University of Rome "La Sapienza"
Faculty of Information Engineering, Informatics and Statistics
Department of Statistical Sciences

Ph.D Thesis in Demography
(XXIV cycle)

Emilia Arcaleni

Health status after union dissolution in Italy

Tutor:
Alessandra De Rose

SAPIENZA
UNIVERSITÀ DI ROMA

Summary

Acknowledgements

First of all I would like to thank my tutor Alessandra De Rose for her comments and suggestions about my work. I also thank Viviana Egidi for her constructive suggestions on the subject of health. Thanks to the two coordinators of our PhD program, Viviana Egidi and Oliviero Casacchia, for their effort to ensure that doctoral students have useful research experiences despite the economic constraints of the Italian university.

My personal thanks are also extended to Marc Luy and the Austrian Academy of Sciences for the helpful research stay in Vienna in February 2011, when the nucleus of this work was born and was discussed with Paola Di Giulio.

I have benefited from the course "Applied Panel Data Analysis" held by professor Josef Brüderl organized by the International Max Planck Research School at the Max Planck Institute for Demographic Research (MPIDR), in Rostock (Germany) in July 2011. Furthermore a special thank to Federico Belotti, brilliant econometric researcher, for his precious help in dealing with the fixed-effects approach. A special thank to Franco Peracchi for his valuable guidance on how to do research.

Thanks to Giancarlo Gualtieri from ISTAT for providing the aggregate series of separations and divorces since 1970 and to Filomena Racioppi for her useful comments on an earlier version of my work. A special thank is also given to Iris Levitis for copy editing. The second and fourth chapters, reviewed in the form of a paper for *Genus*, have also benefited from the valuable comments of two anonymous reviewers and from the English editing of David Harrison.

Introduction

In Italy, more and more marital unions break down ending in separation and divorce. Marital dissolution experience is an increasingly shared condition among the Italian population. Therefore, it is of social interest to know more about the living conditions, health and well-being of these individuals. In particular, it is of interest for social policy to investigate the short- and long-term consequences of marital crisis and dissolution on health status. This is why we are interested in this subject.

While the causes behind the increasing trend of union dissolution have been widely explored in Italy, only a few scholars have investigated its consequences. On the contrary, the international scientific community have more widely addressed its concern to the consequence of divorce, especially in the United States and northern Europe. The

consequences of separation and divorce are manifold, and they are observable both at the individual and societal levels. Amato and Keith (1991) distinguished 15 different areas in which people are affected by divorce, ranging from psychological well-being to physical health. Our study deals with the consequences of partnership dissolution at the individual level and focuses on health aspects. Unlike other countries, in Italy there is a relative lack of research on the well-being of people who experienced union dissolution, except for economic condition. Others dimensions of well-being have not yet been explored, such as health status, quality of relationships, life satisfaction and so on. Health is an important dimension of well-being and is proved to strongly affect quality of life and many individual socioeconomic outcomes.

Several studies have found evidence that marital dissolution is an adverse event for health, both mental and physical. The present thesis further investigates the detrimental effects of union dissolution on health. This is, as far as we know, the first attempt to study the consequences of separation on specific health measures for former married people in Italy.

A further subject so far little investigated in Italy is dissolution of consensual (*more uxorio*) unions. The main reasons probably reside in the relative small number of these unions and in the lack of data. Though a few decades ago consensual unions were relatively rare, they have dramatically increased. In addition, an increasing number of these unions are fertile. In recent years, consensual unions were listed as a new type of family, worthy of statistical interest. The present study of health status after separation includes dissolution of consensual unions. The analysis is conducted to test for significant differences among types of unions.

Outline

The analysis starts with a review of previous findings from the international literature. We then describe the different theories, approaches and perspectives proposed about the relationship between separation and health status. The theoretical framework underlying the study and the research questions is then described (**Chapter** 1).

Chapter 2 explores the peculiarities of the Italian context. Regulations and trends are presented; previous findings on union dissolution are discussed; consensual unions and the related research in Italy are described. The hypotheses and the research questions of this work are here introduced.

The study is enriched by a review of the survey instruments available in Italy: the focus is on measuring separation and its consequence on health (**Chapter** 3). The aim is to make scholars aware of the strengths and weaknesses of Italian survey data for studying the consequences of union dissolution on health. The main points addressed include: proper identification of a union dissolution event; proper identification of people

with past separation experience; proper placing of separation in time and in the life course; identifying a non-custodial parent; as well as what health measures are available.

The empirical part of our study starts with a profile of the Italian population who have experienced marital disruption (**Chapter** 4). Its demographic and socioeconomic condition, living arrangement and health status are described. The analysis is a two-way analysis, based on two Italian cross sectional nationally representative surveys, *Household and Social Actors* (*Famiglia e Soggetti Sociali*) carried out in 2003 and *Health Status of the Population and Use of Health Services* (*Condizioni di salute e ricorso ai servizi sanitari*) carried out in Italy in 2005 by the National Statistical Institute.

The empirical analysis continues investigating the risk of health problems among separated people, through logistic regression models (**Chapter** 5). In detail, the association between experience of separation and longstanding illness or permanent disability that causes activity limitation is explored. We also investigate the role of potential mediators that may moderate or amplify the association. These mediators include, the presence of children, the socio cultural context, and the current living arrangement. Data from "*Famiglia e Soggetti Sociali*" survey are used. The results are only suggestive of a causal relationship between separation and health problem, due to selection factors, which cannot be taken into account with cross-sectional data.

The last step of the empirical analysis adopts more effective and advanced methods allowing for causal interpretation (**Chapter** 6). Panel data from the *European Survey on Income and Living Condition* survey are used. The effect of union dissolution on self-rated health is investigated. In this step consensual unions are included.

The discussion of the results concludes the study (**Chapter** 7).

Each Chapter of this Thesis starts with an introduction wherein the aim of the Chapter, the data used, the methods adopted and the research questions investigated are summarized.

The empirical analysis described in Chapters 4 and 5 is in press at the journal *Genus* under the title "Health status after marital dissolution in Italy".

Chapter 1 - Union dissolution and health: theories and evidence

1.1. Introduction

In this chapter previous findings and the theoretical framework concerning the effect of separation on health are reported. Both detrimental and beneficial effects are documented (Section 2). The analysis is limited to the consequences on former partners, though some scholars have also investigated the effect on the well-being of children and other actors. The different theoretical approaches are presented (Section 3) explaining which mechanism translates separation experience in health outcomes.

The effect of separation is mediated by several factors, which mainly relates to the socioeconomic characteristics of the individual as well as to the social context. They may have an amplifying or moderating effect on the consequences of divorce. The main research on these factors is presented later (Section 4).

Specific attention is devoted to non-marital unions (Section 5). The information and the evidence concerning their dissolution are still poor but this is increasingly an area of interest.

Finally, the main selection issues which act in the separation process are addressed, such as selection to marriage, selection to divorce, reverse causalities and anticipatory effects (Section 6).

1.2. Evidence on health effects of divorce

Over recent decades, research has shown that divorced individuals, compared with married individuals, exhibit more symptoms of depression and anxiety, more health problems, more substance use and a greater risk of mortality. These detrimental health effects of divorce have been documented for several countries; for a review see Amato (2000, 2010).

A higher (overall) mortality among unmarried people than among married is well documented (see Hu and Goldman, 1990; Joung, 1996; Vallin *et al.*, 2001). These differences are usually more pronounced among men than among women. In particular, Burgoa *et al.* (1998) find that divorced and separated men and women have a lower mortality than married people for various causes of death, except for traffic accidents, suicide, cirrhosis of the liver and HIV infection, where mortality is higher for divorced and separated people. Mortality differences have been attributed to the beneficial health effects of marriage, which seem to cumulate during the union (Lillard and Waite, 1995). It is also indicated that a second marriage has positive effects on health and on survival (Hughes and Waite, 2009).

One further hypothesis to explain the higher mortality of divorcees compared to unmarried people rests on the long-term damaging effects of the divorce on health. The two hypotheses of course complement each other and contribute to the same result. Substantial differences were observed for self-reported indicators of morbidity among divorcees, including health complaints and the prevalence of diseases. Both mental and physical health are impaired. As regard to gender differences, the strength of association between divorce and measures of mental health appears to be comparable for women and men. Conversely, the association between divorce and measures of physical health (and mortality) appears to be stronger for men (Waite *et al.*, 2009). The adverse effects of marital dissolution on self-rated health seem to have increased over time, and more for women than for men (Liu and Umberson's, 2008).

Andreß and Broeckel (2007) document a drop in life satisfaction and income satisfaction before and immediately after separation. Liu (2012) modelled self-rated health changes after marital dissolution. His results suggest that transitions from marriage to divorce and widowhood have adverse effects on self-rated health, although those who are continuously divorced exhibit health trajectories that are similar to those who remain. Other evidence specific to self-rated health are reported in the section devoted to the description of the measure (Section 6.6).

Much evidence of persistent and serious illness has been found as a consequence of separation (Joung, 1996). In particular, Lillberg *et al.* (2003) investigated the relation between stressful life events and the risk of breast cancer among women from the Finnish Twin Cohort. They found that divorce/separation, the death of a husband, and the death of a close relative or friend were all associated with an increased risk of breast cancer during 15 years of follow-up compared to people who were not experiencing these events. Irwin *et al.* (1987) found that women who had experienced major life changes had more impaired immune responses than women who had few changes. Severity of depressive symptoms in these women was associated with an impairment of immune function. From a longitudinal analysis, Zhang and Hayward (2006) assessed that emotional distress and socioeconomic status account for the higher risk of a cardiovascular disease among divorced women compared to continuously married women. Recently, Hughes and Waite (2009) focused on four key aspects of midlife health: chronic conditions, mobility limitations, self-rated health and depression symptoms. The authors found that a significant disruption in marital stability, such as divorce or spousal death, often has a prolonged impact, negatively affecting all four aspects.

Moreover, beneficial effects of union dissolution are also documented. Monden and Uunk (2011) study the effect of divorce on self-rated health. Using fixed-effect panel analyses, they show that, after the divorce, self-assessed health improves among some divorcees, while for others it declines; their findings support the idea that the association between divorce and health is an outcome of both causation and selection and that the effect of divorce is highly heterogeneous. Hewitt and Turrel (2011) studied the SF-36

one year after the separation. On the basis of this analysis_women's physical health improves after separation, while men's worsens. Separated men experience a decay in health, more remarkable for its mental than for its physical dimensions.

1.3. Theoretical approaches

A variety of theories and conceptual perspectives are proposed to explain the mechanism under the supposed detrimental health effect of marital dissolution. They all attribute beneficial health effects to marriage and most of them identify marital dissolution as a stressful life transition to which adults must adjust. The main perspective is the divorce-stress-adjustment one, proposed by Amato (2000) as a combination of various element from several theories.

The divorce-stress-adjustment perspective is based on the consideration that separation is not a discrete event but a process which may occur after many years of marital crisis and poor quality of the marriage. Studies assessed that the marriage quality negatively influences health (Kalmijn and Monden, 2006). From this perspective, Separation is the climax of a process of crisis of the couple/marital crisis, where stressors accumulated over time. The prolonged exposure to these stressors increases the risk of negative emotional, behavioural, and health outcomes for adults and children. The severity and duration of these negative outcomes varies from person to person, depending on the presence of a variety of moderating or protective factors (see Section 1.4).

But it is undoubted that without ignoring the possible source of stress prior to the separation, the familiar split corresponds to the biggest change for the involved actors. Embedded in the divorce-stress-adjustment perspective, further perspectives point to different dimensions (economic, social, emotional) of daily life, affected by the separation event.

In particular, an *economic perspective* points to the loss of resources – material as well as emotional induced by separation. From one side, divorce involves diseconomies of scale and diminished living standards (all else being equal). Low benefits and facilities for lone parents increase the mental and physical burden of divorced people with children (mainly women). Besides, compared with married individuals, divorced people report more social isolation, a lower standard of living, less wealth, and greater economic hardship. In other words, from one side, emotional costs, such as stress, conflicts with (mutual) friends, loss of support, feelings of guilt or of stigma, directly influence physical and especially mental health. From the other side, divorce entails material costs and they in turn affect health. Results from Aasve *et al.* (2007) suggest that women are more likely to be deprived in monetary terms because of their greater reliance on a partner's income. Conversely, men experience a significantly increased deprivation in lifestyle standard because of a rise in expenses due to alimony payments,

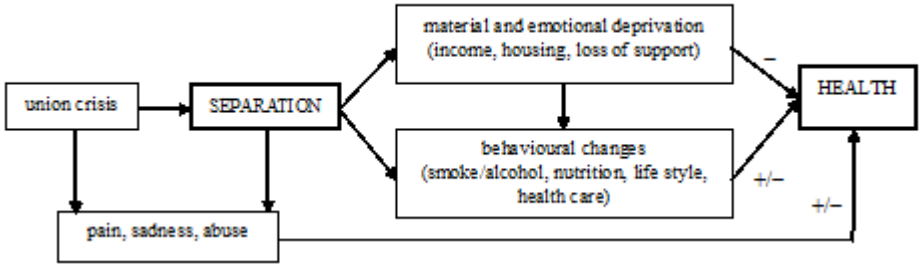
new dwelling costs, etc. Transition out of marriage may also lead to subsequent changes in patterns of use and costs of health care and preventive health services. As an example, Lee *et al.* (2005) find that transitions out of marriage due to divorce increase women's odds of skipping regular breast cancer screenings by roughly 27%. In fact, econometric modelling of poverty dynamics shows that separation or divorce was the most common family-related event associated with falling below the poverty line in both the EU and North America (Jenkins and Rigg, 2001 for the UK; Canto Sanchez, 2003 with Spanish data; Muffels, 2000 for the Netherlands; OECD, 2001 in a comparative perspective).

A *social support perspective* focuses on the loss of marriage benefits, including companionship, everyday assistance, emotional support and encouragement to engage in healthy behaviours, such as smoking less, eating well, and having regular medical check-ups. A subsequent psychological reaction to the stress could also increase disease risk by causing behavioural changes implicated in the etiology of the disease (Holland, 1990). As regards behavioural changes, Bachman *et al*. (1997) find that, for both young men and women, divorce leads to a fairly substantial increase in the likelihood of smoking, while remarriage after divorce leads to a similarly large decline in the likelihood of smoking. Also Lee *et al*.'s study (2005) finds that among those women who did not smoke initially, divorce increased the likelihood of starting to smoke.

Separation is the breaking of a balance. For most individuals, separation means ending a long-term relationship, dealing with feelings of anger or sadness, changing residence, experiencing a decline in standard of living and adopting a single lifestyle. Besides the economic and social support perspectives, the *stress theory* assumes that a large number of changes concentrated within a short time can have adverse effects on mental and physical health (Pearlin *et al*., 2005), creating organic lesions. It has been suggested that stressful life events are linked to the incidence of disease through direct biological mechanisms, such as changes in immunologic function and stress-induced disruption of the functions of the neuroendocrine axes (Cohen and Herbert, 1996; Hilakivi-Clarke *et al*., 1993). Adaptation in facing of stressful situations involves activation of neural and neuroendocrine-immune mechanisms producing hormones which give protective and adaptive benefits in the short run. Nevertheless, the *allostatic load theory* assumes that constant exposure to these hormones can eventually induce illnesses (such as hypertension that can lead to heart disease) and weaken the body's immune system (McEwen, 2000). In fact, the human body is adaptable, but it cannot adjust to stressful changes for very long times without consequence.

It is also relevant to mention the "beginner" status in the process of separation (Hewitt and Turrell, 2011). This mechanism is based on the fact that the person who begins the separation process has probably sufficient means and alternatives and he/she does not deal with the event "all of a sudden". Men who begin the separation process have a better general health status than those men who stay married. Women who begin the process (alone or with their partner) have better physical functioning and less physical pain than married women.

Figure 1 - Scheme of the health effects of marital dissolution.



1.4. Time and other mediators

During the time in which the marriage is ending, and in the immediate post-divorce period, new events and processes (mediators) emerge which have the potential to affect people's emotions, behaviour, and health. According to Amato (2000) mediators (stressors) include: having sole responsibility for the care of children (among custodial parents); losing contact with one's children (among noncustodial parents); continuing conflict with the former spouse over child support, visitation, or custody; loss of emotional support due to declining contact with in-laws, married friends, and neighbors; downward economic mobility (especially for mothers); and other disruptive life events, such as moving from the family home into less expensive accommodation in a poorer neighborhood. The mediators can be viewed as outcomes of divorce in their own right.

Other factors act in the separation process. They are the demographic characteristics, the context norms of divorce and the individual, interpersonal, structural resources. They might either have a mediation role, that is to convey negative effect of separation, or a moderator role, that is protective factors. Among the individual resources we only cite the economic resources, the human capital, the presence of a network of support.

As regards the context role, the magnitude of the difference in well-being among divorced and married people varies significantly across countries. The social costs of divorce are expected to be higher in some contexts than in others. This means that the context acts as a mediator of the divorce effects: Monden and Uunk (2006) hypothesize that a divorce will affect health more strongly the higher the stigmatization of divorced people are. This hypothesis predicts stronger negative health effects of divorce in social contexts with low divorce rates and negative public attitudes towards divorce (e.g. high traditional family values, dominant religion condemning divorce). Kalmijn (2010a) finds that the effect of divorce is weaker in countries where the family is strong, in line with notions of support. The effect of divorce also appears to be weaker when divorce is more common, pointing to the role of declining selectivity as divorce rates increase (where rates are low, people who divorce have experienced more serious marital and personal problems). The divorce effect is stronger in countries that have stronger norms against

divorce, but this is only found for religious people. Family-centred societies – such as Italy – generally disapprove of divorce more strongly than individualistic societies. Hence, family-centred societies may have, on the one hand, strong sanctions against divorce and at the same time may compensate divorcees by providing family support (Glaser *et al*., 2004; Kalmijn and Saraceno, 2008).

In the divorce–stress–adjustment theoretical framework, the time elapsed since separation appears to be a relevant mediator of the consequence of a union dissolution. The timing of physical and psychic symptoms onset at this point has been less researched. Divorce immediately increases psychological distress and has long-term negative consequences for the physical health of divorced people. On the one hand, the permanence in the status of a separated person challenges the person's health. On the other hand, stressful events are concentrated in the first years after separation; therefore, the passage of time may attenuate the damage accumulated in the initial years, allowing new living arrangements and new resources to stabilize.

As regards time, two adjustment models for divorce have been proposed: the 'crisis model'(short-term) and the 'chronic stress model' (long-term). The crisis model refers to acute stressors in the years immediately before and after divorce, while the chronic stress model refers to chronic stressors due to the longer-term economic hardship and social isolation divorce causes. The first model assumes that given a sufficient amount of time, the great majority of individuals return to their pre-divorce level of functioning. The second model assumes that being divorced involves persistent strains: "declines in well-being associated with divorce might continue more or less indefinitely and divorced individuals do not, in general, return to the same level of well-being they experienced early in the marriage" (Amato, 2010). Lorenz *et al*. (2006) show that in the years soon after their divorce, divorced women reported significantly higher levels of psychological distress than married women but no differences in physical illness. But a decade later, the divorced women reported significantly higher levels of illness, even after controlling for age, remarriage, education, income and prior health. Results from Lorenz *et al*. suggest that, rather than competing, the two theories are complementary: "volatile outcomes such as psychological distress are more reactive to acute stressors than physical illnesses, which incrementally accumulate in response to the relatively stable dimensions of chronic stress" (2006: 121). When the two patterns are put together, the result suggests a U-shaped curve. The trough of the U reflects the declining impact of getting divorced, while the upward right portion reflects the proliferation of stressors that follow from being divorced.

1.5. Dissolution of non-marital cohabitations

Many studies have shown the dramatic gender-specific changes connected to divorce, but few have focused on the implications of dissolving a consensual union. Literature on

the dissolution of consensual unions is still incomplete and many studies are still in progress. Amato (2010) called them "informal divorces". Analyzing the consequences of partnership dissolution in a longitudinal setting, it is sometimes difficult to capture the dissolutions of consensual unions. This problem does not apply to the analysis of consensual unions with children.

Many scholars point to the anomic character of cohabitations, to the lack of regulations and to a selection process of entering cohabitations as factor for their dissolution. These features would be responsible for the higher instability of cohabitations and for a higher emotional cost of dissolution in the presence of children.

The higher instability of consensual unions compared to marital ones is confirmed in the Italian context. De Rose and Di Cesare (2003) and Coppola and Di Cesare (2008) found that cohabiting couples have a much higher risk of experiencing union dissolution than married couples. Authors attribute this instability to the lack of protective regulations for consensual unions compared to those for marriages. In fact, in Italy cohabiters do not have mutual rights or duties and each partner may consider ending the relationship at any time. Authors also point to a selection process, according to which people with tendency to couple instability prefer a type of union with fewer legal constraints. This tendency also makes the possibility of marriage following cohabitation less likely. In addition, partners may prefer a cohabitation when they do not feel a strong commitment or when they desire to test their relationship before getting married. Conversely, according to the "trial marriage" theory, premarital cohabitation decreases the risk of marital separation (Kulu and Boyle 2009).

Using Norwegian panel data, Barstad (2008) found no significant differences in comparing the consequences of dissolving a marriage and a consensual union. In both cases partnership dissolutions have emotional costs and increase distress, but mainly in the short term. There is, however, some support for a permanent strain effect among men. However, there is a remarkable variation within the group of cohabitants. Cohabitants without a marriage-like relationship do not experience any rise in symptoms of mental distress following dissolution. On the other hand, people in marriage-like cohabitations (long duration, with children) react much more negatively to the dissolution, and even more strongly than a similar group of married people. The finding that people in marriage-like cohabitations experience higher emotional costs is attributed to the fact that cohabitation is considered an "incomplete institution". The more ambiguous and anomic character of cohabitations can be a drawback in the dissolution of long-term partnerships and partnerships with children.

A panel study from the Netherlands (Manting and Bouman, 2006) reveals that both divorced and ex-cohabiting partners experience a dramatic decline in their economic situation immediately after union dissolution. It also reveals that former cohabiting women experience a smaller decline than divorced women in their economic situation immediately after the dissolution of the union. They show that immediately after

divorce, women substantially lose, whereas men gain economically. Furthermore, men also experience a financial loss immediately after breaking up a consensual union, even if it is much smaller for them. According to Manting and Bounman, this may be caused by the simple fact that cohabitating men more often lose an equal earner partner than married men when they separate. This generates smaller gender differences shortly after disruption. However, the majority of married couples follow the traditional division of job or earnings: husbands contribute more than wives. This is why divorced men on average gain from divorce.

Utilizing Canadian longitudinal data, Wu and Hart (2002) find that exiting from both marriage and cohabitation seems to have similar effects. Dissolving either union tends to be associated with a decrease in physical health, mental health, or both.

1.6. Causality and selection

In studying the effect of divorce on health, a number of potential selection issues may bias the estimated causal effect of marital dissolution on health. The point is to assess whether the association between divorce and negative outcomes is spurious, due to selection factors, that is, variables that cause divorce as well as post-divorce problems. These mechanism can be disentangled most effectively by comparing health status before separation with health status after separation. As observed by Amato (2010), one improvement of the research on divorce during the last decade has been an increase in the adoption of methods to identify causal effects (such as longitudinal comparisons, fixed-effects models, simultaneous equations, and propensity score matching). Such methods allow us to assess whether the associations between divorce and post-divorce health problems are because of selection factors. Many studies adopting these methods found evidence of divorce causation.

A first health selection occurs through marriage (Lillard and Panis, 1996). Healthier people are more likely to get married. The positive selection into marriage is based on unmeasured factors that both promote good health and encourage marriage. As a consequence, separated people may be found to have better health status than never married people simply because the former were selected into marriage by being healthier than the latter. An adverse selection also applies, since marriage has a protective effects on health; so, the people in poor health and/or at higher risk of mortality have a greater incentive to marry and gain that protection. As a consequence, separated people may be found to have worse health status than those never married, simply because they were selected into marriage by being less healthy than others.

A second potential selection occurs through divorce. This is driven by the fact that couples experiencing a marital separation may be qualitatively different from couples who are not. In Italy the spread of marital disruption started among middle to highly

educated people (Salvini and Vignoli, 2011), and high educational attainment is generally associated with better health status. As supposed by Aasve *et al*. (2007) men and women who are at high risk of entering poverty may be more likely to avoid separation. For example, women who are strongly dependent on their partner's income might be less likely to separate from them (Becker, 1991). The association between poverty and bad health status may lead to a selection effect. As synthesized by Hemström (1996), "Generally speaking, proponents of the selection hypothesis argue that there is a predominance of healthy individuals getting married and unhealthy individuals getting divorced".

On the other side, a reverse causation also applies, since health and marital quality are reciprocally related. Unhealthy behaviours such as drug addiction or alcoholism may cause both marital breakdown and health problems. Poor health or a decline in health (e.g. serious chronic diseases, depression or psychological problems) could increase divorce risks. The explanations of a positive effect of poor health on divorce (e.g. fewer working hours and lower income which can put the relationship under stress) are well summarised by Monden and Uunk (2011).

The evidence on the direction of the link between health problems and divorce is not conclusive. There is little evidence of divorce selection effects; Wade and Pevalin (2004) find that poor mental health also precedes marital disruption. Mental health declines even more afterward, however, suggesting support for selection as well as divorce causation. Monden and Uunk (2011) find evidence for reverse causality, that is a negative effect of self-assessed health on divorce risks. This selection effect seems to be caused by prolonged poor health. A reverse effect is confirmed by Singleton (2012). His study measures the longitudinal effect of disability on earnings, marriage, and divorce. Results show that the onset of a work-preventing disability is associated with a precipitous decline in earnings and with an increase in divorce. The association between disability and divorce is greatest among young and educated males who experience a work-preventing, rather than a work-limiting, disability. Conversely, Yorgason *et al*. (2008) find that the onset of disability is associated with an increase in marital quality – higher levels of marital happiness and marital interaction – whereas a decline in self-rated health does not show this association. Once a couple has adapted to the infirmity, it may remain stable for an extended period, whereas a decline in health may be viewed as a continuous process that requires frequent changes in care. Wu and Hart (2002) examine the effects of marital and non-marital union transition on health. They find that remaining in either type of union is generally associated with poorer health. They speculate that decreased union quality may account for this inverse relationship, and that protection effects may explain much of the reported health gains associated with union life.

Evidence of an anticipatory effect of separation has also been recently found in a longitudinal study on mental health medication before and after divorce (Metsä-Simola and Martikainen, 2011). The authors found that both selective and causal mechanisms appear to cause adverse mental health effects among the divorced; the pre-divorce period seems critical for the development of mental health. The cause of the assessed detrimental effect of separation is not the separation *per se*, as in the conflict experienced during the marriage and in the hard times after separation. In the described theoretical framework, therefore, separation should be appropriately considered as a process – rather than as an event – that takes years before separation and years after it, during when spouses experience the painful and stressful crisis of their relationship and adjust to it. This also has to be taken into account when interpreting the result of our analysis. The possible negative effects of separation on health are ascribable to the hard times experienced both in the aftermath of and preceding the separation event.

In his review Amato concludes, 'Although a degree of selection is likely to be operating, the bulk of the evidence supports the notion that marital dissolution negatively affects the mental and physical health of many adults' (2010: 659).

Chapter 2 - The Italian background and the research questions of this Thesis

2.1. Introduction

The following Chapter deals with the main features of union dissolution in Italy. We first focus our attention on rules and regulations which govern the matter and the trend of separations in the last decades (Section 2). We also recall the previous findings on the consequences of union dissolution in Italy. The lack of studies of the health dimension of well-being is highlighted, in contrast to the economic dimensions that have been adequately investigated (Section 3). Another section is devoted to consensual unions (Section 4) analyzing their features and trends are presented, from a comparative European perspective. As regards the consequences of consensual union disruption, we discuss the findings of the rare international and Italian studies. A section (Section 5) discussing the research questions concludes the Chapter. The research questions developed through the Thesis are here included in a unique framework.

2.2. Regulations and trends

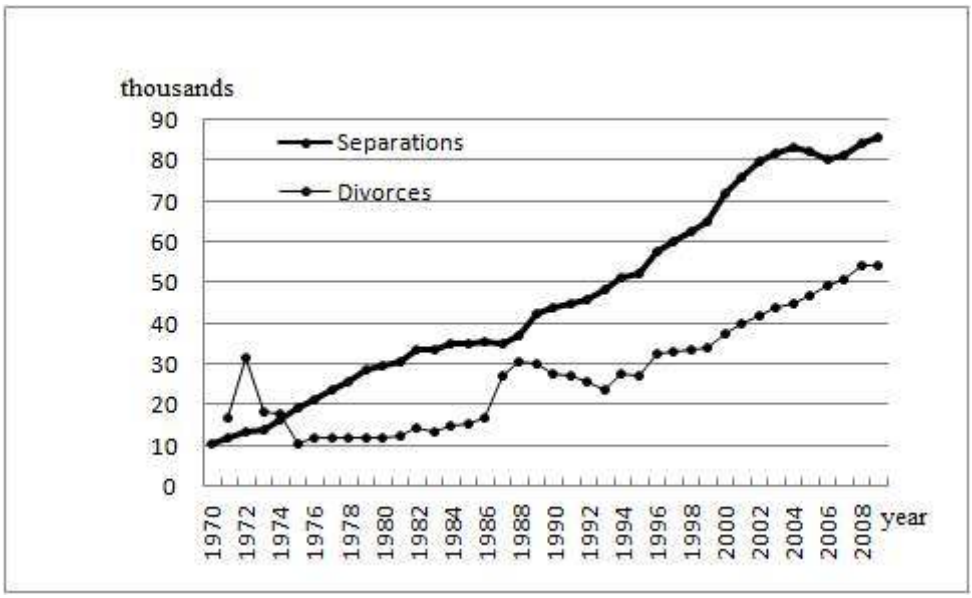
In Italy, divorce has been legally admitted since 1970 (Law n. 898/1970), but only after a period of legal separation between the spouses. Legal separation represents in Italy the first (and often the last) formal stage of the intent to break up the marriage; the married couple stops living together, sets up a financial agreement, allocates the conjugal house and decides who will have care of the children. In Italy, child custody is usually given to the mother; only recently has the law provides for a joint custody of the parents (Law n. 54/2006).

Legal separation is a binding condition to get a divorce. Under Italian law it is possible to obtain a divorce after three years of continuous separation (five years before 1987), except for very rare cases. Only a residual fraction of the divorces (one%) are granted on different grounds, in the cases provided for by law. Not all legal separations subsequently converted to divorces; often former partners prefer to spare the cost and the administrative burden of a new legal formality and to maintain financial advantages, also in the case of a new relationship. Only about 60% of legal separations obtained in 1995 ended with a divorce during the following decade (ISTAT, 2008a). Divorce is strictly necessary only if one of the partners wants to remarry. For this reason studies on causes and consequences of marriage dissolution in Italy normally disregard the status of the divorce and focus on *de facto* or legal separations (e.g. De Rose, 1992; Ongaro *et al*., 2009; Salvini and Vignoli, 2011). A *de facto* separation usually is the first step in the marital dissolution process and usually precedes legal separation. *De facto* separation is the informal step that breaks up cohabitation.

Current Italian data on marital instability record the legal judgments of separation and divorce pronounced in the country. The data are provided by ISTAT, which receive individual forms monthly for each legal separation and divorce judgement from the administrative courts of the country.[1] No administrative sources enumerate *de facto* separations, nor dissolutions of consensual unions. These relevant events are monitored by the important household surveys held by ISTAT, in primis *Famiglia e Soggetti Sociali* (see Section 2.2).

The two distinct trends, for legal separations and divorces, are plotted in Figure 2. In particular, the leap in the number of divorces is connected with the regulation of Law n. 74/1987, which reduced the necessary period to seek divorce after separation from five to three years. In 1980, a total of 29,462 separations and 11,844 divorces were recorded; thirty years later (2009), separations were 85,945 and divorces 54,456 (ISTAT, 2001 and 2011a).

Figure 2 - Number of separations and divorces in Italy, 1970-2009 (in thousands).



Source: National Statistical Institute (ISTAT)

An appropriate estimator of the separation rate compares separations and divorces occurring in one year to the initial number of marriages of the same cohort (the Total Separation or Divorce Rate is obtained by summing up the specific rates for each cohort of marriage). In 1995, about 158 separations and 80 divorces occurred per 1,000

[1] The forms include some socioeconomic characteristics of the spouses (date and place of birth, citizenship, marital status before marriage, education, job); information on the marriage (date, civil or religious ceremony); economic measures following separation/divorce; custody of any children and allocation of the marital home. The forms for separation (ISTAT/M/252) and divorce (ISTAT/M/253) can be downloaded at the url: http://www.istat.it/it/archivio/8758

marriages of the same marriage cohort; in 2009, 297 separations and 181 divorces were recorded for every 1,000 marriages (ISTAT, 2011a).

Two evident trends have been detected: an even more frequent recourse to the interruption of conjugal matches and a progressive shortening of the length of the marriage. The average age at separation increased over the years, including a decline of separations among people under 30 years old – mostly the effect of delaying marriage to a late age– and an increase in separations among spouses over sixty years of age (ISTAT, 2011a). Recourse to separation and divorce is not uniform throughout the country, with a steep decreasing geographical gradient from North to South. In 2009 the total separation rate reached its highest value in the northern region of Valle D'Aosta (over 400 separations for every thousand marriages) and the lowest in the southern area (an average value of 198.6). The education gradient is positive, which means that higher education levels are associated with higher divorce and separation rates, although Salvini and Vignoli (2011) find evidence of a reversal in the education gradient, as the rate of separation increases more abruptly among the less educated, while it levels off among the highly educated. This change is either in process or already accomplished in other continental European countries (Matysiak *et al*., 2011).

2.3. Previous findings on marital dissolution

The interest of scholars in the consequences of marital dissolution in Italy is more recent than the exploration of its causes. In 2007 a Congress at the Accademia Nazionale dei Lincei was organized to present the results of a two-year research project on familial instability conducted by eight Italian universities. Most of the contributions focused on the causes; moreover few analyses of the consequences came out (Mencarini, 2008; Rossi and Ongaro, 2008).

Initial studies of the consequences of dissolution focused on its impact on the family system. De Rose (2000) shows that living arrangements after marital dissolution differ between men and women. Men who separate live mostly alone (just under half of them), while women mostly live as single mothers, being the custodial parent in almost every separation. About one-third of men cohabit with a new partner (married or not), versus one-fourth of women, and the remaining individuals go back to the parental household, especially men. Results point to the rise of new family types, such as reconstituted families and *de facto* unions.

Further analysis shows that separated and divorced individuals exhibit a stronger dissatisfaction with some aspects of everyday life than people who never experienced separation or divorce (ISTAT, 2004). 41.8% of separated people are dissatisfied with their economic condition, in contrast to 36.6% among the rest of the adult population. Especially single parents (51.3%) are dissatisfied, and in general, single mothers more

than single fathers (over ten percentage points more). Family relationship are a cause of dissatisfaction for 16.5% of people who experienced separation, as compared to 5.3% among the rest of the population. A stronger dissatisfaction is reported among single men (26.3%) and in general among men (19.7% compared to 13.7%). Such stressful and unsatisfactory daily life can be a breeding ground for incidences of physical and psychological distress.

Later research using Italian data shows a prevalent interest in the economic dimensions of well-being, within a gender perspective (Aassve *et al*., 2007; Ongaro *et al*., 2009). The main results show that both men and women suffer from separation in different dimensions of well-being. Results confirm that women undergo worse economic distress than men. Single mothers, in particular, suffer the steepest drop in living standards. However, there is also a significant drop in economic well-being among non-custodial fathers who live alone after separation. The better economic position of Italian men depends on two factors: personal income and the opportunity, provided by the strong family network, of returning – at least in the first period after separation – to the parental home.

Another area of research in Italy deals with the consequences on children's well-being (Ongaro *et al*., 2009; Mazzuco and Meggiolaro, 2010; Meggiolaro and Ongaro, 2010). In particular, results from Meggiolaro and Ongaro show that adolescents' emotional well-being is influenced by parental resources, in particular mother's health. This result provides an additional reason to study the health status of separated parents, as being very important for the well-being of their children.

With regard to health status of formerly married people, there is very little empirical evidence from the Italian literature. Based on survey data collected by ISTAT in 1987–91, Bergaglio (2000) produced two-way descriptive tables, revealing that the chronic nervous disease rate among divorcees is twice as high as among married people. Divorcees use more pain medication, tranquilizers, antidepressants, sedatives and hypnotics and demonstrate heavier smoking behaviour than married people. In addition, 44.3% of divorcees are smokers, compared with 29.6% of married people, with a much higher daily consumption of cigarettes. Separated women suffer from nervous, psychic and cardiovascular diseases much more than married women, while among men, digestive system diseases are more prevalent than among married men. The analysis conducted by Bergaglio was followed by an inferential analysis conducted by De Rose and Spagnoli (2007) on ISTAT data collected in 2000. They studied changes in risky behaviours among separated people. They found that separated men drink more alcohol, smoke more cigarettes, use more drugs but are more engaged in sports activities than married men. Among separated women, they found heavier smoking behaviour but increased sports activity. Mencarini (2008) in a comparative review observed a larger gender gap in the economic consequences of union instability in Italy than in other western European countries. She summarized that the most observed consequences of separation are: higher depression levels, stronger smoking behaviour especially among

women, weaker parent-child relationships. Additionally, the standard of living deteriorates and the poverty risk increases.

2.4. Consensual unions in Italy

Separation is an event which is not only observed in married couples. It equally applies to cohabiting couples, although according to some authors the average economic and social consequences may not be so severe, since for many cohabitation is less binding than marriage, and mutual dependence is less pronounced (Andreß and Hummelsheim, 2009).

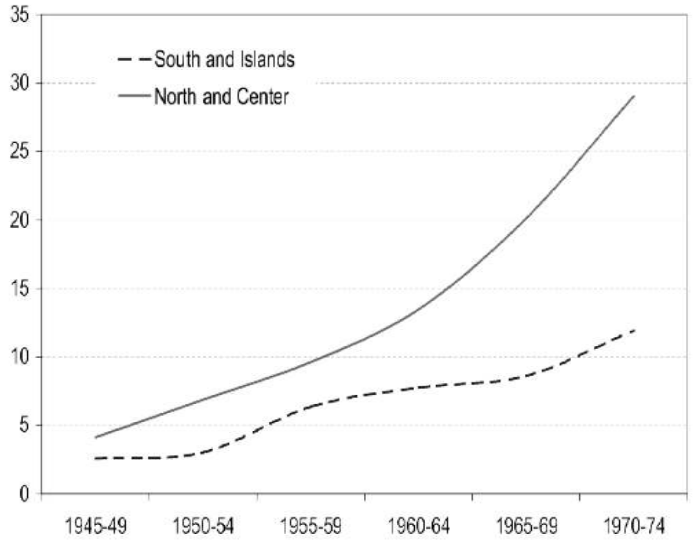
Cohabitation has been spreading in industrial societies since the beginning of the 1970s, and this is one of the most striking aspects of general social changes that have taken place throughout these societies. Consensual unions are very popular in some countries. In 2000, 48% of all Swedish couples between 30 and 39 years of age were cohabiting (Finch, 2006). Cultural elements, such as rising individualism and secularization (Lesthaeghe and Van de Kaa 1986), as well as economic aspects, such as changes brought about by industrialization, changes in gender roles, and rising female labor-market participation, may have contributed to its increase.

The cultural specificity of Italian family ties (Reher 1998, Dalla Zuanna and Micheli 2004) and a welfare state that provides very limited direct help to youth are addressed as the factors of the relatively scarce diffusion of non-marital cohabitation in Italy (Sabbadini, 1997). In particular, the influence of older generations plays a primary role (Rosina and Fraboni, 2004; Di Giulio and Rosina, 2007); a high paternal education level is found to have a negative effect on marriage and a positive one on cohabitation. In Italy, cohabitation is not as common as in other European countries, even though it is visible an increase in the proportion of cohabitations. This is attributed to cultural factors as well as to the economic and social policies that favour marriage (Coppola and Di Cesare 2008). In Italy couples who cohabitate are not legally protected and even registered. Unlike other countries (Mortelmans *et al.*, 2009), in Italy, the joint property of cohabiters is not protected, no joint debt liability has been instituted, legal cohabitation does not come with any particular mutual obligations. When a cohabiting relationship ends, none of the partners or children even have the right to alimony.

More recent estimates show that cohabitations, after some decades of delay, started to spread also in Italy. The pattern has begun to change and entry into consensual unions has increased strongly in younger Italian generations (Rosina, 2002; Barbagli *et al.*, 2003; Rosina and Fraboni, 2004; Di Giulio and Rosina, 2007; Gruppo di Coordinamento della Demografia, 2007; Gabrielli and Hoem, 2010). In ten years (1998-2009) cohabitations have more than duplicated, passing from 343 to 897 thousand couples (5.9% of all unions) (ISTAT, 2011b). 33% of the unions dated between 2003 and 2007

are cohabitations. In addition, first unions are more and more cohabiting unions, as shown in Figure 3.

Figure 3: Percentage of cohabiting unions out of all first unions. Women by region and generations, Italy 2003.



(Source: Gruppo di Coordinamento per la Demografia, 2007).

Cohabitations are more widespread in the North-East, among younger and better educated partners who both work. Cohabitations of never-married partners comprise the main group (53.9%) and had the highest increase. In fact, pre-marriage cohabitations have increased as a test before marriage. 33% of first marriages celebrated in 2004-2009 were preceded by cohabitation. It is common that at least one partner is separated or divorced (41.8%). It has also increased the rate of cohabitations with children, rising to 49.7% (it was 40.1% in 1998) (ISTAT, 2011b).

Cohabitations have natural dynamics; they can end with marriage, last or dissolve. The slow but constant increase in the total number of union disruptions is an indicator of changing family behaviour (Coppola and Di Cesare, 2008). In 2009 more than half (53.2%) of 6 million people who cohabited got married and 30.3% still cohabit, but 25.2% had undergone union dissolution (ISTAT, 2011b).

Very few studies focus on the dissolution consequences for non-marital unions in Italy. Angeli and De Rose (2003) found some evidences concerning living arrangements after the dissolution of the first union (consensual or marital). The results show that the risk of starting a new union for women who experienced a consensual union dissolution is equal to that experienced by those who had had a marital dissolution. By the way, men coming from a consensual union dissolution, have a lower probability of entering a new relationship than former spouses. Authors attribute this difference to a greater

availability of economic resources for men who already had been married, with respect to men who had never married.

According to Sabbadini (2011), year after year cohabitation as a trial for the couple has increased. Cohabitation is not necessarily a precursor to marriage. In ten years, 1998-2009, the proportion of partners doubtful about marriage has doubled (18 to 36.7 %) and the proportion of partners who had never looked at marriage had tripled (from 5.3 to 17.6 %). This new feature may suggest a decreasing commitment of partners in consensual unions. On the other hand, cohabitation may be more and more intended as a permanent form of relationship instead of a precursor to marriage. This interpretation is important to make hypotheses on the consequences of its dissolution on the well-being of the former partners. We hypothesize that the more emotional and material resources are invested in the union, the stronger the effect of dissolution will be.

2.5. Aims and research questions of this study

What we have expounded on indicates that in the Italian context the analysis of the separation event and its consequences has a special relevance. In the past research on the subject in Italy focused on the causes of separation but few studies examined the consequences, unlike in other countries, especially northern European ones. Our research contributes to fill this information gap.

The major aim of this research is to analyze several aspects of the quality of life after separation, especially its effects on mental and physical well-being. This research considers separation as a process and takes into account that preceding the event there are sources of distress which create subsequent mental and physical ailments.

Our study follows four lines of research to contribute to filling the gap.

1) the first analysis is a review of the main Italian household surveys available in Italy. The aim of the review is to outline the strengths and weaknesses of the survey for measuring the consequences of union dissolution on the health dimensions of well-being. The suitability of the survey in identifying and measuring the several crucial aspects is evaluated. Among these:

- *identifying people who have experienced marital dissolution*
- *measuring instability of consensual unions*
- *identifying non-custodial parents*
- *availability of health information and relationship with separation event*
- *availability of additional information, such as marriage duration, presence of children at the moment of separation, time elapsed since separation.*

We also suggest some changes in the questionnaire, which can fill the lack of information with a minimum impact on the structure of the questionnaire itself.

2) The research continues with the first empirical analysis. We draw a profile of people who experienced separation in their life course. The aim is to better know this continually growing population. We describe its socio-demographic profile and its adjustment to separation. In particular, living arrangement and health status are analysed.

3) The second step of the empirical analysis investigates the hypothesis of detrimental effects of separation on health in the short-, medium- and long-run. A gender perspective is always adopted in the analysis, in order to account for gender-specific effects. Using cross-sectional data we aim to answer the following research questions:

- *Whether and to what extent is marital dissolution associated with later health-related activity limitation?*
- *Are there gender differences in this association?*

In this step we also investigate which factors mediate the effect of separation on health status, by amplifying or attenuating this effect. The mediators investigated are, among others, the presence of young children, the socio-cultural context, and the current living arrangement. The analysis aims to answer the following research questions:

- *Which factors act as mediators in the separation-adjustment?*
- *Are there gender differences among the mediation role of such factors?*
- *When do detrimental effects on health appear?*

Due to the cross-sectional structure of the data, the associations found are only suggestive of a causal interpretation. Indeed, selection processes may bias the results. In addition, reverse causality may also apply. Nevertheless, any evidence of association is suggestive of a detrimental effect, once possible selection issues are taken into account and discussed.

4) The last step of our research aims to overcome the limits in interpreting the results given by selection issues and unobserved heterogeneity. We use longitudinal data for studying the short-term impact of separation on self-perceived health. Through this last chapter, our empirical analysis takes a step forward for two reasons. First, the interpretation of the results is empowered by adopting causal inference methods (fixed-effects models). Second, we extend the analysis to non-marital unions. Consensual unions have been neglected in the analyses of the causes and consequences of union disruption. Consensual unions are increasingly widespread in Italy. They are increasingly chosen as a permanent type of union, more and more frequently with children (marriage-like cohabitations). For these reasons so called “informal divorces” deserve our attention. We aim to answer the main research question:

- *Does the dissolution of a union lead to a sudden change in the self-perception of general health?*

The analysis also aims to answer the following secondary research questions:

- *Are there differences between men and women?*
- *Are there differences between marital and non-marital unions?*
- *Does living alone after separation lead to a greater worsening in general health compared to other living arrangements?*
- *Does the presence of children after separation have an impact on perceived health?*
- *Are these changes temporary or do they last for some time?*

According to the approach adopted, we partially or fully answer the above research questions. In particular, the results from the cross-sectional analysis conducted in Chapter 5 are only suggestive of causal interpretation; conversely, the results from the analysis in Chapter 6 allow causal interpretation, thanks to the use of panel data and of methods which take into account for unobserved heterogeneity.

The two health measures investigated in the analysis are:

- *Health-related activity limitation* (HRAL), which captures disabilities and chronic illnesses;
- *Self-rated health* (SRH), which effectively captures both physical and mental diseases.

The two measures capture different diseases, with different onset times. This allows us to perform a long-, medium- and short-term analysis. In particular, the HRAL measure likely captures disabilities which require more time to onset (see Section 5.3). This is appropriate to measure the potential effect of divorce on a medium-long term. According to the theoretical framework, exposure to stressors and deprivations for a long time may cause the onset of illnesses. As for the SRH it is a subjective measure of general health (see Section 6.6). It is sensitive to the short-medium effects of divorce, caused by the acute stress following separation. The measure effectively captures symptoms of depression, anxiety and psycho-somatic illnesses connected to the acute stressors present in the immediate post-separation time.

Chapter 3 - A review of Italian household surveys

3.1. Introduction

In the last decades, Italian surveys have dramatically increased the potentiality of measuring family changes. In this chapter we focus on Italian survey instruments measuring separation and its consequence on health. The aim is to check the appropriateness of these instruments to measure union dissolution (marital and consensual) and its consequences.

Administrative data on legal separations and divorces are very poor in individual and household information. They only provide basic information about the spouses and the legal agreement reached. Information includes: socio-demographic characteristics of the spouses (date and place of birth, citizenship, marital status before marriage, education, job); information on the marriage (date, civil or religious ceremony); legal agreement following separation/divorce (economic measures, custody of any children and allocation of the marital home. The administrative source has several limits. First, informal separations (*de facto* separations) are not registered. Second, it completely ignores the dissolution of consensual unions, which are more and more marriage-like cohabitations (long duration, with children). Third, it only gives a picture at the moment of separation: a study on the consequences of separation is therefore impossible.

For the above reasons, the focus of this review is on the richer sample household surveys. Household surveys are the only source available to investigate living conditions and well-being associated with separation. The aim of the review is to outline the strengths and weaknesses of the main Italian household surveys for studying the consequences of union dissolution on well-being, especially on health.

The main issues addressed include: identifying a union dissolution event, both marital or consensual; identifying people with separation experience; identifying non-custodial parents; placing dissolution in time and in the life course; measuring health dimensions of well-being.

Identifying a person with a separation experience is not at all trivial. At the time of interview, people with separation experiences have different marital statuses and living arrangements, according to the life stage they are in. Getting at previous separation experiences requires specific instruments and measures. A section of the review is dedicated to non-custodial parents, commonly fathers. After separation the custody of children is normally awarded to mothers, and men are commonly neglected by society (and by the statistics) as still being fathers. Most of them suffer the condition of having non-cohabiting children. In recent years these fathers have let their voices be heard and more social attention is addressed to them. The chapter ends with a review of the health

measures included in the surveys. Surprisingly Italian household survey are lacking in health information; improvements have been made in the very latest editions.

We also suggest several changes to the questionnaire in order to fill the lack of information with the smallest possible impact on the structure of the questionnaire itself.

The surveys reviewed includes: Family and Social Agents (FSS, *Famiglia e Soggetti Sociali*), Annual Survey on Daily Life (*Aspetti della vita quotidiana*), Health Condition Survey (*Condizioni di Salute e ricorso ai servizi sanitari*), Time Use Survey (*Uso del Tempo*), and European Survey on Income and Living Condition (EU-SILC).

3.2. Identifying union dissolution events

The best identification of an event of union dissolution requires longitudinal data, either prospective or retrospective. In a life-course perspective, the event is properly placed in time and in the life history. In the diverse portfolio of Italian household surveys, only two – EU-SILC and FSS – match this requirement.

The longitudinal structure of EU-SILC enables us to follow the same respondents over time, through four waves. This makes it possible to identify the transition to the union dissolution. Separation and subsequent household splits are detected in the wave immediately following the event.

For an exact identification of the event using EU-SILC panel data, many criteria apply: a change of marital status (from married to separated or divorced), the end of a cohabitation/couple living arrangement (residential change, household split), and a partner change. All these criteria are independent, and not without limitations. According to our experience, the recommended strategy is to combine all these criteria, in order to detect all union dissolutions. This strategy was adopted in the longitudinal analysis in Chapter 6.

The *marital status change* criterion only applies to marital unions, by definition. In EU-SILC as in all other surveys, except for FSS, the marital status variable suffers from a serious drawback. If a spouse changes temporary residence for work or study reasons there is no way to distinguish this separation from a marital dissolution. Temporary separations all fall in the "*de facto* separated" category (Appendix A.1).

The *end of a cohabitation* is a further criterion to detect separations in EU-SILC, although not always necessary. In general, we would expect that a separation implies that the couple move to separate dwellings. However, it is not rare, in Italy, to find separated partners who continue to share the same house, mainly for economic reasons (the so called "separated under one roof") until the couple is formally divorced. This means that many couples report separation despite living in the same dwelling. Contrarily, a partner

may be found living as part of a couple in two adjacent waves, but with two different partners.

Further, the "cohabitation" criterion is *per se* ambiguous, since in EU-SILC the reason for the residential change is not asked. Reasons other than relationship disruption may apply, such as work or study. Therefore, the actual number of union dissolutions would be overestimated, including temporary work/study separations. In addition, the EU-SILC relatively short panel duration –four waves – does not help us to detect reunions after temporary work/study separations. This shortcoming applies to both marital and consensual unions. The term '*commuting marriage'* is used interchangeably with 'dual-households' or 'dual-residence living' for these types of families (Winfield, 1985; Saraceno, 1994). As express by Sabbadini (2005) "if a couple lives in one dwelling but at least one partner has a second dwelling where he/she lives sometimes, due to work or study reasons, then the relationships is defined as commuting marital/cohabitating". Scholars of family dynamics tell us that commuting marriages in Italy are more and more common. In 1998, there were approximately 1,850,000 households that had at least one member who spent some time of the year outside the household (Sabbadini, 2005). Moreover, the phenomenon of commuting makes the family/household boundaries less distinct and more permeable, challenging the meaning of household membership itself. (Sabbadini, 2011).

The "*partner*" criterion is much more effective and is appropriate for both marital and consensual unions. It relies on the identification of the partner, where included in the individual record. A missing value or a change of this variable occurring since the previous wave would identify a separation. The ambiguities of the cohabitation criterion as regard to temporary separations apply as well. Minor issues of this criterion include editing errors and a few crossing couples errors (crossing partners of two brothers) in the available data.

A big shortcoming of EU-SILC is attrition. This is an important issue, especially when studying union dissolution, as shown in the empirical analysis (Chapter 6).

While EU-SILC allows the comparison of living conditions before and after separation, FSS is more appropriate to identify population who have experienced marital dissolution in the life course (Section 2.3). Partially adopting the Gender and Generation Survey (GGS) module, the FSS survey adopts a retrospective form for marital life (Appendix A.3). Any marriage is registered, together with any dissolution event (*de facto* separation, legal separation, divorce and widowhood) and the relative dates. These are valuable pieces of information, allowing for event history analysis on marital transitions.

A further longitudinal source of information is the FSS edition held in 2007. A subsample of the FSS 2003 survey was interviewed again four years later. This offers the opportunity to observe people after four years and to detect union dissolutions. Unfortunately, the sample size is very small. Rivellini *et al*. (2012) found about 60 cases

of marital dissolution. Another limit derives from the choice of an individual sample: the 2007 sample is composed by selected individuals and not by their whole households.

3.3. Identifying people with separation experience

A plurality of actors is concerned in separation: the partners, the children born from the union, the partner's parents, relatives and friends.

Demographer are recently addressed some attention to the parents of separated people. As recently noted by Kalmijn (2010b), the grandparents topic is also important from the perspective of parent's health and quality of life. The parents normally contribute to the daily life of the separated person and his/her children. They support single mothers in the care of the children and in combining work and family. They are a point of reference for separated sons, who usually have to leave the conjugal house. They continue the affective and care role toward grandchildren, contributing to their psychological well-being. Kalmijn tested the hypothesis that a child's divorce leads to a decline in parental well-being. At the moment Italian surveys don't allow the proper identification of a child separation during the parent life course (except for longitudinal EuSilc and only if cohabiters).

The focus of this section is on partners. We first discuss the identification of people currently separated and then the identification of people with a past separation experience.

Separated people at the time of the interview are identified by marital status. However, they may have repartnered, perhaps even having had children, without any concomitant change in marital status. For these reasons, additional information, such as living arrangement, is necessary to describe their actual living condition and life style.

The marital status categorization adopted in all the reviewed surveys includes: never married, married (cohabiting with partner), married not cohabitants (*de facto* separated), legally separated, divorced (Appendix A.1). As mentioned above, this categorization is inadequate to identify temporary separations for reasons of work, study or health. These temporary separations are included in the category "Married not cohabitant (*de facto* separated)", together with separation for union crisis. The adopted categorization is sometimes misunderstood by respondents. Sometimes, they refuse the word "separated" when there is no couple crisis and mark the "married" category. In the data editing process these cases are usually categorized as "*de facto* separated" status. Defining as "separated" a partner who does not cohabit for contingent reasons appear less suitable, due to the recent family trend. As suggested by McDonald (2000) "the statistical definition [of a family] is limited because it requires co-residence. It is also limited because it is static whereas 'family' is dynamic".

The ambiguity is elsewhere solved in different ways. In FSS an additional question on the reasons for non-cohabitation is asked (Appendix A.2). This strategy establishes whether it is a real marital dissolution or not. Elsewhere, in the Labour Force Survey, a less ambiguous categorization of marital status is adopted. The married category explicitly includes spouses who temporarily and for specific needs live apart. As a consequence, the de facto separated category only includes cases of marital crisis. This categorization seems to correspond more closely to the feeling of spouses.

Identifying people with a past marital separation experience is more complicated. A social survey which allows us to investigate the quality of life after separation must firstly be able to detect the presence of a familiar separation in the interviewed individual's life, regardless of his/her current status. This requirement is not fully satisfied by several sample surveys.

The same consideration of actual living arrangement of currently separated people applies here as well. At the moment of the interview the subject who experienced a separation may have a different marital status: still separated, living alone or in a couple, married, separated again or widowed. For these reasons retrospective questions to detect separation events in the past have become essential. Indeed, the population is fully identifiable only in retrospective survey (as FSS is).

In the absence of retrospective questions, household surveys can only partially identify this population. This is obtained by combining two questions: current marital status (with the limits described above) and marital status before current marriage (Appendix A.1). Unfortunately, only married people (cohabiting with partner) are asked the second question. Marital status before marriage is not asked to widowed, separated or divorced individuals. Those who dissolved more than one marriage are still unidentifiable. Those limits should be partially overcome by extending the question on pre-marital status to widowed, separated and divorced individuals adding nothing more to the questionnaire.

The dissolution of consensual unions is completely ignored by the current marital status approach.

FSS is the most effective survey for the identification of populations who have experienced marital dissolution in the life course. This survey adopts a retrospective form for marital life (Appendix A.3), where any marital event (de facto separation, legal separation, divorce and widowhood) and the relevant dates are recalled. The main shortcoming of this structure resides in memory problems, as for any retrospective survey. Many inconsistencies or missing information are detected during the editing phase of the production process, and not all can be remedied. Another limit of the FSS 2003 is that the retrospective questions on marital life are asked of all married women and to all separated, divorced and widowed people (Appendix A.6). Husbands cohabitating with their wives are excluded. For them, information is recalled by the wives. This was a risky choice, since a wife may have incomplete information on the

past marital life of her husband or have an aversion to recalling it. This methodology actually resulted in more missing values for the husband's marital life section than for the wife's (see our empirical analysis in Section 5.2). The 2009 edition remedies this problem, by asking the question husbands directly.

A drawback of the FSS 2003 is that it observe individuals only after the separation event. For that reason, it is not possible to study both partners after separation. This means that, unlike for prospective panels, it is not allowed to observe separation event from a couple's perspective.

A common limitation of all household surveys rests on the "invisibility" of the *more uxorio* dissolution. These individuals do not change marital status and at the moment no retrospective form exists on this subject. In the reviewed surveys there are no questions which uncover whether a people has experienced the end of a consensual union, except for the presence of a child. Not even the FSS survey registers consensual unions history. It only recalls premarital cohabitations, that is consensual unions which end with a marriage. Therefore, it is impossible to gain information about the disruption of consensual unions from this survey. Conversely, older Italian surveys on marital and fertility dynamics also followed consensual unions. This is true in the case of the Family and Fertility Survey 1995/96 (INF/2) in which consensual unions were monitored. The results indicate an early stage in the diffusion of this new type of union, with very small numbers and a higher instability compared to marriages (De Sandre *et al*. 1997).

The 2009 edition of the EU-SILC questionnaire includes an *una tantum* module for people with separation experiences. They are asked many questions on their living condition after the last union dissolution. Consensual unions are included. Unfortunately, the microdata are not disseminated, since they belong to the government authority that commissioned the research. A joint publication has recently been issued with the main results (ISTAT and Ministero delle Politiche sociali, 2011).

3.4. Identifying non-custodial parents

The analysis of the consequences of separation when children are involved is of the greatest interest for social research. The monoparental family is the most deeply studied living arrangement after separation**.** It is also the most identifiable family type after a separation involving children. Italian scholars have assessed a higher frailty and poverty risk for single mothers, from a gender perspective. But this is not the only critical condition. The corresponding condition of non-custodial parent is as much critical.

The point of view of the separated individual who does not live with his/her children has difficulty emerging in our society and it still corresponds to a "statistical invisibility". In Italy, the status of non-custodial parent normally refers to men. Rarely do surveys on the quality of life note down if the respondent has children with whom he

does not live. Few studies address this subject and more often the sources of information are non-institutional agencies, as associations of separated fathers (Rossi and Ongaro, 2008). In an enlightened and modern way, FSS, partially including the GGS module, asks respondents whether he/she has children and the year they left the parental house (see Appendix A.4). For up to three non-cohabiting children the module goes into depth, asking their distance from the parental house, the frequency of contact and a providing a satisfaction scale for the relationship (see Appendix A.5). This focus offers a very good opportunity for investigating the quality of the relationship between fathers and non-residential children. In the 2003 edition, the wife was asked to fill in the child module for the husband, as for the marriage history (see Appendix A.7). It is unlikely that wives have complete information on the children their husbands had from previous unions. This critical point has been remedied in the 2009 edition, where the husband is asked directly.

An alternative approach is offered by FSS: the mirror image of non-residential children, that is the non-residential parent (see Appendix 14). All respondents younger than 70 are asked for each parent: living status, distance from child's house, whether parents got separated (and when), and frequency of contact. Unfortunately, no question concerning relationship satisfaction is asked.

Unlike the FSS survey, other surveys do not take sufficient account of this aspect. On top of which there is a lack of very important information necessary to understand the daily life of the subject. Being a parent of minor children, even if non-cohabiting, has a remarkable impact on the availability and allocation of his/her own resources and time, on his/her choices in working, living, relational context and on his/her own priorities. An especial lack of information is seen in the economic conditions surveys, such as EU-SILC or Time Use. The EU-SILC questionnaire ask for the cost of alimony but not for the cost of child support and in any case it does not indicate if there are children involved. The 2009 EU-SILC *una tantum* module about people with separation experiences, goes into detail on the frequency of the contact with non-residential children. Results confirm a deterioration in the parent-children relationship: after separation children have no or less frequent contacts with the non-custodial parent in 18.9% of cases (ISTAT and Ministero delle Politiche sociali, 2011).

The Time Use survey is a precious resource for studying the well-being of parents and children after divorce. The daily diary might give essential information on the presence of a non-residential child (or a non-residential partner), and on the quality of their relationship. Unfortunately, in the TUS daily diary, the time spent with a non-residential father (or child) falls into the residual category “With other people he/she knows” (see Appendix A.8). In the 2002-2003 edition, the residual category was “With non-cohabitant relatives” (see Appendix A.8). The complex relationship between a non-residential parent and his/her child is only captured by the alphabetical description of the activity in the daily diary, making any elaboration very arduous. It is advisable to add the label “mother”, “father” and “child” to the list “Whom with”, regardless of their

cohabitation. As observed by McDonald (2000), “the people we consider as members of our family change as our circumstances change... More precisely, these are forms of living arrangement rather than forms of ‘family’. For example, most children who live in a one-parent family have another parent living elsewhere whom they would describe as part of their family. Thus, it seems more appropriate to describe “family” in terms of the changing nature of relationships between people that can be considered to be ‘family’ relationships".

3.5. Placing separation in the life course

We know that the influence of an event in the life course varies, according to the life stage when the event is experienced. This is known as the “life stage principle” (Ryder, 1965; Giele and Elder, 1998). That is why, If we want to analyze the consequences of separation on well-being, it is important to know the age and the life stage when the event occurred and the elapsed time. The crucial information is the date of separation. Combined with other information it allows us to derive important variables such as: age at separation, cultural context, time elapsed since separation and the age of any children at the separation time.

This information is only present in the FSS survey. It is of course known in the longitudinal EU-SILC in cases where a separation is observed through the panel. The lack of this information is critical in thematic surveys such as the Health Condition Surveys, since investigating the consequences of marital dissolution on health becomes impossible. The literature shows that many factors such as marriage duration, age at separation and presence of children mediate the health effects of separation. So it is desirable to make an effort to include this information in all thematic surveys (beginning with the Health Condition Survey).

In the Health Condition Survey, a specific question asks whether in the last three years a painful and stressful event has occurred. The list of the events includes, among others, the death of a loved person and the breakup of a couple relationship (Appendix A.9). The observation is limited to the last three years. The question does not ask to specify whether the couple was married or cohabitating or even living apart together. More important, the event is not important per se but only if the respondent feels it as distressing or hard to deal with. This method has disadvantages, since a separation perceived as not distressing could become the source of considerable stress and could have an impact on health. Furthermore, the possible beneficial effects on health are of interest to scholars. A separation could be a sigh of relief or could have positive effects on health as in the case of very negative marriages or those involving abuse.

A second important piece of information is year of marriage. This is essential in order to calculate marriage duration. Marriage duration is an important factor in the

study of the consequences of separation. In all the surveys reviewed the question about the marriage year is restricted to currently married people and only if cohabitants (Appendix A.10). With very little effort it would be easily extended to all people with marriage experience (separated, divorced, widowed). The information advantage would be undeniable. The restriction to only cohabiting spouses seems outworn especially in the present age, when separations are more frequent not necessarily for emotional reasons.

3.6. Health information

Health has both a psychological and a physical dimension. Mental suffering is a common consequence of separation and it occurs immediately before and after separation; while the onset of physical disease usually takes more time. Both these dimensions are well captured by the self-rated health (SRH). The SRH question is common to all the surveys reviewed, except for the FSS survey (edition 2003). (Appendix A.12).

Unfortunately, the FSS survey, the most powerful survey for the study of marital life, is inadequate when it comes to health information. No satisfaction scales, nor self-rating questions on happiness are included in the FSS survey. These are not proper health measures but somewhat relate to mental well-being. The only health variable in FSS is described by the question, '*Are you affected by a longstanding illness or a permanent disability that reduces your personal freedom, requiring help from other people for daily needs inside or outside your house?*' The answers are '*No', 'Yes, occasionally for some needs,' and 'Yes, continuously or for important needs*'. The measure is also known as Health-Related Activity Limitation (HRAL) (Appendix A.11). The HRAL measure allows us to better detect long-term consequences of separation. The wording uses the term "chronic", "permanent", addressing long-term consequences. This is a measure of disability appropriate for old age. Further comments on this measure are provided in Section 5.3. The question strictly relates to the third item of the Minimum European Health Module (MEHM) recommended by Eurostat, although the survey has not been harmonized yet (Appendix A.12). The MEHM is a set of three global questions concerning three health domains: self-rated health, long-standing illness, and limitation in usual activity (Robine and Jagger, 2003). In the subsequent edition of the FSS, held in 2009, the MEHM is totally adopted. Among the surveys reviewed, the Annual Survey on Daily Life (since 2008), the Time Use survey (since 2008) and the EU-SILC adopted the European module MEHM.

The Health Condition survey, on the other side, has a very limited approach to the life cycle (such as marital and child history), while it is very rich in health information. It includes self-rated health, use of drugs, health behaviours (prevention, smoking behaviour, sports activity) and an open question for any illness or diseases suffered in the last 4 weeks. In addition, a list of chronic illnesses and permanent diseases issued to the

respondent includes the nervous and psychic diseases most common among people dealing with stressful events, such as depression and anxiety (Appendix A.13). Health status is also measured by the SF-12, a self-reported measure of physical and mental status (Ware *et al*., 1998) and the derived *Mental Component Summary index* (MCS) and *Physical Component Summary* (PCS) are calculated. The MCS and PCS indexes measure physical and psychological well-being, respectively.

In order to properly study the consequences of separation on health, the statuses before and after separation should be compared. This is only possible using longitudinal prospective data. All the reviewed surveys (except for EU-SILC) have a cross-sectional structure, allowing only for association studies. In fact, cross-sectional structure cannot control for unobserved heterogeneity and its selection effects. Conversely, the longitudinal structure of EU-SILC allows for a casual approach. Amato (2010) in his review appreciates the advancement of knowledge of the consequence of union dissolution produced in recent studies by the adoption of causal inference methods. The empirical analysis shown in Chapter 6 falls into this line of research.

3.7. Conclusions

In this chapter we have reviewed the main Italian household surveys. The focus is on their suitability for measuring separation and its consequence on health. The review includes: Family and Social Agents 2003 (FSS), Annual Survey on Daily Life, Health Condition Survey, Time Use Survey (*Uso del Tempo*), and the European Survey on Income and Living Condition (EU-SILC).

Italian sources of data are not completely adequate for the study of the consequences of union dissolution on health. The main limitation hinges on the identification of the people who separated. All of the surveys, except for the FSS, systematically overestimate the number of people who experience dissolution and lack many additional pieces of essential information.

FSS, the only survey which adequately identifies dissolutions, adopts a retrospective approach, providing much information on the separation (such as marriage duration, presence of children). It has the significant limitation of allowing only association studies. In fact, its cross-sectional structure cannot control for unobserved heterogeneity and its selection effects.

The second most powerful survey for dissolution analysis is the EU-SILC. The longitudinal structure of the survey enables the following of the same respondents over time. This makes it possible to identify the transition to union dissolutions and subsequent household splits. It allows us to apply methods of causal analysis. The EU-SILC's main drawbacks are: the short panel span (four waves), attrition, and the size of the final sample, resulting in separation being a rare event.

Unfortunately, both the FSS and the EU-SILC lack health information.

This review showed these additional critical points. First, dissolution of consensual unions are ignored by most of the surveys. Second, a great improvement would derive from adopting better specified marital status categories, in order to exclude temporary non-cohabitation for particular needs (such as work, study) from the *de facto* separated category. Third, the lack of the separation date makes it impossible to derive precious information on factors that act as mediators: marriage duration, presence of children at separation, time spent since separation. Fourth, information on non-residential parent (or children) is missing in almost all surveys, neglecting a very relevant element in the quality of the respondent's life.

A possible way forward to exploit administrative information is to perform a record linkage with a household survey. The administrative source might fill-in the lack of information on the past life of the separated people, such as the custody of children and a socioeconomic profile of the former partner.

Chapter 4 - People with separation experience: the profile of a sub-population

4.1. Introduction

This empirical analysis starts with a description of the Italian population with marital dissolution experience. Its aim is to know more about this increasing sub-population which shares the experience of separation. The social and demographic relevance of this sub-population is determined by its specific needs, its social and demographic behaviours, and its specific living conditions. How do they live? How and why do they differ from the rest of the population? With this aim, all ever-married respondents aged 20 and over are sampled. The socioeconomic profile of ever- versus never-separated people is compared. The characteristics investigated include among others: age, region of residence, education level, partnership, and household economic condition.

The analysis is based on the Italian surveys: *Household and Social Actors* (*Famiglia e Soggetti Sociali*, FSS), conducted in Italy in November 2003 and *Health status of the population and use of health services* (*Condizioni di salute e ricorso ai servizi sanitari*) carried out in 2004.

The chapter is organized as follows. The data sources are described in Section 2; the profile of separated people is reported in Section 3. Section 4 is devoted to living arrangements after separation. A further section (Section 5) focuses on health status; the prevalence of Health-Related Activity Limitations (HRAL) and of chronic illnesses and permanent disabilities is investigated. Section 6 concludes the chapter.

4.2. Data sources and measures

This profile is mainly based on the Italian survey, *Famiglia e Soggetti Sociali* (FSS), conducted in Italy by the National Statistical Institute (ISTAT) in November 2003. This is the Italian version of the Generations and Gender Survey. The original sample comprised 19,927 households and 49,541 individuals. Data on all individuals living in the sampled households were collected. Residents in communities such as convents, residential hospitals and retirement homes were excluded. The sample includes all ever-married respondents, aged 20 and over; it consists of 30,094 people (13,585 men and 16,509 women).

The information on marital life are derived from the retrospective life-course section of the FSS questionnaire. Separation experience is defined by dichotomous categories: *never-separated* / *ever-separated*. In a life-course perspective, 'ever-separated' people are defined by having experienced separation or divorce at least once in their life, regardless of current marital status and living arrangement. People who get remarried

after marital dissolution are included in the "ever-separated" category; in the tables they are described either as "in couple" or "with a partner", respectively for living arrangement and partnership. As a consequence, 'never-separated' includes spouses in intact marriages and widowed people. Throughout the Chapter, the term 'separated people' denotes those having experienced marital dissolution.

The main advantage of using the FSS survey is that it allows us to properly define and locate in time any separation event. Thanks to the retrospective life-course section, we are allowed to include *de facto* separations, and to distinguish spouses living apart for work, study or reasons other than marital crisis (see Chapter 3). These advantages lead to a preference for the FSS as a source rather than other household surveys available, which are richer in well-being information (such as economic resources and health status) but lacking in life course information.

The characteristics investigated include: age, region of residence, education, household economic condition, living arrangement, partnership, and health status. Respondent's age was taken at the interview time. Educational level is defined as low (up to 8 years), medium (9 to 13 years), and high (14 or more years) and household economic condition is self-rated as good (combining excellent and adequate categories) and bad or very bad. Current living arrangement is presented in two alternative categorizations: the usual categorization (includes: in a couple, single parent, living alone and other living arrangement) and a more detailed one, suitable for the specific features of separated people. Partnership is included as a dichotomous variable. The 'with a partner' category refers to having a partner, regardless of the cohabitation (thus including 'living apart together' relationship).

The health information we can derive from FSS survey is very sketchy: the only health information is derived from the question, '*Are you affected by a longstanding illness or a permanent disability that reduces your personal freedom, requiring help from other people for daily needs inside or outside your house?*' The answers are '*No', 'Yes, occasionally for some needs,' and 'Yes, continuously or for important needs*'. The measure is also known as the Health-Related Activity Limitation (HRAL). The question is a global single-question instrument used to identify subjects who perceive themselves as having long-standing, health-related limitations. Any more detailed information concerns the type of health problem that are eventually captured through the question. No medical description of the health problem is required; only the importance of the needs and the frequency of the received assistance is relevant. The measure is discussed in greater detail later in the text (Section 5.3), where the risk of HRAL is modelled through multivariate analysis methods.

In order to have more information on the health status of people who experienced marital dissolution, data from the Italian survey on and *Health status of the population and use of health services* (*Condizioni di salute e ricorso ai servizi sanitari*) are used. This is a nationally representative survey, carried out in 2004–2005 by ISTAT on a

sample of 128,040 individuals. The survey is approximately contemporary to FSS. Through a self-administered questionnaire, every respondent is asked about the presence of chronic illnesses and permanent disabilities, from a list of 24 items. We calculated the prevalence of the illnesses among the two groups of ever-separated and of never-separated people, performing significance tests. The aim is to give some clues to chronic illnesses and permanent disabilities that are more prevalent among those who experienced marital dissolution. Ever-separated people are defined by the marital status (*de facto* or legal separation, divorce) and the marital status before last marriage. The main limitation of this analysis is that the identification of separation experiences is less precise than in FSS. In fact, it is not possible to exclude from this analysis separations for reasons other than affective (such as non-cohabitation for work, study and other practical reasons). In addition, any information on the time elapsed since separation is unavailable.

The program SAS 9.1 was used for all data analysis.

4.3. A socioeconomic profile

FSS survey respondents who had experienced the dissolution of their marriage corresponds to about 2.5 million residents in Italy in 2003. This population is increasing as in 2000-2001 it was estimated at 2.3 million (ISTAT, 2003), and in 2009 it was estimated at 3.1 million (ISTAT and Ministero delle Politiche sociali, 2011). Just over half (53.2%) went through with divorces, and the rest (46.8%) experienced only separation. A small share (2%) experienced the breakdown of more than one marriage. Taking the earlier separation event (usually *de facto* separation), the estimated average duration of marriage is 11.7 and 12.0 years (s.d. 9.3 and 9.4), for men and women respectively. The mean age at separation was 38.7 years (s.d. 9.8) for men and 35.8 years (s.d. 9.7) for women. A large proportion of people had one or more children younger than 15 at the time of separation (54.4% of men and 62.5% of women). On average 11.9 years (men) and 13 years (women) had elapsed since separation.

The sub-population of people who had experienced separation represents 4.5% of the entire population resident in Italy aged 15 and over – 4.8% and 5.2% for men and women respectively, and 7% of all ever-married respondent aged 20 years – 7.2% and 6.9% for men and women respectively (Table 1).

In Table 1 the proportion of people who have experienced marital dissolution across socioeconomic categories is displayed. Separation experience is more widespread among adult middle-aged groups, highly educated people and people living in North and Central Italy. These features are part of the well-known heterogeneity of people who face marital dissolution, with respect to the rest of married partners. This heterogeneity is at the base of the self-selection to divorce perspective (Amato, 2000; 2010). The Italian literature on

the causes of divorce points to a positive gradient between marital instability and the level of education for women (De Rose 1992; De Rose and Rosina 1999; Vignoli and Ferro 2009). The effect of education on the risks of dissolution appears much weaker for men (De Rose and Di Cesare 2003). These features are not all time-invariant: as an example Salvini and Vignoli (2011) showed a reverse of the education gradient which took place in the last decades.

Table 1 - Prevalence of separation experience (per 100 ever-married people aged 20 and over).

	Men	Women	Total
Total	7.2	6.9	7.0
Age			
20-39	7.9	7.5	7.7
40-59	9.3	10.4	9.9
60-79	4.8	3.5	4.1
80 and over	1.3	1.4	1.4
Education			
High level	10.1	10.7	10.4
Medium level	7.5	10.1	8.8
Low level	6.4	4.9	5.5
Area of residence			
North	8.5	8.1	8.3
Centre	7.8	7.9	7.8
South	5.1	4.7	4.9
Economic condition			
Good	6.7	6.0	6.3
Bad	7.7	7.9	7.8
Very bad	10.4	14.1	12.5
Living arrangement			
Living alone	49.2	13.8	23.6
In couple	2.7	2.1	2.4
Single parent	34.4	35.3	35.2
Isolated and other	49.2	13.9	24.3
Partnership (cohabiting or not)			
With a partner	3.6	3.2	3.4
Without a partner	43.3	18.4	24.2

Source: FSS 2003 (own calculations). The analysis is conducted on a weighted sample.

The presence of separated people is almost double among economically disadvantaged households compared to households where economic conditions are good. People with a marital dissolution in their past are more present in one-person households, among isolated household members, and in mono-parental households. Indeed, about half of the men living alone come from marital dissolution; the same is the case for isolated household members. The proportion is much smaller for women. A very small share of couples have at least one partner from a marriage dissolution. The proportion rises a little among living apart together relationship, that is partnership without cohabitation.

Table 2 compares the sub-population of separated people to intact families (married and widowed). The population who experienced marital dissolution is younger than

people who did not: about 81% are under 60, compared to 61% of never-separated people.

Table 2 - Ever-married people aged 20 and over, by their separation status and socioeconomic characteristics (percent composition).

	Ever-separated			Never-separated		
	Men	Women	Total	Men	Women	Total
Total (thousand)	1,130	1,320	2,450	14,613	17,724	32,337
Mean age	50.2	48.3	49.1	54.5	54.9	54.7
Age						
20-39	22.2	24.4	23.4	20.1	22.4	21.3
40-59	56.0	58.2	57.2	42.3	37.2	39.5
60-79	21.0	15.7	18.2	32.1	32.1	32.1
80 and over	0.9	1.6	1.3	5.6	8.2	7.0
Education						
High level	18.4	15.1	16.6	12.6	9.4	10.9
Medium level	31.4	40.9	36.6	30.2	27.3	28.6
Low level	50.2	43.9	46.8	57.2	63.3	60.6
Economic condition						
Good	65.9	57.8	61.6	70.4	68.0	69.1
Bad	26.5	30.9	28.9	24.6	26.9	25.8
Very bad	7.6	11.3	9.6	5.0	5.1	5.1
Widowhood experience						
Yes	0.2	1.6	1.0	6.0	21.3	14.4
Partnership	45.8	35.4	40.2	94.5	78.7	85.8

Source: FSS 2003 (own calculations). The analysis is conducted on a weighted sample.

The positive association between education and separation is partially due to a cohort effect, since divorce is more widespread among younger cohorts, who in turn have higher educational attainment, and partially due to the assessed positive causal relation between education and risk of separation. Ever-separated individuals are on average more educated: about 17% have a high educational level, compared to about 11% among never-separated people; about 37% attained a medium level of education, compared to about 29% among never-separated respondents. Separated people live in worse economic conditions than people in intact families. In the entire population, women are more likely to live in bad or very bad economic conditions than men (28.6% of men vs. 32% of women), but among separated people this gender gap is amplified (34.1% vs. 42.2%).

As regards partnership, in 2003, having a partner, cohabiting or not, is a more common condition among men who experienced a separation (45.8%) than among women (35.4%).

4.4. Living arrangement after separation

The living arrangement after a separation experience is of great interest to those studying the socio-demography of the family. Of course, arrangements depend on the former spouses' current life stage, and it is partially determined by the time passing and by the material and emotional resources separated people have access to. Our sample includes those cases where spouses have recently separated, along with cases of long-run adaptation to separation. In the medium and long run, separated people may stay without a partner for more or less long periods, rebuild more or less stable new couple relationships, start a new cohabitation, with or without a remarriage.

In 2003, a relevant number of separated people (27.6%) recoupled (with cohabitation) (Table 3). The rest of the separated and divorced people lived mostly alone (35.6%), as single parents (27.4%) or had returned to the parental home or lived with friends or relatives (9.4%). Women are at a disadvantage compared to men, since men are more likely to recouple (33.1% vs. 22.8%), whereas separated women mainly live as single mothers with their children (42.3% vs. 9.9% among men). These latter figures are due to the Italian law which until 2006 almost always entrusted children's care to the mother. Since then, the law provides for joint custody that is awarded to both parents.

Table 3 - Ever-married people aged 20 and over by living arrangement (percent composition).

Living arrangement	Ever-separated			Never-separated		
	Men	Women	Total	Men	Women	Total
Living alone	44.8	27.8	35.6	3.6	13.0	8.7
In couple	33.1	22.8	27.6	94.0	78.0	85.2
Single parent	9.9	42.3	27.4	1.5	5.8	3.8
Isolated and other	12.3	7.0	9.4	1.0	3.2	2.2

Source: FSS 2003 (own calculations). The analysis is conducted on a weighted sample.

Previous findings are displayed in Table 4: on the left, we have the living arrangement in the year immediately following separation (Ongaro *et al.*, 2009); on the right, the living arrangement of people having experienced marital dissolution in an unspecified time in their life course (ISTAT, 2004). The following main features are clear, consistent with the rest of the literature. A greater share of men live alone compared to women (almost double). Conversely, women mostly live with their children as single parents; the relative share among men is much smaller. No matter how much time has passed since separation the share of women engaged in a new couple relationship is always smaller than that of men.

Table 4 – The living arrangement of the population with separation experience (percent composition).

Panel 1994-2001 (a)	Men	Women	Total	Mean 2001-2002 (b)	Men	Women	Total
Living alone	55.6	25.0	38.9	Living alone	45.5	25.8	35.2
With parents (with or w/o children)	26.1	8.7	16.6	No family household	7.5	3.9	5.6
Couple (with or w/o children)	2.8	5.8	40.1	Isolated component	9.3	5.5	7.3
Single parent (w/o others)	15.5	60.5	4.5	Couple with children	16.6	13.0	14.7
Total	**100.0**	**100.0**	**100.0**	Couple without children	11.3	7.2	9.1
				Single parent	9.0	39.8	25.2
				More than one family	0.8	4.7	2.9
				Total	**100.0**	**100.0**	**100.0**

Notes: (a) Ongaro *et al*. (2009): sample of 314 separated people interviewed the year after separation, from ECHP panel 1994-2001. (b) ISTAT (2004): sample of ever-separated people from the Annual Multipourpose survey, mean 2001-2002.

The two distributions are not fully comparable, since the categories do not perfectly match and the time references are different: the year immediately after separation (on the left); and an unspecified time after separation (on the right). Nevertheless, an overview of the two distributions suggests the dynamics of living arrangement, as time goes by after separation. In particular, the proportion of those living alone lessens, more for men than for women. This likely evolves into new couple formation. The single parent arrangement is dominant among women in the first year after separation, while it is naturally reduced as time goes by, both because children leave home and for new couple formation. Going back to the parental house is a solution adopted by one fourth of the men in the year immediately after separation. Fewer women adopt this living arrangement. No temporal dynamic is evident for the "with parents" living arrangement in Table 4, since the ISTAT research does not have this category. In Table 5 an alternative living arrangement categorization is presented, more specific for separated people. The categorization is homogeneous to Table 4-left: the "with parents" category is here included and a full comparison is possible. Going back to the parental house seems to be a first solution for men in facing the emergency; indeed as time goes by the number of men still living with parents declines. This is true only for men; the proportion of women living with parents is smaller during the first year, compared to men, but is stable in time. This describes a condition of dependence or mutual support that has continued over the years. An interpretation of these results lies in the peculiarity of the Italian separation process and housing market. Commonly, in Italy, when a couple with children get separated, the mother remains in the marital house with her children, and may find support from her parents for their care. The father, on the other hand, leaves the house and may go back to the parental home, in order to save money since the Italian rental market is very expensive and also to have support for daily care. As shown in Table 5 the father's arrangement is temporary, while the mother's arrangement may be extended until the children have grown up.

Table 5 – Living arrangement of population with separation experience (percent composition).

	Ever-separated			Never-separated		
	Male	Female	Total	Male	Female	Total
Living alone	44.8	27.8	35.6	3.6	13.0	8.7
With parents (w or w/o children)	11.1	8.0	9.5	0.2	0.4	0.3
Couple with children	22.0	13.0	17.2	62.7	52.1	56.9
Couple without children	11.1	9.8	10.4	31.3	25.9	28.3
Single parent (w/o others)	8.6	37.2	24.1	1.3	5.2	3.5
Other	2.4	4.1	3.3	0.9	3.4	2.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: FSS 2003 (own calculations). The analysis is conducted on a weighted sample.

4.5. Some information about health status

Table 6 shows the prevalence of health problems comparing separated people with partners in intact marriages. The presence of health problems is defined by two affirmative answers to the HRL question.

Table 6- Prevalence of health-related activity limitations (HRAL) according to the separation status (per 100 ever-married people aged 20 and over).

	Ever-separated			Never-separated			Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Total	5.4	6.1	5.8	7.1	10.3	8.8	7.0	10.0	8.6
Occasionally for some needs	*2.4*	*4.4*	*3.5*	*3.8*	*5.7*	*4.8*	*3.7*	*5.6*	*4.8*
Continuously or for important needs	*2.9*	*1.7*	*2.3*	*3.3*	*4.6*	*4.0*	*3.2*	*4.4*	*3.9*
Age									
20-39	2.5	2.5	2.5	0.6	1.0	0.8	0.8	1.1	1.0
40-59	3.2	5.3	4.3	2.5	2.8	2.7	2.6	3.1	2.8
60-79	11.9	11.3	11.6	11.5	15.5	13.7	11.5	15.3	13.6
80 and over	59.3	40.0	46.3	40.2	48.6	45.6	40.4	48.5	45.6
Education									
High level	1.6	4.5	3.0	4.8	6.0	5.4	4.5	5.9	5.2
Medium level	3.4	3.2	3.3	3.7	4.0	3.8	3.7	3.9	3.8
Low level	8.0	9.4	8.7	9.4	13.6	11.8	9.3	13.4	11.6
Area of residence									
North	4.6	4.8	4.7	5.6	8.8	7.4	5.5	8.5	7.1
Centre	7.0	3.8	5.2	6.3	11.6	9.2	6.3	11.0	8.9
South	5.7	11.6	8.8	9.5	11.5	10.6	9.3	11.5	10.5
Economic condition									
Good	4.2	3.5	3.8	5.4	7.8	6.7	5.4	7.6	6.5
Bad	5.5	8.7	7.3	10.2	15.3	13.3	10.2	14.8	12.8
Very bad	15.1	12.7	13.6	13.3	16.1	14.8	13.3	15.6	14.6
Living arrangement									
Living alone	5.6	7.6	6.4	14.0	27.4	29.0	14.0	27.4	23.7
In couple	5.1	3.6	4.5	6.1	5.3	5.7	6.1	5.3	5.7
Single parent	5.0	5.2	5.2	14.6	13.3	18.0	14.6	13.3	13.5
Isolated and other	5.6	13.9	8.9	16.7	31.2	32.7	16.7	31.2	26.9
Widowhood experience									
Yes	-	16.3	14.4	25.2	28.7	28.1	25.1	28.6	28.0
No	5.4	6.0	5.7	5.9	5.3	5.6	5.9	5.3	5.6
Partnership									
With a partner	4.3	3.3	3.8	6.1	5.4	5.8	6.1	5.3	5.7
Without a partner	6.3	7.7	7.1	23.8	28.2	27.4	16.2	24.4	22.5

Source: FSS 2003 (own calculations). The analysis is conducted on a weighted sample.

The overall proportion of 7% of men and 10% of women reported activity limitations due to chronic illness or permanent disability. The proportion is highest among less educated people (11.6%), individuals living in Southern Italy (10.5%), people without a partner relationship (22.5%), and those suffering very bad economic conditions (14.6%).

Using crude rates, the health of ever-separated people is better than that of people in intact marriages: 5.8 and 8.8% of ever- and never-separated people, respectively, reported health problems. This first crude result may apparently be explained by the younger age and higher educational level of separated people. On the contrary, in each age class the prevalence among separated people is higher than among never-separated, especially for men. Further analysis of this apparent inconsistency reveals an age composition effect. To test for this effect standardised rates have been calculated, based on the age distribution of the never-separated group. Age standardization allows us to compare the actual prevalence of health problems in the two groups, net of age composition. After standardizing, separated men seem to perform worse than never-separated men (8.9 vs 7.1%). Women, for their part, have an increased rate (9.4%), although still lower than never-separated women (10.3%). The next step of the analysis includes controls for age and further characteristics, at the individual and context level (see Chapter 5).

The age gradient of the health measure confirms that HRAL is an appropriate measure for older ages. Indeed, limitations and disabilities are more prevalent in the elderly, since it takes time before their onset. As expected, health problems (causing activity limitations) and separation experience have two opposite gradients with regard to age. Separation affects mostly young-adult age groups, while health problems affect mostly old age groups (see Table 1). Indeed, in the elderly the prevalence of limitations is very high: 45.6% in those aged 80 and over. Conversely, the oldest respondents also have the lowest rate of separation experience (1.4%). Similarly, at young-adult ages (below 40 years old), the prevalence of health problems is negligible (1%), while separation or divorce experience affects a relevant share (7.7%).

In order to have more information on the health problems possibly captured by the HRAL question, data from the Italian Survey on Health Conditions were used. Results offer some clues about chronic illnesses among separated people (Table 7). The most prevalent chronic diseases are: osteoarthritis and arthritis (20.5%), followed by hypertension (14.2%), recurrent headaches or migraines (13.3%), allergies (13%), chronic anxiety and depression (11.8%), renal and biliary calculi (6.1%). Excluding osteoarthritis/arthritis, which is typical of oldest ages, hypertension, anxiety, depression, headaches or recurring migraines can be attributed to the acute stress faced after the breakdown of marriage. Comparing ever-separated people to never-separated people, the only chronic diseases significantly more prevalent among separated people are: allergies (chi-sq = 10.38; $p < 1\%$) and chronic anxiety and depression (chi-sq = 4.47; $p < 5\%$).

If we include in the analysis those chronic diseases already cured at the time of interview, such as headaches and recurring migraines then the results are significantly more spread among ever-separated people than among never-separated ones (chi-sq = 8.7; p < 1%).

Table 7 - Prevalence of chronic illnesses and permanent disabilities among ever-married people aged 20 and older, by separated status (per 100 people).

	Ever-separated	Never-separated
Asthma	5.6	5.6
Allergy	13.0	11.0
Diabetes	3.7	7.1
Cataract	2.7	8.2
Hypertension	14.2	24.0
Myocardial infarction	1.6	2.8
Angina pectoris	0.9	1.8
Angina or other heart diseases	2.9	5.9
Stroke, cerebral hemorrhage	0.8	1.8
Chronic bronchitis, emphysema	4.8	6.5
Osteoarthritis and arthritis	20.5	29.9
Osteoporosis	5.0	8.3
Gastric and duodenal ulcer	5.5	6.8
Cancer (including lymphoma and leukemia)	2.7	3.4
Recurrent headache or migraine	13.3	13.0
Chronic anxiety and depression	11.8	10.5
Alzheimer's disease, senile dementia	0.1	0.7
Parkinson's disease	0.2	0.5
Other diseases of the nervous system	1.4	1.3
Liver and kidney stones and gallstones	6.1	8.7
Cirrhosis of the liver	0.4	0.4
Thyroid disease	5.2	6.2
Skin diseases (psoriasis, vitiligo)	1.4	1.4
Other chronic disease	5.4	5.7

Source: Health Condition Survey 2004-2005 (own calculations). The analysis is conducted on a weighted sample.

4.6. Conclusions

This Chapter describes the health and socioeconomic profile of the Italian population with marital dissolution experiences, in comparison with partners in intact marriages. The characteristics investigated include: age, region of residence, education level, household economic condition, living arrangement, partnership, and health status.

The respondents in the FSS survey who had experienced the dissolution of their marriage correspond to about 2.5 million individuals in the Italian population in 2003; 7% of all ever-married respondent aged 20 years and over. This confirms the relevance of this sub-population as an interesting phenomenon for demographers of the family.

The first descriptive results confirm the heterogeneity of the sub-population compared to spouses in intact families. Separation experience is more widespread among adult middle-age groups, highly educated people and people resident in the North and Central Italy. This heterogeneity is at the base of the selection perspective (Amato, 2000; 2010). Separated people also live in worse economic conditions than people in intact families.

Living arrangements after a separation experience is of great interest for the socio-demography of the family. Our sample includes those cases where spouses have recently separated, along with cases of long-run adaptation to separation. A greater share of men live alone compared to women (almost double). Conversely, women mostly live with their children as single parents. The respective share of single fathers is much smaller. Regardless of the time which has passed since separation, the share of women engaged in a new couple relationship is always smaller than that of men. Having a partner, cohabiting or not, is a more common condition among men who experienced a separation than among women.

The analysis also suggests the dynamics of living arrangements, as time goes by after separation. The proportion of those living alone decreases, more for men than for women. The single parent arrangement is dominant among women in the first year after separation, while it naturally decreases as time goes by. The decrease may both derive for children leaving home and for new couple formation. Going back to the parental house is a solution adopted by one fourth of men in the year immediately after separation; fewer women adopt this living arrangement. Going back to the parental house seems to be the first solution for men facing this emergency; indeed as time goes by the number of men still living with parents declines. This is true only for men; the proportion of women living with parents is smaller from the first year, compared to men, but is stable over time. This describes a condition of dependence or mutual support that has continued over the years. An interpretation of this result is based on the peculiarity of the Italian separation process and housing market. Commonly, in Italy, when a couple with children get separated, the mother remains in the marital house with her children, and she may find support from her parents for the care of children. The father, on the other hand, leaves the house and may go back to the parental home, in order to save money for a very expensive rental market and also to have support for daily care. As shown in Table 5 the father's arrangement is temporary, while the mother's arrangement may be extended until the children have grown up.

As regards health, ever-separated people perform better than people in intact marriages: 5.8 and 8.8% of ever- and never-separated people, respectively, reported health-related activity limitations (HRAL). This first crude result may apparently be explained by the younger ages and higher educational level of separated people. On the contrary, in each age class the prevalence among separated people is higher than among those never-separated, especially for men. Further analysis of this apparent inconsistency reveals an age composition effect. After standardizing for age, separated men seem to

perform worse than never-separated men. Women, for their part, still have a lower health problem rate than never-separated women.

The age gradient of the health measure confirms that HRAL is an appropriate measure for older people. Indeed, limitations and disabilities are more prevalent in the elderly, since it takes time before their onset. As expected, health problems (causing activity limitations) and separation experiences have two opposite gradients with regard to age. Separation affects mostly young-adult age groups, while health problems affect mostly old age groups.

In order to have more information on the health problems eventually captured by the HRAL question, we analyse the chronic illnesses among separated people. The most prevalent chronic disease are: osteoarthritis and arthritis, followed by hypertension, recurrent headaches or migraines, allergies, chronic anxiety and depression, Liver and kidney stones and gallstones. Excluding osteoarthritis/arthritis, which is typical of oldest ages, hypertension, anxiety, depression, headaches or recurring migraines can be attributed to the acute stress faced after the breakdown of marriage. Allergy and chronic anxiety and depression are also significantly more prevalent among separated people than among never-separated ones.

Chapter 5 - Marital dissolution and health problems: a cross-sectional analysis

5.1. Introduction

In this chapter, we investigate the detrimental effects of marital dissolution on health. Data from *Household and Social Actors* (*Famiglia e Soggetti Sociali*, FSS) carried out in 2003 are used. The health outcome concerns the presence of chronic illness and permanent disability that hampers a person in daily activities (HRAL variable).

The cross-sectional nature of the data prevent a causal interpretation of the results. We can only test the association between separation experience and health problems. In the first step (Section 5.6) the following research questions are addressed:

(1) *Whether and to what extent is marital dissolution associated with later health-related activity limitation?*
(2) *Are there gender differences in this association*?

The probability of suffering for health problems is modelled through a logistic regression. The focus independent variable is the experience of separation, in the dichotomous categorization: never-separated / ever-separated. The outcome variable is the presence of health-related activity limitations. We are not able to identify a causal effect of marital dissolution experience on subsequent health problems. Nevertheless, any evidence of association is suggestive of a detrimental effect, once possible selection issues are taken into account and discussed.

The second step focuses on the role of mediators that moderate or amplify the effect (Section 5.7). The mediators investigated are, among others, the presence of young children, the socio-cultural context, and the current living arrangement. We proceed separately for men and women in order to verify whether some moderator was gender-specific. The analysis also aims to shed light on the timing of the onset of the disease. The following research questions are addressed:

(3) *Which factors act as mediators?*
(4) *Are there gender differences among the mediation role of such factors?* and
(5) *When do detrimental effects on health appear?*

The chapter is organized as follows: the source of data and the analytical strategy are described in Section 2; Section 3 discusses the health outcome, i.e. the HRAL measure; models and controls are described in Section 4; the results in Sections 5 and 6. The discussion of the results ends the chapter (Section 7).

5.2. Data source and strategy of analysis

The analysis is based on the cross-sectional survey *Household and Social Actors* (*Famiglia e Soggetti Sociali*, hereafter FSS) carried out in November 2003.

The main advantage of using the FSS survey is that it allows us to properly define and locate in time any separation event, the birth of children within the marital life course, and any other event of interest. In addition, we were allowed to include de facto separations, not considered in legal judgments statistics, and to exclude spouses living apart for work, study or reasons other than marital crisis. These advantages led to a preference for the FSS as a source rather than the other available household surveys, which are richer in health information but lacking in life course information.

Separation status is the focus regressor of the analysis. In a life-course perspective, separation status is defined by a dichotomous variable: never-separated / ever-separated. The ever-separated category includes people who experienced separation or divorce at least once in their life, regardless of current status (single, remarried...). Never-separated people include spouses who never experienced separation/divorce (including widowers). Hereafter we also refer to the ever-separated category as separated and to the never-separated category as intact families or intact marriages. We derived information on marital dissolution from the marital status and the retrospective section on marital life. Combining current marital status and marital status prior to the current marriage we identify people who experienced marital dissolution. In addition, the retrospective section provides the year of de facto separation, legal separation, divorce for each marriage, up to a maximum of three marriages (Appendixes A.3 and A.6). In the case of multiple separation events (i.e. separation and divorce from the same marriage or from more than one marriage), the earlier separation event is considered. In case of divorces with missing date of legal or *de facto* separation, we assume that the first separation event has occurred three years before the divorce (five years if the divorce happened before 1987), according to the minimum time interval required by the law. This assumption may underestimate the time elapsed since the separation. The cases amount to 46% of respondents who experienced divorce, but rises to 50.6% among cohabiting husbands. This is due to the fact that in the 2003 edition the retrospective section for married men was filled in by wives. In the 2009 edition this critical point has been remedied.

The strategy of analysis consists of two multivariate steps. As a first step, we model the probability of bad health for ever-married people. The aim is to test the association between separation experience and health problems, suggestive of a detrimental effect of separation on health. As a second step, we restrict the analysis to people with separation experience, shedding light on the mediators that may moderate or amplify the effect of marital dissolution on health.

In the first step a logistic regression analysis is conducted (Models A and B). The outcome variable is the presence of health-related activity limitations, converted to a dichotomous variable 'No/Yes' by collapsing the respective answers. The focus independent variable is the experience of separation, in the dichotomous categorization: never-separated / ever-separated. Regressions are conducted separately for men and women, to ascertain possible gender differences in the association. The sample consists of all ever married people aged 20 and over and born in Italy (29,037 observations; 13,180 men and 15,857 women). Selecting ever-married people would control for the problem of health selection into the marriage (Lillard and Panis, 1996). Respondents born abroad are excluded (1,057 people), since this was found to more than double the risk of being separated compared to respondents born in Italy. This may be the causal effect of migration (migration can cause separation) and the result of a marital-status selection of migrants (those separated are more likely to migrate). Migrants are also affected by the well-known health selection phenomenon (migrants are healthier than those who do not move). These two effects led us to consider foreign-born individuals as a select population with a particular association between separation and health. Model B explores interaction effects between separation experience and all categorical covariates. All single covariates included in Model A control for the structural effects ("other things being equal"); in Model B we are interested in these interactions in order to test for the "intensity effects", that is to verify whether some combination of characteristics leads to bigger effects (of separation) than others. Only interactions which are significant for one or both genders are included.

The second step of our analysis consists in focusing on people who have experienced separation (Models C and D). The sample is reduced to 1,921 respondents (874 men and 1,047 women). The aim is to shed light on the mediators that may moderate or amplify the 'effect' of marital dissolution on health. Through logistic regression the probability of health problems among separated people is modelled. We conduct the analysis for gender-separated in order to test for the gender-specificity of the mediators. Except for the variable widowhood experience, the regressions were controlled for by the same set of covariates used in the first step. These covariates now act as potential mediators. Models C and D only differ in the living arrangement categorization adopted.

The whole analysis is conducted on weighted samples, to correct for non-sampling errors (such as non-response bias). The corrective factor is extracted from the survey weights (calibration estimators) (ISTAT, 2006). The program SAS 9.1 was used for all data analysis.

5.3. The health outcome: the HRAL measure

The health outcome is the Health-Related Activity Limitation (HRAL). The health measure is described by the question, 'Are you affected by a longstanding illness or a

permanent disability that reduces your personal freedom, requiring help from other people for daily needs inside or outside your house?' The answers are 'No', 'Yes, occasionally for some needs,' and 'Yes, continuously or for important needs'. The measure is also known as Health-Related Activity Limitation (HRAL). We collapsed the two answers, not being interested in identifying the kind of daily activities for which respondents receive help. Furthermore, both of the two "Yes" categories may relate to serious health problems. The two affirmative answers are also elsewhere in the text referred to as 'bad health' or 'health problems'. For this question a proxy is not allowed. Due to an extensive imputation strategy adopted by ISTAT, no missing cases are found.

This is the only health measure available in the 2003 FSS survey. The FSS survey conducted in 2003 is not yet harmonized to the Minimum European Health Module (MEHM) recommended by Eurostat (for more details about MEHM see Section 2.6 and Appendix A.12). However, the FSS survey strictly relates to the third item of the MEHM "For at least the past 6 months, have you been limited in activities people usually do because of a health problem? (Yes, strongly limited / Yes, limited / No, not limited)". As in the MEHM, our health indicator uses a global approach. The question is a global single-question instrument to identify individuals who perceive themselves as having long-standing, health-related limitations. It is independent of the type of activity, the specific life situations and the kind of health problems causing the activity limitation. No more detailed information is asked about the type of health problems that are possibly captured by the question. No medical description of the health problem is required; only the importance of the needs and the frequency of the received assistance are relevant.

The health measure that is used here is quite specific in several aspects. First, it is a subjective measure of health. Self-reported health measures are commonly used as proxy for health status. They are found to have an acceptable reliability (Cox *et al*. 2009). Second, what kind of disabilities and illness are actually measured is not declared. It is very likely that the measure only includes the most severe cases of health problems. This identification is not objective and may be affected by individual and contextual factors, such as education or social acceptance. For example, depression may seriously impair personal autonomy, but it is often not recognized, and its symptoms are overlooked, or even silenced because of the shame.

HRAL is a measure of disability appropriate for the older age groups. "Longstanding" and "permanent" limitations and disabilities are more prevalent in the elderly, since it takes years before their onset. So, we argue that the health-related activity limitation measure likely captures the potential effect of divorce on the medium-long term. For this reason this measure provides an interesting opportunity to have some hints on medium- and long-term consequences of divorce, notwithstanding the lack of information on the exact time when the health problems started. In our sample, on average 11.9 and 13 years had elapsed since separation, for men and women respectively. This appears to be a congruous time span for some longstanding illnesses to develop.

The FSS question has two affirmative answers, which have a natural order. They are ordered by the impact of the activity limitations and not by the severity of the illnesses and disabilities. Unfortunately, the wording of the question is somewhat ambiguous, since the two "Yes" categories are not mutually exclusive. The first "Yes" category become clear only after reading the second. In particular, the second "Yes" category includes both continuous help and help for important needs. By exclusion, one derives that the first "Yes" category includes only occasional help for unimportant needs. This may lead to misreporting, since commonly first categories attracts answers which are consistent with the following categories in the list. This is not a problem for our analysis, as we collapsed the two answers, being uninterested in identifying the kind of daily activities for which respondents receive help. On the other side, both of the "Yes" categories may relate to serious health problems. A correspondence between the two criteria (importance of needs and severity of illness) is not obvious and, thankfully not necessary for our analysis.

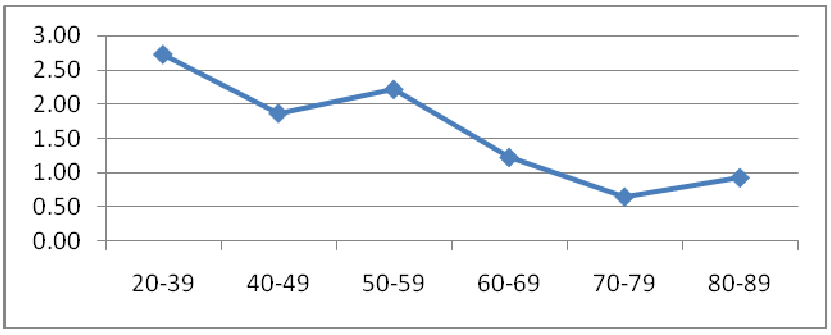
5.4. Models and controls

The aim of the first step is to test the association between separation experience and health problems, suggestive of a detrimental effect of separation on health (Model A and B). The focus regressor, i.e. separation experience, is a dichotomous variable: never-separated / ever-separated (see Section 5.3). The following variables are included as controls: age, widowhood, region of residence, education level and household economic condition. We only included the main determinants assessed in the literature, for two reasons. First, the aim of this study is not that of finding the determinant of the health problems. Second, in consideration of the small sample of separated people, further subdivision of the sample was inappropriate. Respondent's age was measured at the interview time and is treated as a continuous variable. This is also better in the case of a small sample, which separated people compose. The same approach is taken for the first step of the analysis (Table 8), in order to make the results comparable.

The odds of experiencing health problems for ever separated vs. never separated individuals decrease with age (Figure 4). This may suggest that checking whether adding an interaction between the two variables into the model would lead to any changes in the results. Therefore, in Model B an interaction term of separation by age (categorical) has been included (results are not shown for reasons of brevity). The overall test for the interaction is not significant. [2]

[2] Only for women aged 50-59, is the OR of ever-separated vs never-separated significant (OR=2.068; p=0.0103). The estimates have an age trend consistent to the crude measure shown in Figure 4. Including the interaction, the estimates of the other covariates change neither their level nor their significance.

Figure 4 - Odds ratio for HRAL for ever separated vs. never separated people, by age.



As regard to the other controls, a large body of literature focuses on the detrimental effects of widowhood on health. The socioeconomic and cultural context is captured by the macro-region of residence. Educational level and self-assessed household economic condition are used as proxy measures for socioeconomic status (SES). Education level is grouped into low (up to 8 years), medium (9 to 13 years), and high (14 or more years) levels. Household economic condition is self-rated as good (collapsing excellent and adequate categories), bad and very bad.

The second step of this analysis focuses on the mediators that moderate or amplify the 'effect' of marital dissolution on health (Models C and D). Except for the variable "widowhood experience", the regressions were controlled for the same set of covariates used in the first step. They now act as potential mediators. Widowhood is excluded, since only 1% of the sample have experienced both separation and widowhood events. According to the literature, the following are added as further potential mediators: the presence of young children at the time of separation, the time elapsed after separation and the current living arrangement. The presence of children younger than 15 is hypothesized to amplify health problems, at least for mothers (see Aasve *et al*. 2007 on economic deprivation). The time elapsed since separation may be considered to be a relevant mediator of the consequence of a union dissolution (Lorenz, 2006; Andreß and Brockel, 2007). On one hand, time passing may minimize the damage accumulated during the first years after separation, when many stressful events are concentrated. On the other hand, the permanence of the separated status poses challenges to one's health. Time elapsed is categorized as short (up to 5 years), medium (6 to 12 years), or long (more than 12 years). Current living arrangement is a proxy measure for the couple experience after separation. In the assumed theoretical framework, and as stressed by previous studies (Ongaro *et al*., 2009), current living arrangement is an important mediator of the effect of the separation. We adopt two alternative measures: the usual categorization of living arrangement (Model C) and partnership (Model D). The usual categorization includes: in a couple, single parent, living alone and other living arrangement. Partnership is included as a dichotomous variable. In particular, the presence of a partner is hypothesized to be an important factor for psychological and

economic well-being and good health status. The 'with a partner' category refers to having a partner, regardless of the cohabitation (thus including 'living apart together' relationships).

The background characteristics of the people under observation are extensively described in Chapter 4. The only difference is that in the multivariate analysis people born abroad (1,057 cases) are excluded, for the reasons described above. The sample characteristics (unweighted) are described in Appendix B. Due to an extensive imputation strategy adopted by ISTAT, there are no missing cases in any of the covariates included.

5.5. The association between separation and health problems

This section presents the results of the first regression step, modelling the probability of having a health problem. The focus regressor is separation experience as a predictor of health problems. In Model A, the controls are: age, widowhood experience, region of residence, education and household economic condition; in Model B, interactions with separation experience are included (Table 8).

Table 8 - Odds ratios for Health-Related Activity Limitations among ever-married people, aged 20 and over and born in Italy.

	Model A		Model B	
	Men	Women	Men	Women
Separation experience *(ref: never-separated)*				
Ever-separated	1.632**	1.701**	1.088	1.290
Age	1.095**	1.094**	1.095**	1.095**
Widowhood experience *(ref: no)*				
Yes	1.509**	1.424**	1.513**	1.415**
Region *(ref: north)*				
Centre	1.081	1.338**	1.274	0.837
South	1.842**	1.816**	1.732**	2.194**
Education *(ref: high level)*				
Medium level	1.350*	1.129	3.906**	1.717*
Low level	1.865**	1.353*	2.187*	1.176
Economic condition *(ref: good)*				
Bad	1.636**	1.667**	1.655**	1.675**
Very bad	3.066**	2.520**	3.060**	2.487**
Separation*Region *(ever- vs. never-sep.)*				
North	-	-	1.014	1.587*
South	-	-	0.875	2.388**
Separation*Educ. *(ever- vs. never-sep.)*				
Medium level	-	-	2.340**	1.830**
Pseudo R-square	0.113	0.160	0.112	0.160
Max-rescaled R-Square	0.280	0.333	0.280	0.332
LRT (χ2, 4 df)	-	-	11.10*	16.07**

Source: FSS 2003, own calculations.
29,037 observations: 13,180 men and 15,857 women; **p<0.01; * p<0.05; + p<0.10.
The analysis is conducted on a weighted sample (calibration estimates).

As a first result, all the aforementioned covariates present an association with health in the expected direction, according to the literature (Model A). In particular, the likelihood of health problems shows a positive age gradient, with an odds ratio of about 0.10 for each unit increase of age, for both men and women. The detrimental effect of widowhood is evident: widowhood experience is responsible for a 50% higher risk of experiencing health problems. Living in Southern Italy negatively affects the health of both sexes; the context also negatively affects women resident in Central Italy. Furthermore, health-related limitation shows a gradient across educational levels, especially for men. Women's health appears to be less affected by education than that of men, and only for those with low levels of education. The observed gender difference may reflect a unique Italian socioeconomic feature, where traditionally women are shown to increase their well-being through marriage more than through their own education level. Conversely, poor household economic conditions show a strong association with bad health problems for both genders.

Shifting our attention to the focus regressor, that is, separation experience, the results show a positive association with health problems reported after separation. This holds for both men and women (OR = 1.632, $p = 0.003$ for men; 1.701, $p < 0.001$ for women); a slight gender differential is found. People having experienced marital separation or divorce are more than 60% more likely to suffer from chronic illness and limitations in daily activities then the never-separated.

Further exploring the interactions between separation experience and categorical covariates (Model B) the only relevant interactions are the following: a Southern context for women, and medium educational level for both men and women. In particular, in Southern Italy, separated women are twice as likely to have health problems as women in intact families (OR = 2.388, $p< 0.001$). As regards education, people at medium education levels are more likely to have health-related activity limitations when they experience marital dissolution than those who lived in intact families (OR = 2.340, $p < 0.001$ for men and OR = 1.830, $p = 0.002$ for women). Including interactions significantly improves the likelihood of the model for both genders. By including interactions, the separation odds ratio becomes not significant (although still positive among women), suggesting that the effect of separation is mostly mediated by regional contexts for women and by education for both men and women.

A moderate value of goodness of fit measure of Models A and B (the two generalized R-square measure: the likelihood-based pseudo R-square and its rescaled measure) confirms that the adopted specifications include only a few of the predictors of health problems, suggesting the presence of unobserved heterogeneity. This is not a problem for this analysis, since its aim was not to find the determinants of health problems, but to shed light on their association with separation experience.

5.6. The role of mediators

The second step of this analysis is focused on people who experienced separation (Table 9), modelling the probability of having health problems. The purpose is to shed light on the mediators that moderate or amplify the association between marital dissolution and health problems later measured.

Table 9 - Odds ratios for Health-Related Activity Limitations among people aged 20 and over and born in Italy who experienced marital dissolution.

	Model C		Model D	
	Men	Women	Men	Women
Age	1.080**	1.097**	1.076**	1.092**
Region *(ref: North)*				
Centre	1.378	0.412*	1.391	0.406*
South	1.935+	1.742+	2.042+	1.750+
Education *(ref: high level)*				
Medium level	4.937*	1.122	5.109*	1.133
Low level	10.701**	2.173+	10.503**	2.187+
Economic condition *(ref: good)*				
Bad	0.885	2.085*	0.843	2.058*
Very bad	5.431**	3.129**	5.255 **	3.016**
Children *(ref: none)*				
One	0.329*	1.290	0.322*	1.405
Two or more	0.280**	3.254**	0.301*	3.509 **
Time elapsed *(ref: short, up to 5 years)*				
Medium (6 to 12 years)	1.640	1.146	1.633	1.142
Long (13 years and over)	1.767	0.308**	1.859	0.305 **
Living arrangement *(ref: in couple)*				
Living alone	1.137	1.113	-	-
Single parent / Isolated / Other	2.028	1.485	-	-
Partnership *(ref: with a partner)*				
Without a partner	-	-	2.050*	1.412
Pseudo R-square	0.095	0.090	0.098	0.089
Max-rescaled R-Square	0.265	0.234	0.271	0.234

Source: FSS 2003, own calculations.
1,921 observations: 874 men and 1,047 women; ** p<0.01; * p<0.05; + p<0.10.
The analysis is conducted on a weighted sample (calibration estimates).
.

In regards to region of residence (Model C), the Southern context negatively affects the health of separated men and women (OR = 1.935, p = 0.094 for men; OR = 1.742, p = 0.071 for women). In addition, separated women living in the Centre of Italy seem to have an advantage over those living in the rest of the country (OR = 0.412; p = 0.034). This context effect is specific for separated women, since an opposite result is found among the entire population of ever-married women (see Table 8; OR = 1.338; p < 0.001). Education has a very strong impact on separated men, but a weaker effect on separated women. This is in line with the impact on the entire population, although the association among separated men is much stronger than among never-separated men. Household economic condition is very important, with a double risk of health problems

among separated women in bad conomic conditions, compared to those in good ones. The risk is triple for very bad economic conditions. Separated men are even more strongly affected by economic condition than women, but only if they experience very bad economic conditions (OR = 5.431; $p < 0.001$). These results suggest a greater vulnerability of separated men to their economic conditions compared to separated women, but also shows that separated women are vulnerable even at the first degree of economic difficulty. This pattern is not completely congruent with the entire population, where there is not such a big difference between genders. In addition, in intact families, the odds ratio among men in very bad economic conditions is weaker than among separated men. In a causal interpretation, these results would suggest that separation increases the gender gap in vulnerability to bad economic condition and that the health of separated men suffers from economic condition more than that of men in intact marriages.

Figures 5 and 6 compare the effects (odds ratios) of the main covariates between the entire population under observation (blue; from Model A) and ever-separated people (orange; from Model C), for men and women respectively. It is evident that separation makes men's health more vulnerable to the lower human capital and to very bad economic conditions. This rise in vulnerability is weaker among women, suggesting that separation increases the gender gap, to the detriment of men.

Figure 5 - Odds ratios for HRAL among men.

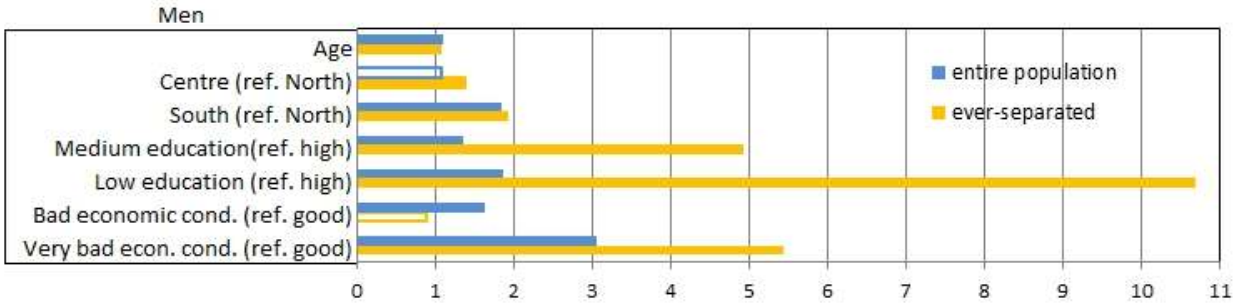
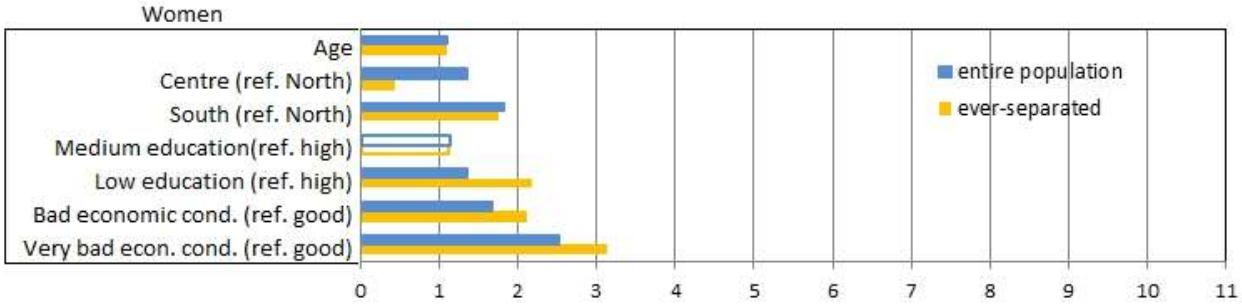


Figure 6 - Odds ratios for HRAL among women.



Exploring further possible mediators, our results suggest that the presence of more than one child at the time of separation amplifies the risk of health problems among women. Having more than one child triples the likelihood of health problems compared

to separated women with no young children. Conversely, having only one young child does not significantly increase the risk for women. The presence of children acts in the opposite direction among separated men. Having one or more children decreases the risk for health problems by about 70% compared to separated men without any children. A possible interpretation is that the presence of young children to take care of provides protection for the fathers, probably inducing a healthier life style. The care of their children, when fully accomplished, can result in better self-care; in addition, fathers do not have the burden of daily childcare, usually assigned to mothers.

As regards time elapsed since separation, the risk of health problems decreases in the long run (after 12 years) for women (OR = 0.308; p = 0.007), while there is no time trend for men. This result suggests a decreasing time profile of health-related activity limitations for separated women and a flat time profile for separated men. In the long run, the supposed effect of separation on the health of women seems to disappear, and women seem to recover from the health damage accumulated in the first years after separation. A further hint on the timing of the health problems is provided by an alternative specification of Models C-D, not reported here for reasons of brevity, where age is included as a categorical variable. The data suggest that activity limitations due to health problems appear earlier among women than men. Indeed, while men suffer from limitations beginning in their sixties, women are already affected in their fifties (with an eight times higher risk than at earlier ages). The results are not in line with the entire population of ever-married people, where the same specification presents an age gradient that is almost equivalent among men and women, suggesting a gender disadvantage related to age among separated people.

The last two mediators investigated are living arrangement and partnership. The association between health problems and current living arrangements other than living in a couple (alone, single parent or isolated) is positive but not significant for either men or women (Model C). This result suggests that the detrimental effect of separation, supported by the first step of the analysis, is independent of living arrangements following separation. The presence of a partner, cohabiting or not, (Model D) gives an interesting result. Having a partner protects against health problems, but only for men (OR = 2.050; p = 0.037). A positive association, although not significant, is found among women (OR = 1.412; p = 0.332). Including partnership in place of living arrangement leads to irrelevant changes in the OR of the other variables.

5.7. Conclusions

In this study, carried out on nationally representative Italian data, 29,037 ever-married individuals are observed out of which 1,921 experienced marital dissolution. The aim is to investigate the association between separation experience and health problems,

specifically health-related activity limitations, reported in the years following the separation.

Once controlled for socioeconomic and demographic conditions, multivariate analysis gives support for the hypothesis that people who separated or divorced have a higher risk of being affected by health-related activity limitations than people in intact families. All potential confounders included in the model show effects congruent with the literature. Therefore, the answer to our research question (1) 'Whether and to what extent is marital dissolution associated with health-related activity limitations?' is affirmative. The result supports the hypothesis that marital dissolution has negative consequences for health. The analysis shows no gender differentiated effects. This result yields a negative answer to our research question (2) 'Are there gender differences in this association?'.

A further focus on the restricted sample of separated people provides some information on the factors that mediate the association between separation and health problems. The Southern Italian context reveals negative effects on the health of separated men and women. Our results confirm a gender specificity of the majority of the mediators. Medium and low education has a very strong impact on separated men, but a weaker effect on separated women. Results also show a greater vulnerability of separated men to their economic conditions compared to separated women. However, women's health seems to be vulnerable even at the first level of economic difficulty. Separation is also associated with an increased gender gap in health status, in the case of bad economic conditions, to the detriment of men. In general, separated men and women with low human capital (education, economic condition) perform worse in term of health than the never-separated. In a causal interpretation, these results suggest that experiencing marital dissolution increases the risk of the onset of health problems for people with low human capital, compared to never-separated people, and this is true especially for men. However, marital separation may cause both the worsening of economic condition and the worsening of health status. The impact on health may partially come to pass through the worsening of economic conditions. This causal interpretation appears to be in line with the economic perspective theoretical framework.

The presence of children younger than 15 at the moment of separation acts in the opposite direction among men and women. While having more than one child seems to amplify the effect of separation on the health of mothers, having children appears to be protective for the fathers. Time seems to act as a moderator for separated women, who in the long run (after more than a decade) seem to completely recover from the detrimental effect of separation. Conversely, for men there is a flat time profile, indicating no time trend. The effect of current living arrangement on health of separated people passes through other mediators, especially economic condition and the presence of children. Having a partner, cohabiting or not, appears protective against health problems, but only for men. These results provide a first answer to our research question (3) 'Which factors

act as mediators?' and answers positively our research question (4) 'Are there gender differences among the mediation role of such factors?'.

There is a partial answer to our research question (5) 'When do detrimental effects on health appear?' The result suggests that detrimental effects of separation on health appear earlier for women than for men. The decreasing time profile found among women suggests an immediate high level of disease after separation that persists for more than a decade, declining later. The health measure used is likely to include serious mental disease, such as depressive symptoms, anxiety and nervous problems, as well as severe physical diseases, such as heart disease, diabetes and cancer. Therefore, the time profile observed may include both volatile and longer-term health outcomes. The issue deserves further study and research.

The main limitation of our analysis resides in the cross-sectional nature of the source, which prevents clear identification of causal effects. The results are suggestive and it cannot be inferred that there are only causal links. A longitudinal source would allow us to correctly estimate the treatment (separation) effect, comparing the health status before and after separation. This is exactly what we do in the next step of the Thesis (see Chapter 6). In the absence of this approach, it is assumed that there is no health selection on people who separated. Nevertheless, the strength of the study consists in the specificity of the dataset for identifying separations among other causes of non-cohabitation (such as work reasons), and in the availability of information related to marital life, such as the date of the separation and the presence of children at that time. The congruence with the literature about the covariate effects and the consistency among the associations found confirms the reliability of the results.

Concluding, the empirical evidence supports the hypothesis of a detrimental effect of separation on health. Of course, a reverse effect may also apply, although it is not likely to account for the entire effect. An anticipation effect of separation on health also applies. The problem is synthesized by Lorenz (2006: 113): '[O]ne difficulty facing researchers is distinguishing changes in psychological distress and physical illness that are due to divorce from changes that are due to the accumulation of more proximal events for which divorce can be a catalyst.' This distinction is not important for the present study. We consider the anticipation effect as a part of the marital breakdown effect. Indeed, this study pointed to the detrimental effects on health of marital breakdown, which includes: the previous marriage crisis, the separation event itself and the longer-term economic hardship and social isolation it may cause.

The results suggest the need for both a policy of prevention of marital dissolution and of support for separated people. Prevention may consist of counselling projects for families and marriages facing a crisis, aimed to improve communication skills and to offer other tools to come out of the crisis. Support for separated people should be provided in the immediate aftermath of separation. The important role of children showed by the data suggests the need of policies that support separated mothers in their

management of work and child care activities. The remarkable results about the role of low education and very bad economic conditions among separated men suggest the need for policies of economic support for separated men with low human capital and poor economic resources.

Chapter 6 - Union dissolution and health problems: a causal approach

6.1. Introduction

The aim of this empirical analysis is to identify the effect of union dissolution on health status. The analysis focuses on a subjective measure of health: self-rated health (SRH). This measure is appropriate to capture the short-term health consequences of separation, in both physical and mental dimensions. Due to the four-year structure of the panel, we observe at most a three year period after separation. This time span matches well with the health measure investigated. This allows us to observe the most critical moment after separation, the initial period.

We address the following research questions:

- *Does the dissolution of a union lead to a sudden change in the self-perception of general health?*
- *Are there differences between men and women?*
- *Are there differences between marital and non-marital unions?*

The analysis also aims to answer the following secondary research questions:

- *Does living alone after separation lead to a greater worsening in general health compared to other living arrangements?*
- *Does the presence of children after separation have an impact on perceived health?*
- *Are the changes temporary or do they last for some times?*

In this last chapter, our empirical analysis takes a step forward for two reasons. First, the interpretation of the results is empowered by adopting causal inference methods. Second, we extend the analysis to non-marital unions.

As regards the methodological enhancement, we aim to overcome the limits in interpreting the results given by selection problems and unobserved heterogeneity. A causal approach is adopted using longitudinal data from the European Survey on Income and Living Condition (EU-SILC). The longitudinal nature of the data enables us to follow the same respondents over time, which makes it possible to detect union dissolution and examine the respondent's health before and after partnership dissolution. Two alternative *within-estimation* models are applied to panel data (*panel inference*).

In regard to consensual unions, we aim to fill the lack of information on the dissolution of *more uxorio* unions, also called "informal divorces" (Amato, 2010). The dissolution of this new family arrangement is not yet the subject of enough scholarly attention, at least not in Italy. Although according to some authors the average economic and social consequences may not be as severe as for marriages (Andreß and

Hummelsheim, 2009) the dissolution of a consensual union often means breaking up a long-term relationship, dealing with feelings of anger or sadness, changing residence, and adopting a single lifestyle just as for former married individuals. There are no reasons to consider a priori the relationship between cohabiting parents less binding and emotionally engaging than a marital cohabitation. The number of consensual unions in Italy is rapidly increasing and is more and more frequently considered by partners a marriage-like union and more and more frequently they even have children (see Section 2.4).

The chapter is organized as follows. We first address the problems of unobserved heterogeneity and justify the need for a causal approach (Section 2). Fixed-effect models are introduced, together with their use in the literature of divorce (Section 3). The analytical strategy adopted in this work and the research questions are then described (Section 4). Data and measures are described (Sections 5 to 7), including a discussion of the SRH measure and the related literature on divorce (Section 6). A descriptive analysis of the observed couples and their transitions, including living arrangement transitions is then presented (Section 8). The results of the causal inference (Sections 9) and the results from an alternative approach are then presented (Section 10) which takes into account separation as a process rather than merely as a single incident in time. The discussion of the results concludes the Chapter (Section 11).

6.2. Why a causal approach

In estimating the effect of union disruption on well-being, we face the potential problem of selection bias, i.e. couples who are experiencing a separation may be qualitatively different from couples who are not separating.

Selection bias might arise through two mechanisms. Firstly, there might be a spurious relationship between these aspects, because they might be simultaneously influenced by unobserved individual characteristics. Secondly, there might be a reverse causality, because health condition may affect the risk of union instability.

Some of the previously cited results (see Chapter 1) were obtained from descriptive analyses on cross-sectional data. They compare people who have experienced a separation and people who did not, as if separated couples could represent what would happen to intact couples in case they would separate. The interpretation must be cautious in these cases. In fact, self-selection may severely bias the true causal relationship between union dissolution and health consequences.

The bias is driven by self-selection into divorce. In fact, people who separate are qualitatively different from those living in intact families in terms of other background characteristics such as age, education level, employment, income, living arrangements and social networks prior to the event. This is confirmed by a considerable Italian

literature (De Rose, 1992; AA:VV., 2008; Salvini and Vignoli, 2011); see also the socioeconomic profile described in this work (Chapter 4). They differ in a number of observable socio-demographic characteristics and, likely, in unmeasurable characteristics too. The *unobserved heterogeneity* of separated people may include unhealthy behaviours, a tendency to relationship instability, a weaker engagement in couple relationships, values and religious attitudes. This heterogeneity might influence both separation risk and mental and physical well-being, leading to a spurious correlation. It is in fact well known that higher economic and education levels are associated with greater access to health care, more prevention, better nutrition and in general healthier behaviours (except for smoking).

Reverse causation may also apply. As an example, bad health status might directly cause couple instability. This causal relationship might give the biased result that separated people are in worse health than those never separated. On the other hand, bad health might reduce the risk of instability, by reducing confidence in future well-being and survival, and vice versa. For example, women who enjoy good health might be more likely to leave an unhappy union than unhealthy ones, as they know they would not experience serious distress.

Cross-sectional studies provide biased estimation in case of selection, that is in the case of non-random assignment of a "treatment" (separation). Longitudinal studies, because of the repeated observation at the individual level, have more power than cross-sectional observational studies, by virtue of being able to exclude time-invariant unobserved individual differences, and by virtue of observing the temporal order of events.

Going into analytical formulas: let Y be the outcome, i and j two sampled individuals, T and C the presence (T) and absence (C for control) of the treatment (separation in our case), and 0 and 1 the times preceding and following the treatment. According to the *counterfactual approach* on causality (Rubin, 1974), the causal effect of a treatment, in our case union dissolution, is defined by:

$$Y_{i,0T} - Y_{i,0C} \qquad (1)$$

that compares the outcomes of the individual i in case of treatment and in case of control. This effect obviously cannot be estimated, since it actually occurs for only one assignment (treatment or control).

Cross-sectional studies adopt a *between-individuals* estimation approach. The between estimate of the treatment effect is given by:

$$Y_{i,0T} - Y_{j,0C}. \qquad (2)$$

The two individuals are observed at the same time 0: the first is assigned to treatment, the second not (*control*). This only provides the true causal effect (unbiased estimate) if the assumption of unit homogeneity (no unobserved heterogeneity) holds. This means that people experiencing treatment are randomly selected and not self-

selected. This is not our case, since union dissolution depends on time-invariant unobservable characteristics (fixed effects) that are correlated with both the decision to separate and health outcomes, that is union dissolution is affected by high self-selection.

Applying specific techniques for panel data we can improve on this, by using *(within estimation*):

$$Y_{i,1T} - Y_{i,0C} \,. \qquad (3)$$

This approach compares the same individual before and after the treatment. This ensures individual time-invariant characteristic are controlled for, providing unbiased estimates. Time-invariant characteristics (also called *fixed effects*) are constant across time and are eliminated ("difference them out") by the within-individual comparison. The idea is that only the variables which have changed between 0 and 1 contribute to the change in Y.

In this study we have adopted the fixed-effects approach, which we are going to illustrate in the following section.

6.3. Fixed-effects methods and their use in divorce studies

Fixed-effect analysis allows us to control for unobserved individual heterogeneity. Since unobserved heterogeneity is the problem of non-experimental research, the latter benefit is especially useful. The approach requires longitudinal data.

These regression models are based on the following modelling strategy. We decompose the error term into two components: A person-specific error v_i and an idiosyncratic error ε_{it},

$$u_{it} = v_i + \varepsilon_{it} \,.$$

The person-specific error does not change over time. The idiosyncratic error varies over individuals and time. It should fulfil the assumptions for standard OLS error terms.

The most simple approach is the *first-differences regression*. In a linear specification of Y, we construct a regression model that relies on the before-after comparison (within estimate). In particular, we assume the outcome Y_{it} (the health measure of interest) has the following analytical expression (error-components model):

$$Y_{it} = \alpha + \beta X_{it} + v_i + \varepsilon_{it} \,, \qquad (4)$$

where X_{it} is the vector of time-varying individual covariates (including a treatment dichotomous term), v_i are the individual fixed effects and e_{it} is an error term. The panel data literature has other names for v_i, such as "unobserved component", "individual effect", "latent variable" or "unobserved heterogeneity". Fixed-effects models only include time-variant covariates, where time-invariant characteristics are constant across time and are eliminated ("difference them out") by the within-individual comparison.

Individual observations are therefore differentiated between time before and after treatment:

$$Y_{i,1} - Y_{i,0} = \beta (X_{i,1}-X_{i,0}) + (v_i-v_i) + (\varepsilon_{i1}-\varepsilon_{i0}) . \quad (5)$$

Fixed effects are differentiated out, giving a straight estimate for the treatment effect:

$$\Delta Y_i = \beta \Delta X_i + \Delta\varepsilon_i . \quad (6)$$

Ordinary least squares (OLS) regression is then performed on these differences. The fixed-effects model compares the same person at different times and controls for any unobservable (and time-invariant) effects. In fact, the equation includes the term $(v_{i1}-v_{i0})$, which compares person-specific time-constant unobserved heterogeneity (fixed-effects) and it is equal to zero. The (6) consistently estimates β under standard assumptions (applied to the differenced variables)

The fact that X_{it} cannot include time-constant explanatory variables is a drawback in certain applications, but when the interest is only in time-varying explanatory variables, it is convenient not to have to worry about modelling time-constant factors that are not of direct interest. In panel data analysis the term 'time-varying explanatory variables' means that each element of X_{it} varies over time for some cross section units. Often there are elements of X_{it} that are constant across time for a subset of the cross section. For example, if we have a panel of adults and one element of X_{it} is education, we can allow education to be constant for some part of the sample. But we must have education changing for some people in the sample.

In the case of the ordered categorical variable Y_{it}, as Self-Rated Health measure, the most popular regression-type models are the *fixed-effects ordered logit model*. That is an ordered logistic regression applied to panel data. With cross-section data, these parametric models are very easy to use and to estimate by maximum likelihood. However, extensions to a panel data context are complex and far from obvious. Unlike in the linear model, no simple transformation (such as first-differencing or within-transformation) is available that would purge the ordered response models from the individual-specific fixed effects.

The ordered logistic regression model with fixed-effects has the following main features. Estimation is done by the method of conditional likelihood (Allison, 1994). We profit from the big advantage of the FE-methodology, that is the estimates of βs are unbiased even in the presence of unobserved heterogeneity (if it is time-constant). People who have no variability on the dependent variable are dropped, because they provide no information for the likelihood. This can dramatically reduce the estimation dataset. Thus, to use a FE-OL we need data with sufficient variance both on X and Y, i.e. generally you will need panel data with many waves (Allison, 2009). In regard to subject-specific estimates, the probability interpretation is not possible. We have to use the sign interpretation (or odds). With nonlinear models, the coefficients of FE models are interpreted as subject-specific estimates. The marginal effect depends on $\nu_{i,}$, therefore, it

is different for each subject. These are considered to be more accurate estimates of the underlying causal mechanism.[3]

We apply a fixed-effects ordered logit model to SRH, using the "Blow and Cluster Estimator" (BUC) proposed by Beatschman *et al*. (2011). The BUC estimator is implemented by the routine 'feologit_buc' for STATA. The BUC estimator dichotomizes the dependent variable at all possible cutpoints. Therefore it jointly estimates all the obtained fixed-effects logit models in a unique likelihood function. Other estimate approaches to the fixed-effects ordered logistic variable are based on dichotomizations. Only the BUC estimator combines all dichotomizations. Among all estimation approaches the BUC is the one which performs better in simulations (Beatschman *et al*. 2011). Dichotomizing the dependent variable at all possible cut-points better exploits the information present in the dependent variable. In addition, the estimates are less sensitive to the number of panel waves than other estimators. The BUC estimator was recently used for modelling the self-rated happiness (1-4 score) after a change in the occupational status of both partners (Baranowska-Rataj and Matysiak, 2012).

There are two common assumptions made about the fixed-effects models (Wooldridge, 2002):

Assumption 1 - *Strict exogeneity of the explanatory variables conditional on* v_i.

The first assumption is that the ε_{it} are uncorrelated with X_i conditional on v_i :

$$E(\varepsilon_{it} \mid X_i; v_i) = 0, t = 1; 2; \ldots; T.$$

Moreover, the individual specific effect v_i is allowed to be arbitrarily correlated with the X_{it}. This means that the estimator is actually unbiased conditional on X.

A different approach to unobserved heterogeneity, the random effect approach, assumes that the individual specific effects are uncorrelated with the independent variables. We can test whether a fixed or random effects model is appropriate (Hausman test).

Assumption 2: *Homoskedasticity* and *no serial correlation* in ε_{it} .

The second assumption implies that the idiosyncratic errors ε_{it} have a constant variance across t and are serially uncorrelated::

$$Var(\varepsilon_i \mid X_i; v_i) = \sigma_\varepsilon{}^2 I_T .$$

Under assumptions 1 and 2 the FE estimator is the most efficient in the class of estimator using a strict exogeneity assumption.

[3] Ordered logit models are pretty specific models with quite strong underlying assumptions. One of the assumptions is that the relationship between each pair of outcome groups is the same (proportional odds assumption). In other words, ordered logistic regression assumes that the coefficients that describe the relationship between, say, the lowest versus all higher categories of the response variable are the same as those that describe the relationship between the next lowest category and all higher categories, etc. The Brant test is available to test this assumption. For fixed-effect ordered logit things are more complicated and scholars are studying user-written commands for STATA.

Application of within-estimation methods in the literature of divorce.

Within-estimation models are more and more applied to the research on divorce. However, we found very few applications to health outcomes after divorce. Here follow the most pertinent works to our research area.

Andreß and Broeckel (2007) modelled the consequences of divorce on two satisfaction indexes: life satisfaction and income satisfaction (score 0-11) through a fixed-effects linear regression. The data are from the German Socio-Economic Panel Study.

Barstad (2008) studies the emotional cost of leaving a marriage compared to a cohabitation. The health outcome is mental distress (1-4 score), modelled through a fixed-effect linear regression. He uses data from a panel survey on living conditions, conducted by Statistics Norway in the period 1997-2002 (6 waves).

Yorgason *et al*. (2008) studied the link between a decline in health and the onset of disability and marital quality. Data come from a 20-year longitudinal study of a U.S. sample of 2,034 married individuals who were interviewed by telephone in four waves between 1988 and 2000.

Van den Bogaard (2009) used fixed-effects linear regression for modelling depression changes (1-36 score) after marital disruption. He uses 15 waves of data from the British Household Panel Survey (BHPS).

Monden and Uunk (2011) analyzed data from the European Community Household Panel (ECHP). They study the effect of divorce on Self-Rated Health, categorized as in our study, into five categories.

Liu (2012) modelled the consequences of marital dissolution on self-rated health (1-5 score) through a linear growth curve model. She uses four waves from the Americans' Changing Lives (ACL) national longitudinal survey. Growth curve models are mixed effects models which can distinguish the two levels (i.e. within- and between-individual) of heterogeneity in estimating health trajectories shaped by marital dissolution.

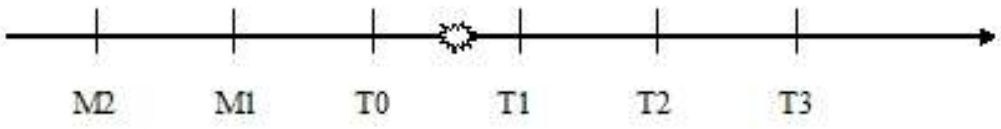
The well-being of children after divorce has also been investigated. Children's behaviour problems after parental divorce were investigated by Li (2007). He exploits the National Longitudinal Survey of Youth 1979 (NLSY79). A 0-28 score variable is observed on children and modelled through a fixed-effect linear regression. Chen and Liu (2011) modelled the consequences of parental divorce on college admission (dichotomous) adopting within-family fixed-effects. They linked four administrative registers in Taiwan between 1978 and 1999 (Birth, College Entrance Test Records, Divorce Registry, and Unemployment).

Fixed-effects ordered logit models have been used frequently in the economic literature. Recent applications to health economics include the effect of income on health (Frijters *et al.*, 2005) and the socioeconomic determinant of changes in health satisfaction (Jones and Schurer, 2011). We did not find any study on the literature of divorce. The BUC estimator for the panel ordered logistic regression was recently used by Baranowska-Rataj and Matysiak (2012) for modelling self-rated happiness (1-4 score) after changes in labour market status.

6.4. Analytical strategy and research questions

To examine the effect of union dissolution on general health we perform a fixed-effects analysis. We use data from the Italian section of the Community European Statistics on Income and Living Condition (EU-SILC). The longitudinal nature of this survey enables us to follow the same respondents over time, which makes it possible to examine the respondent's health before and after partnership dissolution. We follow all the couples and we identify the transitions to separation. In case a separation was detected across waves, the two waves between which separation took place are marked T0 and T1. In the figure below (Figure 7), M2 to T3 are points in time, and correspond with the waves of the survey. T0 is the last year of the relationship (pre-dissolution) and T1 is the first year after the end of the relationship (post-dissolution). Consequently, the years M1 (minus 1) and M2 (minus 2), T2 and T3 are identified. Having EU-SILC a four-years panel each respondents may only have four terms.

Figure 7 - Union dissolution event and waves observation



We therefore perform a fixed-effects analysis, using two alternative approaches: a first-differences regression (FD) and a fixed-effects ordered logistic regression (FE-OL) (see Section 6.4). In both the analyses, separation is the focus regressor (dichotomous).

The first approach is a first-differences regression as in expression (6). In particular, we assume the outcome Y_{it} (self-rated health) depends on a set of time-varying individual covariates X_{it}, including union dissolution. Model specifications include time-varying covariates X_i such as: age, presence of children, per capita household income, presence of chronic diseases, presence of health-related activity limitations and living arrangement. In the FD approach the outcome ΔY_i represents the variability of SRH

between two waves. The original SRH (that is Y_i) range from 1 to 5, therefore ΔY_i is an ordinal variable which ranges between -4 e +4, assuming only integer values. In particular, the outcome -4 represent the highest possible health improvement, that is a variation from Very bad to Very good (label 5 to 1). Conversely, the outcome 4 results from the biggest decline, with a rating passing from Very good to Very bad (label 1 to 5). Intermediate values derive from all possible variations; 0 describe no changes occurred. The OLS regression treats this outcome variable as continuous. We are aware that this is not completely appropriate, as the original outcome is a categorical variable and the variation assumes very few levels. For these reasons, we forbear from interpreting regression coefficients as usual in linear regression; instead we settle for interpreting the sign and the significance of the effects. The STATA procedure *xtreg* is used after declaring panel data with *xtset* command.

Alternatively, one could treat self-rated health as a dichotomous variable (collapsing categories into bad/good), then apply a logistic regression with fixed-effects. This method makes estimation much more simple. Except that this would entail a significant loss of information, such as the variability between intermediate levels.

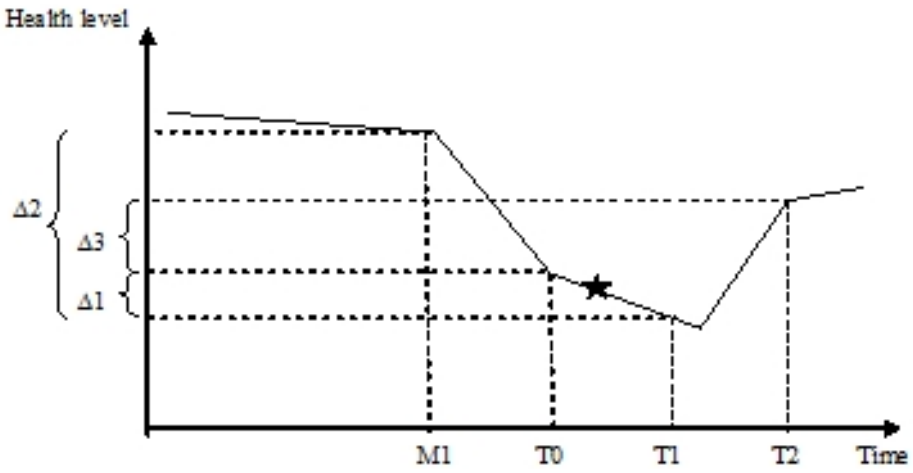
The second approach adopted in our analysis is a *fixed-effects ordered logistic regression* (FE-OL), that is, an ordered logistic regression applied to panel data. Here the outcome, self-rated health, is appropriately treated as an ordered categorical variable, in that we assume that the levels have a natural ordering (high to low), but the distances between adjacent levels are unknown. The levels 1 to 5 are ordered from the best to the worst perception of one's health. The BUC estimator described in Section 6.3 is used.

We considered health status in years T0 (before dissolution) and T1 (after dissolution). With this small window of observation we measure only the short-term impact of separation. The SRH seems to be appropriate to measure transitory health problems, including psychological diseases and symptoms due to acute stress conditions. Aassve *et al*. (2007) and Ongaro *et al*. (2009) use the same window of observation (one year) in their study of the economic impact of union dissolution. Uunk (2004) uses a larger window (two years), but as a consequence the number of cases in Italy is dramatically reduced. The last step of our analysis is an extension which covers a longer time span (two years). The maximum number of years after separation that can be observed is three. Of course longer time intervals would too sharply reduce the number of cases.

The last part of this chapter is aimed at an alternative method. In the theoretical section it was noted that separation can be seen as a process rather than merely as a single incident in time. Obviously there are multiple reasons to get separated, but in general it can be expected that people suffers from anger, depression, and/or acute stress in their marriage prior to the separation. This can make self-rated health worse long before the actual dissolution has taken place. As mentioned above, this study basically compares the self-rated health of people at two points in time: before and after the

divorce. Normally when performing a fixed effects model, the difference between T0 and T1 would be used. This means that on average, there is a measure for self-rated health six months prior to and six months after the dissolution.[4] Therefore, the difference between the measured health might then be relatively small. This is graphically depicted in Figure 8, where higher levels indicate better status. The difference in health status between T0 and T1 is represented by Δ1. Note that this is a hypothetical development of self-rated health status to be tested, where a deterioration of self-perceived health in the period prior to the actual event is described. According to the theoretical concept that divorce is a process, it is clear that Δ1 is considerably smaller than the difference between M1 and T1 (Δ2), indicating an anticipatory effect. With regard to the years after dissolution, the detrimental effect of union dissolution might recover. In this case the difference between T0 and T2 is proximate to zero (Δ3). This alternative method was proposed by Van den Bogaard (2009).

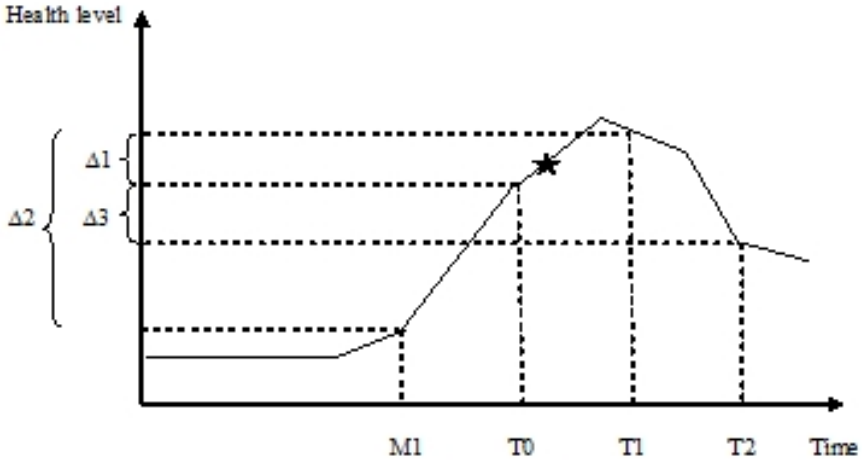
Figure 8 - Hypothetical progression of self-rated health in the process of dissolution.



Alternatively, an improvement in health status may be hypothesized, as dissolution can provide relief (Figure 9). Our study also aims to test whether self-rated health follows a concave or convex time profile around separation.

[4] This is the case because it is possible for people to get separated one day after the survey was completed. They would then only be reported to be separated in the following wave, one year later. On the other hand, a person may get separated one day prior to the survey wave. Thus, on average, a separation happens exactly in between two waves.

Figure 9 - Alternative hypothetical progression of self-rated health in the process of dissolution.



6.5. Data

We use data from the Italian section of EU-SILC, accounting for its longitudinal nature. The EU's Statistics on Income and Living Conditions, launched in 2003, is the first longitudinal micro-level data set to provide comprehensive data on incomes and a large number of other social and economic domains, across all 27 member states of the enlarged EU and several other countries (European Commission, 2010). The Italian survey is conducted by ISTAT every year since 2004. People living in collective households and in institutions are excluded from the target population. In each wave, the longitudinal component of EU-SILC should represent the population living in private households within the national territory.

EU-SILC has replaced the European Community Household Panel (ECHP) as the basis for many of the common social inclusion indicators. The main technical change with respect to the ECHP lies in the panel duration: ECHP had a pure panel structure, while EU-SILC has a four-wave rotational panel structure. The rotational design and the main methodological survey features are described in ISTAT (2008b).

The longitudinal source is still less exploited by Italian demographer with only a few exceptions. Vignoli *et al*. (2012) studied how job instability affects the likelihood of becoming a parent. However, they used logistic regressions, which did not fully exploit the potentiality of the longitudinal structure of the data. We did not find any Italian studies on consequences of marital instability based on this resource.

The longitudinal nature of the survey enables us to follow the same respondents over time, through four waves, which makes it possible to examine the respondent's health before and after partnership dissolution. The only case where individuals are no longer followed is when they move abroad or to a collective household or institution. Due to the rotational design, while a subsample concludes its fourth wave, the other three

subsamples are administered their third, second and first waves, respectively. This means that a completed panel consists of four waves, while incomplete panels are also disseminated by ISTAT, consisting of three or two waves. For our purposes, data are appended from: all available complete panels (2004-2007, 2005-2008, 2006-2009), the available three-wave panels (2004-2006 and 2007-2009) and the only available two-year panel (2008-2009).

We observe all people aged 18 years and over who were found in cohabiting couples (married and unmarried) and who were observed for at least one wave thereafter. Being a four-wave panel survey, the observation period may cover at maximum three years. The following transitions may occur during the observation span: split-up of the couple (the event of our interest), dissolution due to death of one or both partners, moving out of the target population, into the category of emigrants or into collective institution for both partners, no transition (intact union). People who separated are observed for up to 2.5 years, assuming separation occurring in the middle of two waves.

We follow all the couples and we identify the transitions to separation. The sample for the descriptive analysis consists of 42,718 individuals. They correspond to 21,359 couples, including 20,083 married couples (94%) and 1,276 consensual unions (6%). Over time 384 union dissolutions are observed, 267 from marital unions (69.5%) and 116 from consensual unions (30.2% of separations). This means a crude dissolution rate of 1.3% for marital unions and 9.1% for non-marital unions. The analytical sample for the multivariate analysis reduced since all individuals with missing values in one or more covariates are excluded from the model. In addition, the within-individual comparison is performed only for those individuals which are observed in both waves

Operationally, EU-SILC longitudinal data have been prepared for the fixed-effects analysis. EU-SILC data are originally stored in three files: the register of individuals (R-file), the personal interview (P-file), and the household questionnaire (H-file). The individual information from the three files are first merged into a unique dataset, containing one record per individual per year (long format). Second, information collected for each respondent in subsequent waves are put on the same record (wide format). This step is necessary in order to detect transitions, that is union dissolution across waves. When a separation is detected, the waves are identified by the labels M2, M1, T0, T1, T2 and T3 as in Figure 7. As a final step, the dataset is reshaped from a wide- to a long-format dataset (that is a person-year dataset) since fixed-effects analysis requires the data to be in a long format. Sampling weights provided by ISTAT are used in estimation of descriptive statistics. No weights are used in the longitudinal analysis.

Attrition

The table below shows the pattern observations for people who get separated. T0 represents the wave before dissolution; T1 the wave after dissolution; M2 and M1

represent two and one wave before T0, while T2 and T3 the two waves after T1. We observe 384 separations, that is 768 partners who undergo a separation.

M2	M1	T0	T1	T2	T3	Frequency	Percent
.	.	x	.		.	108	14.1
.	.	x	.	x	.	19	2.5
.	.	x	.	x	x	12	1.6
.	.	x	x	.	.	70	9.1
.	.	x	x	.	x	7	0.9
.	.	x	x	x	.	99	12.9
.	.	x	x	x	x	72	9.4
.	x	x	.	.	.	104	13.5
.	x	x	.	x	.	9	1.2
.	x	x	x	.	.	94	12.2
.	x	x	x	x	.	64	8.3
x	.	x	.	.	.	2	0.3
x	.	x	x	.	.	2	0.3
x	x	x	.	.	.	45	5.9
x	x	x	x	.	.	61	7.9
				Total		768	100.0

The attrition for separated people is a relevant issue for these data. We can see that a high number of partners are no longer enumerated in the survey (33.7%) in the wave after the separation event. We also observe few cases (5.3%) where missing partners are enumerated again one year later.

The terms of reference of the survey state clearly (with the exceptions of those who die, move overseas, or move to an institution) that sample members aged 16 or over should be interviewed again, if they leave the original household and start living somewhere else. However, it is clear that the implementation of this rule has not been particularly comprehensive in Italy. This problem has already been noticed by Iacovou *et al.* (2012). They estimate that 86.5% of the eligible individuals in the sample were interviewed the next year; nevertheless, the rate is much lower in two particular subgroups within the population, namely young adults who move out of their parents' home and people who separate. For young adults they found that 0% of the eligible young were followed. The problem is common in other European countries (only France and Cyprus exceed 50%). Authors do not provide analogous figures for separated people.

Attrition is a common and unavoidable problem for every longitudinal survey. However, attrition leads to negative consequences only when it is selective, that is when total missing information is not distributed at random with respect to the characteristics of interest. This is actually the case for separation. Indeed, in our sample of couples, the attrition among separated people (33.7%) is found to be more than double the attrition among people who over the observation period do not experience separation (14.6%). Attrition is higher among separated men (37.6%) than among separated women (30.5%). This is explained by the increased mobility of separated people. Recent results (Feijten

and Van Ham, 2007) show that the recently separated move more often than do people in other living arrangements. The effect is long lasting, even though it decreases over time. Those in a new relationship also move considerably more often than people in a first relationship. In general separation enables housing movements of owner-occupiers (Dewilde, 2008; Fejiten, 2005). This is among the most important economic consequences of separation and one of the most important source of stress (Boot and Amato, 1992).

Of course in the case of couple attrition, that is when both partners are missing, multiple reasons may apply, together with union dissolution, such as moving, death etc. This attrition leads to an underestimation of the separations which occurred, and possibly to a biased estimate of the consequences, in which people who moved might be selected.

By tracing rules, sample people who have moved to another private household within the national territory are followed to the new location (split-off household). As a consequence of tracking rules few people are "lost" across the waves. In particular, sample people moving to a collective household or to an institution, or moving abroad, are no longer traced. In addition, co-resident people are not eligible to be followed. They are those members who aggregate to the household after the first wave, such as spouses. They are included in the EU-SILC as long as they continue to live with a sample subject. That means that in case of separation they are no longer followed to the new location.

6.6. The health outcome: self-rated health

The outcome of the analysis is a measure of general health, the self-rated health status (SRH). Respondents are asked "*How is your health in general? Is it… Very good* (1); *Good* (2); *Fair* (3); *Bad* (4); *Very bad* (5)". The health question is implemented as in the MEHM, according to Eurostat recommendations (for more details see Section 2.6). For this question a proxy is not allowed. Very few cases are missing at the beginning of the observation period (0.3%).

The Italian wording of the question changed over time. From 2004 to 2006 EU-SILC editions the intermediate answer was translated as "Discretamente", which may have a positive meaning. According to EUROSTAT (2010) recommendations: "It is also important to note that the intermediate category 'fair' should be translated into an appropriately neutral term (not good, nor bad), as far as possible keeping in mind cultural interpretations, in the various languages". From the 2007 edition onward, the neutral "Né bene né male" wording is adopted.

In our analysis, we considered health status for years T0 (before dissolution) and T1 (after dissolution). With this small window of observation we can measure only the short-term impact of separation. The limited time span of ECHP does not allow us to identify medium- or long-term impact. The SRH appears as appropriate to measure

transitory health problems, including psychological diseases and symptoms due to acute stress conditions. The extension presented in Section 6.10 covers a longer time span, such as two years.

The measurement of self-rated health is, by its very nature, subjective. The notion is restricted to an assessment coming from the individual and not from anyone else (an interviewer, a health care worker or a relative). As noted by EUROSTAT (2010) SRH is influenced by the impressions or opinions of other people, but it is the result after these impressions have been processed by the individual according to their own beliefs and attitudes. The question is not intended to measure temporary health problems, but the reference is to health in general. It is expected to include the different dimensions of health, i.e. physical, social and emotional functions and biomedical signs and symptoms.

SRH is a multidimensional measure, widely used in literature as a measure of subjective well-being. Also known as self-perceived health (SPH), it is acknowledged as a valid indicator of health status, predictive of morbidity and mortality (Lundberg and Manderbacka, 1996; Idler and Benyamini, 1997; Egidi and Spizzichino, 2007). There are good reasons for using such subjective evaluations in empirical research, for example, because they substitute objective information that is not collected, or because the subjective responses are of inherent interest. For instance, subjective health status might be more closely tied to certain behavioural responses than actual health.

Verropoulou (2012) analyses the determinants of a change in self-rated health among older adults. She uses waves 1 and 2 of the Survey of Health Ageing and Retirement in Europe (SHARE). The results indicate that worse health at baseline is an important predictor of subsequent decline but behavioural changes occurring between the waves have a more pronounced effect, implying that SRH is more influenced by recent developments.

Liu (2012) explores the potentially changing relationship between marital dissolution and health over the life course and across birth cohorts. Using longitudinal data she finds that transitions from marriage to divorce and widowhood have adverse effects on self-rated health. She finds that the health penalty of transitions to divorce and widowhood is more pronounced later in the life course for earlier birth cohorts; while this penalty is more pronounced earlier in the life course for more recent birth cohorts. These results may reflect birth cohort differences in the process of aging and/or in the experience of marital dissolution.

Consistent with the WHO definition of health as “a state of complete physical, mental and social well-being”, in order to evaluate the state of health of people we no longer refer to the absence of disease and we give a growing importance to the subjective perception of one’s own health conditions. In this way, the respondent become a relevant and reliable source of evaluation of his/her own health conditions (Egidi and Ferruzza, 2009).

6.7. Models and measures

The same model specifications are used for both of the fixed-effects analyses performed, that is first-differences regression (FD) and fixed-effects ordered logit (FE-OL). Separation is the focus regressor of the analyses. It is included in model specifications as an indicator variable at individual level (1/0).

Model 1 is the basic specification including only separation variables. In Model 2 the following time-varying covariates are included as controls: age, chronic morbidity, activity limitation due to health problems, living alone and presence of children. This choice is driven by the fixed-effects method, that include only time-variant covariates. Fixed-effects models usually have very few covariates. However, we study the effect of time-invariant characteristics, such as gender and type of union (marital/non marital) by their interacts with the dissolution covariate (Model 3 and 4, respectively).

Focus regression: transition to separation

One technical issue was the definition of the transition of interest. Union dissolution is defined as: when the partners no longer live together. EU-SILC does not provide a household grid, that is, a series of variables documenting the relationship between each household member. Instead of this detailed information, the EU-SILC provides only three variables: the personal identifiers of each individual's spouse or partner, and of his or her mother and father, when they are resident in the same household. This enables us to identify people who are living as part of a couple. If two partners stopped living in the same house (not because of the death of a partner), they were deemed to be separated. For married couples this event coincides with a change in marital status (from married to de facto or legally separated); for non-marital unions no change in marital status is expected. Transitions to couple dissolution are therefore identified by a combination of criteria, including change in marital status, partnership change and household split (partners no longer live together), as described in detail in Section 3.2.

Unlike the Family and Social Actors survey (FSS), EU-SILC doesn't ask any additional question about the reasons for de facto separation. Thus, we are unable to identify couples who separate for work reasons or any reasons other than the end of a romantic relationship. This means that it is possible we include among separated people those who live temporarily apart and consider their couple relationship intact (as for commuting marriages). However, we expect that such cases are rare. From Family and Social Actors survey, conducted by ISTAT in 2003, we find that the percentage of married individuals living outside the conjugal home is 2.7%.

Controls

The main determinants of self-rated health are almost the same for men and women: objective health status, satisfaction for many aspects of one's life, and several socio-demographic individual characteristics, such as gender, age, territorial context, education, housing, marital status, economic condition. For these reasons we include as controls: gender, age, living arrangement and two objective health measures: chronic disabilities and health related activity limitations. A gender difference is found, in which women report a negative health evaluation more frequently than men, with respect to men. This is confirmed by the Italian data (Egidi and Spizzichino 2007). Women more frequently report disabilities and chronic diseases (especially multichronicity); this may partly account for their gender disadvantage in health self-perception. As regards age, better health perception is found when age increases, especially for women (Egidi and Spizzichino 2007); indeed the gender disadvantage seems to reduce when age increases (Case and Deaton, 2003; Arber and Cooper, 1999).

We cannot account for couples' union duration because this information is not available in EU-SILC data.

Age. Age is treated as a continuous variable. Grouping age in categories had the drawback of giving different weights to ageing, only including in the analysis variations which involve a category change. To account for a nonlinear link between age and health, we included a square measure of age, but it was not significant. We have excluded it from the model specification.

Living alone. We included the living arrangement of people living alone, such as one-person families. Having excluded transition to widowhood, this variable only refers to people who lives alone after a separation. We hypothesize that living alone after separation exacerbates the effect of separation. According to the literature, the partner who leaves the couple's house may face sudden economic hardship and housing deprivations. In the presence of children the father usually leave the house, allocated to the mother and their children. This might lead to mental diseases such as anxiety, depression and feelings of sadness. All these diseases can be captured by the SRH measure.

Chronic morbidity and activity limitation due to health problems. The two measures of health included as controls are part of the MEHM (for more details see Section 2.6). The presence of chronic diseases and the limitation in usual activities are defined by the following questions:

> "*Do you have any longstanding illness or longstanding health problem? (By longstanding I mean illnesses or health problems which have lasted, or are expected to last, for 6 months or more)*" "*Yes/No*".

"*For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been…" "Severely limited; limited but not severely; not limited at all?*".[5]

Both measures are appropriately included as controls since they are shown to be determiners of self- perceived health (Verropoulou, 2009). The second question is included as a dichotomous variable, collapsing the two affirmative answers. Although the health question was not mandatory and no proxy answers were admitted, very few cases are missing: chronic morbidity (0.9%) and limitation in usual activities (0.7%). The total amount of excluded individuals is 2.2% of the initial sample.

Type of union. The type of union is included as dichotomous: marital/non marital cohabitations. This information is derived from a specific variable of the EU-SILC dataset. This gives us the opportunity to test for a difference in the consequences of dissolution between the two types of couples.

Children. For parenthood a dummy variable is constructed. The variable 'children' indicates whether a person is a parent or not (of a child living in the household). In the 2004-2006 panel the relationships within the household are not reported, leading us to additional work to identify the basic couple and parenthood relationships. At the beginning of the observation period around 57% of the respondents who subsequently get separated indicate that at least one child of their own is living in the household. Similarly so did around 66% of partners who did not get separated. It is important to note that the presence of children in this model is formulated in the broadest sense. No distinction is made between the number or age of the children. We hypothesize that the custody of children exacerbates the effect of separation. Therefore, we included a measurement for 'general' parenthood. It is important to notice that in this study, parenthood is linked to the presence of children in the household. The presence of children is here defined by their relationship with the respondent, regardless of their marital status. As noted in the theoretical section, children are expected to worsen the health effect of separation, mainly as a result of three mechanisms: parenting related stress, resulting from direct care; financial difficulties since children cost money; and enduring contact between former partners, which can result in conflicts. For children who are not present in the household, these mechanisms are either reduced or absent. There is little or no direct care, and such children are often older and independent, and custody arrangements often do not play a role.

[5] Since EU-SILC 2007, the Italian wording of the two MEHM questions was:

"Lei è affetto da malattie croniche o problemi di salute di lunga durata? (Il termine "lunga durata" si riferisce a malattie o problemi di salute che durano da almeno 6 mesi o si prevede che durino per almeno 6 mesi)." "Si / No.";

"A causa di problemi di salute, in che misura Lei ha delle limitazioni che durano da almeno 6 mesi nelle attività che le persone abitualmente svolgono? Direbbe di avere: Limitazioni gravi; Limitazioni non gravi; Nessuna limitazione".

Before the 2007 edition the wording was:

"Lei è affetto da malattie o condizioni patologiche croniche?" "Sì / No";

"A causa di problemi di salute, Lei ha delle limitazioni, che durano da almeno 6 mesi, nello svolgere le abituali attività della vita quotidiana?" "Sì, forti limitazioni / Sì, qualche limitazione / No, nessuna limitazione".

The per capita equivalized disposable household income was initially included in the model.[6] The relevant number of missing cases in income (23.6%) and the insignificant coefficient obtained, lead us to exclude it from the final specification. In fact, any observation reporting missing value in any covariate is excluded from the analysis. This led to a sensible reduction of the sample size.

We found the fixed-effects model very sensitive to the inclusion of terms that do not reach significance. This generally results in a loss of significance of other covariates. This may be attributed to the additional fractioning of the sample induced by the inclusion of any new covariate. For this reasons we excluded from the model not significant terms, such as squared age and income. The only exceptions are of course the interaction terms of separation by other variables (gender, type of union, presence of children).

6.8. Descriptive results

A descriptive analysis of people under observation is reported in this section. The initial status and the main transitions of people living in couples are described below.

The profile in Table 10 is based on data at the beginning of the observation period. The descriptive analysis confirms the heterogeneity of people who get separated, as already seen in the cross-sectional analysis (see Chapter 4) and is well assessed in the literature. People who get separated are younger, enjoy better health status and live in households with a higher per capita equivalized household income (see footnote 6). It is important to remember that the couples observed include non-marital unions. The summary statistics confirm the higher instability of this type of union. This type of union is more widespread among educated, dual earner and among those with high household income.

This general result justifies the use of panel data and methods that deal with observed and unobserved heterogeneity, comparing health before and after separation, such as within-estimation methods. In a standard cross-sectional approach the health differences observed between separated and never separated people would be totally ascribed to separation itself.

[6] The total equivalized disposable income is calculated as HX090= (HY020*HY025) / HX050, where HY020 is the total disposable household income, that is the sum of incomes from work, assets, and private and public transfers, net of taxes, for all household members; HY025 is the within household non-response inflation factor necessary to compensate for missing individual questionnaires and income information; HX050 is the equivalized household size defined as: 1+ 0.5 *((component aged 14 and over) -1) + 0.3 * (component aged 13 or less). We finally calculated the value at constant prices (base 1995).

Table 10 - Characteristics of Intact and Separated people, based on data from the first wave under observation (percent composition).

	People who separated			People who did not separate		
	Men	Women	Total	Men	Women	Total
No observations	384	384	768	20,975	20,975	41,950
Mean age	46.5	44.8	45.7	53.6	50.2	51.9
Age						
18-29	6.7	12.3	9.5	2.7	6.1	4.4
30-49	60.1	56.1	58.1	40.6	45.3	42.9
50-79	21.2	23.6	22.4	38.9	36.9	37.9
70 and over	12.0	8.1	10.0	17.8	11.8	14.8
Marital status						
Not married	17.3	14.3	15.9	3.9	3.8	3.8
Married	72.0	72.0	72.0	94.5	94.5	94.5
De facto separated	3.5	3.2	3.3	0.5	0.3	0.4
Legally separated	2.3	1.7	2.0	0.4	0.4	0.4
Divorced	2.3	5.2	3.8	0.5	0.6	0.6
Widows/ers	2.3	3.7	3.0	0.2	0.3	0.3
Consensual unions	28.0	28.0	28.0	5.5	5.5	5.5
Presence of children	57.4	57.4	57.4	65.9	65.9	65.9
Self-rated health						
Missing	0.3	0.5	0.4	0.3	0.3	0.3
Very good	13.1	9.9	11.5	10.4	9.8	10.1
Good	50.4	52.5	51.4	46.6	48.0	47.4
Fair	27.9	29.0	28.5	33.3	32.0	32.6
Bad	6.2	6.5	6.3	7.6	8.2	7.9
Very bad	2.1	1.7	1.9	1.8	1.7	1.8
Chronic Morbidity						
Missing	0.2	0.8	0.5	0.8	0.9	0.9
Yes	17.4	17.7	17.5	22.4	20.7	21.6
Limitation in Usual Activities						
Missing	0.6	0.8	0.7	0.7	0.7	0.7
Yes	15.9	19.3	17.6	20.3	20.6	20.5
Pc household income (mean)	14,847	13,275	14,068	13,837	13,829	13,833

Source: EU-SILC panel data, own calculations. The analysis is conducted on a weighted sample.

In Table 10 we see that self-reported health differs between people who face a dissolution and people who do not. Self-reported health status also differs between individuals living in married and non-married couple (Table 11). Men and women in marital unions perform worse than those in non-marital ones. Age and education likely account for these differences.

Table 11 - Self-rated health of people living in a couple at the beginning of the observation period according to the type of union (percent composition).

	Non-marital unions		Marital unions	
	Men	Women	Men	Women
No observations	1,276	1,276	20,083	20,083
Presence of children	51.0	49.6	66.8	66.7
Self-rated health				
Missing	0.3	0.3	0.3	0.3
Very good	15.6	13.3	10.1	9.5
Good	55.3	57.6	46.1	57.5
Fair	23.1	22.6	33.9	32.6
Bad	4.7	5.5	7.8	8.4
Very bad	1.0	0.7	1.9	1.8

Source: EU-SILC panel data, own calculations. The analysis is conducted on a weighted sample.

Finally, we consider transitions in living arrangements of men and women who underwent a separation (Table 12). The definition of living arrangements used here distinguishes one-person families, couples, single parents and people living with other people (parents, relatives, friends). After separation there is a dramatic change in the former partners' living arrangements, and this change depends strongly on the presence of children. When there are no children, the paths taken by men and women after separation are quite similar: most of them live alone. There is a greater gender difference among couples with children: 36.1% of separated men move to a single-parent family after separation, but the figure for women reaches 87.9%. As a consequence, after separation, on the whole, only 21.4% of men live as single-parents, 11.6% live in other contexts (including parental home), and the majority live alone. 55.5% of women live with their children (as single parents), 37% live alone and less than 6.5% return to their parents or live with other people. In both cases, less than 6% form new couples, with a big difference between sexes. One year after separation, a bigger share of men already have a new partner (7.3%) compared to women (2.0%).

Table 12 - Living arrangement transitions of individuals who underwent a separation (percent composition).

	After separation (T1)			
Before separation (T0)	Alone	In couple	Single parent	Isolated and other
Men:	61.4	5.6	21.4	11.6
Couple without children	70.8	7.3	3.1	18.8
Couple with children	53.8	4.2	36.1	5.9
Women:	37.0	2.0	55.5	5.5
Couple without children	80.4	3.1	3.1	13.4
Couple with children	10.2	1.3	87.9	0.6

Source: EU-SILC panel data, own calculations.

6.9. Change in self-rated health after separation

A first descriptive analysis of the change in health status after separation is summarized in Table 13. Most of the people who face a separation do not report a change in self-perceived health status. It is also true that the few levels of the variable do not capture all changes in perceived health. A score variable with a higher number of levels would allow us to have a more detailed analysis. This is the case with the satisfaction indexes (see Andreß and Hummelsheim, 2009) or of the depression levels (Van den Bogaard, 2009). However an initial result is that women experience a decline more than men.

Table 13 - Changes in SRH for people who underwent separation (comparison between 1 year before and 1 year after the event).

	People who separated	
	Men	Women
Self-rated health		
% improvement	12.9	13.1
% worsening	8.7	13.9
% steady	34.2	38.4
% one or both missing	44.2	34.6

Source: EU-SILC panel data, own calculations.

This pattern of change could be not only specific to separated people. In order to see the actual effect of separation we need a multivariate analysis. Table 14 presents the results of the first-differences regression (FD) with a change in self-rated health as the dependent variable. For the reasons already explained (Section 6.4) we forbear from interpreting regression coefficients as usual in linear regression. Instead we interpret the sign and the significance of the effects. It is important to remember that in the FD analysis, a negative sign in the coefficient stands for an improvement in general health while a positive sign means a worsening.[7] The detailed results - including standard errors, p-values and confidence intervals - are reported in Appendix C.

It is important to realize that a fixed-effects model can only estimate transition effects. This means that the effects that are presented flow from a change in a situation. For instance, in Model 1 (without controls) the effect of divorce is not significant (-0.036). According to this analysis the average person that gets separated does not experience a significant change in his/her perceived health status.

[7] In fact, the dependent variable ranges in the interval from -4 to +4, assuming integer values. The lowest value (-4) represents the biggest improvement of SRH, that is a change from 1 prior to separation to 5 after separation. The highest value (+4) represents the biggest decline, that is SRH variation from 5 to 1.

Table 14 - First-differences regression (FD) estimates of the impact of union dissolution on self-rated health.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Separation	-0.036	-0.081**	-0.132**	-0.134*	-0.085*
Separ * woman	-	-	0.088	-	-
Separ * marriage	-	-	-	0.075	-
Separ * children	-	-	-	-	0.008
Alone	-	0.080**	0.086**	0.082**	0.082**
Age	-	0.005**	0.005**	0.004**	0.005**
Chronic morbidity	-	0.214***	0.214***	0.213***	0.214***
Activity limitations	-	0.303***	0.303***	0.303***	0.303***
No of individuals	41494	40688	40688	40674	40688
R-squared	0.000	0.059	0.059	0.059	0.059
Prob > F	0.290	0.000	0.000	0.000	0.000

All standard errors are clustered at the individual level.
* = p<0.1; ** = p<0.05; *** = p<0.01.

The effect of separation in Model 1 is the average effect for all separated people. No difference is yet made between genders or living arrangements or other characteristics. In Model 2 several controls are added to the model, including a living alone dummy (Alone). By adding the controls the effect of separation becomes significant at the 5% level. Bear in mind that Alone is essentially an interaction variable, since only separated people are eligible to fall into this category (as transition to widowhood is excluded from the analysis). Thus, the coefficient for separation applies to people that after separation live in other arrangements (as an example, custodial mothers and men returned to parental house). The separation effect is now beneficial (-0.081; p = 0.032). This means that people who after separation live with other people (children, parents, non relatives) on average experience a significant beneficial change in his/her perceived health status after separation.

If the hypothesis that living alone after separation leads to a greater decline in general health compared to other living arrangements is correct, it can be expected that the coefficient for Alone would be significant and positive in sign. So it is (0.080; p = 0.021).

The controls are consistent with expectations. Increasing the age of one year leads to a small but significant worsening in self-perceived health. Similarly for Chronic morbidity and Activity limitations, whose effect is much stronger and significant at the 1% level. This means that the onset of a chronic disability or of a longstanding disease that hampers daily activities leads to a dramatic drop in the perception of one's general health. This is consistent with the recent findings of the determinant of a SRH change (Verropoulou, 2012).

Model 3 tests whether there are differences between men and women. This is done by creating an interaction variable, combining the variables Separation and Women. Now, the coefficient for separation (-0.132; p = 0.014) only refers to men (and people not living alone, since the variable Alone is present in the controls). It is interesting to see

that this coefficient is significant and negative. This means that on the basis of this analysis, men who get separated and live with other people (a new partner, a parent, with children) seem to experience a benefit in self-perceived health. However, the interaction variable does not reach significance (0.088; p = 0.193). This means that women who separated, generally do not experience a change in perceived health.

To determine whether there are differences between marriages and non-marital unions, an interaction variable is created, by combining the variable dissolution and marriage. In Model 4, the interaction term is added to Model 2. Now, the coefficient for dissolution only refers to non-marital cohabitations. It is interesting to see that this coefficient is significant (-0.134; p = 0.050), while the interaction variable does not reach significance (0.075; p = 0.318). According to this analysis, people who get separated from non-marital cohabitations, seem to experience a benefit in self-perceived health. The decreasing of significance is probably due to the small sample of consensual unions. Conversely, people who separate from a marital union, generally do not experience a change in health status.

In Model 5 the interaction between separation and the presence of children is added. Now, the coefficient for separated only refers to non-parents (and people not living alone, since the variable Alone is present in the controls). It is interesting to see that this coefficient is still negative and significant at the 10% level (-0.085; p = 0.100). This means that on the basis of this analysis, people who get separated and live without children (partner without children and non-custodial parent) seem to experience an improvement in perceived health. However, the interaction variable does not reach significance (0.008; p = 0.916), meaning that custodial parents do not seem to experience a worsening in health status. These results emphasize the importance of differentiating between parents and non-parents, although the fixed-effects estimates are very small and the significance is at the 1% level. Custodial and not-custodial parents differ greatly in the effects that divorce has on their perceived health. It is important to note that the presence of children in this model is formulated in the broadest sense. There may be a single child present, or more than three. Furthermore, the child or children may be a newborn, a teenager, or even a child over 18 still present in the household.

The results from the second fixed-effects approach are reported in Table 15. Here a fixed-effects ordered logit model is estimated (FE-OL). The results confirm those from the FD model. An overall beneficial effect of dissolution is confirmed. Again, interacting with gender, the effect is significant only for men. Interacting with the type of union, the effect is significant only for consensual unions. Interacting with the presence of children, the effect is significant (10% level) only for non-custodial parents or for former partners of a union without children. The only difference between the two approaches is a more significant effect for non-marital cohabitations compared to FD estimates. The detailed results - including standard errors, p-values and confidence intervals - are reported in Appendix D.

Table 15 - Fixed-effects ordered logistic regression (FE-OL) estimates of the impact of union dissolution on self-rated health.

Variable	Model 1	Model 2	Model 3	Model 4	Model5
Separation	-0.184	-0.370**	-0.668**	-0.557**	-0.494*
Separ * woman	-	-	0.499	-	-
Separ * marriage	-	-	-	0.289	-
Separ * children	-	-	-	-	0.231
Alone	-	0.382**	0.417**	0.385**	0.431**
Age	-	0.026**	0.026**	0.026**	0.026***
Chronic morbidity	-	0.918***	0.918***	0.918***	0.918***
Activity limitations	-	1.317***	1.317***	1.317***	1.317***
No of individuals	22537	21646	21646	21642	21646
Pseudo R2	0.000	0.099	0.099	0.099	0.099
Prob > chi2	0.236	0.000	0.000	0.000	0.000

All standard errors are clustered at the individual level.
* p<0.1; ** p<0.05; *** p<0.01.

6.10. Alternative method of measurement

The results of the last section support the "relief" hypothesis as represented in Fig 9. This section is aimed at the alternative method as it was discussed earlier (see Section 6.4). This approach considers separation as a process rather than merely as a single incident in time, and investigates what happens two years before and two years after the separation event.

In the first analysis we compare the self-rated health of a person two waves before and one wave after the dissolution (M1-T1). This analysis addresses the research question whether in the years before separation self-perceived health worsen. Consistently with the literature, it is expected that by doing this, the effect of dissolution will turn out to be null, since self-rated health is expected to be bad in the wave preceding the dissolution. For example Van den Bogaard (2009) found higher depression level in the years preceding the divorce. Combining this hypothesis with our results from the last chapter, we could draw a "U" shape curve describing a detrimental anticipatory effect of separation, followed by a recovery ("relief"). Table 16 shows the results of this analysis.

The results indicate a not significant change in the perceived health status between two years before and one year after separation, for an average separated person (Model 2). The sign is still negative, but it is not significant. The level is smaller than in the T0-T1 analysis.

Table 16 - Alternative fixed-effects estimates (FD) of change in self-rated health after union dissolution. Comparison between two years before (M1) and one year after (T1) separation.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Separation	-0.023	-0.091	-0.155*	-0.150	-0.049
Separ * woman	-	-	0.113	-	-
Separ * marriage	-	-	-	0.080	-
Separ * children	-	-	-	-	-0.088
Alone	-	0.119***	0.121***	0.119***	0.111***
Age	-	-0.004**	-0.004**	-0.004**	-0.004**
Chronic morbidity	-	0.277***	0.277***	0.277***	0.277***
Activity limitations	-	0.344***	0.344***	0.344***	0.344***
No of individuals	31034	26144	26144	26144	26144
Pseudo R2	0.000	0.085	0.085	0.085	0.085
Prob > chi2	0.638	0.000	0.000	0.000	0.000

* p<0.1; ** p<0.05; *** p<0.01.

This suggests that the beneficial effects described in the last section's analyses only recovers from detrimental effects pre-separation. However, the detrimental effect of living alone after separation is now stronger and more significant (0.119; p = 0.002). This suggests a higher anticipatory detrimental effect for those people who are aware that they will live alone following the separation. The effect of separation for men who live with other people after separation is still positive although it loses significance (-0.155; p = 0.053).

Our next analysis aims to answer the question: How long does the effect of separation last? This is done by comparing the self-rated health of a person one wave prior to and two wave after the dissolution (T0-T2). Table 17 shows the results of this analyses. The panel structure allows us to observe a very short period, three waves maximum after separation. Nevertheless the analysis suggests some result. The change in health is not significantly different from zero. This suggests that two years after separation people have recovered the levels they had before separation. People who get separated seems to have a temporary relief which disappears in a very short time.

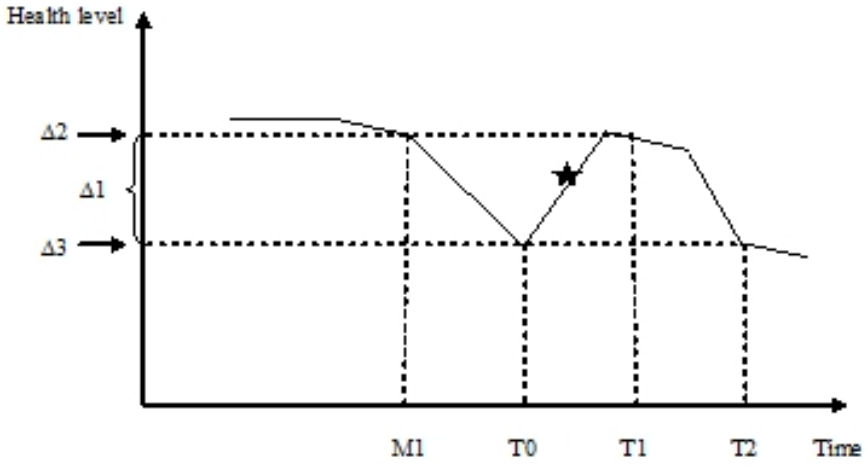
Table 17 - Alternative fixed-effects estimates (FD) of change in self-rated health after union dissolution. Comparison between one years before (T0) and two year after (T2) separation.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Separation	0.007	-0.062	-0.124	-0.110	-0.084
Separ * woman	-	-	0.112	-	-
Separ * marriage	-	-	-	0.077	-
Separ * children	-	-	-	-	0.051
Alone	-	0.120***	0.122***	0.120***	0.125***
Age	-	-0.003	-0.003	-0.003	-0.003
Chronic morbidity	-	0.279***	0.280***	0.279***	0.279***
Activity limitations	-	0.340***	0.340***	0.340***	0.340***
No of individuals	31108	30465	30465	30462	30465
Pseudo R2	0.000	0.083	0.083	0.083	0.083
Prob > chi2	0.886	0.000	0.000	0.000	0.000

* p<0.1; ** p<0.05; *** p<0.01.

Figure 10 combines the results from this section in a unique time profile, covering four waves (M1 to T2). The coefficients are here reported in the Y-axis as a mere indicative scope. Where the change is not significant, comparable levels are drawn.

Figure 10 - Progression of self-rated health in the process of dissolution, as suggested by our results.



6.11. Conclusions

In conclusion, both the fixed-effects approaches indicate an improvement in the self-perception of one's health in the very short run of a single year. The results support the "relief" hypothesis shown in Fig 9. This seems to be true only for men, and only if they do not live with any children after separation (partners from a couple without children or non-custodial fathers). On the other side, custodial parents do not seem to experience a worsening in health status. The relief seems to occur especially in case of non-marital cohabitations. For separated people in other circumstances, no change in self-perceived health is evident in the initial period.

The analysis provides some additional hints. Living alone after separation seems to lead to a greater decline in general health compared to other living arrangements.

This study has argued that getting separated is a process rather than a single event in time. In order to demonstrate this, analyses were performed that took this perspective into account. The results of these analyses indicates that health status levels decrease prior to the separation. That the "relief" is temporary, as it generally disappears after one year. We could draw a "U" shape curve which describes a detrimental anticipatory effect of separation, followed by a recovery.

Our results suggest a detrimental anticipatory effect which is consistent with the literature. Van den Bogaard (2009) shows that the depression level appears to be rising prior to the divorce. Andreß and Brockel (2007) indicated a worsening in the life satisfaction index in the years immediately before separation.

On the other side, we found a beneficial effects, although it does not appear to be intensely strong, which is covered by the theoretical framework, although not frequently found in the literature (see Section 1.2).

Chapter 7 - Discussion and conclusions

Main results

The main results of our analysis can be summarized as follows.

The review of the main Italian household surveys, reveals that the existing sources are not completely adequate for the study of the consequences of union dissolution on health. The main limitation is the identification of the people who separated. All the surveys, except for the FSS, systematically overestimate the number of people who experience dissolution and lacks many additional essential pieces of information.

However, the FSS has the big limitation of allowing only association studies. In fact, its cross-sectional structure cannot control for unobserved heterogeneity and its selection effects. The second most powerful survey for dissolution analysis is EU-SILC. Its longitudinal structure enables us to identify the transitions to separation and to apply within-estimation methods. EU-SILC's main drawbacks are: the short panel span (four waves), the attrition, and the size of the final sample, as separation is still a rare event. Unfortunately, both the FSS and EU-SILC lack health information.

Furthermore, most of the surveys have the following critical problems: dissolution of consensual unions are ignored; marital status categories do not distinguish separation for particular needs (such as work, study); marriage duration, presence of children at separation, time passed since separation and other essential pieces of information cannot be derived; non-residential parents (or children) are not identified.

The socioeconomic profile of the Italian population with marital dissolution experience, confirms that this is a select population. In 2003 they amount to about 2.5 million people; 7.0% of all ever-married respondents aged 20 years and over. This confirms the relevance of this sub-population as presenting an interesting phenomenon for demographers of the family. Separation experience is more widespread among adult middle-age groups, highly educated people and people resident in North and Central Italy. This heterogeneity is at the base of the self-selection perspective (Amato, 2000; 2010). Separated people also live in worse economic conditions than people in intact families.

Our sample includes those cases where spouses have recently separated, along with cases of long-run adaptation to separation. A greater share of men live alone compared to women (almost double). Conversely, women mostly live with their children as single parents. The respective share among men is much smaller. Regardless of the time which has passed since separation, the share of women engaged in a new couple relationship is always smaller than that of men.

As regards health, ever-separated people perform better than people in intact marriages. Further analysis reveals an age composition effect. After standardizing for age, separated men seem to perform worse than never-separated men. Women, for their

part, still have a lower rate of health problems than never-separated women. The most prevalent chronic diseases among separated people are: osteoarthritis and arthritis, followed by hypertension, recurrent headaches or migraines, allergies, chronic anxiety and depression, liver and kidney stones and gallstones. Allergies and chronic anxiety and depression are also significantly more prevalent among separated people than among never-separated ones.

The age gradient of the health measure confirms that HRAL is an appropriate measure for older people. Indeed, limitations and disabilities are more prevalent in the elderly, since it takes longer before their onset. As expected, health problems (causing activity limitations) and separation experience have two opposite gradients with regard to age. Separation affects mostly young-adult age groups, while health problems affect mostly old age groups.

The cross-sectional analysis based on FSS data supports the hypothesis of a detrimental effect of separation on health. Of course, a reverse effect may also apply, although it is not likely to account for the entire effect. In this analysis we investigate the association between separation experience and health problems, specifically health-related activity limitations, reported in the years following the separation. Once controlled for socioeconomic and demographic conditions, multivariate analysis gives support for the hypothesis that people who separated or divorced have a higher risk of being affected by health-related activity limitations than people in intact families. Nevertheless, separated women after more than a decade seem to completely recover from the detrimental effects of separation. Conversely, for men there is a flat time profile.

A further focus on the restricted sample of separated people provides information on the factors that mediate this association. Our results confirm a gender specificity of the majority of the mediators. Medium and low education has a very strong impact on separated men, but a weaker effect on separated women. Results also show a greater vulnerability of separated men to their economic conditions compared to separated women. However, women's health seems to be vulnerable even at the initial level of economic difficulty. In general, separated men and women with low human capital (education, economic condition) perform worse in term of health than the never-separated. In a causal interpretation, these results suggest that experiencing marital dissolution increases the risk for the onset of health problems for people with low human capital, compared to never-separated people, and this is especially true for men. Separation is also associated with an increased gender gap in health status, in case of bad economic condition, to the detriment of men. However, marital separation may cause both the worsening of economic conditions and the worsening of health status. The impact on health may partially pass through the worsened economic condition itself. This causal interpretation appears to be in line with the economic perspective (Amato, 2000).

The presence of children at the moment of separation acts in the opposite direction among men and women. While having more than one child seems to amplify the effect of separation on the health of mothers, having children appears to be protective for fathers. Having a partner, cohabiting or not, appears protective against health problems, but only for men.

The results suggest that detrimental effects of separation on health appear earlier for women than for men. The decreasing time profile found among women suggests an immediate high level of disease after separation that persists for more than a decade, declining later. The U-shaped curve, reported by Lorenz (2006) is interpreted in the literature as the result of the two adjustment processes: volatile outcomes such as psychological distress in reaction to the acute stressors immediately after the separation and physical illnesses, which incrementally accumulate in response to chronic stressors. In our study it is not possible to distinguish between physical and psychological diseases. The health measure used is likely to include serious mental disease, such as depressive symptoms, anxiety and nervous problems, as well as severe physical diseases, such as heart disease, diabetes and cancer. Therefore, the time profile observed may include both volatile and longer-term health outcomes. The issue deserve further study and research.

The last step of our empirical analyses supports the beneficial effect hypothesis, although it does not appear to be intensely strong. Both the fixed-effects approaches indicate an improvement in the self-perception of one's health in the very short run of a single year. The use of fixed-effects methods solves the problem of selection into divorce. This result is somewhat unexpected, although it fits into the theoretical framework. In the literature we still have little evidence of this, as example Hewitt and Turrel, 2011; Monden and Uunk, 2011. This "relief" effect seems to be true only for men, and only if they are not custodial. On the other side, custodial parents do not seem to experience a worsening in health status. The relief seems to occur especially in case of non-marital cohabitations. For separated people in other circumstances, no change in self-perceived health is evident in the initial period. The analysis provides some additional hints. Living alone after separation seems to lead to a greater decline in general health compared to other living arrangements.

This is not fully consistent with the result of the cross-sectional analysis, as regards the general results (beneficial or detrimental) and to the protective role of children for custodial-fathers. However the health dimensions investigated in the two analyses are very different, especially as regards the time span observed.

The results of additional analyses indicates that health status levels decrease prior to the separation. The "relief" effects seem temporary, as they disappear after one year. We could draw a "U" shaped curve which describes a detrimental anticipatory effect of separation, followed by a recovery. Our results suggest a detrimental anticipatory effect which is consistent with the literature. Van den Bogaard (2009) shows that the depression level appears to be rising prior to the divorce. Andreß and Brockel (2007)

indicated a worsening in the life satisfaction index in the years immediately before separation.

Strengths and limitations

In our opinion, the strengths of this study lie in the following aspects:

- We provide a review of the strengths and weakness of Italian data sources for the study of the consequences of separation on health. In doing this we exploited the decennial work experience on the production of these data. Considering the very early stage of the Italian research on this subject, we hope this is particularly useful for scholars.
- We contribute to the knowledge of the living conditions of people who experienced union dissolution, which is a more and more common condition among the population.
- We extend the analysis of the union dissolution to non-marital unions, which are increasingly widespread in Italy but still very little investigated.
- We investigate two different health measures – SRH and HRAL – which give an overview of the short- and long-term effects of separation on health. This is particularly appropriate, since the theoretical framework hypothesizes both an initial acute crisis phase and prolonged exposition to stressors.
- We use longitudinal data and we apply fixed-effects models. There is not an abundance of divorce research using waves of data, and very little specific to Italy. The use of fixed-effects models ensures that no unknown and unmeasured factors influence the relationship between divorce and depression.
- Finally, this study provides rather clear results on a subject - consequences of separation on health and its mediators - that has not been investigated much up until now, thus making scientific progress.

Like all studies however, this research paper has several drawbacks. Although the EU-SILC provides a very extensive dataset with many respondents, the statistical power appeared to be insufficient at times. The reason for this is the rather strict selection: only transitions into separation are taken into account, a difference is made in turn between parents and non-parents, between sexes and between types of union. As a result, the total number of cases available for analysis was sometimes rather small, although the inclusion of non-marital dissolutions contributed to increasing the sample. Perhaps because of this, significant results were not always found.

Another limitation is this study's focus on Italy. As with any study the results must be interpreted with care when applied to other countries. Nations may differ significantly in their views towards divorce. Countries differ in the way divorces are handled, viewed and treated. Legal rules for custody arrangements differ, which can affect the role

children have in divorce. It can therefore be expected that they also differ in the effect that divorce has on perceived health.

Finally, the problem of selectivity must be addressed. The cross-sectional step of the analysis likely suffers from the selection processes which might lead to spurious association between divorce and health outcomes. This problem is solved in the longitudinal step of the analysis. Nevertheless, the necessary use of different data sources (FSS and EU-SILC) and health measures make it impossible to fully compare the results. On the other side, the two measures are complementary, capturing different time-scale health effects.

Implications

The results of this study raise some questions and suggestions for further research. A first question is what mechanisms are responsible for the reported volatility in self-assessed health of separated people. The European panel data do not enable us to test effects beyond two-three years of separation duration. Therefore, we cannot test the long-term effect on self-perceived health.

A second question that can be raised involves the long term effects of divorce on health. The earlier mentioned mortality statistics strongly suggest that there are effects in the long run. The question is when these effects kick in. Longer running panel data are needed to solve this question. A related question would be whether physical health is influenced (more strongly or only) by being divorced and repartnered or by being single after divorce for a prolonged period.

The small size of the sample may be partially augmented by addinf the data from the next EU-SILC release, that is the 2007-2010 panel. This will increase the sample, and probably give more significant estimates. At the date of this study these data are still not disseminated.

What does this mean for policies concerning divorce? This study points to the detrimental effects on health of marital breakdown. Separation must be considered as a process, which include previous marriage crisis, the separation event itself and the longer-term economic hardship and social isolation it may cause. The results of the cross-sectional analysis suggest the need for both a policy of prevention of marital dissolution and of support for separated people. Prevention may consist of counselling projects for families and marriages facing a crisis, aimed to improve communication skills and to offer other tools to come out of the crisis. Support to separated people should be provided in the immediate period after separation. The important role of children shown by the data suggests the need of policies that support separated mothers in their management of work and child care activities. The remarkable results concerning the role of low education and very bad economic conditions among separated men

suggest the need for policies of economic support for separated men with low human capital and poor economic resources.

References

AA.VV. (2008), *Instabilità familiare: aspetti casuali e conseguenze demografiche, economiche e sociali*, Atti dei Convegni Lincei (Roma, 20-21 September 2007), 224: Bardi Editore, Roma.

AASSVE, A., BETTI, G., MAZZUCO, S. and MENCARINI, L. (2007), Marital disruption and economic wellbeing: a comparative analysis, *Journal of the Royal Statistical Society*, series A, 170: 781–799.

ALLISON, P.D. (1994), Using Panel Data to Estimate the Effects of Events, *Sociological Methods and Research*, 23: 174–199.

ALLISON, P.D (2009), *Fixed effects regression models*, 07-160, Sage Pubbl.

AMATO, P.R. (2000), The Consequences of Divorce for Adults and Children, *Journal of Marriage and Family*, 62: 1269–1287.

AMATO, P.R. (2010), Research on Divorce: Continuing Trends and New Developments, *Journal of Marriage and Family*, 72: 650–666.

AMATO, P. R. and KEITH, B. (1991), Consequences of parental divorce for children's well-being: A meta-analysis, *Psychological Bulletin*, 110: 26–46.

ANDREß, H.J. and HUMMELSHEIM, D. Eds (2009), *When Marriage Ends: Economic and Social Consequences of Partnership Dissolution*, Edward Elgar Publishing.

ANDREß H.J. and BROCKEL, M. (2007), Income and life satisfaction after marital disruption in Germany, *Journal of Marriage and Family*, 69: 500–512.

ANGELI, A. and DE ROSE, A. (2003), Donne e uomini dopo lo scioglimento della prima unione. In: PINNELLI, A., RACIOPPI, F., and RETTAROLI, R. (eds.). *Genere e demografia*, Il Mulino, Bologna: 367–392.

ARBER, S. and COOPER, H. (1999), Gender Differences in Health in Later Life: The New Paradox?, *Social Science and Medicine*, 48(1): 61–76.

BACHMAN, J.G., WADSWORTH, K.N., O'MALLEY, P.M., JOHNSTON, L.D. and SCHULENBERG, J.E. (1997), *Smoking, Drinking, and Drug use in Young Adulthood: The Impacts of New Freedoms and New Responsibilities*, Lawrence Erlbaum Assoc., Mahwah, N.J.

BAETSCHMANN, G., STAUB, K.E. and WINKELMANN, R., (2011), Consistent Estimation of the Fixed Effects Ordered Logit Model, *IZA DP* 5443.

BARANOWSKA-RATAJ, A. and MATYSIAK, A. (2012), *Which family model makes couples more happy - dual earner or male breadwinner ?* Paper presented at the Scientific Meeting of the Italian Statistical Society, Rome, 20-22 June.

BARBAGLI, M., CASTIGLIONI, M. and DALLA ZUANNA, G.. (2003), *Fare famiglia in Italia, Un secolo di cambiamento*, Il Mulino, Bologna.

BARSTAD, A. (2008), *Leaving a marriage or a cohabiting relationship: What are the emotional costs?* Paper presented at the Sixth Meeting of the European Network for the Sociological and. Demographic Study of Divorce, September 18th -19th 2008, Oslo, Norway.

BECKER, G..S. (1991), *A Treatise on Family*, Harvard University Press, Cambridge.

BERGAGLIO, M. (2000), Il divorzio come fonte di malessere, *Famiglia oggi*, XXIII (4). Available: http://www.stpauls.it/fa_oggi00/0004f_o/0004fo51.htm.

BOOTH, A. and AMATO, P. R. (1992), Divorce, residential change, and stress, *Journal of Divorce and Remarriage,* 18(1): 205–214.

BURGOA, M., REGIDOR, E., RODRIGUEZ, C. and GUTIERREZ-FISAC, J.L. (1998), Mortality by cause of death and marital status in Spain, *European Journal of Public Health*, 8: 37–42.

CANTO SANCHEZ, O. (2003), Finding out the Routes to Escape Poverty: the relevance of demographic vs. Labour market events in Spain, *Review of Income and Wealth,* 49(4): 569–589.

CASE, A. and DEATON, A. (2003), Broken Down by Work and Sex: How Our Health Declines, NBER Working Papers 9821.

CHEN, Y. and LIU, J. (2011), Do Parental Divorce and Displacement Matter? mimeo.

COHEN, S. and HERBERT, T.B. (1996), Health psychology: psychological factors and physical disease from the perspective of human psychoneuroimmunology, *Annual Review of Psychology*, 47: 113–142.

COPPOLA, L. and DI CESARE, M.C. (2008), How fertility and union stability interact in shaping new family patterns in Italy and Spain, *Demographic Research*, 18(4): 117–144.

COX, B., VAN OYEN, H., CAMBOIS, E., JAGGER, C., LE ROY, S., ROBINE, J.M. and ROMIEU, I. (2009), The reliability of the Minimum European Health Module, *International Journal of Public Health*, 54: 55–60.

DALLA ZUANNA, G. and MICHELI, G. (2004), *Strong family, familism and lowest-low fertility*. Kluwer Academic Press, Dordrecht.

DE ROSE, A. (1992), Socio-Economic Factors and Family Size as Determinants of Marital Dissolution in Italy, *European Sociological Review*, 8(1): 71–91.

DE ROSE, A. (2000), Separation and Divorce: Effect on Family Structures and Life Conditions, *Labour*, 14(1): 145–160.

DE ROSE, A. and DI CESARE, M.C. (2003*), Genere e scioglimento della prima unione*. In: Pinnelli A., Racioppi, F., and Rettaroli, R. (eds.). Genere e demografia, Il Mulino, Bologna: 339–366.

DE ROSE, A. and ROSINA, A. (1999), *Scioglimento delle unioni*. In: De Sandre, P., Pinnelli, A., and Santini, A. (eds.). Nuzialità e fecondità in trasformazione: Percorsi e fattori del cambiamento. Il Mulino, Bologna: 379–391.

DE ROSE, A. and SPAGNOLI, D. (2007), *Cambiamenti di stile di vita e differenze di genere dopo lo scioglimento di un'unione*, in: PINNELLI, A., RACIOPPI, F., TERZERA, L., (eds.), Genere, famiglia e salute, Franco Angeli, Milano: 472–482.

DE SANDRE, P., ONGARO, F., RETTAROLI, R. and SALVINI, S. (1997), *Matrimonio e nascite: tra rinvio e rinuncia. Seconda Indagine nazionale sulla fecondità*. il Mulino, Bologna.

DEWILDE, C. (2008), Divorce and the housing movements of owner-occupiers: A European comparison, *Housing Studies, 23*(6): 809–832.

DI GIULIO, P. and ROSINA, A. (2007), Intergenerational family ties and the diffusion of cohabitation in Italy, *Demographic Research*, 16: 441–468.

EGIDI, V. and FERRUZZA, A. (Eds.) (2009), *Navigando tra le fonti demografiche e sociali*, ISTAT, Roma.

EGIDI,V. and SPIZZICHINO, D. (2007), Dimensioni oggettive e soggettive delle differenze di genere nella salute. In: PINNELLI, A., RACIOPPI, F., TERZERA, L., Genere, famiglia e salute, Franco Angeli, Milano: 560–581.

EUROPEAN COMMISSION (2010). Eurostat Home [electronic resource]. http://www.epp.eurostat.ec.europa.eu.

EUROSTAT (2010), EU-SILC. *Description of Target variables*, 2008 operation.

FEIJTEN, P. (2005), Union dissolution, unemployment and moving out of homeownership, *European Sociological Review*, 21: 59–71.

FEIJTEN, P. and VAN HAM, M. (2007), Residential mobility and migration of the divorced and separated, *Demographic Research,* 17: 623–654.

FINCH, J. (2006), *Family change*, In BRADSHAW, J. and A. HATLAND, A. (eds), Social Policy, Employment and Family Change in Comparative Perspective, Edward Elgar Publishing.

FRIJTERS, P., HAISKEN-DENEW, J.P. and SHIELDS M.A. (2005), The causal effect of income on health: Evidence from German reunification", *Journal of Health Economics*, 24: 997–1017.

JONES, A.M., and SCHURER S. (2011), How does heterogeneity shape the socioeconomic gradient in health satisfaction?, *Journal of Applied Econometrics*, 26(4): 549–714.

GABRIELLI, G.. and HOEM, J.M. (2010), Italy's non-negligible cohabitational unions, *European Journal of Population*, 26(1): 33–46. doi:10.1007/s10680-009-9193-y.

.

GIELE, J.Z. and ELDER, G.H. (1998), *Life course research: development of a field*. In: GIELE, J.Z., ELDER, GH (eds), Methods of Life Course Research: Qualitiative and Quantitative Approaches. Sage Publications, Thousand Oaks, CA: 5–27.

GLASER, K., TOMASSINI, C. and GRUNDY, E. (2004), Revisiting convergence and divergence: support for elderly people in Europe, *European Journal of Ageing*, 1: 64–72.

GRUPPO DI COORDINAMENTO PER LA DEMOGRAFIA (2007), *Rapporto sulla popolazione. L'Italia all'inizio del XXI secolo*. Il Mulino, Bologna.

HEMSTRÖM, Ö. (1996), Is Marriage Dissolution Linked to Differences in Mortality Risks for Men and Women?, *Journal of Marriage and Family*, 58(2): 366–378.

HEWITT, B. and TURREL, G. (2011), Short-term functional health and well-being after marital separation: does initiator status make a difference? American Journal of Epidemioliology, 173(11): 1308–1318.

HILAKIVI-CLARKE, L., ROWLAND, J., CLARKE, R. and LIPPMAN, M.E. (1993), Psychosocial factors in the development and progression of breast cancer, *Breast Cancer Research and Treatment*, 29: 141–160.

HOLLAND, J.C. (1990), *Behavioral and psychosocial risk factors in cancer: human studies.* In: HOLLAND, J.C., ROWLAND, R.H., (eds.). Handbook of psycho-oncology, Oxford University Press, New York: 705–726.

HU, Y.R. and GOLDMAN, N. (1990), Mortality differentials by marital status: an international comparison, *Demography*, 27(2): 233–250.

HUGHES, M.H. and WAITE, L.J. (2009), Marital biography and health at mid-life, *Journal of Health and Social Behavior,*, 50: 344–358.

IDLER, E.L. and BENYAMINI, Y. (1997), Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies, *Journal of Health and Social Behavior*, 38: 21–37.

IRWIN, M., DANIELS, M., BLOOM, E.T., SMITH, T.L. and WEINER, H. (1987), Life events, depressive symptoms, and immune function, *American Journal of Psychiatry*, 144: 437–441.

IACOVOU, M., KAMINSKA, O., LEVY, H. (2012), Using EU-SILC data for cross-national analysis: strengths, problems and recommendations, ISER 2012-03.

ISTAT (2001), *L"instabilità coniugale in Italia: evoluzione e aspetti strutturali. Anni 1980-99*, Informazioni, 7. Available: http://www3.istat.it/dati/catalogo/20020529_00/

ISTAT (2003), Rapporto Annuale 2002. La situazione del paese nel 2002, ISTAT, Roma.

ISTAT (2004), *La vita quotidiana di separati e divorziati in Italia. Media 2001-2002*, Statistiche in breve, 10 maggio. Available: http://www3.istat.it/salastampa/comunicati/non_calendario/20040510_00/

ISTAT (2006), *Indagine Multiscopo sulle Famiglie. Famiglia e soggetti sociali. Anno 2003. File Standard. Manuale utente.* Available: http://www.istat.it/it/archivio/5725

ISTAT (2008a), *Evoluzione e nuove tendenze dell'instabilità coniugale*, Argomenti, 34. Available: http://www3.istat.it/dati/catalogo/20080624_00/

ISTAT (2008b), *L'indagine europea sui redditi e le condizioni di vita delle famiglie (Eu-Silc)*, Metodi e Norme n. 37

ISTAT (2011a), *Separazioni e divorzi in Italia. Anno 2009*, Statistiche Report, 7 luglio. Available: http://www.istat.it/en/archive/32717

ISTAT (2011b), *Come cambiano le forme familiari. Anno 2009*, Statistiche Report, 15 september 2011.

ISTAT and MINISTERO DEL LAVORO E DELLE POLITICHE SOCIALI (2011), *Condizioni di vita delle persone separate, divorziate e coniugate dopo un divorzio. Anno 2009*, Statistiche Focus (7 dicembre).

JENKINS, S.P. and RIGG, A. (2001), *The dynamics of poverty in Britain*, Department of Work and Pensions, *Research Report 157,* Leeds, Corporate Document Services.

JOUNG, I. (1996), *Marital Status and Health: Descriptive and explanatory studies*, Thesis, Erasmus Universiteit Rotterdam, Offsetdrukkerij Haveka, Alblasserdam.

KALMIJN, M. (2010a), Country Differences in the Effects of Divorce on Well-Being: The Role of Norms, Support, and Selectivity, *European Sociological Review*, 26 (4): 475–490.

KALMIJN, M. (2010b), *Life course changes of children and well-being of parents*, paper presented at the EAPS European Population Conference, Vienna, 1-4 September.

KALMIJN, M. and MONDEN, C.W.S. (2006), Are the effects of divorce on well-being dependent on marital quality? *Journal of Marriage and Family*, 68: 1197–1213.

KALMIJN, M. and SARACENO, C. (2008), A comparative perspective on intergenerational support: responsiveness to parental needs in individualistic and familialistic countries, *European Societies*, 10: 479–508.

KULU, H. and BOYLE, P. (2009), Premarital cohabitation and divorce: Support for the "Trial Marriage" Theory?, *Demographic Research*, 23: 879–904.

LESTHAEGHE, R. and VAN DE KAA, D. (1986), *Twee demografische transities? In Groei en Krimp, Mens en Maatschappij*: 9–24. Deventer.

LEE, S., CHO, E., GRODSTEIN, F., KAWACHI, I., H.U., F.B and COLDITZ, G..A. (2005), Effects of Marital Transitions on Changes in Dietary and Other Health Behaviours in U.S. Women, *International Journal of Epidemiology*, 34: 69–78.

LI, J.A. (2007), *The Kids Are OK: Divorce and Children's Behavior Problems*, RANK Labor and Population working paper, WR-489.

LIEFBROER, A.C. and DOURLEIJN, E. (2006), Unmarried Cohabitation and Union Stability: Testing the Role of Diffusion Using Data From 16 European Countries, *Demography*, 43(2): 203-221.

LILLARD, L.A. and WAITE, L.J. (1995), Til Death Do Us Part: Marital Disruption and Mortality, *The American Journal of Sociology*, 100(5): 1131–1156.

LILLARD, L.A. and PANIS, C.W. (1996), Marital status and mortality: the role of health, *Demography*, 33(3): 313–327.

LILLBERG, K., VERKASALO, P.K., KAPRIO, J., TEPPO, L., HELENIUS, H. and KOSKENVUO, M. (2003), Stressful Life Events and Risk of Breast Cancer in 10,808 Women: A Cohort Study, *American Journal of Epidemiology*, 157(5): 415–423.

LIU, H. (2012), Marital Dissolution and Self-Rated Health: Age Trajectories and Birth Cohort Variations, *Social Science and Medicine*, 74: 1107–1116.

LIU, H. and UMBERSON, D.J. (2008), The times they are a changin': Marital status and health differential from 1972 to 2003, *Journal of Health and Social Behavior*, 49: 239–253.

LUNDBERG, O. and MANDERBACKA, K (1996), Assessing reliability of a measure of self-rated health, *Scandinavian Journal of Social Medicine*, 24(3): 218–224.

LORENZ, F.O., WICKRAMA, K.A.S., CONGER, R.D. and ELDER, G.H. (2006), The short-term and decadelong effects of divorce on women's midlife health, *Journal of Health and Social Behavior*, 47: 111–125.

MANTING, D. and BOUMAN, A.M. (2006), Short- and Long-Term Economic Consequences of the Dissolution of Marital and Consensual Unions. The Example of the Netherlands, *European Sociological Review*, 22 (4): 413–429.

MATYSIAK, A., STYRC, M. and VIGNOLI, D. (2011), *The educational gradient in marital disruption: A meta-analysis of European longitudinal research*, Working Paper, 13, Dipartimento di Statistica, Università di Firenze. Available: http://www.ds.unifi.it/ricerca/pubblicazioni/working_papers/2011/wp2011_13.pdf

MAZZUCO, S. and MEGGIOLARO, S. (2010), *Family resources and health behaviours in adolescence*, paper presented at the European Population Conference, 1-4 September, Vienna.

MCDONALD, P. (2000), Family Relationships in Australia: The Conservative-Liberal-Radical Debate, *Review of Population and Social Policy*, 9: 171–194.

MC EWEN, B.S. (2000), Allostasis and allostatic load: implications for neuropsychopharmacology, *Neuropsychopharmacology*, 22(2): 108–124.

MEGGIOLARO, S. and ONGARO, F. (2010), *Family contexts and adolescents' emotional status*, paper presented at the European Population Conference, 1-4 September, Vienna.

MENCARINI, L. (2008), Le conseguenze sui partner dell'instabilità familiare. In: AA.VV. *Instabilità' familiare: aspetti causali e conseguenze demografiche, economiche, e sociali*, Atti dei Convegni Lincei (Roma, 20-21 September 2007), Bardi, Roma.

METSÄ-SIMOLA, N. and MARTIKAINEN, P. (2011), *Trajectories of mental health medication before and after divorce in a large Finnish cohort*, paper presented at the European Divorce Conference, 26-29 October, Milan. Cited with the permission of the authors.

MONDEN, C. and UUNK, W. (2006), *Does the negative health effect of divorce vary between European regions? A test of hypotheses on institutional, economic and cultural differences*, paper presented at the Fourth conference of European Network for the sociological and demographic Study of Divorce, 22-24 June, Florence. Cited with the permission of the authors.

MONDEN, C. and UUNK, W. (2011), *For better and for worse: The relationship between divorce and self-assessed health in European panel data*, paper presented at the Annual Meeting of the PAA. Cited with the permission of the authors.

MORTELMANS, D., SNOECKX, L. and RAEYMAECKERS, P. (2009), *Belgium_economic hardship despite elaborate childcare and leave time programmes*. In: Andreß H.J., Hummelsheim D., When Marriage Ends: Economic and Social Consequences of Partnership Dissolution, Edward Elgar Publishing.

MUFFELS, R. (2000), Dynamics of poverty and the determinants of poverty transitions: results from the Dutch socio-economic panel. In: Rose D. (ed.). *Researching Social and Economic Change*, London: Routledge.

OECD (2001), When Money is Tight: Poverty Dynamics in OECD Countries, Chapter 2, *Employment Outlook,* Paris: OECD.

ONGARO, F., MAZZUCO, S. and MEGGIOLARO, S. (2009), Economic Consequences of Union Dissolution in Italy: Findings from the European Community Household Panel, *European Journal of Population*, 25: 45–65.

PEARLIN, L.I., SCHIEMAN, S., FAZIO, E.M. and MEERSMAN, S.C. (2005), Stress, health, and the life course: Some conceptual perspectives, *Journal of Health and Social Behavior*, 46: 205–219.

REHER, D. S. (1998), Family ties in western Europe: persistent contrasts. *Population and Development Review*, 24(2): 203–234.

RIVELLINI, G. Rosina, A. and Sironi E. (2012), Marital Disruption and Subjective Well-being: Evidence from an Italian Panel Survey, paper presented at the EAPS European Population Conference, Vienna, 1-4 September.

ROBINE, J.M. and JAGGER C. (2003), Creating a coherent set of indicators to monitor health across Europe: the Euro-REVES 2 project, *European Journal of Public Health*, 13(3 Suppl): 6–14.

ROSINA, A. (2002), *Le prime unioni alternative al matrimonio*. In: Famiglie, mutamenti e politiche sociali, Vol. I, Osservatorio Nazionale sulle famiglie e le politiche locali di sostegno alle responsabilità familiari. Il Mulino, Bologna: 113–125.

ROSINA, A. and FRABONI, R. (2004), Is marriage losing its centrality in Italy? *Demographic Research*, 11: 149–172.

ROSSI, F. and ONGARO, F. (2008), Gli effetti della rottura del matrimonio. Un'indagine esplorativa presso un'associazione di separati. In: AA.VV. *Instabilità' familiare: aspetti causali e conseguenze demografiche, economiche, e sociali*, Atti dei Convegni Lincei (Roma, 20-21 September 2007), Bardi, Roma.

RUBIN, D. (1974), Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies, *Journal of Educational Psychology*, 66 (5): 688–701.

RYDER, N. (1965), The Cohort as a Concept in the Study of Social Change, *American Sociological Review*, 30(6): 843–861.

SABBADINI, L.L. (1997), *Le Convivenze "More Uxorio*", in BARBAGLI, M. and SARACENO, C. (eds.), Lo Stato delle Famiglie in Italia, Il Mulino: Bologna: 86–94.

SABBADINI, L.L. (2005), *Changes in households structures and behaviours: new challenges for official statistics*, Conference of European Statisticians, Working Paper No 1, 23 September 2005. Available: *www.istat.it/it/files/2011/08/ppt1.ppt*

SABBADINI, L.L. (2011), *Famiglie in mutamento,* paper presented ad the Workshop "Incontro di ricerca fra ISTAT e Università: Generazioni che si formano e si incrociano: scelte di vita nel difficile contesto italiano", 15-16 settembre, Roma.

SARACENO, C. (1994), Commuting between households: multiple membership, shifting boundaries, *Innovation*, *The European Journal of Social Sciences* 7(1): 51–62.

SALVINI, S. and VIGNOLI, D. (2011), Things change: Women's and men's marital disruption dynamics in Italy during a time of social transformations, 1970–2003, *Demographic Research*, 24, 145-174. Available: http://www.demographic-research.org/Volumes/Vol24/5/24-5.pdf

SINGLETON, P. (2012), Insult to Injury. Disability, Earnings, and Divorce, *Journal of Human Resources*, 47(4): 972–990.

UUNK, W. (2004), The economic consequences of divorce for women in the European Union: The impact of welfare state arrangements, *European Journal of Population*, 20: 251–285.

VALLIN, J., MESLÉ, F. and VALKONEN, T. (2001), Tendences en matière de mortalité et mortalité différentielle, *Etudes démographiques*, 36, Editions du Conseil de l"Europe. Available: http://www.coe.int/t/f/coh%C3%A9sion_sociale/population/Publications/

VAN DEN BOGAARD, L.B.D. (2009), *Health effects of divorce: The influence of children*, Master thesis submitted as completion of the master in Sociology (Supervisors: Monden C. and Kalmijn M.), Tillburg University.

VERROPOULOU G. (2009), Key elements composing self-rated health in older adults: a comparative study of 11 European countries, *European Journal of Ageing*, 6(3): 213–226.

VERROPOULOU G. (2012), Determinants of change in self-rated health among older adults in Europe: a longitudinal perspective based on SHARE data, *European Journal of Ageing*, 9(4): 305–318.

VIGNOLI, D. and FERRO, I. (2009), Rising marital disruption in Italy and its correlates. *Demographic Research* 20(4): 11–36.

VIGNOLI, D., DREFAHL, S. and DE SANTIS, G. (2012), Whose job instability affects the likelihood of becoming a parent in Italy? A tale of two partners, *Demographic-Research*, 26: 41–62.

WADE, T.J. and PEVALIN, D.J. (2004), Marital transitions and mental health, *Journal of Health and Social Behavior,* 45: 155–170.

WAITE, L.J., LUO, Y. and LEWIN, A.C. (2009), Marital happiness and marital stability: Consequences for psychological well-being, *Social Science Research*, 38: 201–212.

WARE, J.E., KOSINSKI, M. and KELLER, S.D. (1998), *How to score the SF-12 physical and mental health summary scales*. 3rd ed. Boston: The Health Institute, New England Medical Center.

WINFIELD, F. E. (1985), *Commuter marriage: Living together, apart.* New York: Columbia University Press.

WOOLDRIDGE, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge, MA.

WU, Z. and HART, R. (2002), The effects of marital and non marital union transition on health, *Journal of Marriage and Family*, 64(2): 420–432.

YORGASON, J.B., BOOTH, A. and JOHNSON, D. (2008), Health, Disability, and Marital Quality, *Research on Aging*, 30(6): 623–648.

ZHANG, Z. and HAYWARD, M. (2006), Gender, the marital life course, and cardiovascular disease in late midlife, *Journal of Marriage and Family*, 68: 639–657.

Appendices

Appendix A - Questionnaires

Appendix A.1 - Marital status and Marital status before current marriage (common to all the reviewed surveys)

Stato Civile ***(6 anni e più)***
Celibe o nubile 1
Coniugato/a coabitante col coniuge..... 2
Coniugato/a non coabitante col coniuge (separato/a di fatto) 3
Separato/a legalmente..... 4
Divorziato/a 5
Vedovo/a 6

Stato civile prima del matrimonio attuale ***(se coniugato/a coabitante con il coniuge)***
Celibe o nubile 1
Divorziato/a 5
Vedovo/a 6

Appendix A.2 - Reason for the non-cohabitation of the spouses (Survey: FSS)

Motivo della non coabitazione ***(se coniugato non coabitante col coniuge)***
Interruzione della relazione affettiva 1
Motivi di lavoro/studio 2
Motivi di salute 3
Altro *(specificare nella Scheda Generale)* 4

Appendix A.3 - Marital life retrospective questions (Survey: FSS 2003)

(Per le donne coniugate e per tutti i separati/e,divorziati/e e vedovi/e)

10.4 Parliamo ora del suo matrimonio. Quante volte lei si è sposato/a?
Una sola volta..... 1
Due o più volte..... 2 ➔ **Quante?** ….....N°

10.5 Le chiedo ora notizie relative a ciascun matrimonio che lei ha avuto, partendo dal primo.

(chi si è sposato una sola volta, compili solo la prima colonna)
COMPILARE PER COLONNA PER OGNI MATRIMONIO AVUTO

	Primo matrimonio	Secondo matrimonio	Ultimo matrimonio
10.5a) Mi può indicare la data di matrimonio?			
Mese.....	|_|_|	|_|_|	|_|_|
Anno.....	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|

(...)

10.6 Il matrimonio è ancora in corso?

	Primo matrimonio	Secondo matrimonio	Ultimo matrimonio
No	1	1	1
Sì.....	2	2	2

(Se NO, altrimenti andare a dom.11.1)

10.7 Può indicare l'anno di eventuale separazione, divorzio o vedovanza?

COMPILARE PER COLONNA PER OGNI MATRIMONIO AVUTO

	Primo matrimonio	Secondo matrimonio	Ultimo matrimonio
Separazione di fatto:			
Anno.....	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|
Separazione legale:			
Anno.....	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|
Divorzio:			
Anno.....	|_|_|_|_|	|_|_|_|_|	|_|_|_|_|
Vedovanza:			
Anno.....	|_|_|_|_|	|_|_|_|_|	. |_|_|_|_|

Appendix A.4 - Children section
(Survey: FSS 2003)

(PER LE PERSONE DI 15 ANNI E PIÙ, ESCLUSI GLI UOMINI CONIUGATI COABITANTI CON LA CONIUGE)

10.1 Lei ha o ha avuto figli suoi nati vivi?

No 1

Sì..... 2 ➔ **Quanti?** ..... N°...

10.2 Lei ha o ha avuto figli adottati o affiliati?

No 1

Sì..... 2 ➔ **Quanti?** ..... N°...

(Se ha o ha avuto figli suoi o adottati/affiliati, altrimenti andare al riquadro successivo)

10.3 Consideri ciascun figlio che ha o ha avuto e, seguendo l'ordine di nascita, ne riporti il sesso, la data di nascita, se e quando ha smesso di vivere con lei.

COMPILARE PER COLONNA PER OGNI FIGLIO AVUTO

	1° figlio	2° figlio	3° figlio	4° figlio	5° figlio	6° figlio	7° figlio
a) Sesso e data di nascita:							
Maschio	1	1	1	1	1	1	1
Femmina	2	2	2	2	2	2	2
Mese di nascita.....	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|
Anno di nascita.....	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|

(...)

c) Suo figlio ha smesso di vivere con lei?

No	1	1	1	1	1	1	1
Sì, vive altrove.....	2	2	2	2	2	2	2
Sì, è deceduto	3	3	3	3	3	3	3

(Se SÌ, altrimenti andare al riquadro)

d) Anno in cui suo figlio ha smesso di vivere con lei o anno di decesso

Anno.....	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|	|_|_|

Appendix A.5 - Non-cohabitant children
(Survey: FSS 2003)

(PER LE PERSONE DI 25 ANNI E PIÙ)
5.2 Ha figli che non vivono con lei?

No …….. 1➔ Le persone fino a 34 anni compresi vanno a dom. 6.1, gli altri vanno a dom. 5.8

Sì..... 2➔ **Quanti?**..... N°_

(Se Sì)
5.3 Può dirci se sono maschi o femmine, che età hanno e dove abitano?
(Indicarlo per ciascun figlio che non vive con lei.
Se ha più di 3 figli che non vivono con lei, riferirsi ai 3 che abitano più vicino)
COMPILARE PER COLONNA

	1° figlio/a	2° figlio/a	3° figlio/a
Sesso:			
Maschio.....	1	1	1
Femmina	2	2	2
Età.....	|_|_|	|_|_|	|_|_|
Dove abita:			
In un altro appartamento dello stesso caseggiato.....	1	1	1
Nello stesso Comune:			
entro 1 km	2	2	2
nel resto del Comune	3	3	3
In un altro Comune in Italia distante:			
meno di 16 km.....	4	4	4
da 16 a 50 km	5	5	5
più di 50 km.....	6	6	6
All'estero.....	7	7	7

5.4 Con che frequenza vi vedete?

Tutti i giorni	1	1	4
Qualche volta a settimana	2	2	2
Una volta a settimana.....	3	3	3
Qualche volta al mese (meno di 4)	4	4	4
Qualche volta all'anno	5	5	5
Mai	6	6	6

5.5 Con che frequenza vi sentite per telefono?

Tutti i giorni	1	1	1
Qualche volta a settimana	2	2	2
Una volta a settimana.....	3	3	3
Qualche volta al mese (meno di 4)	4	4	4
Qualche volta all'anno	5	5	5
Mai	6	6	6

(Se vede i figli almeno qualche volta all'anno, altrimenti andare a dom. 5.7)
5.6 Quanto tempo impiega abitualmente per raggiungere, da casa sua, il luogo in cui vivono attualmente i suoi figli?

Ore.....	|_|_|	|_|_|	|_|_|
Minuti.....	|_|_|	|_|_|	|_|_|

5.7 Quanto è soddisfatto del rapporto con i suoi figli?
(dia un punteggio da 0 a 10, dove 0 indica per niente soddisfatto e 10 completamente soddisfatto)

Punteggio	|_|_|	|_|_|	|_|_|

Appendix A.6 - Marital life for men actually married. Form filled by the wife (Survey: FSS 2003).

PER LE DONNE CONIUGATE COABITANTI CON IL CONIUGE.

12.3 Suo marito è stato sposato più di una volta?

No.....1☐→ andare a dom. 12.5

Sì.....2☐ → **Quante volte?** ..... N° ☐☐

(Se Sì)

12.4 Le chiedo ora notizie relative a ciascun precedente matrimonio che suo marito ha avuto, partendo dal primo.
(senza considerare il matrimonio attuale)

COMPILARE PER COLONNA PER OGNI MATRIMONIO AVUTO DAL MARITO

	Primo matrimonio	Secondo matrimonio	Terzo matrimonio
a) Mi può indicare la data di matrimonio?			
Mese.....	☐☐	☐☐	☐☐
Anno.....	☐☐☐☐	☐☐☐☐	☐☐☐☐

(...)

c) Può indicare l'anno di eventuale separazione, divorzio o vedovanza?

COMPILARE PER COLONNA PER OGNI MATRIMONIO AVUTO DAL MARITO

	Primo matrimonio	Secondo matrimonio	Terzo matrimonio
Separazione di fatto: Anno.....	☐☐☐☐	☐☐☐☐	☐☐☐☐
Separazione legale: Anno.....	☐☐☐☐	☐☐☐☐	☐☐☐☐
Divorzio: Anno.....	☐☐☐☐	☐☐☐☐	☐☐☐☐
Vedovanza: Anno.....	☐☐☐☐	☐☐☐☐	☐☐☐☐

Appendix A.7 - Children section for men actually married. Form filled by the wife (Survey: FSS 2003).

(Per le donne coniugate coabitanti con il coniuge)

12.5 Suo marito ha o ha avuto figli suoi nati vivi, al di fuori dell'unione attuale?

No.....1☐

Sì.....2☐ → **Quanti?** ..... N° ☐☐

Non risponde .....3☐

12.6 Suo marito ha o ha avuto figli adottati/affiliati, al di fuori dell'unione attuale?

No.....1☐

Sì.....2☐ → **Quanti?** ..... N° ☐☐

Non risponde .....3☐

(Se suo marito ha avuto figli suoi, adottati o affiliati al di fuori dell'unione attuale, altrimenti andare a Sezione 13)

12.7 Consideri ciascun figlio che suo marito ha o ha avuto al di fuori dell'unione attuale e, seguendo l'ordine di nascita, ne riporti il sesso, la data di nascita, se e quando il figlio ha smesso di vivere con lui.

COMPILARE PER COLONNA PER OGNI FIGLIO AVUTO DAL MARITO

	1° figlio	2° figlio	3° figlio	4° figlio	5° figlio	6° figlio	7° figlio
a) Sesso:							
Maschio	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐
Femmina	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐
Mese di nascita	__	__	__	__	__	__	__
Anno di nascita	____	____	____	____	____	____	____

(...)

c) Questo figlio ha smesso di vivere con suo marito?

COMPILARE PER COLONNA PER OGNI FIGLIO AVUTO DAL MARITO

	1° figlio	2° figlio	3° figlio	4° figlio	5° figlio	6° figlio	7° figlio
No	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐	1 ☐
Sì, vive altrove	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐	2 ☐
Sì, è deceduto	3 ☐	3 ☐	3 ☐	3 ☐	3 ☐	3 ☐	3 ☐

(Se Sì)

d) Anno in cui questo figlio ha smesso di vivere con suo marito o anno di decesso

	1° figlio	2° figlio	3° figlio	4° figlio	5° figlio	6° figlio	7° figlio
Anno	____	____	____	____	____	____	____

Appendix A.8 - Who was with you?
(Survey: Time Use 2002-2003 (top) and 2008-2009 (bottom)

È da solo o con persone che conosce?

Non risponda se sta dormendo, lavorando o se sta a scuola

Indicare almeno una risposta per riga. Se è da solo o con le stesse persone per più di 10 minuti può tracciare una linea verticale

Da solo	Con familiari conviventi		Con familiari non conviventi	Con altre persone che conosce
	con meno di 10 anni	di 10 anni o più		

È da solo o con persone che conosce?

Non risponda se sta a letto o sta dormendo

Indicare almeno una risposta per riga. Se è da solo o con le stesse persone per più di 10 minuti può tracciare una linea verticale

Da solo	Con familiari conviventi					Con altre persone che conosce
	Madre	Padre	Coniuge/ partner	Figlio/a	Fratello/ sorella	

Appendix A.9 - Painful events over the last 3 years
(Survey: Health Conditions 2004-2005)

Negli ultimi tre anni Le è accaduto qualche evento doloroso o difficile da affrontare?
(Se Sì, possibili più risposte)

NO..... 01

Se Sì, quali:
Perdita del lavoro sua o di un suo familiare (periodo disoccupazione, licenziamento, fallimento, ecc.)..... 02
Gravi problemi economici (inclusi sfratto e indebitamento, ecc.) 03
Una sua grave malattia o incidente/infortunio 04
Una grave malattia o incidente/infortunio che ha colpito un suo familiare o persona cara..... 05
Grave rottura del rapporto di coppia (separazione, divorzio, ecc.) 06
Decesso di un familiare o di una persona cara..... 07
Gravi problemi familiari (problemi con figli o altri familiari)..... 08
Uscita dei figli dalla famiglia 09
Altro... *(specificare)*..... 10

Appendix A.10 - Marriage year (usually in the Household Register) (common to all the reviewed surveys)

Solo per le persone coniugate *coabitanti con il coniuge (Marital status=2)*
Indicare il mese e l'anno (con 4 cifre, ad es. 1952) del matrimonio attuale.

Appendix A.11 - Health-Related Activity Limitiation (Source: FSS 2003)

Original language (left) - English translation (right)

Lei è affetto da una malattia cronica o da una invalidità permanente che riduce l'autonomia personale fino a richiedere l'aiuto di altre persone per le esigenze della vita quotidiana in casa o fuori casa?

No..... 1
Sì, in modo saltuario per alcune esigenze 2
Sì, in modo continuo o per esigenze importanti .. 3

Are you affected by a longstanding illness or a permanent disability that reduces your personal freedom, requiring help from other people for daily needs inside or outside your house?

No 1
Yes, occasionally for some needs..... 2
Yes, continuously or for important needs..... 3

Appendix A.12 - The Minimum European Health Module (MEHM) Self-Rated Health, Chronic Morbidity and Limitation in Usual Activities

Original language (left) - EU-SILC Italian version since 2007 (right)

1. **How is your health in general?**

   Very good / Good / Fair / Bad / Very bad.

2. **Do you have any long-standing illness or health problem?**

   Yes / No.

3. **For at least the past 6 months, have you been limited in activities people usually do because of a health problem?**

   Yes, strongly limited / Yes, limited / No, not limited.

1. **Come va in generale la Sua salute?**

   Molto bene / Bene / Né bene né male / Male / Molto male / Rifiuta di rispondere.

2. **Lei è affetto da malattie croniche o problemi di salute di lunga durata?** *(Il termine "lunga durata" si riferisce a malattie o problemi di salute che durano da almeno 6 mesi o si prevede che durino per almeno 6 mesi)*

   Si / No / Rifiuta di rispondere.

1. **A causa di problemi di salute, in che misura Lei ha delle limitazioni che durano da almeno 6 mesi nelle attività che le persone abitualmente svolgono? Direbbe di avere:**

   Limitazioni gravi / Limitazioni non gravi / Nessuna limitazione / Rifiuta di rispondere.

Appendix A.13 - Chronic illnesses or permanent disabilities (Survey: Health Conditions 2004-2005)

È affetto o è stato affetto in passato da una o più delle seguenti malattie o condizioni patologiche?
Se SÌ, indichi se è stata diagnosticata da un medico, a che età le è stata diagnosticata dal medico per la prima volta, se ne è stato affetto negli ultimi 12 mesi e se, per questa malattia, ha preso farmaci o ha fatto terapie negli ultimi 12 mesi
(rispondere per ciascuna malattia)

Asma	Asthma
Allergia	Allergy
Diabete	Diabetes
Cataratta	Cataract
ipertensione	Hypertension
Infarto del miocardio	Myocardial infarction
Angina pectoris	Angina pectoris
Angina pectoris o altre malattie del cuore	Angina or other heart diseases
Ictus, emorragia cerebrale	Stroke, cerebral hemorrhage
Bronchite cronica, enfisema	Chronic bronchitis, emphysema
Artrosi, artrite	Osteoarthritis and arthritis
Osteoporosi	Osteoporosis
Ulcera gastrica e duodenale	Gastric and duodenal ulcer
Tumore (incluso linfoma e leucemia)	Cancer (including lymphoma and leukemia)
Cefalea o emicrania ricorrente	Recurrent headache or migraine
Ansietà cronica e depressione	Chronic anxiety and depression
Alzheimer, demenze senili	Alzheimer's disease, senile dementia
Parkinsonismo	Parkinson's disease
Altre malattie del sistema nervoso	Other diseases of the nervous system
Calcolosi del fegato o delle vie biliari / calcolosi renale	Liver stones and gallstones / kidney stones
Cirrosi epatica	Cirrhosis of the liver
Malattie della tiroide	Thyroid disease
Malattie della pelle (psoriasi, vitiligine, ecc)	Skin diseases (psoriasis, vitiligo)
Altra malattia cronica	Other chronic disease

Appendix A.14 - Parents' section
(Source: FSS 2003)

6. GENITORI E NONNI *(PER LE PERSONE FINO A 69 ANNI COMPRESI)*

6.1 Dove abitano sua madre e suo padre?

	Madre	Padre
Insieme a lei	1 ☐	1 ☐
In un altro appartamento dello stesso caseggiato	2 ☐	2 ☐
Nello stesso Comune:		
entro 1 km	3 ☐	3 ☐
nel resto del Comune	4 ☐	4 ☐
In altro Comune in Italia distante:		
meno di 16 km	5 ☐	5 ☐
da 16 a 50 km	6 ☐	6 ☐
più di 50 Km	7 ☐	7 ☐
All'estero	8 ☐	8 ☐
E' deceduto/a	9 ☐	9 ☐

(Se almeno uno dei due genitori non abita con lei o è deceduto, altrimenti andare a dom 6.12)

6.2 I suoi genitori si sono separati o hanno divorziato? *(non consideri le separazioni temporanee)*

No ..... 1 ☐ → andare a dom. 6.4
Sì..... 2 ☐

(Se Sì)

6.3 In che anno i suoi genitori hanno smesso di vivere insieme?

Anno ..... |_|_|_|_|
Mai..... 9999 ☐

(Se almeno uno dei due non è deceduto e non vive con lei, altrimenti andare a dom. 6.12)

6.4 Che età hanno sua madre e suo padre?

	Madre	Padre
Età	|_|_|	|_|_|

6.5 Con che frequenza vi vedete?

	Madre	Padre
Tutti i giorni	1 ☐	1 ☐
Qualche volta a settimana	2 ☐	2 ☐
Una volta a settimana	3 ☐	3 ☐
Qualche volta al mese (meno di 4)	4 ☐	4 ☐
Qualche volta all'anno	5 ☐	5 ☐
Mai	6 ☐	6 ☐

6.6 Con che frequenza vi sentite per telefono?

	Madre	Padre
Tutti i giorni	1 ☐	1 ☐
Qualche volta a settimana	2 ☐	2 ☐
Una volta a settimana	3 ☐	3 ☐
Qualche volta al mese (meno di 4)	4 ☐	4 ☐
Qualche volta all'anno	5 ☐	5 ☐
Mai	6 ☐	6 ☐

(Se vede i suoi genitori almeno qualche volta all'anno, altrimenti andare a dom. 6.8)

6.7 Quanto tempo impiega abitualmente per raggiungere, da casa sua, il luogo in cui vive attualmente sua madre e/o suo padre?

	Madre	Padre
Ore	|_|_|	|_|_|
Minuti	|_|_|	|_|_|

6.8 I suoi genitori sono affetti da una malattia cronica o da una invalidità permanente che ne riduce l'autonomia personale fino a richiedere l'aiuto di altre persone per le esigenze della vita quotidiana in casa o fuori casa?

	Madre	Padre
No	1 ☐	1 ☐
Sì, in modo saltuario per alcune esigenze	2 ☐	2 ☐
Sì, in modo continuo o per esigenze importanti	3 ☐	3 ☐

6.9 Sua madre e/o suo padre vivono:

	Madre	Padre
In coppia insieme ai figli	1 ☐	1 ☐
In coppia senza figli	2 ☐	2 ☐
In una famiglia di un componente	3 ☐	3 ☐
Senza coniuge/partner e con figli	4 ☐	4 ☐
In istituto, pensionato, ecc	5 ☐	5 ☐
Altro *(specificare)*	6 ☐	6 ☐

(Se almeno uno dei due non vive in istituto, pensionato, ecc., altrimenti andare a dom. 6.12)

6.10 I suoi genitori vivono insieme a persone che a pagamento li assistono, si occupano di loro e/o delle faccende domestiche?

	Madre	Padre
No	1 ☐	1 ☐
Sì, con stranieri	2 ☐	2 ☐
Sì, con italiani	3 ☐	3 ☐

Appendix B - Sample characteristics (Chapter 5)

Sample characteristics (unweighted data) by gender and separation status for Chapter 5 analysis.

	Ever-separated		Never-separated	
	Men	Women	Men	Women
HRAL ("*Yes*" categories collapsed)	4.8	7.0	7.1	10.0
Age (average)	50.9	48.4	55.0	55.4
Region				
North	52.4	54.9	40.5	40.4
Centre	19.7	19.2	18.8	19.4
South	27.9	25.9	40.7	40.2
Education				
High level	17.6	13.7	11.7	8.9
Medium level	31.8	40.7	29.8	25.9
Low level	50.6	45.7	58.5	65.1
Household economic condition				
Good	69.0	57.7	72.2	69.6
Bad	24.5	32.0	23.3	25.7
Very bad	6.5	10.3	4.6	4.6
Widowhood experience	0.2	1.2	5.9	21.6
Living arrangement				
In couple	34.4	20.1	94.4	77.8
Living alone	43.2	26.9	3.3	12.7
Single parent / Isolated / Other	22.3	53.0	2.3	9.5
Partnership (regardless cohabitation	47.0	33.0	94.8	78.4
Children at separation (younger than 15)				
None	44.2	37.8	-	-
One	30.8	34.5	-	-
Two or more	25.1	27.7	-	-
Time elapsed since separation				
Short, up to 5 years	30.2	27.4	-	-
Medium (6 to 12 years)	27.8	29.2	-	-
Long (13 years and over)	42.0	43.4	-	-
No. of observations	**874**	**1047**	**12306**	**14810**

Source: FSS 2003, own calculations.

Appendix C - Results of the first-differences regressions (Section 6.9)

Model 1 (Table 14)

```
Number of obs =   86285
F(  1, 41493)  =    1.12
Prob > F       =  0.2903
R-squared      =  0.0000
Root MSE       =  .69207
(Std. Err. adjusted for 41494 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |  -.0364807   .0344944    -1.06   0.290    -.1040904    .0311291
------------------------------------------------------------------------------
```

Model 2 (Table 14)

```
Number of obs =   83637
F(  5, 40687)  =  622.40
Prob > F       =  0.0000
R-squared      =  0.0594
Root MSE       =  .66945
(Std. Err. adjusted for 40688 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |   -.081304   .0379511    -2.14   0.032    -.155689    -.006919
  Alone      |   .0803869   .0348157     2.31   0.021     .0121474    .1486265
  Age        |   .0045324   .0017916     2.53   0.011     .0010208    .0080441
  Chronic morbidity |   .2135795   .0075465    28.30   0.000     .1987883    .2283708
  Activity limitations |   .3031045   .0075504    40.14   0.000     .2883056    .3179034
------------------------------------------------------------------------------
```

Model 3 (Table 14)

```
Number of obs =   83637
F(  6, 40687)  =  519.06
Prob > F       =  0.0000
R-squared      =  0.0594
Root MSE       =  .66945
(Std. Err. adjusted for 40688 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |  -.1318497   .0536339    -2.46   0.014    -.2369734    -.026726
  Separ*woman |   .0881528   .0677262     1.30   0.193    -.0445921    .2208978
  Alone      |   .0857413   .0351138     2.44   0.015     .0169174    .1545652
  Age        |   .0045128   .0017918     2.52   0.012     .001001     .0080247
  Chronic morbidity |   .2135579   .0075466    28.30   0.000     .1987664    .2283493
  Activity limitations |   .3031068   .0075504    40.14   0.000     .2883079    .3179057
------------------------------------------------------------------------------
```

Model 4 (Table 14)

Number of obs = 83623
F(6, 40673) = 518.56
Prob > F = 0.0000
R-squared = 0.0594
Root MSE = .66948
(Std. Err. adjusted for 40674 clusters in idind)

	Coef.	Robust Std. Err.	t	P>|t	[95% Conf.	Interval]
Separation	-.133855	.0683038	-1.96	0.050	-.2677319	.0000219
Separ*marriage	.0753862	.0755615	1.00	0.318	-.0727159	.2234884
Alone	.0821248	.0349452	2.35	0.019	.0136315	.1506181
Age	.0044814	.0017918	2.50	0.012	.0009694	.0079934
Chronic morbidity	.2134408	.0075469	28.28	0.000	.1986486	.2282329
Activity limitations	.3031561	.0075502	40.15	0.000	.2883575	.3179548

Model 5 (Table 14)

Number of obs = 83637
F(6, 40687) = 518.72
Prob > F = 0.0000
R-squared = 0.0594
Root MSE = .66946
(Std. Err. adjusted for 40688 clusters in idind)

	Coef.	Robust Std. Err.	t	P>|t	[95% Conf.	Interval]
Separation	-.085298	.0518535	-1.64	0.100	-.186932	.0163361
Separ*children	.0079623	.0758484	0.10	0.916	-.1407022	.1566269
Alone	.0819338	.0380042	2.16	0.031	.0074448	.1564228
Age	.004528	.0017926	2.53	0.012	.0010145	.0080415
Chronic morbidity	.2135748	.0075468	28.30	0.000	.1987829	.2283666
Activity limitations	.3031058	.0075503	40.14	0.000	.288307	.3179046

Appendix D - Results of the fixed-effects ordered logistic regressions (Section 6.9)

Model 1 (Table 15)

```
Number of obs      =        71404
Wald chi2(1)       =         1.40
Prob > chi2        =       0.2361
Log pseudolikelihood = -24745.822
Pseudo R2          =       0.0000
(Std. Err. adjusted for 22537 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |  -.1840036   .1553194    -1.18   0.236    -.4884241    .1204169
------------------------------------------------------------------------------
```

Model 2 (Table 15)

```
Number of obs      =        66958
Wald chi2(5)       =      2525.00
Prob > chi2        =       0.0000
Log pseudolikelihood = -20908.376
Pseudo R2          =       0.0990
(Std. Err. adjusted for 21646 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |   -.370202   .1770063    -2.09   0.036    -.7171279   -.0232761
      Alone  |   .3824414   .1721697     2.22   0.026     .0449949    .7198879
         Age |   .0259783   .0099873     2.60   0.009     .0064035    .0455531
Chronic morbidity |   .9183201   .0363147    25.29   0.000     .8471447    .9894956
Activity limitations |   1.317203   .0366428    35.95   0.000     1.245385    1.389022
------------------------------------------------------------------------------
```

Model 3 (Table 15)

```
Number of obs      =        66958
Wald chi2(6)       =      2526.31
Prob > chi2        =       0.0000
Log pseudolikelihood = -20907.066
Pseudo R2          =       0.0991
 (Std. Err. adjusted for 21646 clusters in idind)
------------------------------------------------------------------------------
             |               Robust
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  Separation |  -.6683305   .2590317    -2.58   0.010    -1.176023   -.1606376
      Alone  |   .4168305   .1753363     2.38   0.017     .0731776    .7604834
Separ*women  |   .4994093   .3207939     1.56   0.120    -.1293352    1.128154
         Age |   .0258521   .0099882     2.59   0.010     .0062756    .0454285
Chronic morbidity |   .9181876   .0363149    25.28   0.000     .8470117    .9893636
Activity limitations |   1.317464   .0366442    35.95   0.000     1.245643    1.389286
------------------------------------------------------------------------------
```

Model 4 (Table 15)

Number of obs = 66950
Wald chi2(6) = 2526.00
Prob > chi2 = 0.0000
Log pseudolikelihood = -20905.939
Pseudo R2 = 0.0990
(Std. Err. adjusted for 21642 clusters in idind)

	Coef.	Robust Std. Err.	z	P> z	[95% Conf.	Interval]
Separation	-.5565262	.2802492	-1.99	0.047	-1.105805	-.0072478
Alone	.3846673	.172381	2.23	0.026	.0468068	.7225278
Separ*marriage	.2889974	.3314446	0.87	0.383	-.3606222	.9386169
Age	.02571	.009988	2.57	0.010	.0061338	.0452861
Chronic morbidity	.9177958	.0363188	25.27	0.000	.8466123	.9889793
Activity limitations	1.317412	.0366405	35.96	0.000	1.245598	1.389226

Model 5 (Table 15)

Number of obs = 66958
Wald chi2(6) = 2525.13
Prob > chi2 = 0.0000
Log pseudolikelihood = -20908.138
Pseudo R2 = 0.0990
(Std. Err. adjusted for 21646 clusters in idind)

	Coef.	Robust Std. Err.	z	P> z	[95% Conf.	Interval]
Separation	-.493744	.258861	-1.91	0.056	-1.001102	.0136143
Alone	.4313456	.1928971	2.24	0.025	.0532743	.8094169
Separ*children	.230562	.3540943	0.65	0.515	-.4634502	.9245741
Age	.0258424	.0099919	2.59	0.010	.0062586	.0454262
Chronic morbidity	.9182762	.0363141	25.29	0.000	.8471019	.9894506
Activity limitations	1.31728	.0366417	35.95	0.000	1.245464	1.389096

Appendix E - Results of alternative fixed-effects analysis M1-T1 (Section 6.10)

Model 1 (Table 16)

Number of obs = 46247
F(1, 31033) = 0.22
Prob > F = 0.6379
R-squared = 0.0000
Root MSE = .7495
(Std. Err. adjusted for 31034 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.0231481	.0491892	-0.47	0.638	-.119561	.0732647

Model 2 (Table 16)

Number of obs = 40627
F(5, 26143) = 534.78
Prob > F = 0.0000
R-squared = 0.0853
Root MSE = .71558
(Std. Err. adjusted for 26144 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.0908753	.056511	-1.61	0.108	-.2016398	.0198893
Alone	.1188092	.037634	3.16	0.002	.0450446	.1925738
Age	-.0039312	.0018944	-2.08	0.038	-.0076443	-.0002181
Chronic morbidity	.2767108	.0099659	27.77	0.000	.257177	.2962446
Activity limitations	.3441513	.0095893	35.89	0.000	.3253558	.3629469

Model 3 (Table 16)

Number of obs = 40627
F(6, 26143) = 445.86
Prob > F = 0.0000
R-squared = 0.0854
Root MSE = .71558
(Std. Err. adjusted for 26144 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.1552925	.0803261	-1.93	0.053	-.3127362	.0021511
Alone	.1212252	.0377927	3.21	0.001	.0471493	.195301
Separ*women	.1132112	.1060001	1.07	0.286	-.0945549	.3209773
Age	-.0039405	.0018945	-2.08	0.038	-.0076538	-.0002273
Chronic morbidity	.2766244	.0099668	27.75	0.000	.2570889	.29616
Activity limitations	.344153	.0095889	35.89	0.000	.3253583	.3629477

Model 4 (Table 16)

Number of obs = 40625
F(6, 26141) = 445.68
Prob > F = 0.0000
R-squared = 0.0853
Root MSE = .71557
(Std. Err. adjusted for 26142 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.150002	.1076511	-1.39	0.164	-.3610041	.0610001
Alone	.1192266	.0376739	3.16	0.002	.0453836	.1930695
Separ*marriage	.0804519	.1214375	0.66	0.508	-.1575722	.318476
Age	-.0039086	.0018944	-2.06	0.039	-.0076217	-.0001955
Chronic morbidity	.2766952	.009966	27.76	0.000	.2571612	.2962292
Activity limitations	.344171	.0095897	35.89	0.000	.3253747	.3629673

Model 5 (Table 16)

Number of obs = 40627
F(6, 26143) = 445.74
Prob > F = 0.0000
R-squared = 0.0853
Root MSE = .71558
(Std. Err. adjusted for 26144 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.0486759	.079552	-0.61	0.541	-.2046022	.1072503
Alone	.1109483	.039645	2.80	0.005	.0332419	.1886546
Age	-.0039033	.0018949	-2.06	0.039	-.0076174	-.0001892
Chronic morbidity	.2767458	.0099672	27.77	0.000	.2572097	.296282
Activity limitations	.3441569	.0095895	35.89	0.000	.3253609	.3629529
Separ*children	-.0880936	.112596	-0.78	0.434	-.3087878	.1326007

Appendix F - Results of the alternative fixed-effects analysis T0-T2 (Section 6.10)

Model 1 (Table 17)

Number of obs = 46261
F(1, 31107) = 0.02
Prob > F = 0.8864
R-squared = 0.0000
Root MSE = .75008
(Std. Err. adjusted for 31108 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	.0074074	.0518507	0.14	0.886	-.0942221	.1090369

Model 2 (Table 17)

Number of obs = 44890
F(5, 30464) = 575.88
Prob > F = 0.0000
R-squared = 0.0831
Root MSE = .71618
(Std. Err. adjusted for 30465 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.0615808	.0515512	-1.19	0.232	-.1626232	.0394616
Alone	.1197868	.0371069	3.23	0.001	.0470556	.1925179
Age	-.0027619	.0017959	-1.54	0.124	-.0062819	.0007582
Chronic morbidity	.2794826	.0095713	29.20	0.000	.2607225	.2982427
Activity limitations	.3403732	.0092022	36.99	0.000	.3223365	.3584098

Model 3 (Table 17)

Number of obs = 44890
F(6, 30464) = 480.17
Prob > F = 0.0000
R-squared = 0.0831
Root MSE = .71617
(Std. Err. adjusted for 30465 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.1242852	.0837204	-1.48	0.138	-.2883807	.0398103
Alone	.121757	.0372241	3.27	0.001	.0487963	.1947177
Separ*women	.1117982	.1017322	1.10	0.272	-.0876012	.3111975
Age	-.0027672	.0017959	-1.54	0.123	-.0062873	.0007529
Chronic morbidity	.2795216	.0095708	29.21	0.000	.2607624	.2982808
Activity limitations	.3403439	.0092015	36.99	0.000	.3223085	.3583793

Model 4 (Table 17)

Number of obs = 44887
F(6, 30461) = 479.92
Prob > F = 0.0000
R-squared = 0.0831
Root MSE = .71616
(Std. Err. adjusted for 30462 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.1098734	.0849321	-1.29	0.196	-.2763438	.056597
Alone	.1202025	.0371001	3.24	0.001	.0474848	.1929203
Separ*marriage	.0772362	.1036321	0.75	0.456	-.1258872	.2803595
Age	-.0027281	.0017959	-1.52	0.129	-.0062481	.000792
Chronic morbidity	.2794752	.0095713	29.20	0.000	.2607151	.2982353
Activity limitations	.3403509	.0092023	36.99	0.000	.322314	.3583877

Model 5 (Table 17)

Number of obs = 44890
F(6, 30464) = 480.08
Prob > F = 0.0000
R-squared = 0.0831
Root MSE = .71618
(Std. Err. adjusted for 30465 clusters in idind)

	Coef.	Robust Std. Err.	t	P> t	[95% Conf.	Interval]
Separation	-.0844346	.0681836	-1.24	0.216	-.2180774	.0492081
Alone	.1249033	.0381129	3.28	0.001	.0502005	.1996061
Age	-.0027774	.0017959	-1.55	0.122	-.0062974	.0007427
Chronic morbidity	.2794803	.0095714	29.20	0.000	.26072	.2982406
Activity limitations	.3403341	.009204	36.98	0.000	.3222939	.3583744
Separ*children	.0506817	.1038354	0.49	0.625	-.1528401	.2542034