
Marrieds	1.15	0.97	1.11	1.65***
LAT	0.88	1.33**	1.02	0.94
N	3940	3941	3940	3940
Males				
Partnership type (ref. Cohabiting)				
Marrieds	1.16	1.00	0.93	1.27[a]
LAT	1.20	2.11***	1.42*	0.69**
N	2651	2651	2651	2652

Notes: NATSAL-3 data, own computations; weighted results; *** p < 0.001, ** p < 0.01, * p < 0.05; a = 0.051; The results are presented in odds ratios; Results net of other covariates; N – number of cases.

Table A.13: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for females; relationship duration is grouped

Females	*Proportional Odds Models (POM)*			
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
Variables	M1	M2	M3	M4
Partnership type (ref. Marrieds)				
Cohabitors	0.92	1.02	0.92	0.62***
LATs	0.79	1.24	0.9	0.61***
Age groups (ref. 16-29)				
30-39	0.95	1.10	1.14	0.96
40-49	0.84	1.11	1.14	0.75**
50-59	1.03	1.56***	1.16	0.74*
60+	1.16	1.38*	0.97	0.73*
Relationship duration (ref. 1-3 yrs.)				
4-6 yrs.	0.80	0.75*	0.82	1.08
7-9 yrs.	0.59***	0.57***	0.57***	1.12
>9 yrs.	0.46***	0.45***	0.54***	0.92
No. of natural children (ref. 0)				
1	0.73**	0.82	0.83	0.73**
2	0.80*	0.88	0.97	0.74**
3+	0.83	1.02	1.06	0.70**
Health and disability problems (ref. No)				
Yes	0.67***	0.46***	0.68***	0.86
No. of sexual partners in life				
2	0.95	0.81	1.11	0.88
3-4	0.82	0.77**	1.16	0.87
5+	0.85	0.70***	1.14	0.83
Attempt sex without respondent's will				
Yes	0.65***	0.66***	0.78*	0.85*
Educational attainment (ref. None)				
Degree level qualification	0.86	0.59***	0.84	0.96
Other higher and Advanced level	1.12	0.70**	1.01	0.91
GCSE, O-level/equivalent/other	1.01	0.86	0.93	0.94
N	3940	3941	3940	3940

Notes: Natsal-3, own computations; weighted results; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; The results are presented in odds ratios;

In these models relationship duration is grouped; N- number of cases.

Table A.14: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for males; relationship duration is grouped

Males		*Proportional Odds Models (POM)*		
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship happiness**
Variables	M1	M2	M3	M4
Partnership type (ref. Marrieds)				
Cohabitors	0.83	0.94	1.03	0.77*
LATs	0.96	1.88***	1.43*	0.52***
Age groups (ref. 16-29)				
30-39	0.73*	1.11	0.95	0.88
40-49	0.93	1.21	1.31	0.87
50-59	0.82	1.46*	1.29	0.85
60+	1.21	1.88***	1.35	0.98
Relationship duration (ref. 1-3 yrs)				
4-6 yrs.	0.79	0.69*	0.77	0.87
7-9 yrs.	0.86	0.65*	0.63*	1.02
>9 yrs.	0.80	0.46***	0.54***	0.73
No. of natural children (ref. 0)				
1	1.49**	1.05	1.29*	1.04
2	1.06	0.87	1.01	0.95
3+	1.02	0.80	0.97	0.87
Health and disability problems (ref. No)				
Yes	0.80	0.67***	0.72**	1.04
No. of sexual partners in life				
2	0.73	0.77	0.72	0.89
3-4	0.73	0.73*	0.83	0.61**
5+	0.64**	0.76*	0.79*	0.65**
Attempt sex without respondent's will				
Yes	0.85	0.85	0.96	0.75
Educational attainment (ref. None)				
Degree level qualification	0.75	0.51***	0.69*	0.57**
Other higher and Advanced level	0.79	0.77	0.78	0.65*
GCSE, O-level/equivalent/other	0.85	0.78	0.91	0.62*
N	2561	2561	2561	2562

Notes: Natsal-3, own computations; weighted results; *** p < 0.001, ** p < 0.01, * p < 0.05; The results are presented in odds ratios;

In these models relationship duration is grouped; N- number of cases.

Table A.15: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for females. The response categories for the outcomes are not collapsed

Females	*Proportional Odds Models (POM)*			
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.87	1.02	0.90	0.60***
LATs	0.77*	1.35**	0.92	0.57***
Age groups (ref. 16-29)				
30-39	0.85	0.97	1.04	0.95
40-49	0.87	1.03	1.13	0.77*
50-59	1.33	1.68***	1.35*	0.81
60+	2.10***	1.84***	1.41	0.88
Relationship duration	0.96***	0.98***	0.98***	0.99*
Number of natural children (ref. 0)				
1	0.70**	0.78*	0.80*	0.74**
2	0.78*	0.84	0.94	0.76**
3+	0.81	0.96	1.02	0.71**
Health and disability problems (ref. No)				
Yes	0.68***	0.46***	0.69***	0.86
No. of sexual partners in life (ref. 1)				
2	0.85	0.75*	1.04	0.86
3-4	0.70**	0.69***	1.03	0.83
5+	0.70**	0.63***	1.01	0.79*
Attempt sex without respondent's will (ref. No)				
Yes	0.62***	0.65***	0.76**	0.84*
Educational attainment (ref. None)				
Degree level qualification	0.78	0.56***	0.78	0.93
Other higher and Advanced level	1.06	0.68**	0.96	0.89
GCSE, O-level/equivalent/other	0.97	0.84	0.9	0.99
N	3940	3941	3940	3940

Notes: NATSAL-3 data, own computations; weighted results; *** p < 0.001, ** p < 0.01, * p < 0.05;

The response categories of the outcomes are not collapsed; The results are presented in odds ratios; N: the number of subpopulation analysed (females).

Table A.16: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for males. The response categories for the outcomes are not collapsed

Males	*Proportional Odds Models (POM)*			
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.86	1.01	1.07	0.79[a]
LATs	1.04	2.11***	1.53**	0.55***
Age groups (ref. 16-29)				
30-39	0.71*	0.99	0.87	0.84
40-49	0.88	1.08	1.22	0.81
50-59	0.77	1.46*	1.37	0.83
60+	1.15	2.26***	1.67**	1.01
Relationship duration	1.01	0.98***	0.98***	0.99
Number of natural children (ref. 0)				
1	1.47**	1.04	1.26	1.02
2	1.05	0.85	0.99	0.93
3+	1.01	0.78	0.96	0.85
Health and disability problems (ref. No)				
Yes	0.80	0.69**	0.75*	0.73**
No. of sexual partners in life (ref. 1)				
2	0.73	0.76	0.71	0.89
3-4	0.74	0.68**	0.78	0.59**
5+	0.64**	0.69**	0.72**	0.64**
Attempt sex without respondent's will (ref. No)				
Yes	0.85	0.80	0.93	0.75
Educational attainment (ref. None)				
Degree level qualification	0.75	0.52***	0.69*	0.58**
Other higher and Advanced level	0.79	0.78	0.78	0.65*
GCSE, O-level/equivalent/other	0.85	0.80	0.93	0.63*
N	2561	2561	2561	2562

Notes: NATSAL-3 data, own computations; weighted results; *** p < 0.001, ** p < 0.01, * p < 0.05, a= 0.051;

The response categories of the outcomes are not collapsed; The results are presented in odds ratios; POM: proportional odds model; N: the number of subpopulation analysed (males).

Table A.17: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for females. Unweighted results

Females	*Proportional Odds Models (POM)*			
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.88	0.96	0.88	0.67***
LATs	0.74**	1.24*	0.89	0.60***
Age groups (ref. 16-29)				
30-39	0.88	0.93	1.03	0.97
40-49	0.89	0.99	1.11	0.77**
50-59	1.51**	1.64***	1.27	0.79
60+	2.17***	1.84***	1.36	0.87
Relationship duration	0.97***	0.97***	0.98***	0.99
Number of natural children (ref. 0)				
1	0.76**	0.77**	0.81*	0.74***
2	0.73**	0.78**	0.92	0.75**
3+	0.80*	0.94	1.02	0.74**
Health and disability problems (ref. No)				
Yes	0.70***	0.48***	0.73***	0.85*
No. of sexual partners in life (ref. 1)				
2	0.77*	0.76*	0.97	0.79*
3-4	0.71**	0.76**	1.04	0.83
5+	0.71***	0.66***	1.03	0.71***
Attempt sex without respondent's will (ref. No)				
Yes	0.60***	0.69***	0.77***	0.83*
Educational attainment (ref. None)				
Degree level qualification	0.87	0.64***	0.83	1.03
Other higher and Advanced level	1.12	0.72**	0.94	0.98
GCSE, O-level/equivalent/other	1.03	0.94	0.96	1.04
Brant test	**0.002**	**0.000**	**0.000**	**0.000**
N	3940	3941	3940	3940

Notes: NATSAL-3 data, own computations; unweighted results; *** p < 0.001, ** p < 0.01, * p < 0.05; All the outcomes are grouped in order for the Brant test to be estimated; the results are similar to the results estimated on weighted data; the bold probability values from the Brant test indicate that the parallel lines assumption is violated; POM: proportional odds model; N the number of subpopulation analysed (females).

Table A.18: Odds ratios from proportional odds regression models for emotional closeness, compatibility in sexual interest, sexual preferences, and relationship happiness, for males. Unweighted results

Males	*Proportional Odds Models (POM)*			
	Emotional closeness	**Compatibility in sexual interest**	**Compatibility in sexual preferences**	**Relationship Happiness**
VARIABLES	Model 1	Model 2	Model 3	Model 4
Partnership type (ref. Marrieds)				
Cohabitors	0.86	0.91	1.06	0.74**
LATs	1.06	1.99***	1.58***	0.51***
Age groups (ref. 16-29)				
30-39	0.70**	0.91	0.90	0.83
40-49	0.92	0.98	1.12	0.77*
50-59	0.8	1.36*	1.29	0.83
60+	1.16	1.88***	1.40	0.95
Relationship duration	1.01	0.98***	0.99**	0.99
Number of natural children (ref. 0)				
1	1.50**	1.03	1.27*	0.99
2	1.01	0.85	1.04	0.89
3+	0.99	0.79	0.94	0.80
Health and disability problems (ref. No)				
Yes	0.87	0.67***	0.76*	0.74**
No. of sexual partners in life (ref. 1)				
2	0.60**	0.67*	0.72	0.99
3-4	0.80	0.72*	0.85	0.70**
5+	0.62***	0.72**	0.79*	0.72**
Attempt sex without respondent's will (ref. No)				
Yes	0.73	0.8	0.92	0.63*
Educational attainment (ref. None)				
Degree level qualification	0.68*	0.49***	0.65*	0.54***
Other higher and Advanced level	0.72	0.67*	0.71*	0.61**
GCSE, O-level/equivalent/other	0.80	0.73*	0.86	0.63**
Brant test	0.491	0.058	0.681	**0.000**
N	2561	2561	2561	2562

Notes: NATSAL-3 data, own computations; unweighted results; *** p < 0.001, ** p < 0.01, * p < 0.05; All the outcomes are grouped in order for the Brant test to be estimated; the results are similar to the results estimated on weighted data; the bold probability values from the Brant test indicate that the parallel lines assumption is violated; POM: proportional odds model; N: the number of subpopulation analysed (males).

Appendix B Chapter 3

B.1 Characteristics about the initial and analytical LAT samples

Table B.1: Wording of the item measuring LAT relationships in pairfam, wave 1, anchor questionnaire

Wording of the questions asked in pairfam in order to define LAT
'In the following, I'll ask you about intimate relationships
Do you currently have a partner in this sense?' Yes/No question
The questions asked in pairfam in order to define the relationship stages and spans in wave 1
Do you live together with [name partner (sd4n)] in the same dwelling? Yes/No
When did you and [name partner (sd4n)] start living together?
Did you ever live together with [name partner (sd4n)] before that time? Yes/No
When did you start living together with [name partner (sd4n)] back then?
When did you and [name partner (sd4n)] stop living together at this time?
Did you live with [name partner (sd4n)] at any other time?
What is your current marital status?
When did you get married to [name partner]?

Table B.2: Proportion of all respondents in wave 1 and in subsequent waves in the pairfam sample

Wave	**N in parifam**	**% of wave 1**
Wave 1 (2008/09)	12402	100%
Wave 2 (2009/10)	9069	73.1%
Wave 3 (2010/11)	7901	63.7%
Wave 4 (2011/12)	6999	56.4%
Wave 5 (2012/13)	6261	50.5%
Wave 6 (2013/14)	5696	45.9%
Wave 7 (2014/15)	5119	41.3%
Wave 8 (2015/16)	4727	38.1%
Wave 9 (2016/2017)	4424	35.7%

Notes: this table refers at all respondents in the pairfam sample (irrespective of relationship status) in wave 1 and subsequent waves; the column with the number of N is adapted from (Fuß *et al.*, 2017) and the column with the % of wave 1 is calculated by the author.

Table B.3: Proportion of all respondents attrited between t-1 and t (in the pairfam and demodiff samples)

	Pairfam sample	DemoDiff
Wave 1-2	22.7%	
Wave 2-3	14.2%	16.7%
Wave 3-4	11.4%	10.4%
Wave 4-5	10.7%	8.3%
Wave 5-6	9.7%	11.1%
Wave 6-7	10.0%	9.1%
Wave 7-8	7.7%	7.6%
Wave 8-9	6.7%	5.1%

Notes: Pairfam's calculations, Source: Brüdel et al., 2018, p. 24.

Attrition was quite high in wave 2 (22.7%) but dropped to 6.7% in wave 9, the last wave . About 1/5 of the initial sample did not make in the wave 2 and a further 14% did not make in wave 3. Due to the pairfam's non-monotonic design, pairfam suggests a corrected formula for attrition: the attrition rate is corrected by taking into consideration those who did not respond in a previous wave but came back in the subsequent wave (temporary dropouts). Hence, pairfam calculates the attrition rate for each wave only after the subsequent wave has been completed. In this way, the number of non-respondents from wave t who came back in wave t+1 is known. Only wave t non-respondents who do not participate in wave t+1 are "atriters" whereas those who return to the panel are termed "temporary dropouts" (Brüdel *et al.,* 2018).

The corrected attrition rate is calculated as

$$AR_t = \frac{attrt_t}{resp_{t-1}+tdrop_{t-1}},$$

'Where $attrt_t$ is the number of attriters, $resp_{t-1}$ is the number of respondents in wave t-1, and $tdrop_{t-1}$, is the number of tremporary dropouts, i.e. participants in wave t-2 who did not participate in wave t-1 (…). The denominator considers the temporary dropouts from wave t-1 because these are also "at risk" to attrite in wave t' (Brüderl *et al.,* 2018, p. 27).

Appendix B

Steps in deriving the analytical sample

The *total subsample* of all LAT relationships (homosexual and heterosexual) in the two birth cohorts resulted from the combination of the interview (anchor) datasets (waves 1-9) with the ready-to-use event history dataset (*biopart*). The *total subsample* of all LAT relationships started from 1102 individuals. However, after this dataset was investigated in terms of respondents' being in a same-sex relationship, dates of starting the partnership and item non-responses for the variables of interest, the subsample dropped to 921 LAT relationships. The reason for this drop is the exclusion of some respondents. For example, those in a same-sex relationship are not considered because their number is too low to be part of a separate category (24). Individuals in a LAT relationship in wave 1 who have cohabited or who have been married with their partner before the interview date are not considered (69) as they have already experienced a coresidential relationship with their partner. Other individuals who are found in the relationship history file as actually cohabiting in wave 1 (7) or whose LAT relationship started after the interview date (1) are not included either, being defined as reporting inconsistencies. LAT partnerships in which partners temporarily interrupted their relationships are not considered (8). Even though they could have been included since they identify themselves as being in a LAT relationship, I consider that imputing the item non-response for that break (person-months) with the value from the previous wave does not capture a real measure of the covariates. Respondents with item missing in wave 1 are also not considered (72) (see the Flow Diagram B.1 below). The *analytical sample* of this chapter consists of 921 LAT relationships, corresponding to 8884 person-months.

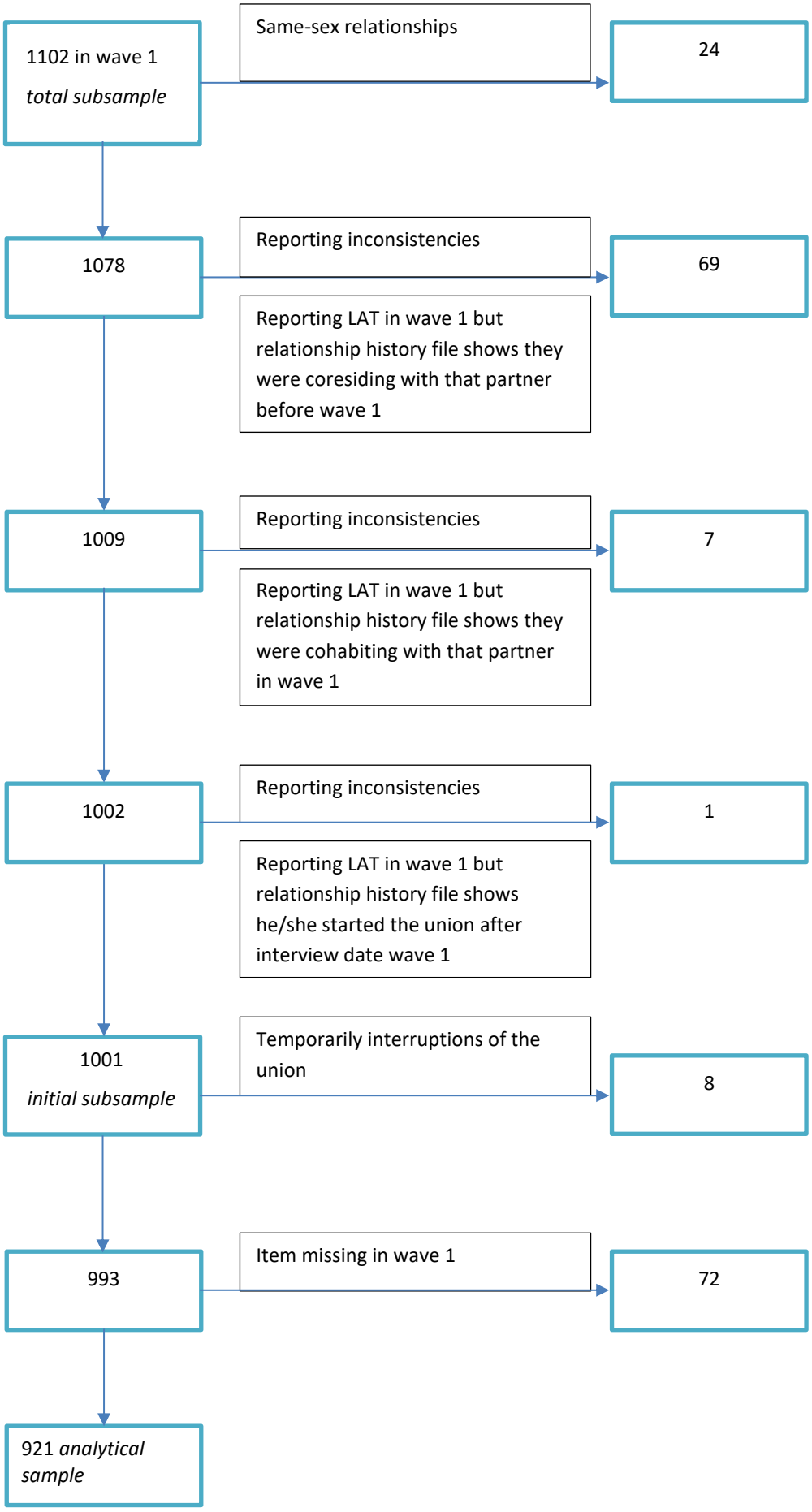

Figure B.1: Diagram showing the selection of the analytical sample of LATs; pairfam, waves 1-9; author's diagram

Table B.4: The pattern of response in the total subsample of LAT individuals in wave 1 and at least one subsequent wave; pairfam

LAT pattern of response in all 9 waves	**% unweighted**
Those who participated in wave 1 and 2 and attrited after wave 2	28.5
Attrited by wave 2	29.9
Full response	25.7
Temporary dropouts	15.9
Total	100

Notes: pairfam data, waves 1-9, own calculations; this table refers to the *total subsample* of 1102 LAT respondents in wave 1 and at least one subsequent wave; unweighted results; The group 'attrited by wave 2' refers to those who participated just in wave 1.

Table B.5: Comparison between those attrited by wave 2 and those who are not by gender, cohort, education, employment status, and mean years of education; total subsample of LAT individuals in wave 1 and at least one subsequent wave

	Those in wave 1 and in at least one subsequent wave		**Attrited by wave 2**		**Total**	
Variables	**Numbers**	**% or mean (SD)**	**Numbers**	**% or mean (SD)**	**Numbers**	**% or mean (SD)**
Gender						
Male	397	51.4	179	54.4	576	52.3
Female	376	48.6	150	45.6	526	47.7
Birth cohort						
1981-1983	577	74.6	261	79.3	838	76.0
1971-1973	196	25.4	68	20.7	264	23.9
Educational attainment						
Low	63	8.2	23	7.0	86	7.8
Medium	403	52.1	188	57.1	591	53.6
High	307	39.7	118	35.8	425	38.5
Employment status						
Not employed	251	32.5	99	30.1	350	31.8
Employed	522	67.5	230	69.9	752	68.2
Mean for years of education	-	13.06 (3.14)	-	12.96 (3.17)	-	13.03 (3.15)
Total	773	100	329	100	1102	100

Notes: pairfam data, waves 1-9; own's calculations; unweighted results; these calculations are made on the *total subsample* of LAT individuals in wave 1 followed across all the 9 waves, which consists of 1102 homosexual and heterosexual individuals in a LAT partnerships in the two birth cohorts;

N – number of observations; % percentages; SD. – standard deviation.

Transition estimates for all heterosexual individuals in LAT relationships prior to deleting any item non-responses (1001 respondents, the initial subsample of LAT individuals)

Cumulative incidence functions for those in LAT relationships to either household formation or separation was firstly calculated on an *initial subsample* of LAT relationships. This subsample is characterised by heterosexual LATs present in wave 1 and at least one subsequent wave (including those who indicated item non-response at the variables of interest; 1001 individuals). Figure B.2 below illustrates the proportion of all LAT relationships experiencing the transition to coresidence and separation. The cumulative incidences are estimated in the presence of competing risk events (i.e. the cumulative incidence of coresidence is estimated after accounting for the competing risk of separation). The estimates show that the transition to coresidence is the preferred destination state, which happens faster than separation: by approximately month 37, about 30% of LAT couples had experienced separation, about 55% had experienced coresidence and 15% were still in LAT.

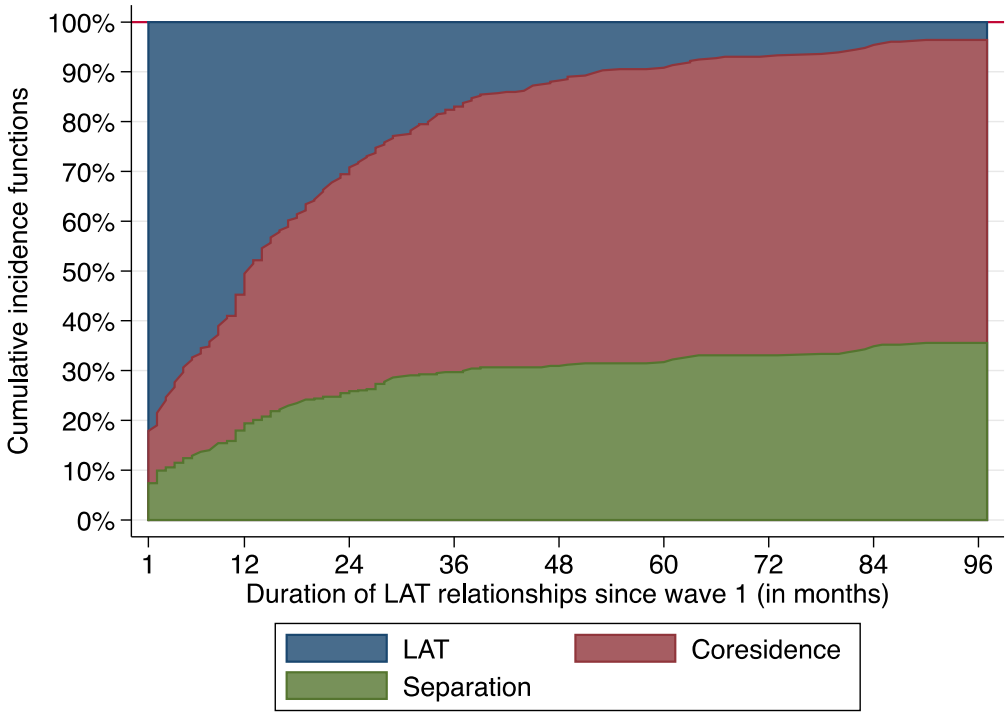

Figure B.2: Cumulative probability of entry into coresidence or separation for LAT relationships since wave 1, initial subsample of LATs; pairfam

This graph is calculated on all 9 waves, on *the initial LAT subsample* of 1001 respondents (unweighted sample). Because approximatively 15% of the LAT unions I wave 1 are still at risk after 36 months, I decided to look at the transitions within 3 years since wave 1.

Item non-response on dates of starting LAT relationships in the analytical sample (921 respondents)

Out of the analytical sample consisting of 921 LAT individuals, some (12 individuals) did not provide any dates for the beginning of their relationship (in the *biopart* dataset). I imported the dates for the beginning of relationships in two ways: a) for those cases where pairfam provides information about the number of months since the relationship had started (in the interview dataset in wave 1), I imputed the missing cases with the value of the difference between the date of interview from wave 1 and the number of months since the relationship had started (9 cases); b) for those cases where pairfam does not provide information about the number of months since the relationship had started, I just replaced the start of the LAT relationship duration with the date when wave 1 was collected; (3 cases); For this latter group, I acknowledge that the LAT relationships might have begun before wave 1, but they were certainly ongoing at the moment of interview in wave 1. Hence, replacing missing data for the start of the relationship with the date of interview from wave 1 was the most appropriate imputation method.

B.2 Descriptive statistics and relationships between key independent variables in wave 1

Table B.6: Descriptive statistics of the analytical sample at wave 1; pairfam

Variables	Frequency (unweighted)	Percent (unweighted)
Cohort		
1971-1973	199	21.6
1981-1983	722	78.4
Gender		
Male	485	52.7
Female	436	47.3
R education		
Low	62	6.7
Medium	492	53.4
High	367	39.9
Couple's combined labour force status		
Both employed	531	57.7
Both non-employed	91	9.9
One employed	299	32.5
Travel distance to partner		
< 1h	744	80.8
>1 h	177	19.2
R. has children		
No	745	80.9
Yes	176	19.1
Living in East Germany		
No	753	81.8
Yes	168	18.2
Urban conglomerate		
City Centre 500,000+	176	19.1
Periphery 500,000+	88	9.6
City Centre 50,000-500,000	169	18.4
Periphery 50,000-500,000	229	24.9
Region 20,000-50,000	145	15.7
Region < 20,000	114	12.4
Time in LAT before wave 1		
< 6 months	174	18.9
6-11 months	154	16.7
1-3 years	293	31.8
4+ years	300	32.6
Total	921	100

Notes: pairfam, wave 1, own computations; unweighted results.

Table B.7: Relationship status among all respondents in the birth cohort 1971-1973; pairfam, wave 1

Relationship status of those born in 1971-73 in wave 1	**Frequency (unweighted)**	**Percent (unweighted)**
Incomplete data	8	0.2
LAT	264	6.5
Single	695	17.1
Cohabiting	528	13.0
Married	2,559	63.1
Total	4054	100

Notes: pairfam, wave 1, own computations; unweighted sample.

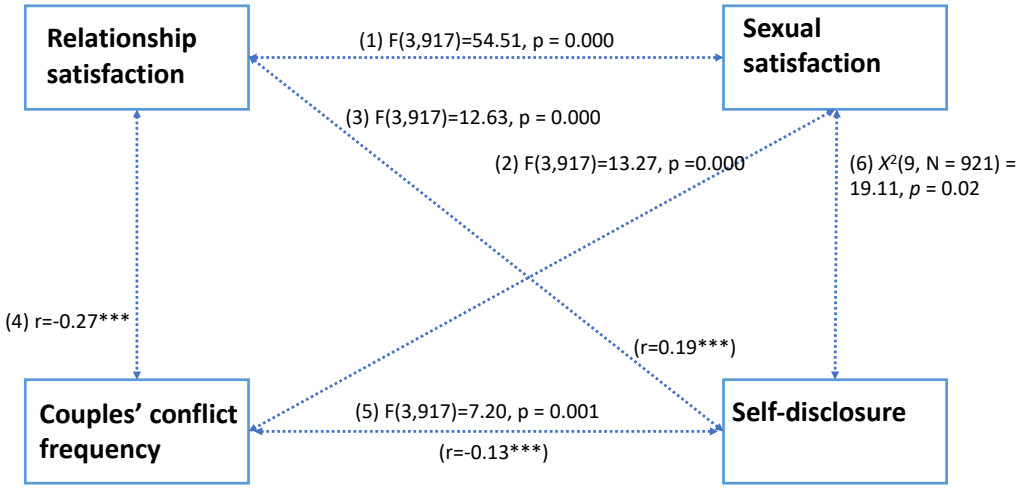

Figure B.3: The relationship between key independent variables at wave 1; analytical sample, pairfam

Notes: pairfam, own calculations on the variables measured at wave 1, unweighted results. The following tests were calculated according to the variables' levels of measurement: One-way ANOVA between 1) relationship satisfaction and sexual satisfaction; 2) couples' conflict frequency and sexual satisfaction 3) relationship satisfaction and self-disclosure; 5) couples' conflict frequency and self-disclosure.

Pearson correlation was estimated between 4) relationship satisfaction and couples' conflict frequency; A Chi-square test of association was estimated between 6) sexual satisfaction and self-disclosure.

Table B.8: Correlation matrix between key variables in chapter 3, at wave 1; analytical sample, pairfam

Variables	Sexual satisfaction	Self-disclosure	Relationship satisfaction	Couple's conflict frequency
Sexual satisfaction	1	-		
Self-disclosure	0.09 (0.005)	1	-	
Relationship satisfaction	0.33 (0.000)	0.2	1	-
Couple's conflict frequency	- 0.15 (0.000)	- 0.13 (0.000)	- 0.27 (0.000)	1

Notes: pairfam, own calculations on the variables measured at wave 1; unweighted results; p-values in parentheses; for ease of interpretation, I considered variables as metric variables measured on a continuous scale.

Table B.9: One-way analyses of variance (ANOVA) of relationship satisfaction and conflict by levels of sexual satisfaction and self-disclosure at wave 1; analytical sample, pairfam

Summary of relationship satisfaction							
Sexual satisfaction	**Mean**	**Standard deviation**	**Standard error (mean)**	**Min**	**Max**	**Frequency**	**P-value**
No response	7.93	2.55	0.33	0	10	59	0.000
Low	6.80	2.81	0.20	0	10	194	
Moderate	8.06	1.72	0.11	0	10	264	
High	8.97	1.44	0.07	0	10	404	
Total	8.18	2.12	0.07	0	10	921	

	Summary of couple's conflict frequency						
Sexual satisfaction	**Mean**	**Standard deviation**	**Standard error (mean)**	**Min**	**Max**	**Frequency**	**P-value**
No response	2.42	0.77	0.1	1	4	59	0.000
Low	2.62	0.77	0.06	1	4.5	194	
Moderate	2.56	0.67	0.04	1	4.5	264	
High	2.28	0.71	0.04	1	5	404	
Total	2.44	0.73	0.02	1	5	921	

	Summary of couple's conflict frequency						
Self-disclosure	**Mean**	**Standard deviation**	**Standard error (mean)**	**Min**	**Max**	**Frequency**	**P-value**
Not often	2.83	0.77	0.12	1.5	4	40	0.001
Sometimes	2.59	0.76	0.06	1	4.5	147	
Often	2.40	0.69	0.03	1	5	492	
Always	2.36	0.76	0.05	1	5	242	
Total	2.44	0.73	0.02	1	5	921	

	Summary of relationship satisfaction						
Self-disclosure	**Mean**	**Standard deviation**	**Standard error (mean)**	**Min**	**Max**	**Frequency**	**P-value**
Not often	7.00	2.29	0.36	0	10	40	0.000
Sometimes	7.74	2.13	0.18	0	10	147	
Often	8.13	2.20	0.10	0	10	492	
Always	8.75	1.75	0.11	0	10	242	
Total	8.18	2.12	0.07	0	10	921	

Notes: pairfam, own calculations on the variables measured at wave 1; unweighted data; the one-way analyses of variance show that there are statistically significant differences in the means of relationship satisfaction and couple's conflict frequency between at least two sexual satisfaction and self-disclosure groups.

(cont. Notes from Table B.9)

Tuckey post-hoc tests (results not shown, available upon request of author) show that the mean of relationship satisfaction is significantly higher in the high sexual satisfaction group (mean = 8.97) than in the groups with no response (mean = 7.93), low (mean = 6.80) and moderate sexual satisfaction (mean = 8.06). Also, those with high sexual satisfaction have significantly lower levels of couple's conflict frequency (mean = 2.28) than those with low (mean = 2.62) and moderate sexual satisfaction (mean = 2.56). Those who disclose 'always' (mean = 8.75) and 'often' (mean = 8.13) have significantly higher means of relationship satisfaction as compared to those who disclose 'not often' (mean = 7.0). Those who disclose 'always' have significantly higher means of relationship satisfaction than those who disclose 'sometimes' (mean = 7.74) and 'often' (mean = 8.13). The mean of couple's conflict frequency is significantly lower in the group of those who disclose 'always' (mean = 2.36) and 'often' (mean = 2.40) than in the group who disclose 'not often' (mean = 2.83) and 'sometimes' (mean = 2.59).

Table B.10: Bivariate analysis between sexual satisfaction and self-disclosure at wave 1; analytical sample, pairfam

	Sexual Satisfaction					
Self-disclosure	**No response**	**Low**	**Moderate**	**High**	**Total**	**p-value (Chi-Square)**
Not often	2.5	40.0	30.0	27.5	100	0.024
	1.7	8.3	4.6	2.7	4.3	
Sometimes	8.8	21.8	29.3	40.1	100	
	22.0	16.5	16.3	14.6	16.0	
Often	5.7	21.8	29.7	42.9	100	
	47.5	55.2	55.3	52.2	53.4	
Always	7.0	16.1	26.0	50.8	100	
	28.8	20.1	23.9	30.5	26.3	
Total	6.4	21.1	28.7	43.9	100	
	100	100	100	100	100	

Notes: pairfam, own computations at wave 1, unweighted data; among those who disclose 'not often' to their partner, most of them have low (40%) sexual satisfaction, and are followed by those with moderate (30%) levels of sexual satisfaction. Among those who disclose 'always', 'often' and 'sometimes' to their partner, most have high sexual satisfaction (50.8%, 42.9%, and 40.1%). Among those who report high levels of sexual satisfaction, majority disclose 'often' (52.2%) to their partner, followed by those who disclose 'always' to their partner (30.5%).

B.3 Sensitivity analysis

Table B.11: Comparison of fit statistics between a model with time in LAT relationships after wave 1 measured in yearly increments and a model with time measured in 6 months increments; analytical sample, pairfam

Fit statistic	Model with time after wave 1 in yearly increments	Model with time after wave 1 in 6 months increments	Difference in the fit statistics
AIC	4529	4513.2	15.8
BIC	4926.2	4952.9	-26.7

Notes: pairfam data, own computations; AIC – Akaike Information Criteria, BIC – Bayesian Information Criteria; The difference of 26.7 in BIC provides very strong support for the model where time in LAT after wave 1 is measured in yearly increments; models run on the analytical sample.

Table B.12: Summary of time in LAT relationships before wave 1; analytical sample, pairfam

Variable	Min.	Mean	Std. err.	P.25	Median	P.75	P.95	Max.	SD
Time in LAT before w1	1	32.4	1.19	7	20	46	101	424	36.15

Notes: pairfam data, own computations on the analytical sample at wave 1; min. – minimum month of LAT before wave 1; std.err – standard error of the mean; P.25 – the 25th percentile for the sample; P.75 – the 75th percentile for the sample; P.95 – the 95th percentile for the sample; max. – maximum month of being in a LAT relationship before wave 1; SD – standard deviation.

Table B.13: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transitions; The 'no response' category is excluded for the indicator sexual satisfaction

	Separation vs. LAT	Coresidence vs. LAT
Variables	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)		
13-24 months	0.52**	0.85
25-36 months	0.48**	0.89
Relationship satisfaction	0.92*	1.05
Sexual satisfaction (ref. Low)		
Moderate	0.59*	0.84
High	0.73	0.91
Self-disclosure frequency (ref. Not often)		
Sometimes	2.19+	3.19+
Often	1.07	2.50
Always	0.67	3.20+
Couple's conflict frequency	1.32*	0.80*
Cohort (ref. 1971-1973)	1.62*	1.22
Time in LAT before w1 (ref. 4+ years)		
< 6 months	2.73***	1.15
6-12 months	1.79*	1.75**
1-3 years	1.19	1.24
Gender (ref. Male)		
Female	1.08	1.20
R. education (ref. Low)		
Medium	1.17	0.75
High	1.32	0.97
Couple's combined labour force status (ref. Both employed)		
Both non-employed	0.78	0.85
One employed	0.84	0.91
Duration to partner (ref. < 1 h)		
>1 h	1.47*	0.92
Respondent has children (ref. no)		
1 or more children	1.66*	1.02
R living in East (ref. No)		
Yes	0.83	0.97
Urban conglomerate (ref. Region < 20.000)		
City Centre 500,000+	1.79*	1.26
Periphery 500,000+	0.70	1.04
City Centre 50,000-500,000	0.59+	0.92
Periphery 50,000-500,000	1.02	0.79
Region 20,000-50,000	0.85	0.91
N (person-months)	8536	8536

Notes: pairfam data; own calculations; unweighted results; R – respondent;

*** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10.

Table B.14: Average marginal effects (AME) from the competing risk discrete-time event-history analysis on LAT relationship transitions

	Separation vs. LAT	Coresidence vs. LAT
Variables	**AME**	**AME**
Duration after w1 (ref. < 13 months)		
13-24 months	-0.011***	-0.004
25-36 months	-0.012**	-0.005
Relationship satisfaction	-0.002*	0.002
Sexual satisfaction (ref. Low)		
No response	0.007	0.011
Moderate	-0.010*	-0.005
High	-0.007	-0.003
Self-disclosure (ref. Not often)		
Sometimes	0.021*	0.024*
Often	0.001	0.020*
Always	-0.007	0.031***
Couple's conflict frequency	0.005*	-0.007*
Cohort (ref. 1971-1973)		
1981-1983	0.008*	0.007
Time in LAT before w1 (ref. 4+ years)		
< 6 months	0.024***	0.002
< 12 months	0.009+	0.023**
1-3 years	0.002	0.007
Gender (ref. Male)		
Female	0.002	0.007
R.'s level of education (ref. Low)		
Medium	0.003	-0.006
High	0.003	0.002
Couple's combined labour force status (ref. Both employed)		
Both non-employed	-0.005	-0.006
One employed	-0.003	-0.001
Travel duration to partner (ref. < 1 h)		
>1 h	0.011*	-0.002
R. has children (ref. no)		
1 or more children	0.012+	0.001
Living in East Germany (ref. No)		
Yes	-0.004	0.001
Urban conglomerate (ref. Region < 20.000)		
City Centre 500,000+	0.017*	0.006
Periphery 500,000+	-0.006	0.002
City Centre 50,000-500,000	-0.008	-0.001
Periphery 50,000-500,000	0.001	-0.008
Region 20,000-50,000	-0.003	-0.005
N	8884	8884

Notes: pairfam data, own calculations; unweighted results; R.- respondent; ref. – reference category;

*** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10.

Table B.15: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transition to separation; Models with the independent effect of key variables

	Separation vs. LAT					
	M1	**M2**	**M3**	**M4**	**M5**	**M6**
Independent effect of each variable	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)						
13-24 months	0.52***	0.55**	0.57**	0.55**	0.55**	0.54**
25-36 months	0.58*	0.59*	0.54*	0.51*	0.51*	0.51*
Relationship satisfaction	0.87***	-	-	-	-	0.92*
Sexual satisfaction (ref. Low)						
No response	-	1.24	-	-	1.17	1.31
Moderate	-	0.53**	-	-	0.55**	0.60*
High	-	0.54**	-	-	0.63*	0.73
Self-disclosure (ref. Not often)						
Sometimes	-	-	1.64	-	1.95+	2.17+
Often	-	-	0.72	-	0.90	1.01
Always	-	-	0.44*	-	0.59	0.70
Couple's conflict frequency	-	-	-	1.42**	1.36**	1.27*
N	8884	8884	8884	8884	8884	8884

Notes: pairfam data, own calculations; unweighted results; R.- respondent; ref. – reference category; M1 contains just the relationship satisfaction and the covariates; M2 contains just the sexual satisfaction indicator and the covariates; M3 contains just the self-disclosure frequency indicator and the covariates; M4 contains just the couple's conflict frequency indicator and the covariates; M5 contains only the specific indicators of relationship satisfaction and the covariates and M6 contains all the key independent variables together with the covariates; In model 5, for the indicator self-disclosure, the statistically significant difference between 'always' and 'not often' loses its significance when either conflicts or sexual satisfaction are added. Models 5 and 6 show that self-disclosure has a weak effect on LAT individuals' decision to break-up;

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$, + $p < 0.10$.

Table B.16: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transition to coresidence; Models with the independent effect of key variables

	Coresidence vs. LAT					
	M1	**M2**	**M3**	**M4**	**M5**	**M6**
Independent effect of each variable	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)						
13-24 months	0.88	0.87	0.84	0.85	0.85	0.86
25-36 months	0.85	0.83	0.82	0.83	0.83	0.85
Relationship satisfaction	1.10**	-	-	-	-	1.05
Sexual satisfaction (ref. Low)						
No response	-	1.47	-	-	1.37	1.31
Moderate	-	0.92	-	-	0.88	0.84
High	-	1.11	-	-	0.97	0.90
Self-disclosure (ref. Not often)						
Sometimes	-	-	3.46*	-	3.07+	2.92+
Often	-	-	3.05+	-	2.69+	2.51
Always	-	-	4.29*	-	3.76*	3.42*
Couple's conflict frequency	-	-	-	0.74**	0.78**	0.81*
N	8884	8884	8884	8884	8884	8884

Notes: pairfam data, own calculations; unweighted results; R.- respondent; ref. – reference category; M1 contains just the relationship satisfaction and the covariates; M2 contains just the sexual satisfaction indicator and the covariates; M3 contains just the self-disclosure frequency indicator and the covariates; M4 contains just the couple's conflict frequency indicator and the covariates; M5 contains only the specific indicators of relationship satisfaction and the covariates and M6 contains all the key independent variables together with the covariates; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$, + $p < 0.10$.

Table B.17: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transition to separation; The global and each specific indicator for relationship satisfaction are estimated in a separate model

	Separation vs. LAT				
	M1	**M2**	**M3**	**M4**	**M5**
Rel. satisfaction together with one specific indicator	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)					
13-24 months	0.52***	0.53**	0.54**	0.53**	0.54**
25-36 months	0.58*	0.57*	0.52*	0.58*	0.51*
Relationship satisfaction	0.87***	0.89***	0.89***	0.89***	0.92*
Sexual satisfaction (ref. Low)					
No response	-	1.48	-	-	1.31
Moderate	-	0.61*	-	-	0.60*
High	-	0.70+	-	-	0.73
Self-disclosure (ref. Not often)					
Sometimes	-	-	2.05+	-	2.17+
Often	-	-	0.92	-	1.01
Always	-	-	0.62	-	0.70
Couple's conflict frequency	-	-	-	1.27*	1.27*
N	8884	8884	8884	8884	8884

Notes: pairfam data, own calculations; unweighted results; R.- respondent; ref. – reference category; M1 contains the relationship satisfaction and the covariates; M2 contains the relationship satisfaction and sexual satisfaction indicators and the covariates; this models shows the importance of sexual satisfaction in the presence of the overall relationship satisfaction in LATs' decision to break-up; M3 contains the relationship satisfaction and self-disclosure frequency indicators and the covariates, showing that self-disclosure is a weak indicator for LATs' decision to separate; M4 contains the relationship satisfaction and couple's conflict frequency indicators and the covariates; M5 contains all the key independent variables together with the covariates;

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.5$, + $p < 0.10$.

Table B.18: Relative risk ratios (RRR) from the competing risk discrete-time event-history analysis on LAT relationship transition to coresidence; The global and each specific indicator for relationship satisfaction are estimated in a separate model

	Coresidence vs. LAT				
	M1	**M2**	**M3**	**M4**	**M5**
Rel. satisfaction together with one specific indicator	**RRR**	**RRR**	**RRR**	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)					
13-24 months	0.88	0.89	0.86	0.88	0.86
25-36 months	0.85	0.86	0.84	0.86	0.85
Relationship satisfaction	1.10**	1.10**	1.07*	1.07+	1.05
Sexual satisfaction (ref. Low)					
No response	-	1.33	-	-	1.31
Moderate	-	0.84	-	-	0.84
High	-	0.93	-	-	0.90
Self-disclosure (ref. Not often)					
Sometimes	-	-	3.08+	-	2.92+
Often	-	-	2.64	-	2.51
Always	-	-	3.54*	-	3.42*
Couple's conflict frequency	-	-	-	0.79*	0.81*
N	8884	8884	8884	8884	8884

Notes: pairfam data, own calculations; unweighted results; R.- respondent; ref. – reference category; M1 contains the relationship satisfaction and the covariates; M2 contains the relationship satisfaction and sexual satisfaction indicators and the covariates; M3 contains the relationship satisfaction and self-disclosure frequency indicators and the covariates; M4 contains the relationship satisfaction and couple's conflict frequency indicators and the covariates; M5 contains all the key independent variables together with the covariates; Models 3-5 shows that self-disclosure and conflicts mediates the association between relationship satisfaction and LAT individuals' decision to move in together with their partner;

*** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10.

Model with complete case approach

Table B.19: Relative risk ratios (RRR) from a competing risk event-history model on complete cases

	Separation vs. LAT	Coresidence vs. LAT
Variables	**RRR**	**RRR**
Sexual satisfaction (ref. Low)		
No response	1.31	1.53
Moderate	0.56*	0.82
High	0.70	0.93
Relationship satisfaction	0.92*	1.03
Self-disclosure frequency (ref. Not often)		
Sometimes	2.26+	3.01+
Often	1.03	2.47
Always	0.77	3.73*
Conflict with partner - scale	1.30*	0.86
Cohort (ref. 1971-1973)		
1981-1983	1.78*	1.32
Duration after w1 (ref. < 13 months)		
13-24 months	0.51**	0.74+
25-36 months	0.31***	0.64+
Time in LAT before w1 (ref. 4+ years)		
< 6 months	2.82***	1.02
6- 12 months	1.66+	1.85***
1-3 years	1.15	1.26
Gender (ref. Male)		
Female	0.96	1.21
R education (ref. Low)		
Medium	2.43*	0.75
High	2.50*	0.97
Couple's combined labour force status (ref. Both employed)		
Both non-employed	0.74	0.78
One employed	0.88	0.99
Duration to partner (ref. < 1 h)		
>1 h	1.62*	0.89
Respondent has children (ref. no)		
1 or more children	1.99**	1.02
R living in East (ref. No)		
Yes	0.79	1.04
Urban conglomerate (ref. Region < 20.000)		
City Centre 500,000+	1.63+	1.32
Periphery 500,000+	0.58	1.04

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	Separation vs. LAT	Coresidence vs. LAT
Variables	**RRR**	**RRR**
City Centre 50,000-500,000	0.43*	1.04
Periphery 50,000-500,000	0.89	0.80
Region 20,000-50,000	0.65	0.94
Constant	0.01***	0.01***
N (person-months)	7277	7277
Log-likelihood	-1873.8	-1873.8
AIC	3859.7	3859.7

Notes: pairfam data, own computations; unweighted results;

*** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10; Model with complete case approach.

B.4 Interaction effects

Table B.20: Relative risk ratios (RRR) for the model with interaction terms between sexual satisfaction and gender

	Model with interaction effect between sexual satisfaction and gender	
	Separation vs. LAT	**Coresidence vs. LAT**
Variables	**RRR**	**RRR**
Duration after w1 (ref. < 13 months)		
13-24 months	0.55**	0.86
25-36 months	0.50*	0.87
Relationship satisfaction	0.92*	1.05
Sexual satisfaction (ref. Low)		
No response	1.02	0.99
Moderate	0.61+	0.89
High	0.58+	1.22
Self-disclosure frequency (ref. Not often)		
Sometimes	2.14+	2.82+
Often	0.99	2.49
Always	0.68	3.43*
Couple's conflict frequency	1.26*	0.82*
Cohort (ref. 1971-1973)		
1981-1983	1.65*	1.25
Time in LAT before w1 (ref. 4+ years)		
< 6 months	2.25***	0.91
6- 12 months	1.47	1.53*
1-3 years	0.87	0.82
Gender (ref. Male)		
Female	0.92	1.59+
R education (ref. Low)		
Medium	1.17	0.9
High	1.18	1.13
Couple's combined labour force status (ref. Both employed)		
Both non-employed	0.75	0.82
One employed	0.82	0.95
Duration to partner (ref. < 1 h)		
>1 h	1.61**	0.94
Respondent has children (ref. no)		
1 or more children	1.68*	1.06
R living in East (ref. No)		
Yes	0.85	0.96

	Model with interaction effect between sexual satisfaction and gender	
	Separation vs. LAT	**Coresidence vs. LAT**
Variables	**RRR**	**RRR**
Urban conglomerate (ref. Region < 20.000)		
City Centre 500,000+	1.89*	1.15
Periphery 500,000+	0.7	1.02
City Centre 50,000-500,000	0.63	0.95
Periphery 50,000-500,000	1.04	0.76
Region 20,000-50,000	0.87	0.84
Interaction terms		
No response*Female	1.64	1.58
Moderate*Female	0.94	0.89
High*Female	1.59	0.55+
Constant	0.02***	0.01***
N	8884	8884
p-value from Wald test	0.139	0.139
Log-likelihood	-2203.61	-2203.61
AIC	4531.23	4531.23

Notes: pairfam data, own computations; unweighted results;

*** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10;

p value is the probability value of the Wald test for the overall interaction effect between sexual satisfaction and gender, which is not significant at 5% confidence level. This statistic suggests that none of the interaction coefficients are significantly different than zero. Also, the inclusion of the interaction terms does not improve the model fit as the AIC statistic (4531.23) from this model is higher than the model without the interaction terms (Table 3.3, Model 3, AIC = 4529.04). However, according to the Log-likelihood goodness-of-fit-statistic, the model with the interaction term would be a better fit to the data, since its value (-2203.61) is slightly lower than the model without the interaction terms (Table 3.3, Model 3, Log-likelihood = -2208.52). Nonetheless, the difference in model fit is not statistically significant (LR = 9.81, p = 0.132; results not shown in the table, at request upon author). Guided by the Wald test for the overall interaction term and the goodness-of-fit statistics, I opted to show in the thesis the more parsimonious model (without the interaction effect).

B.5 Predicted probabilities for key independent variables on LAT outcomes

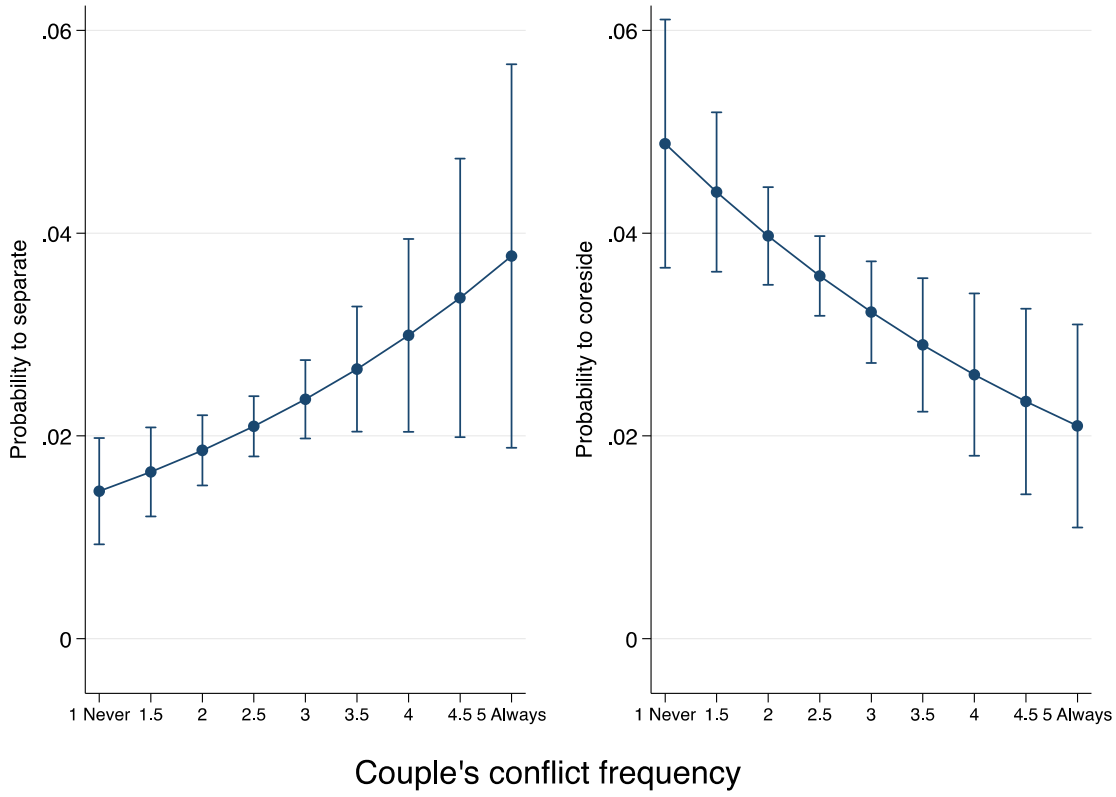

Figure B.4: The effect of couple's conflict frequency on LAT couples' probabilities to coreside or separate

Notes: pairfam, own computations, the continuous variables are held constant at their means and the categorical variables are held constant at baseline.

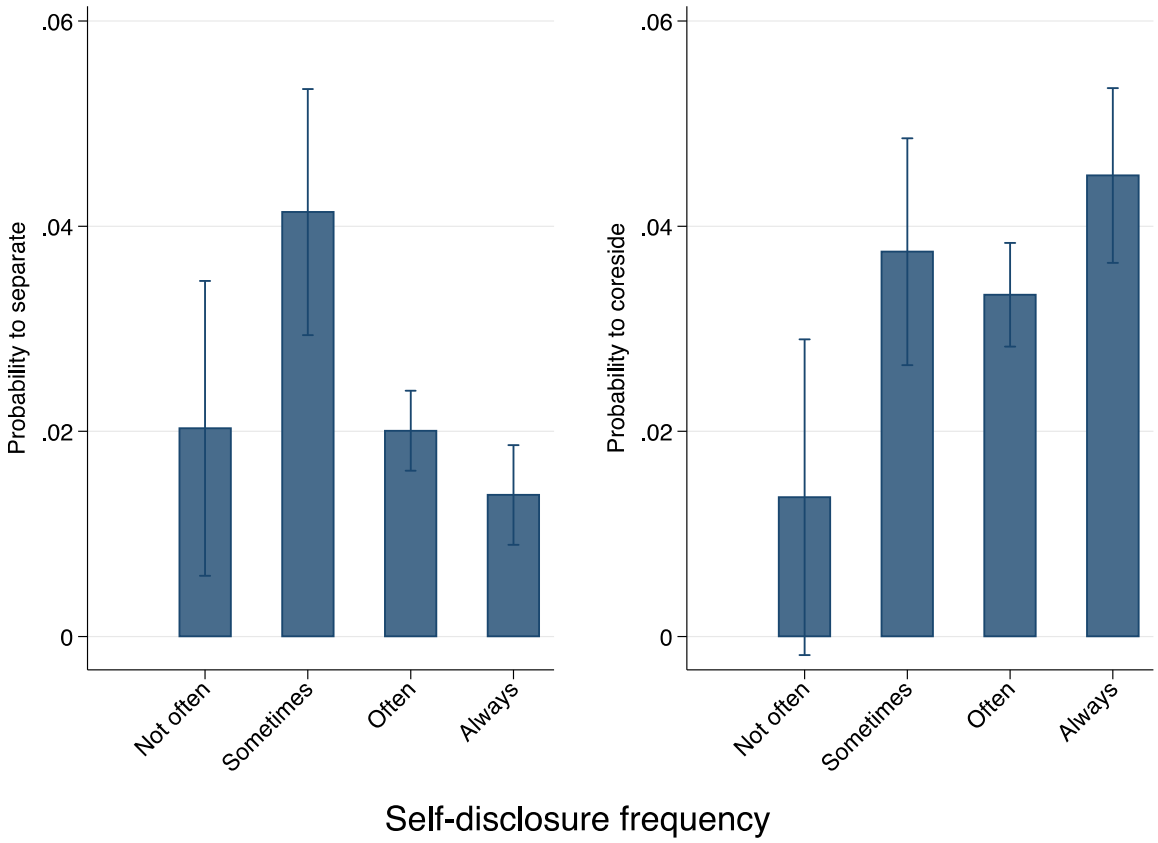

Figure B.5: The effect of self-disclosure frequency on LAT couples' probabilities to coreside and separate

Notes: pairfam, own computations, the continuous variables are held constant at their means and the categorical variables are held constant at baseline.

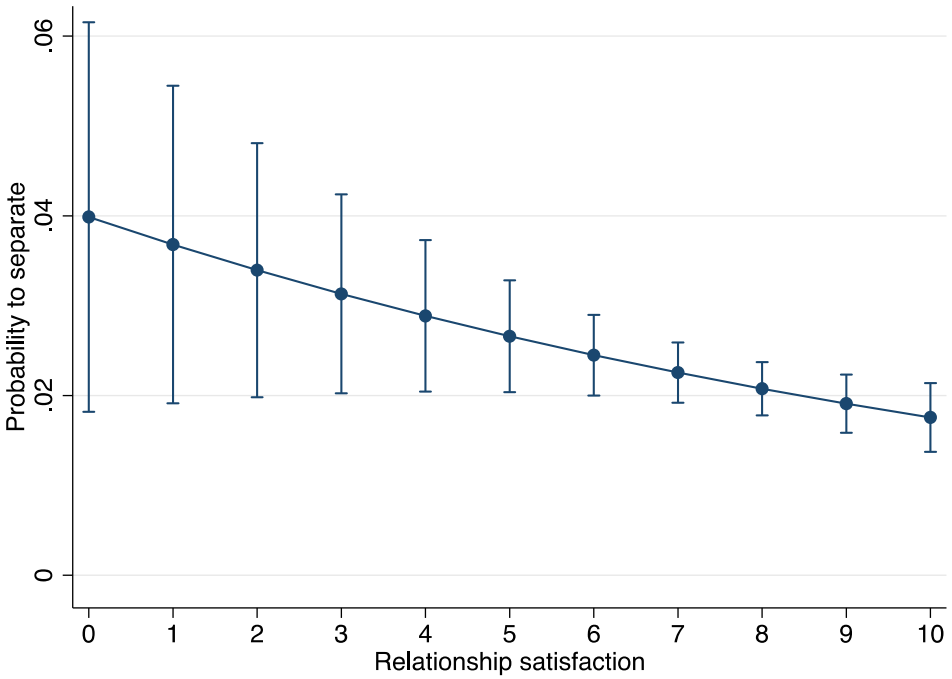

Figure B.6: The effect of relationship satisfaction on LAT couples' probability to separate

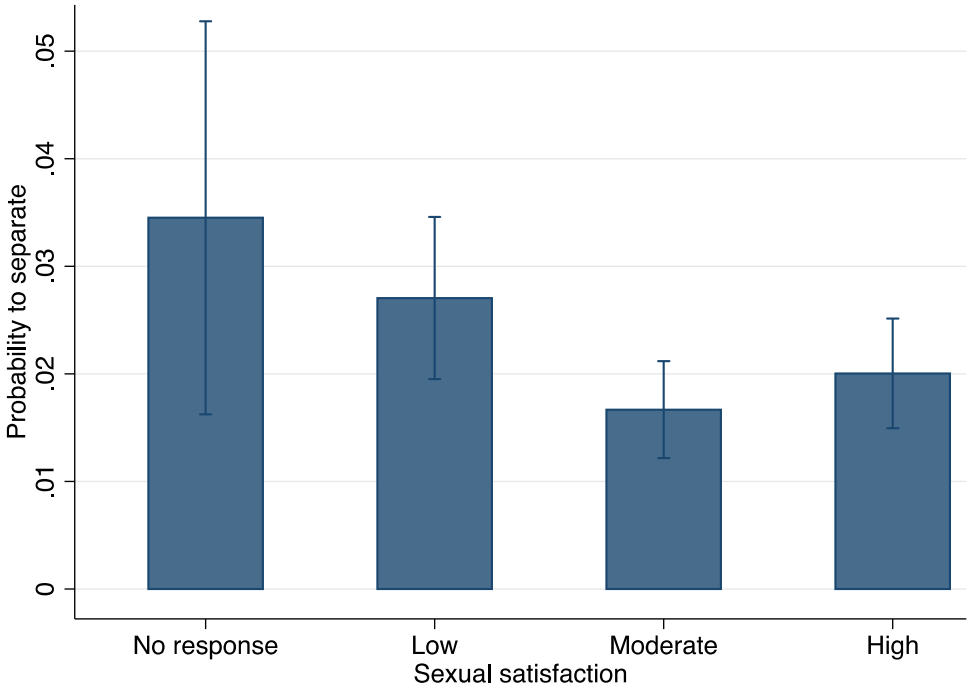

Figure B.7: The effect of sexual satisfaction on LAT couples' probability to separate

Notes: pairfam, own computations, the continuous variables are held constant at their means and the categorical variables are held constant at baseline.

Appendix C Chapter 4

C.1 Other descriptive results

Table C.1: Characteristics of single males by past intimate relationships; pairfam, wave 1

Main variables of interest. Males	Past intimate relationships				Total
	Lifelong singlehood	Past LAT relationship	Past coresidential relationship	No information provided about past intimate relationships	
Satisfaction with being single	6.27	5.71	5.75	6.30	5.92
(mean)	(0.29)	(0.27)	(0.28)	(0.53)	(0.15)
Satisfaction with friends	6.87	7.43	7.28	7.29	7.22
(mean)	(0.26)	(0.29)	(0.30)	(0.39)	(0.16)
Frequency of contacting biological parents					
Both parents died	3.4	3.7	6.1	3.8	4.5
At least once a week	83.0	76.0	82.4	76.6	80.1
At least once a month	9.0	15.7	4.3	7.5	9.3
Several times per year or never	4.6	4.6	7.2	12.2	6.1
Control variables					
Educational attainment					
Low	8.3	5.3	11.3	11.1	8.7
Medium	52.0	60.8	60.2	62.1	58.4
High	39.7	33.9	28.5	26.7	32.9
Labour force status					
Not employed	14.8	18.8	18.4	23.6	18.0
Employed	85.2	81.2	81.6	76.4	82.0
Religiosity					
Without religious background	72.1	65.5	53.9	64.8	63.1
With religious background	27.9	34.5	46.1	35.2	36.9
Household composition					
Living alone	***19.6***	***24.4***	***26.1***	***5.5***	75.6
Parents or other relatives (siblings, friends, housemates, children could live as well)	***6.8***	***5.5***	***5.3***	***2.1***	19.7
Children only	***0.0***	***0.0***	***3.7***	***0.2***	3.8
Not clear with whom, but not alone	***0.0***	***0.2***	***0.4***	***0.3***	0.9

Appendix C

Main variables of interest. Males	Past intimate relationships				Total
	Lifelong singlehood	Past LAT relationship	Past coresidential relationship	No information provided about past intimate relationships	
Self-rated health in the past 4 weeks					
Poor	6.6	13.7	19.2	19.2	14.2
Satisfactory	29.4	21.7	14.0	25.9	21.3
Good or very good	64.0	64.6	66.8	54.9	64.4
Country of birth					
East Germany	65.9	80.9	71.6	66.8	72.5
West Germany	21.0	12.8	17.2	13.8	16.6
Other	13.1	6.2	11.2	19.4	10.9
Total	100	100	100	100	100

Notes: pairfam, wave 1, own computations; weighted results; italic and bold numbers indicate that the specific variable is associated with past intimate relationships at 5% significance level (according to a χ^2 test of association).

Table C.2: Characteristics of single females by past intimate relationships; pairfam, wave 1

Main variables of interest. Females	Past intimate relationships				Total
	Lifelong singlehood	Past LAT relationship	Past coresidential relationship	No information provided about past intimate relationships	
Satisfaction with being single (mean)	6.13 (0.72)	6.37 (0.32)	5.94 (0.18)	7.16 (0.90)	6.13 (0.16)
Satisfaction with friends	7.43 (0.62)	7.62 (0.37)	7.45 (0.17)	8.87 (0.40)	7.57 (0.15)
Frequency of contacting biological parents					
Both parents died	3.1	2.9	2.5	9.3	3.1
At least once a week	78.1	81.2	76.0	86.2	78.0
At least once a month	14.7	3.9	9.8	0.0	8.2
Several times per year or never	4.1	11.9	11.7	4.6	10.7
Control variables					
Educational attainment					
Low	11.3	7.6	13.0	12.9	11.5
Medium	46.8	55.4	58.2	49.6	56.1
High	42.0	37.0	28.8	37.5	32.4
Labour force status					
Not employed	25.3	25.3	28.0	55.9	28.8
Employed	74.7	74.7	72.0	44.1	71.2
Religiosity					
Without religious background	57.3	68.1	66.4	68.1	66.2
With religious background	42.7	31.9	33.6	31.9	33.8
Household composition					
Living alone	***5.2***	***14.8***	***24.8***	***2.8***	47.7
Parents or other relatives (siblings, friends, housemates, children could live as well)	***1.3***	***5.2***	***5.6***	***0.1***	12.2
Children only	***1.6***	***3.1***	***26.0***	***2.7***	33.3
Not clear with whom, but not alone	***0.0***	***1.3***	***5.1***	***0.4***	6.8
Self-rated health in the past 4 weeks					
Poor	2.9	17.1	24.6	4.7	19.8
Satisfactory	34.4	31.2	26.8	24.5	28.4
Good or very good	62.7	51.7	48.5	70.8	51.8

Appendix C

Main variables of interest. Females	Past intimate relationships				Total
	Lifelong singlehood	Past LAT relationship	Past coresidential relationship	No information provided about past intimate relationships	
Country of birth					
East Germany	80.8	73.1	65.7	63.2	68.6
West Germany	11.7	17.5	18.9	28.9	18.6
Other	7.5	9.5	15.5	7.9	12.9
Total	100	100	100	100	100

Notes: pairfam, wave 1, own computations; weighted results; italic and bold numbers indicate that the specific variable is associated with past intimate relationships at 5% significance level (according to a χ^2 test of association).

Table C.3: The means and standard deviations of satisfaction with friends over frequency of contacting biological parents among those unpartnered; pairfam, wave 1

	Summary of satisfaction with friends and social contacts					
Frequency of contacting biological parents	**Mean**	**Standard error**	**Standard deviation**	**Min.**	**Max.**	**N**
Both parents died	7.94	0.31	1.77	0	10	28
At least once a week	7.57	0.12	2.34	0	10	539
At least once a month	6.48	0.38	2.43	0	10	53
Several times per year or never	6.19	0.51	3.30	0	10	64
Total	7.57	0.15	2.46	0	10	684

Notes: pairfam, own calculations; N- number of cases (unweighted); the means and standard errors are weighted with post-stratification weight;

Additional analyses were conducted to test if the mean of satisfaction with friends and social contacts differs by frequency of contacting parents (analyses not shown, upon request of author). Unweighted and weighted analyses show similar results. For example, findings of a one-way Anova test (on unweighted sample; F (3, 680) = 7.95, p = 0.000) and of univariate linear regression model for satisfaction with friends and social contacts (where post-stratification weight was applied; p-value from Wald test = 0.001) provide evidence that the mean of satisfaction with friends and social contacts differs significantly between at least two groups of the variable frequency of contacting biological parents; the results are discussed in detail in Chapter 4, section 4.5.1, Descriptive results.

Table C.4: The means and standard deviations of satisfaction with friends and social contacts over past intimate relationships among those unpartnered; pairfam, wave 1

	Summary of satisfaction with friends and social contacts					
Past intimate relationships	**Mean**	**Standard error**	**Standard deviation**	**Min.**	**Max.**	**N**
Lifelong singlehood	6.98	0.25	2.14	0	10	107
Past LAT relationship	7.50	0.23	2.32	0	10	160
Past coresidential relationship	7.38	0.16	2.74	0	10	374
No information about past intimate relationship	7.86	0.35	1.69	0	10	43
Total	7.37	0.11	2.46	0	10	684

Notes: pairfam, own calculations; N- number of cases (unweighted); the means and standard errors are weighted with post-stratification weight;

Additional analyses were conducted to check if the mean of satisfaction with friends and social contacts differs by past intimate relationships. For example, results of a one-way Anova test, ran on unweighted sample (F (3, 680) = 2.05, p = 0.106), and of univariate linear regression for satisfaction with friends and social contacts (where post-stratification weight was applied; p-value from Wald test = 0.190) suggests that the mean of satisfaction with friends and social contact does not significantly differ between past intimate relationships.

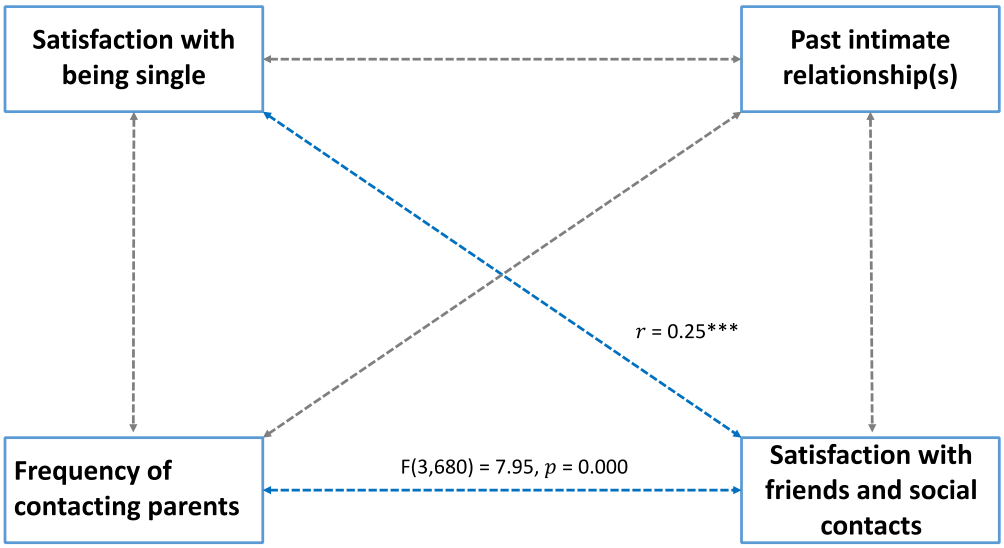

Figure C.1: The relationships among key independent variables and between key independent variables and satisfaction with singlehood (outcome); pairfam, wave 1

Notes: the blue double-arrow dashed lines stand for variables which are related. The grey double-arrow dashed lines stand for variables which are not related. Weighted Pearson correlation coefficient (r) is calculated between satisfaction with being single and satisfaction with friends and social contact (r = 0.25, p < 0.001). One-way Anova test (unweighted) underlines that there is a statistically significant difference in the mean of satisfaction with friends and social contacts between groups of frequency of contacting parents, F (3, 680) = 7.95, p = 0.000.

Additional weighted univariate linear regressions confirm that 1) frequency of contacting parents is associated with satisfaction with friends and social contacts, and that 2) satisfaction with being single is associated with satisfaction with friends and social contacts (the two overall Wald tests were significant at 5% conventional level).

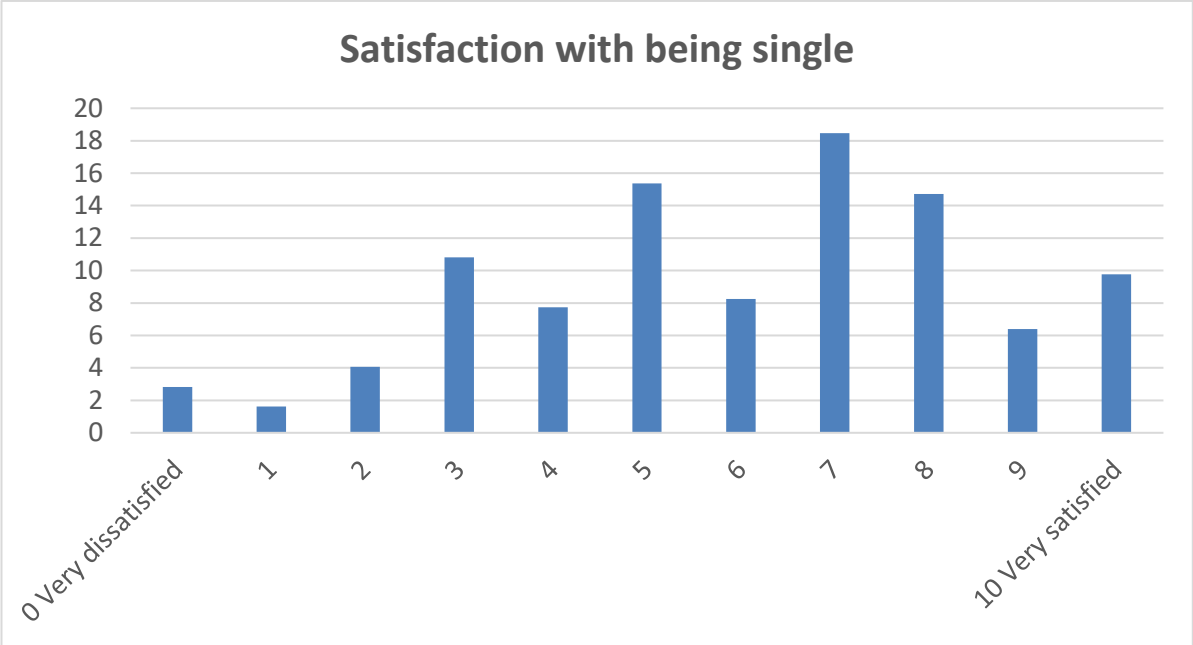

Figure C.2: Distribution of satisfaction with being single; pairfam, wave 1

Figure C.2 shows that the variable satisfaction with being single is not normally distributed. Therefore, a multinomial logistic regression was estimated as sensitivity analysis to check the differences in the coefficients for the main independent variables between the multinomial and the linear regression models. The original scores of the variable 0-4 were grouped into Low, 5-6 into Medium, and 7-10 into High levels of satisfaction with singlehood.

C.2 Sensitivity analysis

Table C.5: Relative risk ratios (RRR) from a multinomial regression model on satisfaction with singlehood

	Satisfaction with being single	
	Medium vs Low	High vs. Low
Variables	**RRR**	**RRR**
Past intimate relationships (ref. Lifelong singlehood)		
Past LAT relationship	1.11	0.71
Past coresidential relationship	0.96	0.55+
No information provided about past relationship(s)	0.93	0.98
Satisfaction with friends and social contacts	1.17**	1.25***
Frequency of contacting biological parents (ref. At least once a week)		
Both parents died	1.06	1.19
At least once a month	1.43	2.29*
Several times per year or never	0.25**	0.61
Gender (ref. Male)		
Female	1.41	1.60+
Educational attainment (ref. Low)		
Medium	0.90	0.67
High	0.47+	0.38**
Labour force status (ref. Employed)		
Not employed	0.63	0.93
Religiosity (ref. Without religious background)		
With religious background	0.97	1.21
Household composition (ref. Living alone)		
Parents and/or others	0.94	0.91
Children only	1.04	0.74
Not clear with whom, but not alone	1.91	1.27
Health status (ref. Good or very good)		
Poor	1.05	0.55*
Satisfactory	0.89	0.56*
Country of birth (ref. East Germany)		
West Germany	1.71	0.67
Other	1.31	0.71
Constant	0.36	1.06
N	684	684

Notes: pairfam, own computations; weighted results; *** p < 0.001, ** p < 0.01, * p < 0.5, + p < 0.10; The original scores 0-4 are grouped into Low, 5-6 into Medium and 7-10 High satisfaction with singlehood.

C.3 Diagnosis checks for linear regression

Table C.6: Multicollinearity check from linear regression on satisfaction with singlehood

Variables from linear regression	VIF	Tolerance
Past intimate relationships		
Past LAT relationship	1.89	0.529
Past coresidential relationship	2.23	0.448
No information provided about past intimate relationships	1.35	0.739
Satisfaction with friends and social contacts	1.15	0.872
Frequency of contacting biological parents		
Both parents died	1.03	0.971
At least once a month	1.08	0.928
Several times per year or never	1.12	0.892
Gender (Female)	1.35	0.741
Educational attainment		
Medium	3.17	0.313
High	3.34	0.289
Labour force status (Employed)	1.20	0.834
Religiosity (With religious background)	1.31	0.761
Household composition		
Parents or other relatives (siblings, friends, housemates, children could live as well)	1.12	0.896
Children only	1.44	0.696
Not clear with whom, but not alone	1.13	0.888
Self-rated health in the past 4 weeks		
Satisfactory	1.17	0.857
Good or very good	1.14	0.874
Country of birth		
West Germany	1.34	0.746
Other	1.13	0.889
Mean VIF	1.51	

Notes: parifam, wave 1, own computations; VIF – Variance Inflation Factor.

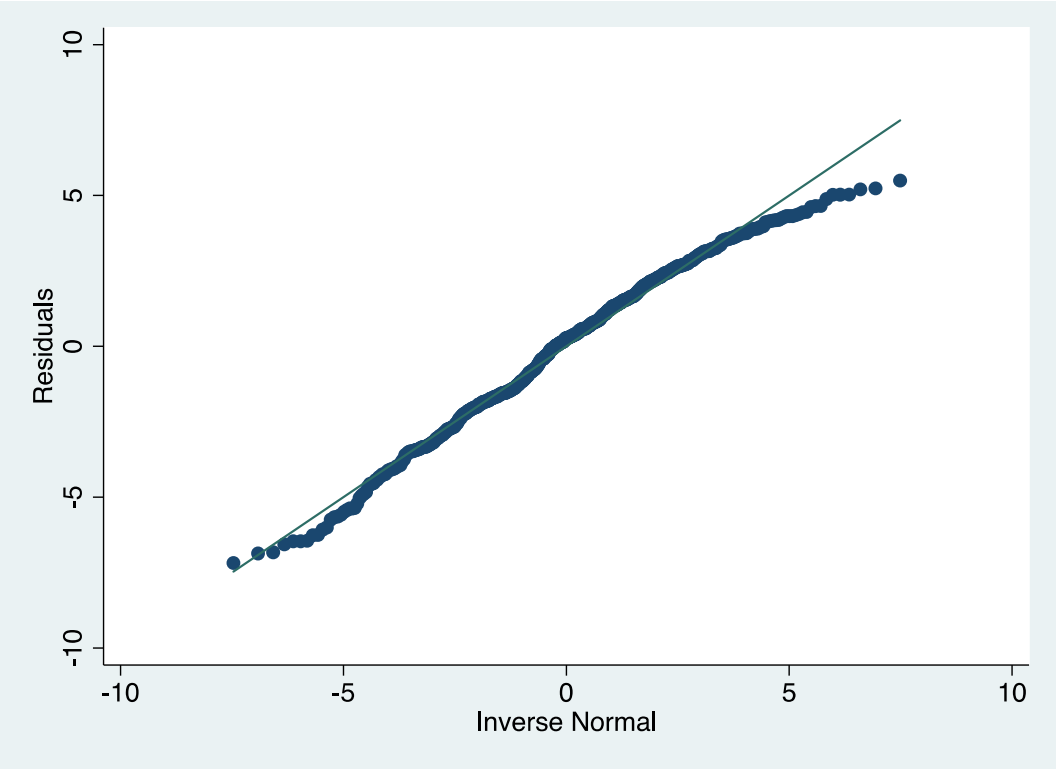

Figure C.3: The quantiles of residuals against the quantiles of a normal distribution from linear regression model on satisfaction with being single

Notes: pairfam, wave 1, own calculations, weighted sample.

The graph shows a slight deviation from normality at the upper tail but this is not a big deviation indicating that the residuals are generally normally distributed; the post-stratification weight suggested by pairfam has been applied.

C.4 Interaction effects

Table C.7: Linear regression coefficients for satisfaction with being single. Interaction terms between gender and past intimate relationships

Variables	M4 – Satisfaction with being single Unstand. Coeff.
Past intimate relationship(s) (ref. No past intimate relationship)	
Past LAT relationship	-0.86*
Past coresidential relationship	-0.71+
No information provided about past relationship(s)	-0.10
Satisfaction with friends and social contacts	0.25***
Frequency of contacting biological parents (ref. At least once a week)	
Both parents died	0.04
At least once a month	0.69*
Several times per year or never	-0.11
Gender (ref. Male)	
Female	-0.34
Educational attainment (ref. Low)	
Medium	-0.26
High	-0.69+
Labour force status (ref. Employed)	
Not employed	-0.08
Religiosity (ref. Without religious background)	
With religious background	0.17
Household composition (ref. Living alone)	
Parents and/or others	-0.05
Children only	-0.32
Not clear with whom, but not alone	0.53
Health status (ref. Good or very good)	
Poor	-0.44
Satisfactory	-0.56*
Country of birth (ref. East Germany)	
West Germany	-0.52+
Other	-0.55+
Interaction terms between past intimate relationship and gender	
Past relationship, with a LAT partner * Female	1.19
Past relationship, with a coresident partner x*Female	0.67
No information provided about past relationship(s) x*Female	0.97
Constant	5.26***
N	684
p-value from Wald test	0.497
R^2	0.11

Notes: pairfam, wave 1; own computations; weighted results; unstand. coeff. – unstandardized coefficients; N – number of cases; *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.10.

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