The Start of Inequality

Evidence from Italian Time-Use Data

Marit Rebane

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Florence, November 2017

European University Institute
Department of Political and Social Sciences

The Start of Inequality

Evidence from Italian Time-Use Data

Marit Rebane

Thesis submitted for assessment with a view to
obtaining the degree of Doctor of Political and Social Sciences
of the European University Institute

Examining Board
Prof Fabrizio Bernardi, European University Institute (Supervisor)
Prof Jonathan Gershuny, University of Oxford
Prof Martin Kohli, European University Institute
Prof Maria Letizia Tanturri, University of Padua

Researcher declaration to accompany the submission of written work

Department of Political and Social Sciences - Doctoral Programme

I, Marit Rebane certify that I am the author of the work *The Start of Inequality. Evidence from Italian Time-Use Data* I have presented for examination for the Ph.D. at the European University Institute. I also certify that this is solely my own original work, other than where I have clearly indicated, in this declaration and in the thesis, that it is the work of others.

I warrant that I have obtained all the permissions required for using any material from other copyrighted publications.

I certify that this work complies with the Code of Ethics in Academic Research issued by the European University Institute (IUE 332/2/10 (CA 297).

I declare that this work consists of 66,518 words.

Statement of inclusion of previous work:

I confirm that chapter 2 draws upon an earlier article I published as
REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *Electronic International Journal of Time Use Research (eIJTUR),* 12**,** 49-72.

Signature and date:

November 10th 2017

To my Family

Acknowledgements

This thesis would be a very different one without the constant inspirational blow from my supervisor, Dr Fabrizio Bernardi. I am deeply grateful to him for all his time, energy, and motivation. His idea to dismiss several previous chapters and substitute them with new ones improved the analytical quality of thesis. I am much obliged to my "academic father" for everything learnt during my PhD studies.

I am most grateful to Dr Raya Muttarak who provided me with letters of reference for PhD programmes for Oxford and Cambridge (both applications successful), and was the first one to introduce and advertise European University Institute to me.

I could not have pursued my PhD studies without the 3-year scholarship from SA Archimedes, Estonia. The last year of my studies was kindly funded by EUI. Thank you so much!

Turning over a new leaf in my life, and driving a car with an infant and all our belongings on board from Estonia to Italy was worth it for all the amazing friends and course-mates whom we met in Firenze. Thank you Maria Dorofejuk, Kasia Gracz, Juana La Mote de Grignon Perez, Carolina Zuccotti, and many many others for making the time at EUI a very bright chapter in our lives!

I would like to thank my colleagues at the Department of Economics and Finance at the Tallinn University of Technology who have been very supportive during my visiting lecturer´s work over the last two years.

Last but not least, I need to thank my family. Thank you Martin for bearing me during my busiest times and worst moods! I am very grateful to my mother Piret Veerus and grandmother Kersti Kõivumägi for their countless number of hours of child care help, and emotional support. I would like to thank my grandfather Peeter Larin who passed away during my first year of doctoral studies for the long philosophical discussions. I am very proud of my bright and talented siblings, Liisa and Mart Veerus. Most of all, I would like to thank my "Oxford-baby" Karl Amandus and "EUI-baby" Emma Eliise for making my life perfect!

Abstract

The thesis consists of three empirical studies which explore the origins of various social inequalities arising at early ages. Italian Time Use Survey data from 2003 and 2009 is used. First, the educational and developmental gradients in childcare are under observation. More educated parents are expected not only to spend more time with children, i.e. the education gradient in child care, but also to alter their childcare time in order to cater children´s developmental needs more, i.e. the developmental gradient in childcare. The empirical results show that: (i) highly educated mothers alter the composition of active childcare time to suit children´s developmental needs more than less educated mothers; (ii) the developmental gradient in fathers´ childcare time only exists for certain activities and child ages; (iii) interesting time-use patterns of compensation emerge for couples with different educational backgrounds.

Second study compares the time use of children from single-mother and intact families, using propensity score matching. The time diaries of children between age 3 and 10 years are scrutinized. Given the multitude of literature on the negative aspects of witnessing parental break-up, and being raised by a single-mother, the results are somewhat surprising. No systematic and large differences in the use of free time between the treatment and the control group. The greatest difference concerns daily meals with parent(s) that are about a quarter of an hour shorter in single-parent families.

Third empirical study adds the perspective of different parental investments by children´s birth order which serves as an indicator of relative disadvantage. The analytical sub-sample consists of families with two and three children aged from 3 to 11 years. The contribution to available studies is (i) connecting the diaries of both parents and all children in the family by place codes, which enables to (ii) scrutinize the link between birth order and parental childcare investments by parental education. Results indicate that each day second-born children receive on average 88 minutes and third-born children 114 minutes less interactive care compared to their first-born sibling, while controlling for children´s age, gender, and other characteristics. The disadvantage arising from birth-order is about 47 minutes smaller if mother has secondary or tertiary education. Siblings fixed effects models underline that the differences in investing time in children are greater between families than inside families.

Table of Contents

CHAPTER 1: General Introduction

1 Introduction

Time is the micro-brick from which the social building is built. Time use is what actually structures social interactions and gives shapes to the courses of our individual lives. All our actions, like paid work, unpaid work and leisure, can be unstitched into the working hours somebody has put in. It is quite straightforward to calculate our time inputs for paid and unpaid work. For paid work, we receive a salary, either for the hours worked or for getting a project done. The compensation for unpaid work may come in many forms, whether as a tasty meal, a tidy room, repaired furniture, a clean car, a nice garden, or happy children. Leisure seems to offer the highest reward for the overworked. Even if we enjoy our scarce leisure time by reading a book on our own, this in itself is made possible by some thousands of working hours contributed by many professionals: the writer, the editor, maybe the proof-reader, artist and translator, the printing press people, the logistics staff, and the salespeople and employees of the book shop (for a more comprehensive overview, please see Gershuny, 2003). Humans as social animals depend heavily on each other, even if they are alone, as when they are reading a book.

All our daily actions shape our society, its institutions, its economy and its social norms among numerous other things. In many ways, time is more valuable than money. It does not matter how hard we try, we still have 24 hours per day and not a minute more. Time does not inflate, burn or corrode. In subjective terms, some actions give a higher rate of return than others. Investments of parental time in small children, even in the most mundane forms of child-minding, feeding, bathing, hushing and bed-time story-telling, have a secular impact on society for the next 80 years or more.

This thesis studies one of the most important building-blocks of the society, which is how parents with small children use their time. Studying time use patterns also helps us approach the mechanism underlying the transmission of advantage and disadvantage between generations. Establishing how much time mothers and fathers with different educational backgrounds spend on a range of

activities with their children at different developmental levels might help us understand social changes that we will see happen in some thirty years' time or more. So by studying inequalities in social background and time use with small children, this thesis aims to give a relatively detailed account of what mothers and fathers with different educational backgrounds do when a baby arrives in their household, and a couple is transformed into a family. It covers three general topics: how time use is different for children of different ages given their social background; differences in the time use of intact families and separated mothers; and differences in the division of time use between siblings. It does so using Italian time budget data that offer one of the most detailed sources currently available for investigating patterns of parental and child time use.

Before addressing the more specific research questions and theories, and the qualities of the time-budget data used and the peculiarities of the Italian case, it is worth discussing briefly the notion of time in philosophy and sociology, and the more recent approach to study time use, which is also followed in this thesis.

1.1 Time in philosophy

Astronomy, cultural semiotics, archaeology, genetics, and many other sciences are all united by their deep interest in Time. Time is probably the most commonly used metafiction in everyday life. It is impossible to imagine contemporary life and its institutions without exact opening and closing times. Humans have long been interested in Time. Prehistoric people first recorded the phases of the moon some 30,000 years ago. All early civilisations invented technologies that helped them to measure time, such as oil lamps, candles, water or sand clocks, and sundials.

Although time is such a core feature of modern life, it is hard to define. The famous comment by Saint Augustine (1955, Book 11) is: "What, then, is time? If no one asks me, I know what it is. If I wish to explain it to him who asks me, I do not know." Some outstanding philosophers of time write that we have no scientific grounds for presuming that time is connected (Prior, 1967), a view of temporal logic that has become highly influential in computer science. The paradigmatic shift in physics from Newtonian mechanics, which required a temporal ordering of events to exist, to relativistic mechanics means that there are many equally plausible B-series orderings (Baron & Miller, 2016). Many writers and film-makers have flirted with that idea. The literary genre of

"postmodern historiographic metafiction" was developed in books like *Waterland* (1983) by Graham Swift, and *The French Lieuthenant´s Woman* (1969) by John Fowles. Several books by the late Umberto Eco play with the notion of multiple and simultaneous narratives, and Italo Calvino's *Il castello dei destini incrociati* (1969) offers numerous layers and interpretations that envelop the reader in the narration process. Numerous films use Belnap's and Molina's models of branching time, for example *Run Lola Run* (1998) by Tom Tycwer, and *The Time Traveller's Wife* (2009) by Schwentke. Translated to the context of life cycle analysis, this means that even if your parents did not read to you when you were a small child, you can still become a Nobel Prize laureate or anything else. A vivid example is this is Alan Turing, whose parents abandoned him several times when he was very young as they travelled between India and England. When he was 13, he cycled 60 miles (97 km) from his home to his boarding school. This is something that today's highly-involved parents would hardly let their children do. Yet Alan Turing is considered to be the founder of computer science and artificial intelligence, and he also contributed greatly to cryptanalysis, mathematics, logic, and biology.

In a folk concept of time, time is whatever it is that plays the role of time (Baron & Miller, 2016). In this sense it is no loss that time-diaries record our actions in 10-minute intervals, as this is as valid a length of time as any other. Recent evidence from neuroscience shows that the duration of cognitive cycles ranges between about 200 and 500 ms (Madl et al., 2011). As such, 10 minutes is long enough for functional consciousness, and many of us actually engage in several simultaneous activities during 10 minutes. Time diaries capture the main and secondary activities of 10-minute intervals, but only the main activities are used in the analyses of this thesis.

It is impossible to touch, see or taste time. Moreover, time is hazily defined and it can be measured in very different ways. Even so, the concept of time is highly important in most areas of life. Psychologists, for instance, stress how important "time" is in everyday life as it helps humans to survive and to adjust to their external environment (Zakay, 2016). Proper timing is a crucial factor in social interaction. A phenomenological approach to psychopathology illustrates that schizophrenia is simply a failure in the synthesis of time consciousness, while depression is triggered by a failure to keep up-to-date, which is characterised by a loss of cognation in the body (Mölder, 2016; Fuchs 2013). There is a great paradox in how some schools of physicists and philosophers, and other scientists consider time. Although humans have measured time since the

dawn of mankind, and have experienced biological ageing, used time as a building block in societies, and organised their social life according to the notion of time, time is still hard to define. A scientific hypothesis may find lots of support but then be rejected by one single strong piece of counter-evidence. For example, the black swan was used since time of Aristotle as a metaphor for something improbable. It was a common expression in 16th century England for describing an impossibility because the limited experience of the old world told people that all swans were white. Once Australia and its black swans were discovered, people retrospectively reconstructed their linguistic terms as well as their biological terms (Taleb, 2007). Though some modern physicists offer proof of timelessness in some areas (Zakay, 2016; Mölder, 2016), time remains a cornerstone in many other sciences. Social sciences do not test the existence of time in the way that hard sciences do, but they take it for granted. There follows a brief review of time in sociology that shows the existence and importance of time, and offers assurance that time exists or is at least among the most powerful human inventions, vitally needed for analysing and understanding human life, different societies and history.

1.2 Time in sociology

1.2.1 Time in earlier sociological writings

Sociological theories cannot be separated from the notion of time. Time has taken in a substantive part of sociological literature since the 1980s. However, there were also notable earlier scholars who integrated daily time use into their theories. This section describes some of the earliest sociology research into time use. Clearly, each of the scientific giants mentioned here deserves to have several PhD theses devoted to them, and the following pages are no more than a nod to the most influential sociological theorists, on whose shoulders this work stands. Each great sociologist is considered for how their work covers daily time, as this is the leitmotif of this thesis. The possible link between their work and parental childcare is subsequently exteriorised.

Karl Marx built his theory originally published in 1867 on the stages of history, each of which had distinct social classes and modes of production (Marx, 1992). Although his theory of historical materialism has been shown to suffer from numerous factual mistakes, it helps in understanding how leisure time was created for some social groups. Marx's concept of "the rate of exploitation" is

a formulation that fits into current time budget analyses, and it explains why the origins of modern time use studies lie in old-style socialist states. Leisure today exists for everyone, varying in its proportion and intensity. Marx also emphasises *the principle of historical specificity*, meaning that each society should be understood in terms of the specific period in which it exists; this is an idea which is very serviceable in the 21st century. The ideas of Marx and Engels on class conflict and surplus value could be used to sharpen the differences in parenting between more educated and less educated families. As many upper-middle class parents implicitly want to transmit their values, living standards, knowledge and more to their offspring, especially at early ages when children are more dependent on their parents and more mouldable than they are when they are teenagers, they have increased childcare time at the start of the 21st century to previously unseen levels, and this could be interpreted as a modern class conflict. However, it is probably not a clear class conflict if Marx's notions of "class in itself" and "class for itself" are used. Class in itself comprises of people with identical or similar relations to the means of production (Marx, 1992). Class for itself also encompasses people's organised pursuit of their class interests (ibid.). The alienation and individualism in contemporary societies make "class parenting for the social elite" quite unlikely. Given that this thesis aims to be as objective as possible, to use most accurate social facts available, and to avoid ideological leanings, the ideas of Marx and Engels are not developed further. Even so, parenthood in Italy in the 21st century has to be analysed in its own specific context. This idea of Marx at least is applied in the following chapters.

Not enough can be said in praise of Max Weber's gigantic impact on all social sciences. Only his studies in the domain of sociology of religion are discussed below, as the notions of historical, personal, and social time are most clearly externalised in these writings. Weber's seminal work *The Protestant Ethic and the Spirit of Capitalism* published in 1905 shows an excellent use of linear time (Weber, 2003). The affinity between protestantism and capitalism grew from the idea that hard work in t_1 will be accompanied by a double success in both material and religious terms in t_2. Weber analysed not only the protestant church but also other religions around the world in order to show that it is only the religious ethics of Calvin's doctrine of predestination that managed the rare transformation of religion into action outside the church (ibid.). Weber's thesis on that historical transformation demands closer attention. His line of thought is that a secret primeval decision of God means the majority of mankind is foreordained to doom (*decretum horribile*). People cannot know nor change God's decision, but the few who will be redeemed might be granted an exception by God and might already feel their salvation in their worldly life. One way of intuiting God's

decision is to feel it through faith, but this is very hard for the majority of ordinary believers. Therefore, people search for other, and for more reliable proof of their salvation. One criterion for this is good deeds (*bona opera*). The idea of certification was unpalatable for Calvin, but many of his followers, such as Beza, approbated it. The ethical belief in predestination together with other features such as rational science and technology, and a free labour market accelerated capitalism in the western world. After a while, people shifted their focus from good deeds to prosperous deeds. Wealthy capitalist traders in 17th century England and the Netherlands could be sure of their salvation when they saw their fortune growing (ibid.). According to Weber, the clear connection between the protestant work ethic, rationalism, and capitalism has driven western history for the past few hundred years.

The Protestant Ethic and the Spirit of Capitalism is one of the most disputed books in sociology, as it is not explicit whether Weber claimed that the protestant work ethic causally led to the immersion of capitalism or whether he simply acclaimed a correlation between the two. Returning to the 21st century, I would like to draw a comparison between the protestant ethic in Weber's works and parental ethics, especially among more educated couples. Presumably all parents want the best for their children, but they know from everyday observations that not everyone succeeds in life. Simultaneous with upward mobility, there exists downward mobility between generations. As parents cannot foresee whether their child will be academically, financially, socially, and emotionally successful in life, and providing lifetime aid to an ill-faring offspring lasts much longer and is far more complex than ensuring early on that the child gets on the right track, modern parents, especially the more educated, are reinforcing and combining their efforts in bringing up their children in the best way possible. The growing literature on child development designed for parents can be cognised as the modern doctrine of predestination, regardless of individual religious affiliation. Good deeds for children, especially deeds that are beneficial for early child development, are important for modern parents as a way to ensure their salvation, as their children will do well in life, will avoid downward mobility, and will be successful in all the realms of life that parents can imagine.

Émile Durkheim who established sociology as a separate academic discipline, used time as a form of highlighting in many of his works, notably when writing about social integration, social facts, collective consciousness, and social pathologies like crime and suicide (Durkheim, 1977; Allan,

2005). Durkheim considered the division of labour to be a historical rule. The division of labour is caused by the increasing material and dynamic density of societies. The crucial link between increasing density in societies, and the division of labour is the increasing "battle of life" (Durkheim, 1978). Durkheim writes about the battle of life with exactly the same meaning that Charles Darwin uses for the notion in his work. Durkheim pays homage to Darwin, saying that Darwin's work is a cornerstone for his theory on the division of labour, adding that the competition between two organisms is fiercest when they share similar features (ibid., 248-9). Like Herbert Spencer, Durkheim carries the idea of the survival of the fittest over into modern societies. In the current thesis, time diary data on individual daily actions are treated as measurable social facts that reflect the social reality of different parenthoods and childhoods in Italy in the early 21st century. Durkheim's *Le suicide* (1930) is given as a fine example of sociological research, and it is complemented by more recent methodologies. The increased exertions of highly educated parents in developing their offspring can in many ways be seen as a parallel to the battle of life. Changes in globalising economies mean there may be fewer good jobs around for the next generation in the western world. Parents who share such concerns can prove especially fertile soil for the ideas of "parenting for child development", "new fatherhood" and "intensive motherhood." No parent wants their child to do worse than themselves. Though not all highly educated parents worry about the jobs their children will have in the future, Durkheim says they might still adapt to the new social norms when they are highly integrated in society. Although it is hard to prove, a six-year-old child's day today might offer quite a different and more hurried experience to that of a coeval of 200 or more years ago. Back then, time was presumably perceived by the phases of the day and meals, and by the passing of seasons. In the 21st century, it is not uncommon for pre-school children to have watches and mobile phones, and they attend kindergarten, nursery school and various after-school activities with strict start and end times. Following this idea of Durkheim leads us to paraphrase Clause Lévi-Strauss: a child of today lives in a "hot" society, while the child of the past lived in a "cold" society.

Georg Simmel, the founder of formal sociology, stressed that antinomy and conflict are ineluctable and even necessary for societies, an idea which is similar to those of Hegel and Marx. Marx claimed that there is a crisis period between each pair of historical eras, an idea that Georg Simmel developed further, showing that each crisis embodies an impelling force (Simmel, 1918). Simmel claimed that adversities exist not only between people but also within them. The concurrence of all possible antipodes is the energising power behind social processes (Simmel, 1908). Competition is

just one form of struggle (*Streit, Kampf*), and social history is an overview of the struggle and compromises within and between men and social groups (ibid.). The unity of antipodes describes Simmel's sociological method as well as the historical understanding (*Verstehen*) method. In his description of the developmental model of the West, he stresses the growth of individual freedom since mediaeval times (ibid.). Alas, as freedom cannot be separated from money, we can draw the conclusion that the division of freedom is highly unequal in a civil society. With the expansion of tertiary education in the latter part of the 20th century, a university diploma gives no guarantee of success in life, and so parents who have more freedom or money to fulfil their expectations for their children, struggle hard to raise the stakes in early child development, as this may later give them a competitive edge over traditionally raised children. This hidden competition in society might increase inequalities for the next generation, but at the same time it could also become an impelling force for future innovation and growth.

Georges Herbert Mead, the founding father of symbolic interaction theory, was among the most original thinkers of the 20th century, and he also coined the less well-known theory of a "temporal world". His theory of action states that time and society are the essentials of all actions (Mead, 1932). His theory of society is founded on the relationship between various temporal modes. He says that people live in the present and constantly re-interpret the past and the future through their experiences in the present (Mead, 1932). Prior to Mead, psychologists agreed that the past shapes the present and the future, but now they share an understanding that humans constantly reinterpret their personal biographies in a way that fits their present identity. Mead defines durations as a "continuous sliding of presents into each other" (Mead, 1932, p. 28), claiming that the past is as hypothetical as the future (p 31). He stressed that human beings are somewhat more complicated than Pavlov's dogs, which acted following a stimulus-response sequence. Humans, Mead claimed, act in a stimulus-interpretation-response sequence, making their response more uncertain, and dependent on consciousness, choice, emergence and novelty (ibid.). Adapting Mead's philosophy of the temporal world to the context of this thesis, we could assume that parents from various social classes or educational backgrounds interpret the stimuli from their children in systematically different ways, thus creating different everyday lives for their children, and potentially shaping different futures for the children of less educated parents and highly educated parents.

Pitirim A. Sorokin used his experience of the world wars and his knowledge of various cultures

across the world to achieve sociological transcendence. One of his main research questions in *Social and Cultural Dynamics* is: "Why do sociocultural phenomena change, yet remain unchanged?" (Sorokin, 1957, p 630). One possible answer is that if a phenomenon is in constant action, it inevitably has to change because it does not operate in a vacuum, but rather in a socio-cultural context. Complete equilibrium is never attained in life as it would mean death (ibid. p 635). Sorokin uses the changes in the American family over the preceding fifty years as an example. He argues that sociocultural phenomena are in constant change from one stage to the next. However, the essence of family or science will never change (ibid.). The current thesis analyses various families, distinguishing between more and less educated parents in chapter 2, between single-parent families and intact families in chapter 3, and between families with different constellations of children by birth order, spacing of births and gender of children in chapter 4. All these families still contribute to the reproduction and socialisation of the population which can be seen as the primary functions of the family, but it seems that families are changing and moving to the next stage even in a traditional Italian context, and it is the job of social scientists to capture and analyse these changes.

Georges Gurvitch analysed various social situations and came to the conclusion that all social phenomena and even all societies can be characterised by their different rhythms (Gurvitch, 1964). Following his ideas, it could be hypothesised that a range of child-care activities are experienced differently by different parents depending on their gender, age, education, and childhood experiences, the age of their child, the nature of their work in the labour market work, and so forth. There may be systematic differences between the parental experiences of different societies and social groups. Some groups could consider parenting to be laborious, tiresome and depressing (Gurvitch's "erratic time" or "deceptive time") while the opposite group might find the same childcare tasks to be pleasant and enjoyable, and to provide them with meaning in their life (Gurvitch's "time in advance of itself"). If parents with tertiary education can delay personal pleasure more easily than their less educated counterparts, and can perceive life *in extenso* with all its pros and cons rather than perceiving only the present, it could be one explanation for the different parenting rhythms and practices.

Norbert Elias called his methodological approach "process sociology", though it is better known as figurational sociology. Figurational sociology can be streamlined by highlighting a few ideas: 1)

people are born into social structures which cannot be reduced to individual actions; 2) these structures or figurations are in constant flux; 3) long-term transformation of the figurations cannot be foreseen; and 4) human knowledge develops in these figurations (Elias, 2012). Elias' ideas provide an interesting angle from which to analyse parenting. They argue that parenting practices depend on larger social structures that cannot be changed by individuals. Moreover, these structures are in constant flux, marking for instance generational variations in how offspring are brought up. Nobody can plan or foresee the future effects of changed parenting, but human knowledge should increase throughout this process.

1.2.2 Time in more contemporary sociological research

It is clear from the preceding paragraphs that time was already an important notion for the founding fathers of sociology and the other early developers of sociology. Numerous other authors have added new nuances to time throughout the history of sociology, and the density of the scientific analyses of time has increased during recent decades especially. It is arbitrary in the extreme to classify sociologists as earlier or more contemporary by which century they were born in, as has been done here, but as time shapes societies and the social structures into which all people are born, differentiating by time of birth might make some sense in a thesis on time use.

Robert K. Merton is sometimes referred to as the "founding father of modern sociology." Merton shaped sociological understanding from the 1930s to the 1960s, and had an even stronger impact on the science than his teachers Parsons and Sorokin did. He coined several terms, including "the self-fulfilling prophecy," "reference group," "role model" and "unintended consequences", all of which are commonly found in many fields in the 21st century (Merton, 1949). All Merton's theoretical ideas are empirically grounded, and this brought structuralism, and more importantly sociology as a whole, to a more mature level. Merton wrote "Social Time" (1937) together with Sorokin and claimed in it that time is a legitimate subject for sociology because of its socio-cultural character. Time has an important role in many of his writings. The current thesis would be unthinkable without Merton. Contemporary parents depend heavily on their reference groups, which are different from those of past generations, comprising parenting websites, blogs, internet forums, mobile parenting apps and similar. The role models of contemporary parents are new and do not necessarily contain their progenitors. Only time will show whether increased parental attention,

especially among more educated parents, will act as a self-fulfilling prophecy of success in life, and what unintended consequences such as greater polarisation of societies in subsequent generations might follow.

C. Wright Mills accentuates the interconnectedness of biography, history and society, which he justifiably calls *the coordinate points of the proper study of man* (Mills, 1977, p 143). He argues that social sciences should be practised as historical disciplines in order to raise awareness of social structures, central terms, and problems of limited milieux. Men and women often perceive various traps to be their personal problems without locating high unemployment rates, increasing divorce rates or survival in war in a wider historical context. The sociological imagination, a term coined by Mills in 1959, lets humans grasp the meaning of a larger historical context and how it shapes the lives and careers of various social groups (Mills 1977, p 5). *Sociological imagination helps to grasp history and biography and the relations between the two within society* (p 6). In his writings about sociological imagination, Mills venerates the great thinkers that came before him like Herbert Spencer, E.A. Ross, Auguste Comte, Emile Durkheim, Karl Mannheim, Karl Marx, Thorstein Veblen, Joseph Schumpeter, W.E.H. Lecky and Max Weber, whom he honours as the highest quality authors writing about man and society in a historical context. The current thesis has a strong empirical inclination, but it also contains Mills' idea of helping people to become aware of their place in history, and the social nature of the problems that both parents and children face today. The everyday actions of adult men and women and their small children are currently the most accurate source of information about individual biographies, as they are shaped by the past and the peculiarity of Italian society. All the analyses on different types of childhood carry the potential for forecasting the societies of the future and revealing the history of mankind.

Pierre Bourdieu also based his study on the links between early personal socialisation and society as a whole, coining the keyword "habitus." Habitus is derived from the Latin verb *habere*, meaning having. Habitus can subsume various types of capital including social, cultural, economic, and symbolic capital. Although Bourdieu avoided such over-simplification, habitus can mean indigenous cultural influences predominantly obtained from the family of origin. Habitus is moulded by social surroundings and is mainly established during childhood (Bourdieu & Passeron, 1964). To a large extent habitus reproduces social classes and distinguishes invisible class boundaries in real life. For Bourdieu, language was not just a method of communication, but more

importantly a mechanism of power. It is practically impossible to measure the development of personal habitus or the various types of capital accumulated during childhood using cross-sectional data. Although Bourdieu's ideas help to shape the theory in this thesis, testing them requires better longitudinal data.

The 20th century is rich in both theoretical and empirical studies of time use. The main theoretical approaches that influence this work are discussed here, and several others are covered in the theoretical parts of the following chapters. Broadly, the main sociological paradigms of the 20th century can be split into two groups depending on their approach to time and space. One group contains the schools of functionalism and structuralism, which assume that there are relatively invariant structures beneath the temporal flux. Mead, Sorokin, Parsons, Luhmann and many others write about the relative openness of the future. However, the future is partly constructed and designed in the present. In contrast to this are scholars like Foucault and his genealogical method, also known as the archaeology of knowledge, Elias with his figurational sociology and Urry, who emphasise constant change and process in societies. This thesis would like to serve as a crossroads for these two paradigms. Family has been quite an invariant social structure throughout history with its distinct functions. However, it seems that contemporary childhoods are structured and redefined in systematically different ways, at least in some social groups. The current thesis explores both permanence and change in family life, and some possible consequences of families progressing to a subsequent stage.

1.2.3 Various concepts of time in sociology

Different authors emphasise different dimensions of time, such as daily time, life time, historical time, calendar time, and subjective time to name but a few. A brief synopsis of these major time-related terms is laid out below.

Daily time is almost synonymous with everyday or quotidian life, embracing everything that is habitual and normal. In sociology, these terms refer to the knowledge of routine ways of life. The time-diaries analysed in this thesis, for instance, are all filled in for "an average working day" or "an average weekend day." Birthdays or holidays are not included as the main aim is to analyse everyday life. Of course, the purest form of daily time analysis comes from ethnographers. Clifford

Geertz advocated the analysis of thick descriptions and said that second-order analysis should be rejected in favour of first-order verisimilitude (Geertz, 1973). Unfortunately, time-budget surveys do not include thick descriptions, but rather offer a poignant overview of how thousands of individuals allocate their daily time. However, the "with whom codes" make it possible to distinguish who else was present during an activity, and this code can be used as a proxy for what Erving Goffman called the analysis of the interaction order. In *The Presentation of Self in Everyday Life*, Goffman employs the metaphor of a theatre to portray the importance of social interaction (Goffman, 1959). In social interaction, just like in a theatrical performance, performers want to guide, control, and impress the audience, perhaps by using white lies, and they want to avoid embarrassing themselves and others (ibid.). Both parents and children put on performances in front of each other. Goffman was the first to underline how important daily face-to-face interactions are as a subject for sociological study. Inspired by Goffman, this thesis uses only the primary activity codes in the analyses as these are the face-to-face actions between parents and children.

The analysis of life time is often referred to as the life-course perspective or life-course theory. Sociologists emphasise the role of historical, social and cultural contexts in shaping the trajectories of personal development from birth to death. Since the 1960s the life course perspective has been used extensively in sociological research into ageing, immigration and social stratification, and also in economics, history, public health and biology. Karl Mannheim advocated the idea that various socio-historical settings produce different perspectives (Mannheim, 1936). This means that biographical events like marriage, becoming a parent, sending a child to school, having an empty nest, or becoming a grandparent at a particular age interface with the social context and the historical and generational events in which they are experienced. One of the major challenges in life-course studies is to disentangle the effects of the specific age, cohort and historical period, and their interactions. Longitudinal studies following the same individuals over multiple cohorts are needed for this, and it is hoped that future time-use surveys will incorporate this sort of sample design.

Historical time is analysed by sociologists from the development of social structures. While anthropology explores the evolution of human beings, historical sociology investigates how societies develop through history. Many historical sociologists use Weber's *Verstehen* tradition (Weber, 2003) to show how specific events and social structures are historically grounded in

specific social conditions. Path dependency is an issue that is much debated in historic sociology. Karl Popper stressed the failure of societies to predict their own future, and warned against totalitarian and authoritarian regimes which presuppose that some general laws or social phenomena necessarily lead to a determined end (Popper, 1945).

Calendar time was needed to organise social life in larger societies. All calendars are socially constructed and the earliest ones date back to the Persian Zoroastrian calendar in 503 BC, the Mayan calendar from the 5th century BC, the old Chinese lunisolar calendar that is more than 2000 years old, and the cycle of eight lunar years used in early Greece to name but a few. The standardisation of calendar time became especially important in the Roman Empire. Julius Caesar consulted the best astronomers of the time to create the Julian calendar in 46 BC. The Julian calendar consists of 365 days divided into 12 months, and has a leap year every four years. In 1582 pope Gregory XIII proposed a more exact calendar to eliminate the leap year problem by correcting the length of the year by 0.002%. Today, the Georgian calendar has gradually replaced the Julian calendar in most countries, but the old Roman names of the months have been preserved, such as July in honour of Julius Caesar and August after Augustus (Blackburn & Holford-Strevens, 2003).

In sociology, subjective time was thoroughly discussed by Sorokin and Merton (1937), who stressed the qualitative nature of time in social settings and daily rhythms, in a similar way to the social anthropologists who highlight the subjective features of time. While objective time is measured in standard units such as minutes, hours, day, weeks and years, subjective time marks the personal variations in how time is perceived against the standard time units. Some moments pass slowly because intensified concentration increases the density of experience per standard time unit, say in memories of an accident or of parachuting. Other moments or even days pass very quickly because they are filled with routine habitual activities, a lack of attention, and a tendency to forget that all mark a decrease in the density of activities. Even so, Sorokin finds there is still quite a strong correlation between social time and astronomical time in clock-driven societies (Sorokin, 1937). Gurvitch developed this idea further and highlighted the multiplicity of time-scales and time-levels for different social classes (Gurvitch, 1964). Social time is not always quantifiable and not even measurable (ibid, p 19).

1.2.4. Time in empirical studies

Hildegarde Kneeland was an exceptional individual not just because she was one of the first female economists and she lived for 101 years. She was the initiator of the most extensive investigation of time use ever attempted. Her main research interest was directed towards the use of time by home-makers. Thanks to Kneeland, researchers today have valuable information about how people allocated their time in farming families living in the US in the 1930s, and how farm women divided their time between child rearing and all other household and farm tasks (Kneeland, 1929). Kneeland was ahead of her time as the next available wave of time-budget surveys date back only to the 1960s.

George A. Lundberg was among the first to explore another facet of time use during the 1930s, by looking at leisure time in New York suburbs (Lundberg et al., 1934). Lundberg always stressed the need to use more precise methodologies in sociological research in order to provide reliable results. For this reason, his studies in the 1930s still provide contemporary sociological insight and give especially detailed information about the Town Club and the Women's Club. Thanks to Lundberg and his colleagues we know today what the world-view, free time use, and social structures were like nearly a century ago.

In 1965 Aleksander Szalai co-ordinated the Multinational Time Budget Study (MTBS) while working at the United Nations (CTUR, 2017). Professor Jonathan Gershuny developed the first Multinational Time Use Study (MTUS) in the mid-1970s. The MTUS compound dataset is constantly growing, and currently encompasses over 60 datasets from 25 countries (CTUR, 2017).

Thanks to time use surveys we not only know the background characteristics of all family members in terms of their age, sex, education and values, but also what they do on an average day. Consider the activity of taking a child to school by car for instance. In this case the respondent would report driving the car as the primary activity and, possibly, talking to their child while driving as a secondary activity. Time diaries also inform us about the place where the activity takes place (the car in this example) and who else was present (the child). Moreover, we know this for thousands of people in a society, and repeated surveys show how the everyday patterns of behaviour of ordinary people change over time, leading to some greater changes in social structure. The most

comprehensive overview of time use data, which also serves as a major source of inspiration for the current thesis, is "Changing Times" by Jonathan Gershuny (2003). By analysing time-use data from twenty countries from the 1960s to the 1990s, Gershuny identifies three trends: 1) convergence by nation, 2) convergence by gender, and 3) convergence by social class (Gershuny, 2003). The national convergence comes through a general increase in leisure time in most societies, which the author elegantly links to the idea of national prosperity. The consumption patterns in the richest society imply the maximum proportion of high human-capital paid work (ibid.). So in order to increase national prosperity, citizens should consume higher value products and services during their leisure time. Two ideal cases are described: a liberal market regime and a social-democratic market regime. In the liberal regime, the rich increase their wealth and employ the poor, while in the social-democratic version all status groups possess specific sorts of human capital and exchange services. The convergence of social strata is especially clear in the social-democratic state. Convergence by gender in paid and unpaid labour is still in progress (ibid.). A parallel can be made with the "The Incomplete Revolution" (Esping-Andersen, 2009).

The current thesis brings together three schools of thought. These cover a) early education and cognitive development (Heckman and others); b) differences in parenting-styles associated with social background (Lareau and others); and c) time-use studies (Gershuny and others). The following pages offer a short overview on each of these areas of research.

2 Literature Review: children, inequality, and time

2.1 Early education

2.1.1 Changing childhoods?

The 20th century could fairly be called 'the century of the child'. The health, nutrition, and education of children became recognised as important for the future of any country. Physical punishment was banned in schools, and child labour became highly regulated. Children gained a higher status within families and in society at large. At the beginning of the 21st century, childhood is longer than ever, and may last well into a person's twenties. Some authors see the 21st century as

'the century of parenthood' as the norms for good parenting have never been set higher (Juusola, 2010). Recent literature on child development suggests however that more educated parents invest more time in their children than less educated parents do (e.g. Gauthier, Smeeding & Furstenberg, 2001; Hill and Stafford, 1985; Leibowitz, 1974a; Sandberg and Hofferth, 2001; Sayer, Gauthier & Furstenberg, 2004), with other factors held constant. Both mothers and fathers have increased the amount of time they spend on childcare over recent decades in the USA (Chalasani 2007; Bianchi, 2000), the UK (Fisher et al., 1999), Australia and Finland (Bittman, 1999), and other countries. However, better educated parents always used to spend more time with their children than less educated parents and this continues to be the case (Bonke and Esping-Andersen, 2009; Chalasani 2007).

Why is time spent by parents with their children so important? Because time is worth much more than money where children are concerned. The time parents devote to their children is a major form of investment. Previous studies have indeed shown that it is a key mechanism for reproducing social classes within a society. Uninterrupted time spent with the mother during the first year has positive effects on a baby's cognitive and non-cognitive outcomes (Neidell, 2000). Maternal childcare time also raises the years of schooling of children (e.g. Fleisher, 1977; Datcher-Loury, 1988). Inputs of parental time are positively correlated with the ability of children at later ages (Leibowitz, 1974b), and reduce behavioural problems (Hofferth and Sandberg, 2001), the risk of early pregnancies, and difficulties in getting established in the labour force (McLanahan and Sandefur, 1994).

Even after the large-scale expansion of education, the biggest differences in educational outcomes can be explained by the social class of the family of origin (Bernardi and Cebolla, 2013; Erikson et al., 2005; Erikson and Rudolphi, 2010). A plausible explanation for this is that education starts at home, not at school, and by the time school starts, the race is already half-way through (Biedinger, 2011; Waldfogel, 2004; Esping-Andersen, 2004). Izzo et al. (1999) found that student achievement depends on how involved parents are with their children from kindergarten through to their third school year. Heckman (2007) shows that ability gaps across socio-economic groups open up at early ages for both cognitive and non-cognitive skills. The early childhood years are increasingly seen as a crucial period for the growth and consolidation of skills that are important for later academic performance. The time that parents spend with small children determines to a large extent whether the children will go to university, what income they will get, and how long they will live for.

Highly educated mothers and fathers are expected to be identified more closely with the norms of intensive parenting than their less educated counterparts are (Alwin, 2004; Craig, 2006). Although mothers spend several times as much time with preschool children as fathers do (Craig & Mullan, 2011), the 'new father', who is a more involved and gender egalitarian father, has emerged among highly educated men (Hook & Wolfe, 2011), which raises concerns about increasing family polarisation (Esping-Andersen, 2009; Lareau, 2011; McLanahan, 2004). When highly educated mothers are married to highly educated fathers and less educated mothers are coupled with less educated fathers, the additional parental time investment that children of highly educated parents receive is different in magnitude to the amount of time spent only by mothers with children. For this reason analyses should consider the time that both parents spend with their children.

A recent alternative view on household change comes from Grotti and Scherer (2016), who analyse LIS data from Denmark, Germany, Italy, the USA and the UK from the 1980s to the 2000s. Their results show that the inflow of women into paid labour helped to reduce economic inequalities between households (Grotti & Scherer, 2016). However, there might be other mechanisms of inequality at work in society. This evidence indicates that men and women are becoming more similar in their education and job profiles, and this thesis investigates whether mothers and fathers are also becoming more similar in the provision of various child care tasks.

2.1.2 Experimental studies

There is ample research on child development and early skill formation (e.g. FPG Child..., 2016; Heckman & Kautz, 2012; HighScope, 2016). One of the best-known experimental studies was the HighScope Perry Preschool Study. Three and four-year-old children born in poverty were randomly allocated to treatment and control groups. The treatment group received HighScope quality preschool care, while the control group did not follow any preschool programme. The study ran from 1962 to 1967, and follow-ups have been conducted ever since. Despite the small number of participants (N=123), the Perry Preschool programme delivered substantive lifelong improvements to the children from the treatment group. They were more likely to receive a secondary diploma and to earn more in their 40s, and were less likely to be involved in criminal activity (Schweinhart et al., 2005). The cost-benefit calculations reveal, that each dollar invested brought an average return of

$12.90. Nearly 90% of the total public benefit arose from savings on crime (HighScope, 2016).

Even greater public benefit arose from the Carolina Abecedarian Project (N=111). The main difference between the Perry Preschool and the Abecedarian projects lies in the age and period of intervention. In the Abecedarian case, children in the treatment group received professional childcare five days per week and all-year-round from the age of four months to age five, meaning from infancy to school. The two studies are essentially equivalent in other aspects. The Abecedarian study randomly assigned children born in poor families between 1972 and 1977 to control and treatment groups. The main emphasis was on teaching language skills through various games. Later follow-ups revealed that children in the treatment group had statistically higher IQ scores and higher test scores at school; were more likely to receive tertiary education and more likely to have a skilled job; and were less likely to report substance abuse, become teenage parents, or become depressed. The mothers of children in the treatment group also benefited from the study, continuing their studies in high school or university. The most revelatory news came from the follow-up when the children reached their mid-30s, when it was found that children from the treatment group have considerably better physical health throughout their life (FPG Child ..., 2016).

Even though both the HighScope Perry Preschool Study and the Carolina Abecedarian Project have had a positive impact on the lives of the participants and have fuelled research, they have also met with harsh criticism. There seem to be very few participants by contemporary standards, and the cost of such experiments is high. Moreover, the positive effect on cognitive development that arises from early intervention seems to disappear if it is not accompanied by encouragement during teenage years and in the transition from school to university. However, the effect on social skills and crime prevention remains (Schweinhart et al., 2005).

2.2 Differences in parenting

It is not news that socialisation starts from the home. Even so, quite a number of books and scientific articles in recent years have been devoted to what happens in the private sphere, bringing to light social mechanisms that produce inequality. One of the best-known studies in the field is that by Annette Lareau, *Unequal Childhoods. Class, Race, and Family Life* (2003), and it presents the results of extensive fieldwork on parenting styles, carried out over several years when the children

under observation were about 10 years old.

Of course, Annette Lareau is not the first author to study social inequalities that arise at home at early ages. It would be hard to trace the first author to write about family inequalities, but as with many topics in the Western cultural context, such writers can be discovered among the Ancient Greek philosophers. Aristotle (384 BC – 322 BC) for example made a rough distinction between families by saying: "Those who educate children well are more to be honoured than they who produce them; for those only gave them life, those the art of living well (Barnes, 1984)." Though we often idealise Ancient Greece as the cradle of democracy for several good reasons, a sizeable part of population was slaves, who probably did not have the means or knowledge to educate their children. good education would presumably not have changed the social status of the slave children.

Returning to the 20th century, Peter L. Berger and Thomas Luckmann developed the idea of a social construction of reality (Berger & Luckmann, 1967). They claim that primary socialisation is the most important for an individual and that the structure of secondary socialisation, which is institution-based, should resemble that of the primary one. "Every individual is born into an objective social structure within which he encounters the significant others who are in charge of his socialization" (Berger & Luckmann, 1967, p 151). Primary socialisation involves more than just cognitive learning taking place under emotionally charged circumstances. The child internalises the values and attitudes of its significant others, who are the mediators of the world to it. Berger and Luckmann say that there is double filtering or double selectivity in socialisation. A lower-class child absorbs a lower-class perspective on the social world along with the manners of its parents, which makes it different both from an upper-class child, and from a lower-class child living next door. Language serves as the principle vehicle of the ongoing translation process between objective and subjective reality (ibid.).

The early works of Basil Bernstein develop the latter idea further, distinguishing between *restricted codes* and *elaborated codes* of language (Bernstein, 1975). Restricted codes draw on earlier knowledge between speakers, such as close friends or family members, and they contain implicit information or contextual expressions that are only understood or created by users. Bernstein argues that all social classes use restricted codes as they symbolise warmth, affection and closeness. In contrast to restricted codes, elaborated codes designate relationships that are independent of context

(Bernstein, 1975, p 31). A stranger who overhears a conversation conveyed mainly in restricted codes would not understand all the hidden meanings, whereas overhearing talk in elaborated codes should provide full information of any matter. Elaborated codes are a hallmark of the middle class and the educated. Bernstein calls class "a fundamental category of exclusion. Class acts crucially on all agencies of cultural reproduction, both family and school" (Bernstein, 1975, p 27). Bernstein underlines two mechanisms of inequality. First, social class regulates the structure of communication within the family, constructing the initial sociolinguistic coding orientation of children. Bernstein draws on several theories of learning including Piaget, Freud, Chomsky, ethological theories of critical learning, and Gestalt in order to show that linguistic codes are already transmitted in infant education such as play (Bernstein, 1975, pp 117-119). Second, the middle classes regulate the institutionalisation of elaborated codes in education, through both the forms of their transmission and the forms of realisation (Bernstein, 1975, p 22).

While Bernstein's ideas on society and the cultural transmission of advantage are anagogic, a more recent test of these ideas comes from Annette Lareau, who mentions Pierre Bourdieu as her guiding light. The strongest methodological side of Lareau's study is the extended length of the observation periods within each participating family in 1994 and 1995, when the study targeted children aged around nine to ten years old. One third of her original book concentrates on the use of language for developmental purposes and as a conduit for social life (Lareau, 2011, pp 105-160). Her follow-up survey ten years later found the most important triggers for the lifelong success of the children were the transmission to higher education and the over-involvement of middle class parents, together with the insider's knowledge of social institutions. A vital component of Bernstein's elaborated codes may have been involved in the educational transmission, but Lareau refrains from mentioning it.

According to Lareau, all parents want the best for their children, regardless of their education, income or social origin. Middle-class parents, who are defined as those with a university-degree, regard their children as large-scale projects. Using a gardening allegory, Lareau calls the middle-class parenting style "concerted cultivation" which should foster the talents, skills and academic success of their children.

> "By making certain their children have these and other experiences, middle-class parents engage in a process of *concerted cultivation*. From this, a robust sense of entitlement takes root in their children. The sense of entitlement plays an especially important role in institutional settings, where middle-class children learn to question adults and address them as relative equals" (Lareau, 2011, p 2).

The parents used help from experts such as doctors, teachers and trainers to supervise their children. The dominant set of cultural repertoires in raising the children were: 1) extensive talking with the children, 2) development of the children's educational interests, 3) active participation in their school life, 4) reasoning with the children, 5) teaching them to solve problems through negotiations rather than physical force, and 6) transmission of social skills like the importance of firm handshakes and eye contact (Lareau, 2011). Experts have shifted their recommendations regularly over recent decades from being stern with offspring and the merits of physical punishment to various forms of reasoning and negotiation. Middle-class parents have responded promptly to these changes in guidance rather than repeating the parenting patterns of their parents that they learnt at early ages. The prospect of declining fortunes for the next generation is also a culprit in the race between parents who strive to ensure that their children are not excluded from any opportunity that could contribute to their advancement (ibid.). The middle-class children were not entirely protected from accidents, but their parents managed to provide them with a wide vocabulary and various skills that proved to be useful in following the rules in higher education institutions. A downside to this kind of philosophy of child rearing is exhausted children and busy parents.

On the flip of the coin are working-class and poor families, who in Lareau's words use "natural growth" in bringing up their children.

> "But unlike middle-class parents, these adults do not consider the concerted development of children, particularly through organized leisure activities, an essential aspect of good parenting. /.../ For them, the crucial responsibilities of parenthood do not lie in eliciting their children's feelings, opinions, and thoughts. Rather, they see a clear boundary between adults and children. /.../ Most children are free to go out and play with friends and relatives who typically live close by. Their parents and guardians facilitate *the accomplishment of natural growth*. Yet these children and their parents

> interact with central institutions in the society, such as schools, which firmly and decisively promote strategies of concerted cultivation in child rearing. For working-class and poor families, the cultural logic of child rearing at home is out of synch with the standards of institutions." (Lareau, 2011, pp 2-3)

These parents used their scarce resources to provide their children with housing, and keep them safe in shoddy neighbourhoods, and fed. Visiting the doctor was a challenge that included bus rides that meant changing buses and waiting at bus stops with crying children in nasty weather. Buying a bus ticket was already an unexpected expenditure for some families that endangered their monthly budget. They gave instructions when needed, and let their children have more free time to play with cousins and watch TV. At home, there was less conversation, and more friendly silence and music.

The child care practices of middle-class families might have been similar in the 1950s and 60s, which are nostalgically considered family friendly. Now the picture has changed, and the children brought up this way in Lareau's study have blue-collar jobs or are unemployed, while the middle-class children are studying at universities to become doctors, managers and so forth (Lareau, 2011). Social class mattered more than race in children's education, though it did not affect all aspects of daily lives, mattering little for example for neatness and order at home, or for sense of humour. Part of the story is connected to parenting skills and practices, but there is also a problem in the hugely varying quality of high schools in the United States.

While the in-depth qualitative studies of Bernstein, Lareau and others serve as a guiding light for the current thesis, it is clear that quantitative data cannot sustain the same research methods and analyses that qualitative data can. They help in understanding the daily life and routine patterns of thousands of individuals from very different families, but they contain no information on thick descriptions of time (Geertz, 1973), nor on subjective feelings of time and the individually perceived density of time (Sorokin and Merton, 1937), or on the time-scales and time-levels of different social classes (Gurvitch, 1964).

It is explicitly clear that this thesis deals only with quantitative measures of time. One way this could be developed in future would be to constrain the collection of qualitative data on parenting

issues to information on the density of experience per standard time unit (Sorokin and Merton, 1937). It may be the case that more educated parents not only devote more time to their offspring while also choosing the best educational activities for each stage of their child's development, but that they also have different parenting practices and manage to enrich the lives of their children more in astronomical time unit than the less educated families do, so that their children will be wiser, happier, and more confident as grown-ups. However, even with the richest qualitative data we should be aware that social time is not always measurable (Gurvitch, 1964).

To overcome some of the limits of quantitative data, an attempt has been made to capture the "developmental gradient" and the "educational gradient" in childcare, and these are presented in chapter 2. Chapters 2, 3 and 4 make the most of the possibilities that quantitative data can offer, providing some interesting insights into possible 'class parenting', the time use of children from single-parent families, and birth order effects in the allocation of childcare.

2.3 Time use differences

Longitudinal time-use research has found two major trends: 1) childcare has increased over recent decades, almost doubling among fathers but also rising for mothers, 2) the intensification of childcare is more pronounced among the highly educated (Bonke and Esping-Andersen, 2009; Chalasani, 2007). Assortative marriages based on education have opposite effects on childcare for highly educated and less educated parents (Bonke and Esping-Andersen, 2009). The American Time Use Survey reveals that parents with higher education spend spectacularly more time with their children than less educated parents do (Guryan et al., 2008). It is striking that highly educated parents devote so much more time to their children, given that better educated parents also spend more time working outside the home. From the point of view of economic theory, this positive education gradient in childcare is surprising because the opportunity cost of time is higher for more highly educated, high-wage adults. The recent intensification of childrearing activities at home, especially among the upper classes, may be one mechanism with which the higher classes can maintain their relative advantage in education at a time of increasing equality in educational outcomes. Another reason for the intensification of childcare among more educated fathers could be the rational decision to invest more in their child now because they may then expect more reciprocity when they reach old age.

Social norms for good parenting have changed substantially over the last century. At the beginning of the 20th century, families were not as child-centred as they are today. Though its roots go back to the 1940s, the paradigm of *intensive mothering* only gained cultural acceptance in the 1990s (Hays, 1996). Altintas finds that childcare activities for parents with a bachelor's degree or more doubled from the 1960s to today, and tripled for parents who have secondary education or less in the United States (Altintas, 2016). Given the different starting points however, the gap in daily developmental care activities between highly educated families and the rest has widened over the last 50 years.

A commonly accepted explanation for such massive behavioural change is the change in the paradigm for good parenting (Chalasani, 2007; Reardon, 2011; Sayer, Bianchi & Robinson, 2004; Waldfogel, 2006). Intensive mothering, where there is a huge increase in developmental care activities and substantial investments of time, money, and emotional, physical and mental energy are needed, became the predominant ideal in the 1990s (Hays, 1996). Change in the social norm for involved fathering was witnessed in the same period (Coltrane, 1996). An involved father is completely different from the male breadwinner who was mainly responsible for supporting his family economically, and also differs from the weekend father who mainly participated in fun activities and played with his children at weekends and during holidays. An involved father is present in a child's life from birth, sharing nappy-changing, feeding, sleepless nights and all other aspects of the child's life as a partner to the mother.

Although parenting for cognitive development is the prevalent norm (Schaub, 2010), it has its critics. More recently a growing mass of both academic and non-academic literature has shown concern about the over-involvement of parents, the growing dependence of children on their parents, lost childhood, and possible adverse effects arising from childhood stress and anxiety (Elkind, 2001; Rosenfeld & Wise, 2001). The current ideal family model, which is "expert-guided, expensive, labour-intensive and time-consuming" (Hays, 1996, p. 8), is the opposite of the post World War II model proposed by Gary Becker (1981), who emphasised that each spouse reaps greater benefits by specialising either in market work or in household chores. At that time children were mainly considered the property of the family and the nation (Hays, 1996, p. 45). Following the revolution in the education, careers, roles and more of western women, men are now expected to share the dual burden of working mothers (Esping-Andersen, 2009). According to Esping-Andersen, the revolution of new roles for women is still incomplete and it is probably evolving at different speeds in different societies.

3 Research questions

Although there is a rich and growing literature on unequal childhoods, this thesis tries to solve some puzzles to which there does not seem to be a clear answer yet.

First, previous studies have shown an "educational gradient" in the time use of more educated parents, meaning that more educated parents spend more time with their offspring (Kalil, Ryan & Corey, 2012). However, is there also a "developmental gradient" in the childcare of the more educated parents, meaning that highly educated parents tailor their childcare time to benefit their children's developmental needs? Which of the gradients is steeper, the educational or the developmental?

Second, both parents hold the same or at least a similar educational degree in most families, which can serve as a proxy for having similar values, tastes and so forth (Blossfeld & Timm, 2003, for the Italian case Bernardi, 2003). How do educationally heterogeneous couples bring up their children? Does the more educated parent increase their childcare time in order to compensate for the lack of childcare input from the spouse? Or is there a regression towards the mean in parenting styles?

Third, it can be expected that there are fewer time constraints from paid labour at weekends, so the educational gradient could be steeper at weekends. What are then the consequences for inequality in social backgrounds? Is the inequality in time use that comes from social background wider at weekends? Conversely, the involvement of fathers could also be larger at weekends. Is gender inequality in time with children reduced at weekends?

Fourth, when a parental union dissolves, children might get less attention from their parents than children in intact families get. Does a parental break-up penalty affect all children equally? Are highly educated mothers more efficient at compensating for the absent spouse in terms of the time spent with the children at possibly cognitive enhancing activities? Or is the alternative true, and the children of highly educated parents have more to lose from a parental divorce (Bernardi and Boertien 2016; Bernardi and Radl 2014)? If that were the case, then divorce would function as an equaliser for the inequality in the time that parents of different educational level spend with their children.

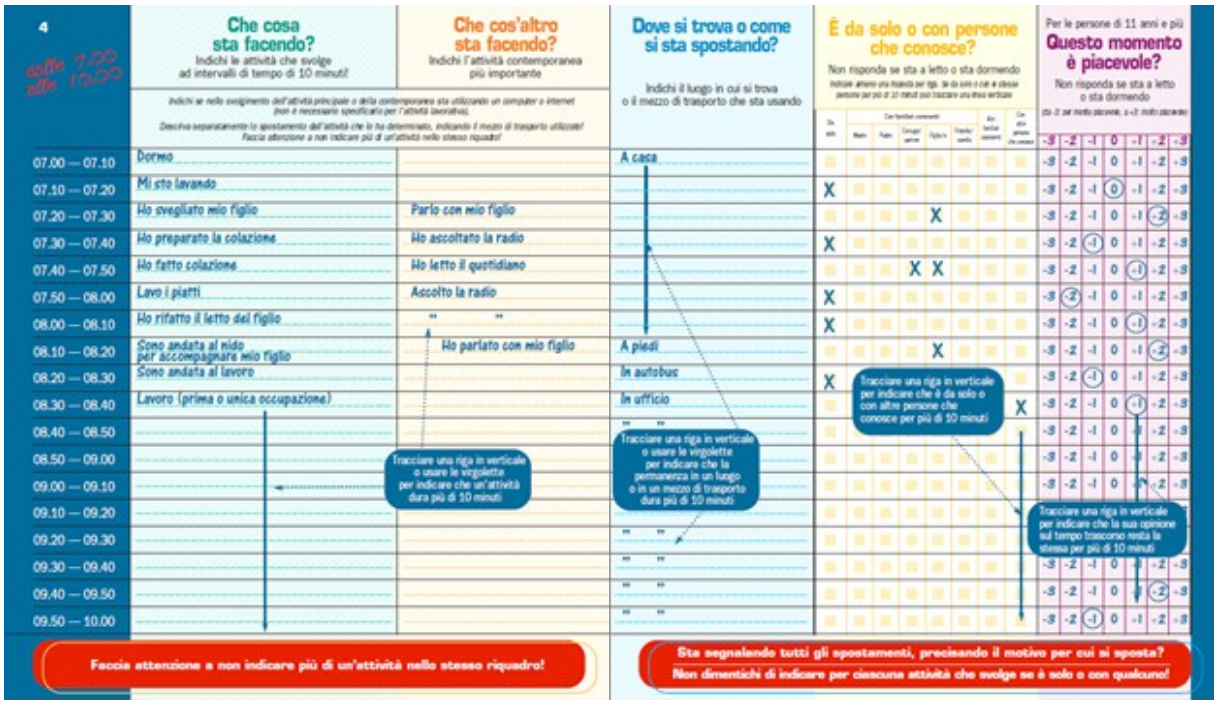
Finally, given the well-known literature on the birth order effect on socio-economic outcomes for children in countries with very different welfare state regimes (e.g. Barclay, 2015; Conley, 2004; Kristensen & Bjerkedal, 2007), it may be presumed that siblings with higher birth order receive less interactive care from their parents than their first-born counterparts do. Is there any evidence of a first-child advantage in the time budget surveys? Do more educated parents invest more time in their later-born children to compensate for the adverse effects that arise from birth order? Does ithist apply to two-child families or also to three-child families?

All these questions are addressed for the Italian case, which immediately raises the important question of "why Italy?"; that is addressed in the next section.

4 The Italian time budget data

The links between parental education and time investments in children are substantiated by results of quantitative analysis taken from the most recent waves of Italian time-use data, collected in 2008-09 and in 2002-03. There are three main reasons for conducting the analysis using the Italian case. First, there is a relative abundance of studies on the educational gradient in childcare time and on differences between intact and non-intact families in the USA (Altintas, 2016; Kalil, Ryan & Corey, 2012; Ryan, Kalil & Corey, 2011), but very few studies on these topics are available for Southern Europe (Gracia, 2014). Second, and possibly most important, the Italian data are excellent. When compared to other similar time-budget data, the Italian data come from a very big sample and the information on daily activities is very detailed. In most other surveys, the precision of activity codes does not allow for cognitive enhancing childcare tasks to be distinguished. For instance the Italian data has a distinct code for "reading to a child" rather than the more general activity code "reading, talking, and playing with children" that is found in most other time-use surveys. Moreover, the Italian data provide information on all siblings, and it is possible to discern with whom parents spent time by using place and activity codes. Finally, a crucial advantage for this thesis is that people start filling in time diaries at a uch earlier age than in the time budget surveys for other countries. Indeed, the Italian time budget survey collects detailed activities for all family members from age three onwards, while the majority of time-use surveys collect children's diaries from a much later age of eight, ten or even from twelve onwards.

To give a better understanding of how time diary data are collected, part of the individual daily questionnaire is presented below. The second column shows how to fill in the primary activity undertaken for 10-minute time intervals (column 1), while the third column refers to secondary activities. The next columns ask for the place, who else was present, and the enjoyability of each activity for people aged 11 and over. The length of an individual time-diary is 30 pages. In addition to the time diaries of all family members for the same day, ISTAT simultaneously collects data on all the people in a household; (this additional survey is 16 pages long, and contains information on education, job, citizenship, parents and many other background characteristics.



Translation of column headings from left to right: time from 7.00 to 10.00; What are you doing? What else are you doing? Where is it or how are you moving? Are you alone or with someone you know? Is this moment enjoyable?

Source: ISTAT 2017

The 2002-03 data were collected between 1 April 2002 and 31 March 2013 using a complex sample design with clustering both for the regional population structure and for families. The sample size from each of the 500 municipalities covered corresponds to the proportion of its demographic size. Families were extracted with equal probabilities and without re-entry. In addition to territorial stratification, temporal stratification was employed so all 12 months of the year were covered equally. The survey covered a total of 21,075 households and 55,773 individuals. Of these, 1146

individuals fell out of the original sample giving a 2% drop-out rate. The first step in the data collection included a direct interview with the households sampled. If some family members were not present, the data were provided by another family member. The second part of the data collection used a self-compiled daily diary from all household members above the age of three, and a self-compiled weekly diary from all household members above the age of 15. In all the regional samples, families were randomly divided into three groups. The survey for the first group covered a weekday, excluding Saturdays and Sundays, the survey for the second group was done on Saturday, and that for the third group was done on a Sunday. The 2002-03 survey contains several datasets. The first one includes: 1) the individual file of each family member, 2) individual answers to pre-tailored questions on daily schedules, 3) a family questionnaire, and 4) a synthesis of information on the weekly diary. The separate episode file records separately with 10-minute precision each episode that happened during the sampling day (ISTAT, 2010a). The sampling is very similar in the 2008-09 survey, with 44,606 individuals from 18,250 families presented in the final sample. The drop-out rate was much higher than in the previous survey at 24.9 % or 14,822 individuals (ISTAT, 2010b). To accommodate for possible sampling errors, weights have been added to the datasets. Although all surveys contain some bias, the sampling, the drop-out rate and the other characteristics of the Italian time-use survey prove that the data are of very high quality. Comparative population data from other sources broadly coincide with the analytical samples used in the analysis. Some examples are given below.

Table 1.1. A comparison of analytical samples with some population characteristics.

Variables	**Demographic data**	**Analytical sample, 2002-2003**	**Analytical sample, 2008-09**
Tertiary education of women	15.6% (European Commission, 2013)	10.3%	16.4%
Mother's age	Mother's age at first birth is 30.6 years in Italy (Eurostat, 2015)	Mothers whose youngest child is aged between 0 and 2 have a mean age of 32.8 years	Mothers whose youngest child is aged between 0 and 2 have a mean age of 34.0 years
Number of children in family	Overall fertility rate 1.4 in 2015 (OECD, 2017)	1.9 children in families with at least 1 child	1.8 children in families with at least 1 child
Female employment rate	47.1% (European Commission, 2013)	45.7% if both full-time and part-time combined	58.6% if both full-time and part-time combined

The main explanatory variable, which is the highest level of parental education attained, has been recoded from the original variable *titolo di studio*. There were two main reasons for recoding the original variable on education. First, some categories contained very few observations. Second, the aim was to make the current study comparable with other research on education as well as with time-use data. Thus the recoding was done in accordance with the International Classification of Education (ISCED) by UNESCO (Eurostat, 2016). The same method of harmonisation is used in the Multinational Time Use Study and in many other datasets containing educational background information. The following steps were taken in data preparation: converting data into STATA format, translating the Italian questionnaires into English variable names in STATA, harmonising the educational variable, uniting the educational variables for mothers and fathers of the same family using household ID, uniting the background information data with the dataset on daily activities.

Table 1.2. An overview of the original categories of the highest level of education obtained, and the codes used in the analyses under the ISCED classification.

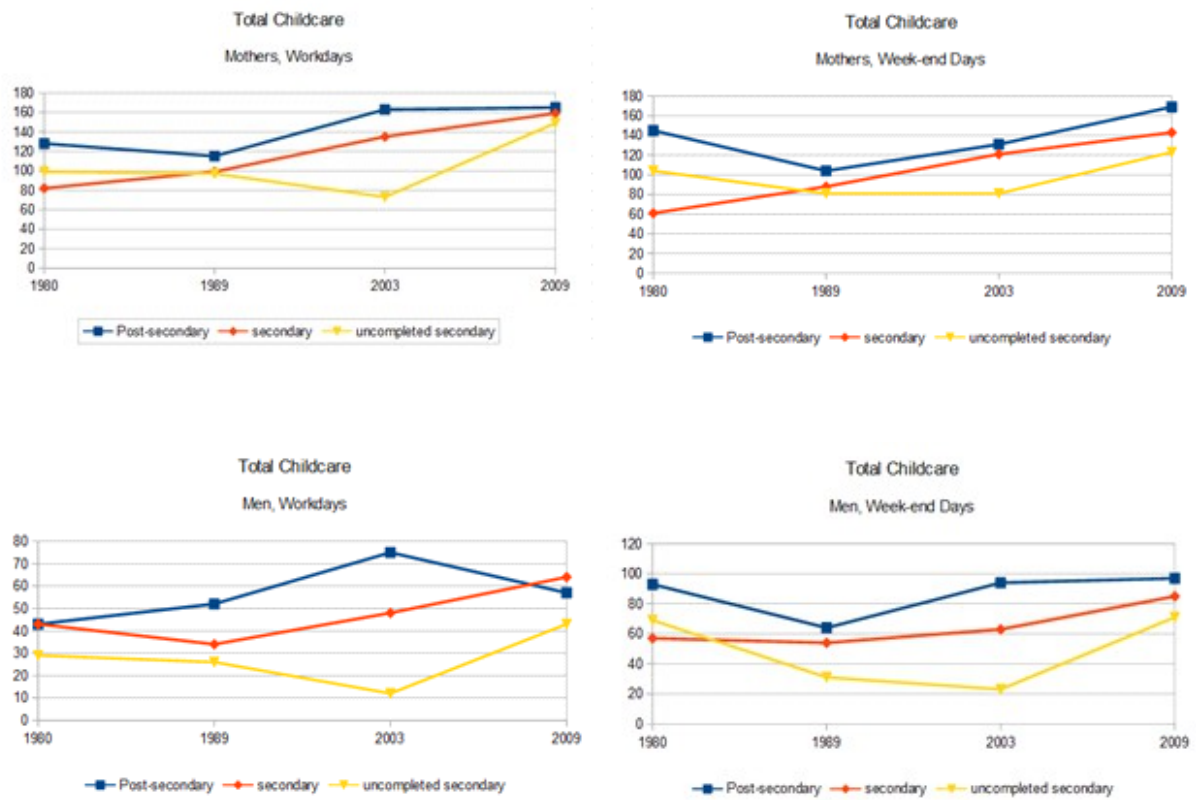
Recoding in analyses	**ISCED equivalent**	**Categories in the 2002-03 survey**	**Categories in the 2008-09 survey**
Tertiary education	ISCED level 5 or above	• *Dottorato di ricerca o specializzazione post-laurea* • *Laurea* • *Diploma universitario*	• *Dottorato di ricerca o specializzazione post-laurea* • *Laurea di 4 anni o più* • *Laurea specialistica di 2 anni di secondo livello* • *Laurea di 3 anni di primo livello* • *Diploma universitario* • *Accademia di belle Arti e altre scuole specialistiche*
Secondary education	Completed ISCED level 3, and/or attendance at level 4	• *Diploma scuola media superiore (4-5 anni)* • *Diploma scuola media superiore (2-3 anni)*	• *Diploma di scuola superiore(4-5 anni)* • *Diploma o qualifica di scuola media sup. (2-3 anni)*
Less than secondary	Not completed ISCED level 3	• *Licenza scuola media inferiore* • *Licenza elementare*	• *Licenza di scuola media inferiore* • *Licenza elementare*

education		• *Nessun titolo (sa leggere e scrivere)* • *Nessun titolo (non sa leggere e/o scrivere)*	• *Nessun titolo - sa leggere e scrivere* • *Nessun titolo - non sa leggere e/o scrivere*

Descriptive results from earlier time-use surveys obtained from the Multinational Time-Use Survey (1979-80 and 1989) are combined with ISTAT data (2002-03 and 2008-09) and presented below. Figures 1.1 to 1.4 show the childcare time spent by Italian parents over the last three decades by their educational background. The overall trend from the 1980s to 2009 seems to be a rise in childcare time for mothers and fathers alike, both during workdays and at weekends and across different educational groups.

Children below the age of five are the most time-intensive age group for parents. In 1980, mothers devoted an average of 100 minutes during a working day to childcare if the youngest child was below the age of five, but in 2009 this number had increased to 160 minutes. While mothers spend about the same amount of time on child care every day, fathers spend more time with their children at weekends. The graphs below illustrate the rising trends in childcare for both genders across educational groups and weekdays. In general, parents with a post-secondary degree spend most time with their children, but other groups have also increased their childcare time.

The aim of this thesis is to shed light on some of the variations in childcare patterns that may create or help to maintain social inequalities. It is hoped that this thesis will provide some small amount of new knowledge that can be used by parents and other relatives to benefit their children, and maybe also by institutions in new or amended policies that would help parents in their enjoyable though often very demanding tasks.



Figures 1.1 to 1.4 – Trends in Childcare by Italian Parents by Education

Sub-Sample of Families with at Least One Child below Age Five

5 The Italian context

C. Wright Mills suggests that all contemporary features should be explained by their functions, and put in a historical context to show why they have persisted (Mills, 1977). Modern Western societies are not trapped in an iron cycle of history, but several mechanisms also known as *principia media* after Karl Mannheim and John Stuart Mill, are deeply rooted in history. Indeed, much of human life consists of playing various roles in specific institutions (ibid.). Both childhood and parenthood are socially constructed, and so what is common practice in one country may not hold in other countries. Though Italy was an early bird in changing family law and in putting family policies into practice, it has been unable to innovate in them once the social context has changed (Knijn & Saraceno, 2010). Of great concern are the work-family conciliation policies (Naldini & Saraceno, 2008). While several other Bismarckian countries have introduced innovations in their social policies, the social policy framework in Italy is still mainly based on family solidarity (ibid.). Recent evidence shows that intergenerational transfers of time and money still take place beyond

nuclear households even in countries that have a stronger public sphere (Kohli, 1999). There is a net downward flow of resources from the oldest family members to their adult children (ibid.). A comparative review of ten Western European countries confirms this trend, showing some welfare state patterns. For example, transfers from parents to adult children are less frequent in Southern European countries than in the Nordic countries but are more intense (Albertini, Kohli, Vogel, 2007).

The labour force participation of women is still lower in Italy than the average in the EU-28, where about 64 per cent of women aged between 20 and 64 are in employment (Eurostat, 2015). The average labour market participation rate for Italian women is about 47 per cent, with large differences between the Northern and Central parts, and the South (European Commission, 2013). Most mothers with pre-school-age children work in the centre and north, but the share of mothers in employment is more modest in the south (ibid.). The majority of mothers work full-time as part-time regulations were only introduced in 1997.

In Italy, the day-care for children below the age of three is both rare and costly, mainly because of a lack of public childcare services targeted at small children, but paid parental leave lasts only up to six months. Italy has the second-largest childcare gap after paid parental leave ends in the EU countries (European Commission, 2015). This means that the paid parental leave provided by the state is so short that many mothers choose to leave the labour force altogether or for a longer period than the maternity leave on offer. The share of children from birth to age three cared for under formal arrangements is about 20 per cent in Italy, while nearly 90 per cent of children from age three to mandatory school age are in formal care (European Commission, 2015). The high rate of enrolment in public childcare for children aged three to six implies that families might also need more public childcare for children aged nought to three, so that mothers could return to the labour force without losing human capital. Small children can be very intense. Currently the help of grandparents is vital for the well-being of families, but not all young families live close to their parents. EU-SILC survey data show that Italy stands out in Europe for the share of young adults living with their parents, as 67.3 per cent of Italians aged 18 to 34 were living together with parents in 2015, against a European average of 47.9 per cent (Eurostat, 2017).

Most families need more than one breadwinner, and if the grandparents are very old and fragile or

live far from the nuclear family with small children, childcare is an issue. Although dual-earner couples in Italy are relatively few compared to the numbers in other Western countries, the dual-career families where both spouses are in the upper occupational classes of the EGP class schema are the most common type among dual-earner families (Lucchini, Saraceno & Schizzerotto, 2007). Italy was one of the first countries in the world to reach "lowest-low" fertility (Tanturri, 2012; see figure 1.6 below). Today, the mean age of Italian mothers at first childbirth has risen to 30.6 years (Eurostat, 2015) and the total fertility rate is just 1.40 births per women (World Bank, 2016). Using 2002-03 time-use data, Tanturri (2012) shows that women dedicate eight to ten hours each day to unpaid work if the family has three children and the youngest is less than three years old. Men devote four to five hours to unpaid work per day regardless of family circumstances. Although men increase their hours of paid work after the transition to fatherhood, parenthood affects the total daily workload of women more seriously (ibid.). The time cost of children falls as the age of the youngest child in family rises, but the number of children in the family does not alter the total time cost of children much (ISTAT, 2012; Tanturri 2012). The share of Italian women who are dissatisfied with childcare and domestic duties is much greater than the share of men who are dissatisfied. As a result, more women are dissatisfied with life in general than men are (ISTAT, 2012). Italian children are very time intensive, and not only in the early years (Tanturri, 2012). Italian children spend fewer hours at school than children in other countries (Mencarini et al., 2014), but at the same time they have a large amount of homework each day (ibid.). Such a peculiarity presumes that one parent, usually the mother, will stay at home and help the child or children with their homework.

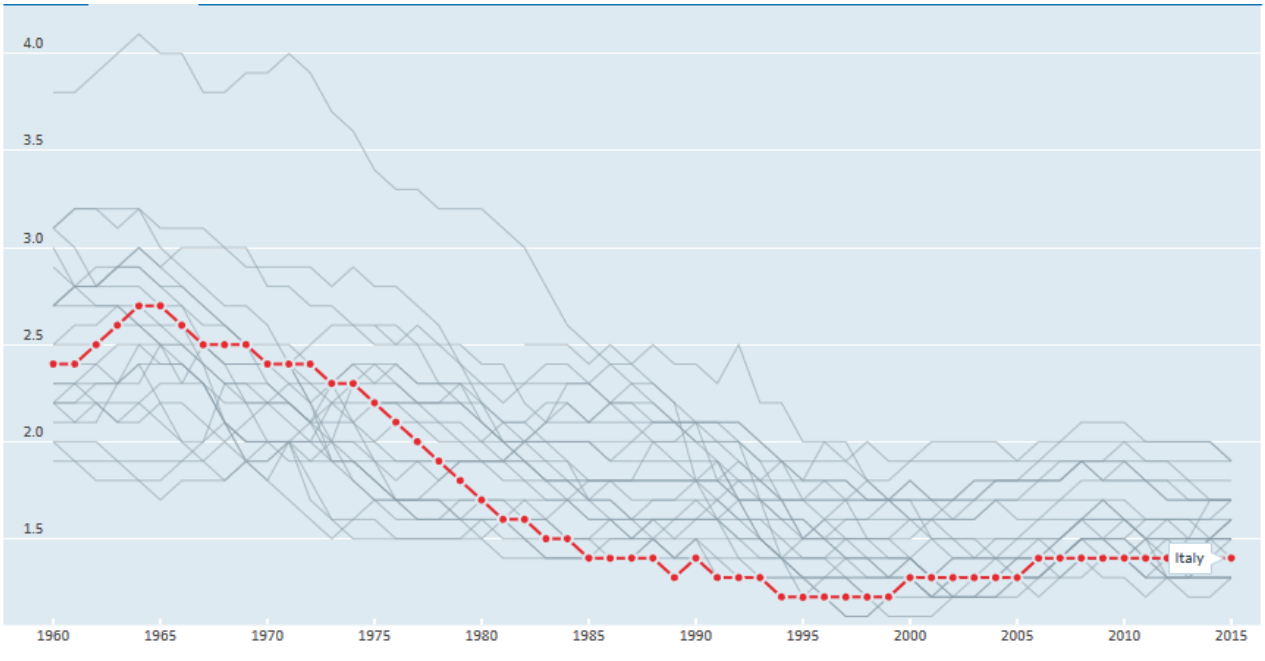


Figure 1.6 Total Fertility rate in the EU-28 between 1960 and 2015 (OECD 2017)

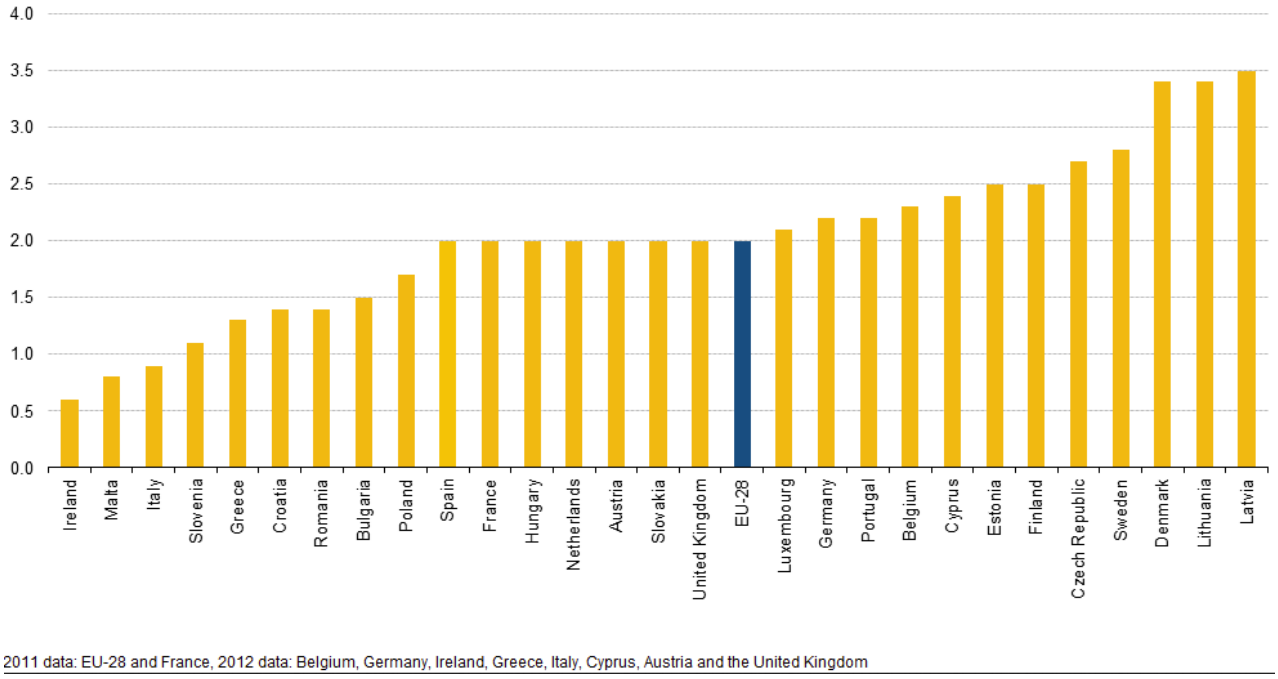


Figure 1.7 Crude divorce rates in EU 28 (Eurostat 2015c)

The law legalising divorce was passed in 1971 after the conflicts of the *autunno caldo* (hot autumn) in 1969. There was a disputed referendum to repeal this law in 1974, but the support for maintaining it prevailed. Today, joint custody is the norm for divorced parents or dissolved cohabiting partners, and this prioritises parenthood over partnership (Knijn & Saraceno, 2010). The share of children with divorced parents is still much lower in Italy than in most EU countries (see Figure 1.6 below for a comparison of divorce rates in the EU-28). The process of divorce is still a very long one, with legal separation as a first step, then a lag of at least three years (five years until 1987) until legal divorce can be proclaimed. There is a wait of at least four to five years between the end of marriage and the legal right to remarry (Nazio & Saraceno, 2013).

Higher education (*laurea*) is free of charge in Italy. Although sending a child to a university attracts additional costs, it is a smaller economic burden than in countries where tuition fees for tertiary education are a rule. In this respect higher education in Italy should be more open to young people from different social backgrounds than it is in Anglo-Saxon countries. Despite this, the proportion of the population with tertiary education is smaller in Italy than the OECD average. "Only 15% of 25-64 year-old Italians have a university-level education, compared to the OECD average of 32%" (OECD 2013). Among the younger population, Italy stands out for its high proportion of 23.2% of 15-29-year-olds who are not in employment, education or training, also known as NEETs. The

OECD average of NEET young adults is 15.8% (OECD 2013). Numerous researchers have stressed the different life chances of children from families with secondary degrees (*diploma scuola media superiore*) and families with tertiary degrees (*laurea*) (e.g. Bernstein, 1975; Cianci et al., 2013; Kalil et al., 2012; Lareau, 2011).

Even though the proportion of the population with a post-secondary degree (*laurea*) is relatively modest in Italy, the share of families with an educationally homogamous union is surprisingly high. In the nationally representative time-use data, about two thirds of the families have parents with the same level of education. The absolute incidence of homogamous marriage has declined across cohorts, but an inversion of this trend can be observed for the youngest cohort (Bernardi 2003). People with primary or no education have the highest propensity to homogamy, which serves as evidence of a social closure at the bottom. The rates of homogamy are increasing for subjects with higher education, raising concerns about the increasing polarisation of Italian society (ibid.). One of the aims of this thesis is to explore whether childcare practices in families with different educational backgrounds are also polarising in Italy.

6 Summary of the chapters

In Chapter 2, the educational and developmental gradients in childcare are observed. More educated mothers and fathers are expected not only to spend more time with children, due to the education gradient in childcare, but also to alter their childcare time in order to cater more for their children's developmental needs due to the developmental gradient in childcare. Data from the 2008-2009 Italian Time-Use Survey are used to analyse the time spent by both mothers and fathers (N=12,611) in four parenting activities (basic care, play, teaching, and child management) across distinct parental education and child age subgroups. The first life stages of children are conceptualised as a central unit in the analysis. These are: 1) infancy (from birth to 12 months), 2) toddler-hood (from age one to age three), 3) the preschool period (from three to five years), and 4) middle childhood (from age six to 13). For each developmental stage, there is a key area of developmental activities which child development studies say should boost cognitive development (Kalil, Ryan & Corey, 2012). These are basic care in infancy, playing in toddler-hood, reading in the preschool period, and child management during middle childhood.

The three main empirical results of the study are that (i) highly educated mothers alter the composition of active childcare time to suit their children's developmental needs more than less educated mothers do; (ii) the developmental gradient in the childcare time of fathers only exists for certain activities and child ages; and (iii) interesting time-use patterns for compensation emerge for couples with different educational backgrounds. Further value might be provided by the test of developmental and educational gradients with high-quality data, the separate analyses for workdays and weekend days, and the account that is taken of the educational levels of both parents in the same family.

Chapter 3 compares the time use of children from single-mother families and intact families. The focus is on two different age groups of minor children: preschoolers from age three up to six years, and primary school children from age seven to ten years. Again, the high-quality Italian Time Use Data from 2002-03 and 2008- 2009 are used, and parental education and child development levels continue to be a vital part of the analysis. A major difference from Chapter 1 is that this time the diaries of the children are scrutinised. This is something that has rarely been done, probably because most time-use surveys collect children's time diaries from age 10 onwards. What children do in their free time helps to predict what kind of adults they may become, or their parents want them to become. Eight different dependent variables are used, some potentially positive, like reading, organised sports and cultural activities, and some potentially harmful or neutral to child cognitive development, like watching TV alone and playing video games.

The main contributions are 1) the focus on the time diaries of relatively young children, which has rarely been done, and 2) the use of propensity score matching to achieve a base where children from separated mothers (N=476) and children in intact families (N=6668) have the most similar characteristics possible, except for family type. This analysis then shows how much less children in single-parent families do developmental activities in their free time than children from intact families do. Given the multitude of literature on the negative aspects of witnessing parental break-up and being raised by a single-mother, the results are somewhat surprising. There are no systematic or large differences in the use of free time between the treatment group of children in single-parent families, and the control group of children in two-parent families. Elementary school children with single-mothers have an eight per cent higher probability of participating in organised sports. They also tend to watch more TV each day on average but the difference amounts to about five minutes per day. The greatest difference between the treatment group and the control group seems to be that the daily meals with the parent or parents are about a quarter of an hour shorter in

single-parent families, which gives a reduction of about 15 per cent in parent-child shared time during daily meals. The results do not suggest that single-parenthood has no effect on child development. Overall, the results suggest that family type has a modest impact on children's free time.

Chapter 4 brings together the stories started in the previous chapters about child developmental stages, cognitive development, parental education and family type, adding the additional dimension of the different parental investments by the birth order of children. Birth order serves as an indicator of relative disadvantage. Higher-order children of the same family are expected to receive fewer inputs of parental time than older children. The data come from the 2002-03 Italian Time-Use Survey. The analytical sub-sample consists of families with two and three children aged from three to eleven years. The interactions between parental education and birth order test whether the differences between siblings of the same family are larger in families where parents have lower levels of education. Fixed effects models for siblings are conducted to see how children of preschool age and primary school age in the same family receive interactive care from their parents.

The contribution of the last chapter to currently available studies is 1) that it connects the diaries of both parents and all the children in a family by place codes, which makes it possible 2) to scrutinise the link between birth order and parental childcare investments by parental education. OLS results show that second-born children receive on average 88 minutes less interactive care and third-born children 114 minutes less interactive care each day than their first-born siblings get, when the children's age and gender are controlled for among many other factors. The disadvantage arising from birth-order is about 47 minutes smaller if the mother has secondary or tertiary education. The effect size of the mother's education is comparable to that of family type. There is a positive interaction effect between the mother's education and the child's birth order in the likelihood of a child receiving interactive childcare each day from its parents. The siblings fixed effects models underline that the differences in investments of time in children are greater between families than inside families.

The main findings of each empirical chapter are summarised and brought together in the conclusion. The implication of the intergenerational transmission of inequality is highlighted. There is a discussion on how the findings might differ in other social contexts, considering the external validity of the results from the Italian case, the limitations of the current research, some policy implementations, and a sketch of other ideas for future research.

References to the General Introduction

ALBERTINI, M., KOHLI, M., VOGEL, C. 2007. Intergenerational transfers of time and money in European families: common patterns – different regimes? *Journal of European Social Policy*, 17 (4), 319-334.

ALTINTAS, E. 2016. The Widening Education Gap in Developmental Child Care Activities in the United States, 1965-2013. *Journal of Marriage and Family,* 78**,** 26-42.

ALLAN, K. 2005. Explorations in Classical Sociological Theory: Seeing the Social World. California: SAGE.

ALTINTAS, E. 2016. The Widening Education Gap in Developmental Child Care Activities in the United States, 1965-2013. Journal of Marriage and Family, 78**,** 26-42.

ALWIN, D. 2004. Parenting practices. *In:* SCOTT, J., RICHARDS, M. & TREAS, J. (eds.) *Blackwell Companion to the Sociology of Families.* Oxford: Blackwell Publishers.

AUGUSTINE, Saint. 1955. *Confessions.* Trans. And ed. Albert C. Outler. Available at: http://www.ccel.org/ccel/Augustine/Confessions [Accessed March 9th 2016]

BARCLAY, K. J. 2015. A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence,* 49**,** 134–143.

BARNES, J. (ed.) 1984. *The Complete Works of Aristotle. The Revised Oxford Translation.* Vol 1. Bollingen Series LXXI-2. Princeton: Princeton University Press.

BARON, S. & MILLER, K. 2016. Our Concept of Time. In: MÖLDER, B., ARSTILA, V. & ØHRSTRØM, P. (eds.) 2016. *Philosophy and Psychology of Time,* 29-52. Cham: Springer.

BECKER, G. 1981. *A Treatise on the Family.* Cambridge, MA: Harvard University Press.

BERGER, P.L. & LUCKMANN, T. 1967. *The Social Construction of Reality. A Treatise in the Sociology of Knowledge*. Garden City, NY: Doubleday.

BERNARDI, F. 2003. Who Marries Whom in Italy? *In:* BLOSSFELD, H.-P. & TIMM, A. (eds.) *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies.* The Netherlands: Kluwer Academic Publishers.

BERNARDI, F. & BOERTIEN, D. 2016. Understanding Heterogeneity in the Effects of Parental Separation on Educational Attainment in Britain: Do Children from Lowed Educational Backgrounds have Less to Lose? *European Sociological Review*, doi: https://doi.org/10.1093/esr/jcw036

BERNARDI, F. & CEBOLLA, B. H. 2013. Previous School Results and Social Background: Compensation and Imperfect Information in Educational Transitions. *European Sociological Review,* 30 (2), 207-217.

BERNARDI, F. and RADL, J. 2014. The Long-Term Consequences of Parental Divorce for Children's Educational Attainment. *Demographic Research,* 30 (61), 1653-1680.

BERNSTEIN, B. 1975. *Class, Codes and Control: Volume 3 - Towards a Theory of Educational Transmissions*. London: Routledge & Kegan Paul.

BIANCHI, S. 2000. Maternal employment and time with children: Dramatic change or surprising continuity? *Demography,* 37**,** 401-414.

BIEDINGER, N. 2011. The influence of education and home environment on the cognitive outcomes of preschool children in Germany. *Child Development Research*. Available at: http://dx.doi.org/10.1155/2011/916303

BITTMAN, M. 1999. Parenthood without penalty: Time use and public policy in Australia and Finland. *Feminist Economics,* 5**,** 27-42.

BLACKBURN, B. & HOLFORD-STREVENS, L. 2003. *The Oxford Companion to the Year: An exploration of calendar customs and time-reconing*. Oxford: Oxford University Press.

BLOSSFELD, H.-P. & TIMM, A. 2003. *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies.* The Netherlands: Kluwer Academic Publishers.

BONKE, J. & ESPING-ANDERSEN, G. 2009. Family Investments in Children—Productivities, Preferences, and Parental Child Care. *European Sociological Review,* 27(1), 43-55.

BOURDIEU. P. & PASSERON, J. C. 1964. *Les héritiers: les étudiants et la culture*. Paris: Les Éditions de la Minuit.

CALVINO, I. 1969. *Il castello dei destini incrociati. Tarocchi - Il mazzo visconteo di Bergamo e New York,* Parma: F.M. Ricci.

CHALASANI, S. 2007. The changing relationship between parents´ education and their time with children. *Electronic International Journal of Time Use Research (eIJTUR),* 4**,** 93-117.

CIANCI, L. et al. 2013. The influence of parents´ education in the Italian standardization sample of the WISC-III, *Learning and Individual Differences*, 28, 47-53.

CONLEY, D. 2004. *The Pecking Order. Which Siblings Succeed and Why,* New York, Pantheon Books.

COLTRANE, S. 1996. *Family man: Fatherhood, housework, and gender equity.* New York, Oxford University Press.

CRAIG, L. 2006. Parental Education, Time in Paid Work and Time with Children: An Australian Time-Diary Analysis. *The British Journal of Sociology,* 57**,** 553-575.

CRAIG, L. & MULLAN, K. 2011. How Mothers and Fathers Share Childcare: A Cross-National Time-Use Comparison. *American Sociological Review,* 76**,** 834-861.

CTUR, 2017. *Multinational Time Use Study*. Available at: http://www.timeuse.org/mtus [Accessed Jan 24th 2017]

DATCHER-LOURY, L. 1988. Effects of mother´s home time on children´s schooling. *The Review of Economics and Statistics,* 70**,** 367-373.

DURKHEIM, É. 1930. *Le suicide. Étude de sociologie.* Paris: Librairie Felix Alcan.

DURKHEIM, É. 1977. *Les règles de la méthode sociologique.* Paris: Presses Universitaires de France.

DURKHEIM, É. 1978. *De la division du travail social.* Paris: Presses Universitaires de France.

ELIAS, N. 2012. *On the Process of Civilisation*. Eds: Mennell, S., Dunning, E., Goudsblom, J., Kilminster. R. Dublin: UCD Press.

ELKIND, D. 2001. *The hurried child,* Cambridge, UK: Perseus.

ERIKSON, R., GOLDTHORPE, J., JACKSON, M., YAISH, M. & COX, D. 2005. On class differentials in educational attainment. *PNAS,* 102**,** 9730-9733.

ERIKSON, R. & RUDOLPHI, F. 2010. Change in Social Selection to Upper Secondary School—Primary and Secondary Effects in Sweden. *European Sociological Review,* 26**,** 291-305.

ESPING-ANDERSEN, G. 2004. Untying the Gordian Knot of Social Inheritance. *Research in Social Stratification and Mobility***,** 115-139.

ESPING-ANDERSEN, G. 2009. *The Incomplete Revolution. Adapting to Women´s New Roles,* Cambridge, Polity Press.

EUROPEAN COMMISSION 2015. Labour Market Participation of Women, Available: http://ec.europa.eu/europe2020/pdf/themes/2016/labour_market_participation_women_201605.pdf [Accessed: 13/7/2017]

EUROPEAN COMMISSION 2014. Parents at work: Men and women participating in the labour force, Available: **ec**.europa.**eu**/justice/gender.../files/.../140502_gender_equality_work**force**_ssr2_en.pdf [Accessed: 31/1/2017]

EUROPEAN COMMISSION, 2013. The current situation of gender equality in Italy - Country Profile. Available at: http://ec.europa.eu/justice/gender-equality/files/epo_campaign/131203_country_profile_italy.pdf [Accessed 13/7/2013]

EUROPEAN PARLIAMENT, 2017. Maternity, paternity and parental leave in the EU. Available at: http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2017)599323 [Accessed 12/7/2017]

EUROSTAT, 2017. Share of young adults aged 18-34 living with their parents by age and sex - EU-SILC survey. Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvps08&lang=en [Accessed 13/7/2017]

EUROSTAT, 2016. International Standard Classification of Education (ISCED). Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/International_Standard_Classification_of_Education_(ISCED) [Accessed 13/7/2017]

EUROSTAT, 2015a. Women in the EU gave birth to their first child at almost 29 years of age on average. Available at: http://ec.europa.eu/eurostat/documents/2995521/6829228/3-13052015-CP-EN.pdf/7e9007fb-3ca9-445f-96eb-fd75d6792965 [Accessed 13/7/2017]

EUROSTAT, 2015b. Employment statistics. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_statistics [Accessed Jan 31st 2017]

EUROSTAT, 2015c. Marriage and divorce statistics. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Marriage_and_divorce_statistics [Accessed 21/9/2017]

FISHER, K., MCCULLOCH, A. & GERSHUNY, J. 1999. British fathers and children: A report for Channel 4 'Dispatches'. Available at: .http://www.iser.essex.ac.uk/press/doc/2000-12-15.pdf

FLEISHER, B. 1977. Mother´s home time and the production of child quality. *Demography,* 14**,**

197-212.

FOWLES, J. 1969. *The French Lieutenant´s Woman*. Boston: Little Brown and Company.

FPG CHILD DEVELOPMENT INSTITUTE OF THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 2016. *The Abecedarian Project.* Available at: http://abc.fpg.unc.edu [Accessed August 11th 2016]

FUCHS, T. 2013. Temporality and psychopathology. *Phenomenology and Cognitive Sciences,* 12**,** 75-104.

GAUTHIER, A. H., SMEEDING, T. & FURSTENBERG, F. F. 2001. Do we invest less time in children? Trends in parental time since the 1960s. *Paper presented at the annual meeting of the Population Association of America.* Washington, DC.

GEERTZ, C. 1973. *The Interpretation of Cultures. Selected Essays*. New york: Basic Books.

GERSHUNY, J. 2003. *Changing Times.* NY: Oxford University Press.

GOFFMAN, E. 1959. *The Presentation of Self in Everyday Life*. New York: Anchor Books.

GRACIA, P. 2014. Fathers' Child Care Involvement and Children's Age in Spain: A Time Use Study on Differences by Education and Mothers' Employment. *European Sociological Review,* 0**,** 1-14.

GROTTI, R. & SCHERER, S. 2016. Does gender equality increase economic inequality? Evidence from five countries, *Research in Social Stratification and Mobility*, 45, pp. 13-26.

GURVITCH, G. 1964. *The Spectrum of Social Time*. Dordrecht: Springer Netherlands.

GURYAN, J., HURST, E. & KEARNEY, M. 2008. Parental Education and Parental Time with Children. *Journal of Economic Perspectives,* 22**,** 23–46.

HAYS, S. 1996. *The Cultural Contradictions of Motherhood.* New Haven, CT: Yale University Press.

HECKMAN, J. J. & KAUTZ, T. 2012. Hard Evidence on Soft Skills. *Labour Economics,* 19**,** 451-464.

HECKMAN, J. J. 2007. The technology and neuroscience of capacity formation. *PNAS*.

HIGHSCOPE EDUCATIONAL RESEARCH FOUNDATION 2016. *HighScope Perry Preschool Study. Lifetime Effects: The HighScope Perry Preschool Study Through Age 40*. Available at: http://www.highscope.org/content.asp?contentid=219 [Accessed August 11th 2016]

HILL, C. R. & STAFFORD, F. P. 1985. Parental care of children: Time diary estimates of quantity, predictability, and variety. *In:* JUSTER, F. T. & STAFFORD, F. P. (eds.) *Time, goods and well-being.* Ann Arbor, MI: University of Michigan, Institute for Social Research.

HOFFERTH, S. L. & SANDBERG, J. F. 2001. How American Children Spend Their Time. *Journal of Marriage and Family,* 63**,** 295-308.

HOOK, J. L. & WOLFE, C. M. 2011. Parental Involvement and Work Schedules: Time with Children in the United States, Germany, Norway and the United Kingdom. *European Sociological Review,* 0**,** 1-15.

ISTAT 2017. *Uso del tempo: informazioni sulla rilevazione*, Available at: http://www.istat.it/it/archivio/5723 [Accessed Jan 24th 2017]

ISTAT 2012. *Uso del tempo e ruoli di genere. Tra lavoro e famiglia nel ciclo di vita,* Roma, ISTAT.

IZZO, C., WEISSBERG, R., KASPROW, W. & FENDRICH, M. 1999. A longitudinal assessment of teacher perceptions of parent involvement in children´s education and school performance. *American Journal of Community Psychology,* 27**,** 817-839.

JUUSOLA, M. 2010. *Et ema jaksaks. Emade energiaraamat,* Helsinki: Ajakirjade Kirjastus.

KALIL, A., RYAN, R. & COREY, M. 2012. Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children. *Demography,* 49**,** 1361–1383.

KNEELAND. H. 1929. Women´s economic contribution in the home. *Annals of the American Academy*, 143, 33-40

KNIJN, T. & SARACENO, C. 2010. Changes in the regulation of responsibilities towards childcare needs in Italy and the Netherlands: different timing, increasingly different approaches. *Journal of European Social Policy*, 20 (5), 444-455.

KOHLI, M. 1999. Private and public transfers between generations: linking the family and the state. *European Societies*, 1 (1), 81-104.

KRISTENSEN, P. & BJERKEDAL, T. 2007. Explaining the relation between birth order and intelligence. *Science,* 316**,** 1717.

LAREAU, A. 2013. Everyday Sociology Talk: Annette Lareau on Social Class and Parenting. *Everyday Sociology Blog*, July 16, 2013. Available at: https://www.youtube.com/watch?v=z1ortYT4TWg [Accessed Jan 18th 2016].

LAREAU, A. 2011. *Unequal Childhoods. Class, Race, and Family Life. 2nd edition with an Update a Decade Later,* Berkley: University of California Press.

LAREAU, A. 2003. *Unequal Childhoods. Class, Race, and Family Life,* Berkeley, Los Angeles: University of California Press.

LEIBOWITZ, A. 1974a. Home investments in children. *Journal of Political Economy,* 82, 111-131.

LEIBOWITZ, A. S. 1974b. Education and home production. *American Economic Review,* 64, 243-250.

LUCCHINI, M., SARACENO, C., SCHIZZEROTTO, A. 2007. Dual-earner and dual-career couples in contemporary Italy. *Zeitschrift für Familienforschung*, 19(3), 290-310.

LUNDBERG, G.A., KOMAROVSKY, M. & McINERNY, M.A. 1934. *Leisure: A Suburban Study*. New York: Columbia University Press.

MARX, K. 1992. *Capital*. London: Penguin Books.

MADL, T., BAARS, B., J. & FRANKLIN, S. 2011. The timing of the cognitive cycle. *PloSOne,* 6(4)**,** e14803.

MANNHEIM, K. 1936. *Ideology and Utopia*. London: Routledge.

MCLANAHAN, S. 2004. Diverging destinies: How children fare under the second demographic transition. *Demography,* 41**,** 607-627.

McLANAHAN, S. & SANDEFUR, G. 1994. *Growing up with a single parent: What hurts, what helps,* Cambridge, Massachusetts: Harvard University Press.

MEAD, G. H. 1932. T*he Philosophy of the Present*, (ed.) A. E. Murphy. Chicago: University of

Chicago Press.

MERTON, R.K. 1949. *Social Theory and Social Structure*. New York: Free Press.

MENCARINI, L., PASQUA, S. & ROMITI, A. 2014. Children´s time use and family structure in Italy. *Families and Societies Working Paper Series,* 21**,** 1-32.

MILLS, C. W. 1977. *The Sociological Imagination*. Original 1959. London: Oxford University Press.

MÖLDER, B. 2016. Time in Intersubjectivity: Some Tools for Analysis. In: In: MÖLDER, B., ARSTILA, V. & ØHRSTRØM, P. (eds.) 2016. *Philosophy and Psychology of Time,* 205-224. Cham: Springer.

NAZIO, T. & SARACENO, C. 2013. Does Cohabitation Lead to Weaker Intergenerational Bonds Than Marriage? A Comparison Between Italy and the United Kingdom. *European Sociological Review*, 29(3), 549-564.

NALDINI, M. & SARACENO, C. 2008. Social and Family Policies in Italy: Not Totally Frozen but Far From Structural Reforms. *Social Policy and Administration*, 42 (7), 733-748.

NEIDELL, M. 2000. Early parental time investments in children´s human capital development: Effects of time in the first year on cognitive and non-cognitive outcomes. *Working paper,* No. 86, Department of Economics, University of California, Los Angeles.

OECD 2017. Fertility rates (indicator). doi: 10.1787/8272fb01-en [Accessed 21/9/2017]

OECD Family Database. 2017. Key characteristics of parental leave systems. Avaliable at https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf [Accessed 12/7/2017]

OECD 2013. Education at a Glance. Country Note. Italy. Available at: http://www.oecd.org/edu/Italy_ EAG2013%20Country%20Note.pdf. [Accessed November 10th 2015]

POPPER, K. 1945. *The Open Society and Its Enemies,* vol 1. London: Routledge.

PRIOR, A. N. 1967. *Past, present and future.* Oxford: Oxford University Press.

REARDON, S. F. 2011. The widening academic-achievement gap between the rich and the poor: New evidence and possible explanations. *In:* DUNCAN, G. J. & MURNANE, R. J. (eds.) *Whither opportunity? Rising inequality, schools, and children´s life chances.* New York: Russell Sage Foundation.

ROSENFELD, A. & WISE, N. 2001. *The over-scheduled child: Avoiding the hyper-parenting trap,* New York: St. Martin Griffin.

RYAN, R., KALIL, A. & COREY, M. 2011. Fathers´ Time Investment: The Developmental Gradient in Fathers´ Time with Children. *Working Paper.* Georgetown University, University of Chicago.

SANDBERG, J. F. & HOFFERTH, S. L. 2001. Changes in children´s time with parents: United States, 1981-1997. *Demography,* 38**,** 423-436.

SAYER, L., BIANCHI, S. & ROBINSON, J. 2004. Are Parents Investing Less in Children? Trends in Mothers' and Fathers' Time with Children. *American Journal of Sociology,* 110**,** 1-43.

SAYER, L., GAUTHIER, A. & FURSTENBERG, F. 2004. Educational Differences in Parents'

Time With Children: Cross-national Variations. *Journal of Marriage and Family,* 66**,** 1152–69.

SCHAUB, M. 2010. Parenting for cognitive development from 1950 to 2000: The institutionalization of mass education and the social construction of parenting in the United States. *Sociology of Education,* 83**,** 46-66.

SCHWEINHART, L. J., MONTIE, J., XIANG, Z., BARNETT, W. S., BELFIELD, C. R. & NORES, M. 2005. *Lifetime effects: The HighScope Perry Preschool study through age 40.* Ypsilanti, MI: HighScope Press.

SCHWENTKE, R. 2009. The Time Traveller´s Wife.

SIMMEL, G. 1908. *Soziologie. Untersuchungen über die Formen der Vergesellschaftung*. Leipzig: Duncker & Humblot.

SIMMEL, G. 1918. *Der Konflikt der moderner Kultur. Ein Vortrag*. München und Leipzig: Duncker & Humblot.

SOROKIN, P. A. 1905 *Social and Cultural Dynamics. A Study of Change in Major Systems of Art, Truth, Ethics, Law and Social Relationships*. Boston: Extending Horizons Books, Porter Sargent Publishers.

SOROKIN, P. A. & MERTON, R. K. 1937. Social Time: A Methodological and Functional Analysis, *American Journal of Sociology*, 42, 615-39.

SWIFT, G. 1983. *Waterland*. Great Britain: William Heinemann Ltd.

TALEB, N. N. 2007. *The Black Swan: The Impact of the Highly Improbable*. USA: The Random House Publishing Group.

TANTURRI, M. L. 2012. How Much Does a Child Cost Its Parents in Terms of Time in an Aged Society? An Estimate for Italy with Time Use Survey Data. *In:* DE SANTIS, G. (ed.) *The Family, the Market or the State? Intergenerational Support Under Pressure in Ageing Societies.* Dordrecht: New York: Springer.

TYCWER, T. 1998. *Run Lola Run*.

WALDFOGEL, J. 2006. *What Children Need.* Cambridge, MA: Harvard University Press.

WALDFOGEL, J. 2004. Social Mobility, Life Chances, and the Early Years. London, UK: Centre for Analysis of Social Exclusion, London School of Economics.

WEBER, M. 2003. *The Protestant Ethic and the Spirit of Capitalism*. Translated by T. Parsons, NY: Dover Publications.

WORLD BANK 2016. Available at: http://data.worldbank.org/indicator/SP.DYN.TFRT.IN? [Accessed Jan 25th 2017]

ZAKAY, D. 2016. Psychological Time. In: MÖLDER, B., ARSTILA, V. & ØHRSTRØM, P. (eds.) 2016. *Philosophy and Psychology of Time*, 53-66. Cham: Springer.

CHAPTER 2

Double Advantage or Disadvantage? The Effect of Parental Education on Child Care

Parts of this Chapter have been published in

REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *Electronic International Journal of Time Use Research* (eIJTUR), 12**,** 49-72.

1 Introduction

Many scholars have raised concerns about the diverging destinies of the next generation (McLanahan, 2004). Previous research has documented that highly educated parents spend more time in active childcare than less educated parents. Moreover, there is evidence that highly educated mothers also alter the composition of their child rearing time for children of different ages to optimize children´s development. For instance, Kalil et al. (2012) show that while at age 0 to 2 highly educated mothers spend significantly more time on basic care and play than less educated mothers. When children are aged from 3 to 5, highly educated mothers spend more time on teaching, and while at age 6 to 13 highly educated mothers spend more time on child management, e.g. driving children to different activities, and accompanying children. A complementary study illustrates that a "developmental gradient" also exists for fathers´ child care time, however only for selected activities and for smaller children (Ryan, Kalil & Corey, 2011).

This chapter tests the developmental gradient hypothesis, i.e. it tests whether highly educated parents tailor their child-rearing time to children's developmental needs more than less educated parents for the Italian case. It makes three main contributions. First, very high quality data from the Italian Time Use Survey 2008-2009 are used to scrutinize the question whether highly educated mothers and fathers spend more time in developmentally enriching roles than less educated parents in Italy at different ages of the child. This is the first time when the developmental gradient

hypothesis is tested for a non-Anglo-Saxon country and culture.

Second, the analysis is done separately for weekdays, and week-ends. The majority of past research has analysed parental practices on either week-end days or for an average weekday. The analysis of child-care in week-end days is theoretically and substantively reviling because parental options are less time constrained by market work on Saturdays and Sundays. In other words, parental preferences in terms of child-care activities can be expressed more freely in week-end days.

Third, and most importantly, the current chapter takes into account the level of education of both parents within the same family. Previous analysis of the relationship between parental education and time use have usually been restricted to either mothers or, in some cases, to fathers. By considering different types of educationally homogamous and heterogamous families this study provides a broader and more precise account of parents´ time use with small children.

2 Theory

2.1 Parental Education, Child Care, and Child Development: Previous Studies

The majority of time-use research related to childcare has concentrated on mothers. Past research is Sociology and Psychology has well established the facts that mothers spend on average more time with children than fathers (e.g. Sayer, Bianchi & Robinson, 2004; van der Lippe et al., 2010), and that highly educated mothers spend more time on child-care than less educated mothers (e.g. Guryan, Hurst & Kearney, 2008; Sayer, Gauthier & Fursternberg, 2004). Research on historical time use trends has found that the gap in active childcare time between the highly educated and the lowly educated has widened over the last decades (McLanahan, 2004; Ramey & Ramey, 2010) raising concerns about the possibility that children from different socio-economic backgrounds face 'diverging destinies´. Parental education has been connected to parenting behaviours such as authoritative instead of authoritarian parenting style (Pinderhughes et al., 2000), sensitive and responsive mother-child interactions (NICHD, 2004), higher level of language stimulation (Hart & Risley, 1995; Hoff, 2003), and greater levels of parental management (Lareau, 1989). Moreover, Kalil, Ryan and Corey (2012) also show that highly educated mothers tailor their child care time as their child grows in order to provide the most developmentally beneficial activities.

As far as fathers are concerned, there is mounting evidence that paternal involvement in childcare is

also positively connected to child outcomes (Lamb & Lewis, 2010; Pleck, 2010). College-educated fathers from many countries spend more time in active childcare than fathers without university degree (Gershuny, 2000; Gauthier, Smeeding & Furstenberg, 2004; Hook & Wolfe, 2012). Moreover, the 'education gradient' also exists for paternal childcare time (Gracia, 2014; Guryan, Hurst & Kearney, 2008; Ryan, Kalil & Corey, 2011; Sayer, Gauthier & Furstenberg, 2004; Yeung et al., 2001). For example, fathers with university education spend over four additional hours per week in active childcare than those without university degree in USA (Guryan et al., 2008). In Spain, father´s education has a significant positive effect on physical childcare when child is aged 0-5, and on teaching activities when the youngest child was aged 3-5 (Gracia, 2014). A plausible explanation is that highly educated fathers are more aware of the parenting styles that foster child development, and therefore adopt the norms of intensive parenting more willingly than their lower-educated counterparts (Alwin, 2004; Craig, 2006). The "new father" or in other words, a more involved and gender egalitarian father has emerged among the highly educated men (Hook & Wolfe, 2012) which raises concerns about increasing family polarization (Esping-Andersen, 2009; Lareau, 2003; McLanahan, 2004; Yeung et al., 2001).

As child care demands vary dramatically across children´s life stages (Budig & Folbre, 2004), scholars should disentangle the effects of parental education at different child development stages. To my best knowledge, only three studies have conceptualized child life stages as a central unit of analysis. The recent study by Kalil, Ryan & Corey (2012) with American data shows an important education gradient in mother´s child care time. Ryan, Kalil & Corey (2011) also find an education gradient in father´s child care time, using the same data from USA. Both studies analyse children from 0 to 13 years of age. Gracia (2014) finds that college-educated fathers in Spain adjust their parental care activities to their children's age-specific developmental needs when children are aged from 0 to 11 years. However, no prior study has analysed both parent´s child care time simultaneously while taking children´s age-specific developmental needs into focus.

2.2 Couple´s Educational Homogamy or Heterogamy

Children of two highly educated parents may be "doubly-advantaged" compared to children of less educated couples (Ryan, Kalil & Corey, 2011). Moreover, educational homogamy is on the rise in many contemporary societies. According to Blossfeld (2009), educational homogamy is driven by three factors: a) individual preferences to be with a partner with similar values and interests, b) structural changes like the educational expansion which increases contact opportunities for equally

educated men and women at an age when people are forming couples, c) women´s changing role in dual earner societies increases the importance of women´s education and career. In Italy, the absolute incidence of homogamous marriage has declined across cohorts, but an inversion of this trend is observed for the youngest cohort (Bernardi, 2003). Persons with primary or no education have the highest propensity to homogamy - evidence of a social closure at the bottom. However, the rates of homogamy are increasing for subjects with higher education, raising concerns about increasing polarisation of Italian society.

In educationally heterogamous couples, the parent with higher educational attainment might increase his/her childcare time in order to compensate for the smaller involvement of the lower educated partner. This may be especially visible during week-ends when parents are more free to express their preferences concerning child rearing. The question how parents divide their daily child care demands in educationally homogamous and heterogamous couples has not been answered in previous studies.

2.3 Parental Education and Childcare: Theoretical Frameworks

Theoretical perspectives on parental childcare can be divided into two groups. According to *time availability* approach, parent´s behaviours respond to their partners´ as well as their own time constraints. From the *time availability* (Presser, 1994) and *demand/response capacity* (Coverman, 1985), hypotheses, fathers react positively to their partner´s job pressures, and increase their childcare inputs. Highly educated dual-earner couples with children face extreme and conflicting time-demands. On one hand, they should maximise their time in paid work to build and maintain a career. On the other hand, they know best how important it is that they should invest time in their children. For example, if a well-educated parent has only one hour of free time with child during a workday evening she/ he should try to make best out of it, and use it for the key developmental activity suited for the child´s age. Time constraints may lead to taxing sleep and adult leisure time to meet childcare demands. During week-ends, when parents are more free from work-related time constraints, “week-end fathering” or “mothering” may be evident.

Several sociologists like Pierre Bourdieu (Bourdieu & Passeron, 1964) point out that education operates in certain ways that recreate/ maintain educational differences. The following mechanism is in operation: through educational attainment, parents acquire certain skills, standards of success, and information that in turn motivate their parental practices and behaviours (Lareau, 2011; already

Sewell, Haller & Ohlendorf, 1970). This mechanism is reinforced by *rational action theory* according to which parents´ primary motivation is to ensure a similar socio-economic position for their offspring to the one that they have achieved (Breen & Goldthorpe, 1997). Education is seen as a strong determinant of parental efficiency (Bianchi & Robinson, 1997). However, a simple linear relationship between parental time investments in children and parental education that has widely been used in time-use research may not reveal 'developmentally effective' parenting to its full extent (Kalil, Ryan & Corey, 2012). Presumably there exists a point of diminishing returns to parental time investments for promoting child development, especially for certain activities at certain ages. This is especially important knowledge for the highly educated double-career couples who face the severest time constraints. If education enhances person's efficiency in non-market human behaviour such as parenting (Michael, 1972), we would expect highly educated parents not only to spend more time with children but also to tailor their childcare time more effectively than less-educated parents.

2.4 Historical shift in parenting

In Simmel´s view, the main asset of sociology lies in its scientific methods for analysing society (Simmel, 1917). It is not enough to ask "how?" in a sociological study. In addition to providing a descriptive overview of a social phenomenon, a sociologist also needs to ask "why?" and to provide a socially critical analysis. A good example of a socially critical exploration in the field of education and inequality, is the longitudinal ethnography of Annette Lareau (2011; Lareau & Weininger, 2008). In the *Unequal Childhoods*, Lareau distinguishes between two ideal types of parenting which she calls "concerted cultivation" and "the accomplishment of natural growth."

Parents who have adopted the mantra of "concerted cultivation," organize many extra-curricular activities for their children, reason with children rather than give straight directives, consciously develop children´s vocabulary at home, teach them important social skills, e.g. looking in the eye while speaking and shaking hands with doctors, coaches and other grown-ups, and become heavily involved in children´s schooling. Out-of-school activities require both monetary and time resources that are unavailable to the poor and working-class parents. Working-class parents often do not have the logistic assets like an extra car in family and at least one parent with a flexi-time job needed for driving children to sports clubs, matches, summer camps, and other venues. Moreover, they do not have the skills to discover children´s talents nor the knowledge about which sport could be the most beneficial for getting a sports scholarship for their child in a college.

Working-class and poor parents consider childhood primarily as a time for play. Providing enough food, clothes and a shelter is an everyday challenge for them. Lareau shows that providing essentials in a society without a safety net for poor children consumes most of the time and energy of working-class and poor parents. Additional expenses like a doctor´s visit and buying medication, can break the already fragile family income balance. As working-class and poor parents have less time for their children, children have more free time for watching TV and playing with siblings and friends from neighbourhood. Another major difference between the two paradigms of upbringing is the process of applying to tertiary education. In middle-class families, applying to college is a family affair that encompasses driving children to open door days at different colleges, aid with filling in applications, advice for retaking some exams, and last not least the payment of college costs. In working-class and poor families, children aged 18 are considered "grown" and responsible for their own deeds, including high-school graduation and applying to college. With so much less informal information and social capital invested in them, it is not surprising that only one out of eight children of poor and working-class origin goes to college at age 20 in Lareau´s study.

It is intriguing that both middle class and lower class parents in her study have been raised according to the logic of "the accomplishment of natural growth." Despite similar logic in upbringing, middle class parents have developed a different child raising strategy from other parents. There has been a historical shift towards intensive mothering that is characterized by increased rationalization, predictability and control. Why has this historical shift happened?

Due to dropping birth rate, and safety concerns, family life has become more predictable and regulated than it has ever been in the recent past. As highly paid manufacturing jobs are decreasing and less desirable service-sector jobs are increasing in numbers, today´s children will be adults in a world with fewer "good jobs" and lower standard of living. Therefore, middle class parents who are better aware of this restructuring as well as of child development, have adopted a new ideology of childrearing. Due to this change in middle-class parents´ childrearing, the initial gaps between children from different social origin continue to rise through their life course.

In addition to her longitudinal ethnography, Lareau provides tobit regressions based on PSID-CDS data showing that her qualitative research findings hold at a national level in the USA. Thus far, the most precise analyses testing Lareau´s findings quantitatively are these of Kalil, Ryan, and Corey

(2011, 2012). Kalil et al. use data from the 2003-2007 American Time Use Surveys (ATUS). Their key finding is the fact that highly educated mothers alter the composition of their child care time in order to suit children´s developmental needs more than less-educated mothers. In addition, they confirm the finding that more educated mothers spend more time in active child care than their less educated counterparts.

2.5 Developmental Framework for Parental Time Investments

Developmental theory assumes that in order to assess parents´ time investments in child development, finer distinctions between different types of parenting activities should be made because different activities foster child development in unique ways. According to *developmental theory*, children at different developmental stages need different types of parental investments. Certain investments such as warmth, nourishment and adequate monitoring remain constant throughout childhood. "Sensitivity" is the hallmark of effective parenting, i.e. responding contingently to children´s needs (Adamson & Bakeman, 1984; Bornstein, 2002; Carew, 1980; Waldfogel, 2006). Sensitivity in parents´ time investments means tailoring childcare time to the specific challenges that dominate each developmental period in a child´s life. For example, an hour spent playing with a toddler and an hour spent helping with homework a school age child both bring developmentally positive outcomes. However, an hour spent with a toddler in formal teaching or an hour spent playing with a school age child do not bring along equal developmental benefits.

Kalil, Ryan and Corey (2012) and Rebane (2015) conceptualise children´s life stages as a central unit of analysis, and distinguish between four different categories of active parenting that are best suited for a particular developmental period. These are: (1) basic care which consists of routine tasks such as feeding, putting asleep, bathing, changing clothes, changing a diaper; (2) play which refers to playing games, pretending, doing art projects, outdoors physical games; (3) teaching which means helping with homework or reading to a child; (4) management which includes organizing and monitoring a child´s life outside home. According to the developmental psychology framework, these activities are best suited for the following periods: (1) infancy - from 0 to 12 months; (2) toddlerhood – from 12 to 35 months; (3) the preschool period – ages 3 to 5 years; and (4) middle childhood – ages 6 to 13 years. This is a very broad generalisation of mental growth and by far not the only one. While reading to children is an advantageous activity at all ages, there are at least three reasons why teaching is chosen to be the key activity during preschool and not during

elementary school. First, there is the explicit assumption that there is no official homework in preschool. Thus, parents who help with homework at that age, voluntarily spend extra time and effort to teach letters and numbers to their children so that the latter would have a smoother acclimatisation at elementary school. Second, helping with homework at school age is a vital activity in most families, but at that time the researcher cannot be sure whether it is meant to help children who are doing really badly at school or whether it is an everyday routine in some families. Unfortunately the current datasets do not contain any information on school grades or other measures of children's´ cognitive skills. Third, the same operationalisation has been used beforehand in academic literature, e.g. by Kalil, Ryan and Corey (2012).

Current analysis excludes the pre-birth developmental stages due to data limitations. Still, these stages, as well as mother-child interaction during pregnancy should not be underestimated. Already a 3 month-old fetus has a narrative imagination, ultrasound films about 4 month-old twins reveal their social awareness and interactions (Castiello et al. 2010), 5 month-old fetuses possess imaginative and self-aware motor planning (Zoia et al. 2007). A 24 week-old fetus is considered a conscious agent who deserves the same standard of medical care as adults (Royal College of Obstetricians and Gynaecologists, 2010). According to Nagy (2011), the first 4 weeks after birth should be a distinct phase of mental development as babies go through a rapid phase of development when adjusting to the external world, moreover, newborns already teach their parents how to communicate feelings and interests into “baby-language” (Brazelton, 1979; Trevarthen, 2016).

The greatest challenges of infancy (from 0 to 12 months) are establishing regular sleeping and eating routines. Therefore, the most important parental activities with children are basic care-giving tasks such as feeding, putting to sleep, comforting, bathing, which are all very time-consuming (Bornstein, 2002). According to attachment theory, warm, consistent and sensitive responses to baby´s emotional and physical needs create bonds between parents and infants which serve as the child´s mental model for future relationships. Moreover, these bonds form the basis of the child´s socio-emotional development (Ainsworth et al., 1978; Bowlby, 1969). Both the quality and quantity of basic care that parents offer their infants shape mother-infant and father-infant attachments. In terms of cognitive development, the basis of language learning is laid during the first year. A greater quantity of time that parents spend with their infants increases opportunities to demonstrate and practice responsiveness as well as sensitive parenting.

During toddlerhood (from 12 to 35 months) children acquire the capacity for representational thought and begin to engage in “symbolic” or pretend play (Piaget, 1952). Engaging in pretend play promotes children’s cognitive and social skills, including attention, memory, logical reasoning, vocabulary, creativity, and emotional regulation (Bergen & Mauer, 2000; Berk, 2001; Elias & Berk, 2002; Lindsey & Mize, 2000; Ruff & Cappozoli, 2003). Sociocultural theory posits that play is most beneficial to toddlers when a grown-up structures their activities (Keren et al. 2005; Rogoff, 2003) so that children learn to explore their environment, learn concepts, express curiosity, and gain competence motivation (Hubley & Trevarthen, 1979; Sigel, 1986). When parents actively guide children´s play, they also foster compliance (Parpal & Maccoby, 1985), teach numbers and sizes, and foster language development (Duckworth, 1972). Moreover, play can diminish ADHD and facilitate the construction of the social brain (Panksepp, 2007). In sum, the best developmental activity that parents can do with their toddlers is to engage in child-directed play.

During the preschool period (ages 3 to 5) children´s language and attention skills develop and they will start to appreciate didactic activities such as book reading, problem solving and doing puzzles (Hoff, 2006). Such didactic activities develop children's cognitive skills which influence early academic outcomes like recognizing letters, numbers and words (Snow, 2006). The frequency of early teaching activities influences language and literacy development (Bus et al., 1995; Roberts et al., 2005) as well as early math and reading scores (Bradley et al., 1988). Moreover, Heckman et al. (2013) found that a real driver for success in life are various soft skills developed at age 3 to 5 that have greater impact on life outcomes than IQ. Both parents and kindergartens can develop academic motivation and help to deal with negative externalizing behaviour. Parents´ efforts in teaching their children prior to school entry are are particularly important in countries where entrance exams to the 1st grade or other types of pre-selection are used.

During middle childhood (ages 6 to 13) children´s social networks expand and the roles of friends, school, and extracurricular activities rise. Now, parents spend less time in direct interaction with children and more time on planning and monitoring children´s busy lives. This management ensures that children learn to form positive relationships, self-management, and responsibility (Collins et al., 2002). In the earlier period of middle childhood, management tasks involve arranging academic, extracurricular, recreational and social activities (Dryfoos et al., 1999; Vuchinich et al., 1992). In the later period of middle childhood, management also entails monitoring social networks to avoid

delinquent behaviour and negative influence from peers (Dishion et al., 1999; Dubow et al., 1997). Middle childhood is an important stage when children learn what they are good at, and how to fit into society (Erikson, 1968). The various extracurricular activities can help children to develop self-confidence which is needed to get through the difficult teenage years successfully. During this life stage, it is vital that children develop healthy attitudes and behaviours which will have lifelong consequences. Parents´ language use at home still has a direct effect on children's school performance (Hart & Risley, 1995).

2.6 The Italian case

There are two main structural differences between Italy and the USA in tertiary education. First, in Italy, contrast to the USA, higher education is free of charge. Although sending a child to a university brings along additional costs, e.g. renting a room in another city, increased spending on travelling and food, it is a smaller economic burden compared to the USA. In this respect higher education in Italy should be more open to the youth from different social backgrounds compared to the USA and other Anglo-Saxon countries.

The second difference lies in the proportion of population with tertiary education which is much smaller in Italy (15% among those aged 25-64) when compared to USA 42%“ (OECD, 2013a). When one looks at younger population, Italy stands out for its high proportion of 15-29 year-olds (23.2%) who are neither employed nor in education or training, also known as NEET youth.

In addition to the above mentioned differences between Italy and the USA, there are also cultural ones. Like other Mediterranean countries, Italy has more traditional gender norms. For women, the transition to parenthood is extremely difficult to reconcile with work life. Employed fathers come home late in the evenings due to non family-friendly working hours. Grandparents, especially grandmothers may help extensively when living nearby. Unlike in the USA, universal kindergarten age starts from age 3 in Italy, and kindergartens are of good quality. However, pre-kindergarten childcare is very expensive. Italian women postpone motherhood and the fertility rate is just 1.40 births per women compared to 1.88 births in USA (World Bank, 2014).

Another important difference between Italy and USA for the purpose of this chapter, is the fact that Italian children spend less hours at school than children in other countries. However, they have a

large amount of homework for each day (Mencarini et al., 2014). Such a peculiarity presumes that one parent, usually mother stays at home and helps the child with homework.

2.7 Hypotheses

2.7.1 Hypothesis 1: Developmental Gradient

Based on previous findings for USA, one can also expect for the Italian case that *highly educated parents tailor their childcare time to benefit children's developmental needs more than less educated parents.* This means that highly educated parents spend more time in basic care when the child is aged below 1 year, more time in playing with children when the child is 1 to 3 years old, more time in teaching when the child is from 3 to 5 years old, and more time in child management when the child is from 6 to 13 years old. The developmental gradient in childcare may co-exist with the education gradient in childcare, i.e. highly educated parents spend more time in all childcare activities compared to their less educated counterparts.

2.7.2 Hypothesis 2: Educational Homogamy and Heterogamy

Simultaneous analysis of parents´ time use may reveal interesting patterns that have not been discovered before. *In educationally heterogamous families, the more educated parent may tailor his/her childcare time more than is common for highly educated parents in homogamous couples in order to compensate for the lack of childcare knowledge from the spouse*. This may mean that highly educated fathers (mothers) married to less educated wives (husbands) may spend additional time in developmentally enriching activities with children in the evenings of workdays or during week-ends.

2.7.3 Hypothesis 3: Time Constraints

Since there are less time constraints during week-ends, the educational gradient should be stronger for Saturdays and Sundays in general and in particular for fathers.

3 Data

Time-budget surveys are considered to be the best statistical source for examining individuals´ daily

activities (Robinson, 1985). Data for the current paper are drawn from two Italian Multi-purpose Surveys on Families´ Time Use, merging waves 2002-2003 and 2008-2009. It is a representative time-use survey of the Italian population, collected by *Istituto Nazionale di Statistica* (ISTAT). In the 2002 survey, the data was collected from April 1st 2002 until March 31st 2003. In 2002, the sample consist of 55,773 individuals belonging to 21,075 families. In the 2008 survey, the total sample consists of 44,606 individuals in 18,250 families. The data collection period started on February 1st 2008 and lasted until January 31st 2009. In both surveys, each family member aged 3 or older completed a time-diary. The sample in each region of Italy was divided into three, and assigned either a random workday, Saturday or Sunday when the family should fill in a time-diary. All family members filled in their time-diaries during the same days. In my analysis, I distinguish between workdays and week-end days. For younger children the diary was completed by parents. Each episode is given by the interval of 10 minutes, and distinction is made between "main" and "secondary" activities. Only information on the main activities is used in this analysis as the face-to-face activities with children are considered far more beneficial for child development than secondary childcare activities. The sub-sample of this chapter comprises of 19,988 married or cohabiting parents with at least one child up to 13 years of age living at home. As the number of immigrants was quite small, only Italian citizens are considered. In order to avoid extreme cases, only parents from age 20 up to 55 have been taken into analysis. In the final analysis I use the age of the youngest child as a classification tool just like past research has done (Kalil, Ryan & Corey, 2012).

While comparing the parenting activity codes of Italy and the USA, the core categories are the same, however, they are compiled of different minor activity codes (see Table 2.2 in Appendix). Differences in results can partially be driven by the differences in activity codes. While there are differences in all the categories, the most important difference between the ATUS and the Italian Time-Use Survey lies in the field of child management. The Italian Time Use Survey captures mainly driving to and picking up of children from school and kindergarten. The ATUS management category is far broader, including attending household children´s events, waiting for/with household children, activities related to household children's health, organization/planning for household children, and travel related to caring for/helping household children. Even the total child care time can be slightly different as it measures primary face-to-face activities with children in Italy, but in the ATUS includes the data of primary activities that are done for children but not

necessarily with them, e.g. activities related to household children's education, and health as well as organization/planning for household children. Therefore, the comparison of parental activities between these countries should be approached with extreme caution.

4 Measures

Five "dependent variables" of active parenting are used. *Basic care*, i.e. feeding, bathing, putting children to bed, physically comforting, physically attending to health needs, counts the minutes that parents allocate to physical care of children. *Play*, for instance "pretend play", and using clay with a child, counts parents´ minutes of active play, both indoors and outdoors. *Teaching* activities include helping children to do homework, as well as reading and talking to children. *Management* tasks comprise of supervising children, attending events, accompanying children, and of other child-related activities. *All child care* is a global measure of primary child care time that records the amount of time spent in any of the above-mentioned activities.

My main "independent variable" is parental education. I use the education of mother and father, and the combined education of both parents for different models. The educational level of both parents is based on the highest educational degree attained. Three mutually exclusive levels of education are used: less than a high school diploma (low), high school diploma (middle), and any university degree (high). Presumably the education of both parents matter in the realm of child development. Therefore, nine combinations of mother´s and father´s combined education are used with mother´s education in the first place (as mother´s education may be more relevant for the early child development stages) and father´s education in the second place: high-high (reference category), high-medium, high-low, medium-high, medium-medium, medium-low, low-high, low-medium, and low-low. The largest groups consist of educationally homogamous couples (high-high, medium-medium, low-low), and the overall homogamy rate is 67%.

The "control variables" are chosen for theoretical and empirical reasons. *Parental age* is also controlled for. *Age of the youngest child* matters most as younger children have more time-consuming needs. *Number of children living at home* is also controlled for as having more than one child should increase total child care time, age is limited to children from 0 to 13 years. *Mother´s employment* consists of three categories: full-time, part-time, and not employed. Mother´s labour

force participation increases time constraints, and is therefore controlled for. As traditional gender norms are still quite prevalent in Italy, I control whether there is a *son,* aged from 0 to 13 years, living at home. I expect fathers to spend more time with sons compared to daughters. I also control for any *pre-school care*. This variable unites children going to nurseries (below age 3) as well as children attending kindergartens (from age 3 to 7). Pre-school care should provide parents with more time free from child minding, however, it may increase time spent travelling with children. As "with whom?" activity codes that distinguish between *grandparents* and others are only available for 2008-2009 survey, I do not control for grand parental care. Presumably grandparents help quite a lot with looking after small children in Italy. While not being able to control for grand parental help, I have only included those families in the sample who live apart from grandparents. The analyses are done separately for *workdays* and *week-ends*.

5 Analysis Plan

I begin by examining the unadjusted differences in parents´ time in child care by education level, age of child, and activity type. The mean minutes for each subgroup indicate whether, unadjusted for any exogenous characteristics, child care time patterns are characterized by education and developmental gradients.

Next, ordinary least squared (OLS) regressions are used to regress time in each activity type as well as in the global measure of all childcare time on parental education and child age groups, controlling for parental age, age of the youngest child, number of children in household, mother´s employment, son in family, and pre-school care. First, I analyse mother´s daily childcare activities, then father´s daily childcare activities, and finally the compound childcare time of both parents. Separate OLS models are presented for workdays and week-ends. The general model:

$$y_i = x_i^T \beta + \varepsilon_i$$

The final model also includes the interaction terms:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 X_2 + \beta_4 X_3 + \beta_5 X_4 + \beta_6 X_5 + \beta_7 X_6 + \beta_8 X_7 + \varepsilon$$

where

Y_1 – denotes the dependent variable, i.e. various child care activities like: total child care, basic

care, playing, teaching, and child management.

X_1 – denotes the key independent variable, i.e. parental education (reference category: secondary education)

X_2 – denotes child development stage (reference category: middle childhood – from 6 to 13)

X_1X_2 – denotes the interaction between parents´ educational level, and child´s development stage.

X_3 – maternal employment (reference category: full-time)

X_4 – maternal age

X_5 – number of children (reference category: one)

X_6 – 1 if a son in family

X_7 – 1 if a child attends pre-school care

β – slope

ε – error

There is a long debate whether to use OLS or more adequate methods for censored data with time use datasets, for instance Heckman model or the Tobit model. Out of these options, Tobit models are more easily usable (Breen 1996). Tobit models estimate linear relationships between variables when there is extreme censoring on the dependent variable (Breen 1996; Greene, 2003). Numerous 0-cases of time use data violate OLS assumption of normal distribution. For instance, nearly 85% of mothers and 93% of fathers do no teaching (see Table 2.1). However, several authors underline the robustness of results, and the possibility to use OLS with time-use data (Hook and Chalasani, 2008). Breen´s example shows that when comparing OLS and Tobit estimates, OLS results are slightly biased and inconsistent (Breen 1996). I have performed my analyses using both Tobit and OLS models, and the results show only some minimal differences in minutes but are robust in general terms.

The statistical model developed by James Tobin in 1958 known as the Tobit model is based on the following latent variable model:

$$y = \beta' X + U$$

where X is a k-vector of regressors, possibly including 1 for the intercept, and the error term U is $N(0,\sigma 2)$ distributed, conditionally on X. The latent variable Y is only observed if $Y > 0$ (Guided tour on Tobit models). If the relationship parameter β is estimated by regressing the positive values of Y

on X, the OLS regression estimators are inconsistent – the slope will be biased downwards and the intercept will be biased upwards. The maximum likelihood estimator of Tobit model has been proven to be consistent (Amemiya, 1973).

Tobit regression coefficients are interpreted in the similar manner to OLS regression coefficients; however, the linear effect is on the uncensored latent variable, not the observed outcome (UCLA, 2014). The problem is, that we do not know what the unobserved latent variable is. Although parental childcare time can only be 0 or above 0, the latent variable that we measure through parental childcare time can also have negative values. Therefore, the constant of Tobit regression may be negative. As a negative constant is difficult to interpret, and the OLS and Tobit coefficients are extremely similar in my analyses, I prefer to present OLS tables in this paper. Tobit model results are available upon request.

In the final part of the analysis, graphs presenting linear probability models of each childcare activity are brought out. In line with a growing body of research, LPMs are used due to the straightforward interpretation of their estimates, in particular the interaction effects that are necessary to understand the developmental gradient in childcare (Angrist and Pischke 2009; Mood 2010). In general, the estimates of LPM tend to be very similar to the average marginal effects of the logit model. The LPM models used in the analysis have the same independent and control variables as the OLS models, as well as the same interaction terms between parental education and the age of the youngest child. The independent variable is the probability to engage in any given childcare task.

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\beta_4 X_3+\beta_5 X_4+\beta_6 X_5+\beta_7 X_6+\beta_8 X_7+\varepsilon$$

Table 2.1. Summary statistics

Variables	Mean	S.D.	%
Dependent variables			
Mother´s minutes in total child care	93.11	102.56	79%
Father´s minutes in total child care	46.17	69.37	53%
Mother´s minutes in physical care	54.31	78.09	70%
Father´s minutes in physical care	14.61	35.22	29%
Mother´s minutes in play	14.66	35.89	23%
Father´s minutes in play	21.06	43.89	30%
Mother´s minutes in teaching	17.94	35.96	33%
Father´s minutes in teaching	7.11	22.46	16%
Mother´s minutes in management	6.22	22.51	15%
Father´s minutes in management	3.41	18.55	7%
Independent variables			
Mother´s tertiary education	0.14	-	-
Mother´s secondary education	0.47	-	-
Mother´s less than secondary education	0.39	-	-
Father´s tertiary education	0.12	-	-
Father´s secondary education	0.42	-	-
Father´s less than secondary education	0.46	-	-
Mother´s full-time job	0.35	-	-
Mother´s part-time job	0.19	-	-
Mother not employed	0.46	-	-
Youngest child aged 0	0.07	-	-
Youngest child aged from 1 to 2	0.17	-	-
Youngest child aged from 3 to 5	0.20	-	-
Youngest child aged from 6 to 13	0.56	-	-
Control variables			
Son aged from 0 to 13 in home	0.52	0.50	-
Number of children: One	0.33	-	-
Number of children: Two	0.52	-	-
Number of children: Three or more	0.15	-	-
Parent´s age	39.61	6.13	-
Pre-school childcare	0.15	0.36	-

N = 19,988, Source: 2002 and 2008 Italian Time Use Surveys (ISTAT).

6 Results

6.1 Bivariate Results

General findings provide evidence of week-end fathering, and of different types of childcare tasks done by mothers and fathers. More tedious basic care is mainly done by mothers while the more fun task of playing with children dominates fathers´ childcare. During week-ends, a clear education gradient emerges both for mothers and fathers in overall childcare. This result is consistent with previous research (Gracia, 2014; Guryan et al., 2008; Kalil et al., 2012). The education gradient varies by child age and activity type. In terms of total care time, the largest differences by mothers´ and fathers´ education emerge in the youngest age group on week-ends. Mothers with university degree spend on average 52 extra minutes in total childcare than those without a high school diploma, during a week-end day. The same educational gap for fathers is 46 minutes during week-end days.

The overall education gradient hides important patterns by activity type. For basic care, the largest education gaps emerge on week-ends when children are aged 0, with university-educated mothers spending additional 48 minutes (25%), and university-educated fathers 24 minutes (59%) per day than parents with less than high school diploma. The largest educational gaps in play emerge during week-ends when children are aged from 1 to 2 years. University educated mothers spend additional 13 minutes (48%), and highly educated fathers 5 minutes (11%) playing with children, compared to their counterparts with less than high school education. For teaching, the education gaps grows with child´s age. For 3 to 5-year-olds, highly educated mothers spend additional 21% of time on teaching during week-ends than lowly educated mothers. When children are aged from 6 to 13, the gap in maternal teaching time grows to 57% during week-ends. For paternal teaching time, the education gap is 220% when comparing highly and lowly educated fathers of 3 to 5-year-old children during week-ends, and is reduced to 83% when the youngest child is aged from 6 to 13. The large percentage differences in teaching tasks equal to rather small differences in actual minutes. No clear educational pattern exists for child management tasks in Italy.

In couples´ time use, mother´s level of education is in the first place and father´s highest educational attainment in the second place. For instance, a “high-medium” family consists of a university-educated wife and a husband with secondary education. The number of families with extreme educational heterogamy is quite low and multivariate results for low-high and high-low

families should be approached with some caution. In the final analysis, the child age categories of 0 and 1-2 are united. The cross-tabulations of mean minutes spent on total child care, basic care, play, teaching and management by both parents are available upon request. The education gradient is clearly visible for both mothers and fathers separately in all major child-care tasks except for management. The child-raring patterns become more complex for couples where partners have different educational attainment. For example, medium-high families surpass high-high families in total childcare and basic care when child is aged 0, during workdays. Low-high families surpass everyone else with playing with 1-2-year-old children during workdays, and teach their 3-5-year-old children more than other families during week-end days. High-low, and medium-low families do more management tasks with 6-13-year-old children during week-ends than other families. Still, in most cases, high-high families stand out with their heavier participation in childcare tasks than other families, and low-low families tend to remain in the lowest position.

6.2 Multivariate Results

In order to determine whether the bivariate results hold when demographic differences are held constant, and to test whether education differences in parental childcare time are statistically significant, I use OLS regression models for time in all care and all four activity types, controlling for parents´ age, age of the youngest child, the number of children in family, mother´s age and her current employment status, having a son in family, and daycare attendance (both *asilo nido* and *scuola materna* have been taken into account) for smallest children. First, the analysis is presented for mothers and mothers´ daily childcare time to test whether the American results by Kalil et al. (2012) also hold for Italy. Second, the analysis is done for fathers and fathers´ time in daily childcare in order to determine whether the same pattern(s) hold for Italian fathers. Third, the analysis is done for the compound childcare time of both parents during the same day, controlling for couple´s educational background. The majority of university-educated mothers with small children work full-time, while the majority of mothers with less than secondary education are economically inactive. The 0 to 5-year-old children of highly educated mothers are far more often attending kindergarten or nursery than the children of lowly educated mothers. Whether lowly educated mothers enjoy home-making and looking after children more than highly educated mothers or simply hold more traditional views about the role of mother or alas, are unable to find a job is impossible to determine with current data.

6.3 Mothers

In order to test whether educational differences are statistically significant and different across age groups, I run OLS regression models for total childcare, basic care, playing, teaching and child management tasks. The reference category for all the models is a mother with secondary education (middle category), having one daughter in the 6 to 13 age group (the biggest child age group), and working full-time. The models for workdays are presented in Table 2.3 and the models for week-end days in Table 2.4 below.

Positive and significant coefficients for university education give support to education gradient assumption. Mothers with higher education are expected to spend more time in each child care activity. In each model, the interaction terms between mother´s education and the age of youngest child provide information about the developmental gradient in mother´s child care. For instance, a significant positive interaction between university and youngest child aged 0 would indicate that the gaps in basic care between university- and high school-educated mothers are greater when children are infants compared to children in middle childhood. Basic care is the most developmentally enriching activity for infants, and highly educated mothers are supposed to be aware of this fact, and spend additional time on basic care with 0-year old children. However, a negative or not significant interaction term does not support the developmental gradient hypothesis. As mothers are expected to be more free from time constraints during week-ends, both education gradient and developmental gradient should be greater during week-ends. As management tasks in Italy involve mainly accompanying children, not organizing children´s free time and other activities as in the ATUS data (Table 2.2), it is unclear whether the education and developmental gradients will emerge for child management.

The overall picture seems to be supporting the story of an "education gradient" in childcare. University-educated mothers spend more time in total childcare, basic care, teaching and management during workdays when compared to mothers with secondary education (Table 2.3). During week-ends, the "education gradient" exists in total childcare, basic care, and teaching. Mothers with less than high school education provide basic care and teach their children less often than other mothers during week-ends. University-educated mothers do, on average, 25 minutes of additional childcare per workday, and 13 minutes of additional childcare per week-end day when compared to mothers with secondary education. These gaps are even greater in Tobit models than in OLS models. The difference of 25 minutes of active childcare per day is not only statistically

significant but exhibits wider sociological meaning (Bernardi et al., 2017). These everyday differences yield into 7,873 minute or 5.5 day long childcare gaps per year. When compared to the results by Kalil et al. (2012), quite a similar 22 minute total childcare gap during workdays is evident in the USA between mothers with tertiary and secondary education when child is between 6 and 13 years old.

The results in Tables 2.3 and 2.4 only partially support the hypothesis about a developmental gradient in childcare. Interaction terms between mother´s education and youngest child´s age are mostly statistically insignificant. In Table 2.3, the statistically positive coefficient for higher education and the negative coefficient for interaction terms between highly educated mother and a 3 to 5 year-old child indicate that highly educated mothers are doing more child management for their 6 to 13-year-old children who are the reference category for child age which is in line with child development literature. The negative interaction term between lowly educated mother and an infant in basic care (~ -28 minutes), and the negative interaction term between lowly educated mother and a 3 to 5-year-old child in teaching (~ -10 minutes) imply that the cut-off point for developmental gradient story, at least for some activities, might be between the lowly educated and the ones with secondary education.

During week-ends, the significant negative interaction terms in combined childcare and basic care tasks between university education and the age of youngest child suggest that highly educated mothers tailor their time in basic care whenever possible. Again, mothers with less than high school education, tailor their time differently from the developmental gradient story, showing a significant negative interaction term between their education and playing with a 1 to 2 year-old (~ -9 minutes).

The importance of child care activities for Italian mothers becomes clearer when the family has more than one child. When a family has more than one child, the time constraints become more severe and parents must use their time more efficiently to cater the needs of all children. For Italian mothers, an additional child in the family means a trade off between playing and other activities which get a higher priority. During workdays and week-ends alike, Italian mothers with more than one child spend significantly less time on playing with children, and more time on basic care, and teaching.

Table 2.3. OLS results for mother´s time spent in each activity on workdays

	(1) Full childcare	(2) Basic	(3) Play	(4) Teach	(5) Mgmt
University	25.26***	**12.73****	1.32	**6.27***	**4.95****
	(6.33)	(4.41)	(2.33)	(2.84)	(1.85)
Less Than High School	-7.98*	-3.83	0.17	-2.76	-1.54
	(3.91)	(2.73)	(1.44)	(1.75)	(1.14)
Youngest Child Aged 0	208.81***	188.28***	38.92***	-13.99***	-4.40†
	(8.03)	(5.60)	(2.96)	(3.60)	(2.35)
Youngest Child Aged 1-2	87.69***	71.61***	26.77***	-10.41***	-0.28
	(6.06)	(4.22)	(2.23)	(2.72)	(1.77)
Youngest Child Aged 3-5	42.65***	26.88***	6.13**	3.79	5.92***
	(5.77)	(4.02)	(2.12)	(2..59)	(1.69)
University x 0	-22.91	-26.20*	0.61	-3.99	6.67
	(15.45)	(10.78)	(5.69)	(6.93)	(4.52)
University x 1-2	-1.55	-3.88	3.58	0.46	-1.71
	(10.93)	(7.62)	(4.02)	(4.90)	(3.20)
University x 3-5	-6.92	10.16	5.26	-12.35*	**-10.43****
	(9.03)	(8.03)	(4.24)	(5.16)	(3.37)
<High School x 0	-42.85***	**-28.32****	-26.05***	8.81	2.70
	(12.94)	(9.02)	(4.76)	(5.80)	(3.78)
<High School x 1-2	-6.92	1.45	-4.01	-0.87	-3.51
	(9.03)	(6.29)	(3.32)	(4.04)	(2.64)
<High School x 3-5	-9.56	-4.60	6.63*	**-9.77***	-1.90
	(8.58)	(5.98)	(3.16)	(3.85)	(2.51)
Mother works part-time	14.62***	4.47	3.42*	2.36	4.35***
	(4.00)	(2.79)	(1.47)	(1.79)	(1.17)
Mother not employed	40.83***	20.57***	4.18***	10.65***	5.42***
	(3.36)	(2.33)	(1.12)	(1.50)	(0.98)
Maternal age	-2.05***	-1.11***	-0.29**	-0.63***	-0.02
	(0.29)	(0.20)	(0.105)	(0.13)	(0.08)
N Child: Two	12.96***	9.09***	-5.47***	8.22***	1.14
	(3.22)	(2.24)	(1.18)	(1.44)	(0.94)
N Child: Three or more	11.04*	8.92**	-6.19***	8.50***	-0.19
	(4.55)	(3.17)	(1.68)	(2.04)	(1.33)
Boy in family	3.34	0.61	-1.48	1.88	2.33**
	(2.79)	(1.94)	(1.03)	(1.25)	(0.82)
Pre-school care	1.88	-0.33	10.27***	-10.57***	2.49†
	(4.56)	(3.18)	(1.68)	(2.04)	(1.33)
Constant	114.23***	52.32***	17.32***	40.05***	4.56
	(12.23)	(8.52)	(4.50)	(5.48)	(3.58)
Adj R-squared	0.35	0.43	0.20	0.06	0.02
N	3,697	3,697	3,697	3,697	3,697

Note: Standard errors are displayed in parentheses below coefficients.
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 2.4. OLS results for mother´s time spent in each activity on week-ends

	(1) Full childcare	(2) Basic	(3) Play	(4) Teach	(5) Mgmt
University	13.36**	**7.52***	3.10	**4.42***	-1.69
	(4.58)	(3.36)	(1.90)	(1.88)	(1.17)
Less Than High School	-16.35***	**-7.88*****	-1.62	**-6.13*****	-0.69
	(2.92)	(2.15)	(1.21)	(1.20)	(0.75)
Youngest Child Aged 0	178.93***	166.78***	25.46***	-10.39***	-2.94†
	(6.33)	(4.65)	(2.63)	(2.59)	(1.61)
Youngest Child Aged 1-2	88.64***	68.22***	30.57***	-8.40***	-1.77
	(4.45)	(3.27)	(1.85)	(1.83)	(1.14)
Youngest Child Aged 3-5	36.50***	28.75***	13.92***	-4.09*	-1.99†
	(4.31)	(3.16)	(1.79)	(1.77)	(1.10)
University x 0	41.88***	**30.94*****	14.26**	-3.16	-0.17
	(11.00)	(8.08)	(4.57)	(4.51)	(2.80)
University x 1-2	-10.88	-5.95	-2.43	-3.98	1.49
	(8.36)	(6.14)	(3.47)	(3.42)	(2.13)
University x 3-5	4.31	1.37	1.83	0.82	0.18
	(7.92)	(5.82)	(3.29)	(3.24)	(2.02)
<High School x 0	12.00	-7.88	9.01*	7.34†	3.51
	(10.22)	(7.51)	(4.25)	(4.19)	(2.61)
<High School x 1-2	-7.99	-1.95	**-8.96*****	4.53	-1.49
	(6.72)	(4.94)	(2.79)	(2.75)	(1.71)
<High School x 3-5	2.26	-2.49	-1.82	5.06*	1.38
	(5.94)	(4.36)	(2.47)	(2.43)	(1.51)
Mother works part-time	6.95 *	3.18	1.32	1.13	1.29†
	(2.91)	(2.14)	(1.21)	(1.19)	(0.74)
Mother not employed	18.14***	15.17***	1.27	2.57*	-0.89
	(2.52)	(1.85)	(1.05)	(1.03)	(0.64)
Maternal age	-2.14***	-1.64***	-0.13	-0.35***	-0.03
	(0.21)	(0.16)	(0.09)	(0.09)	(0.05)
Number of Children: Two	5.88*	5.72***	-4.15***	3.91***	0.35
	(2.40)	(1.76)	(1.00)	(0.98)	(0.61)
N Child: Three or more	14.36***	12.87***	-6.49***	8.23***	-0.30
	(3.38)	(2.48)	(1.41)	(1.39)	(0.86)
Boy in family	3.05	-0.16	1.99*	0.58	0.66
	(2.07)	(1.52)	(0.86)	(0.85)	(0.53)
Pre-school care	8.06*	7.23**	7.25***	-5.65***	-0.75
	(3.39)	(2.49)	(1.41)	(1.39)	(0.87)
Constant	123.87***	78.01***	11.29**	28.04***	6.60**
	(9.03)	(6.63)	(3.75)	(3.70)	(2.30)
Adj R-Squared	0.35	0.42	0.15	0.02	<0.01
N	6,231	6,231	6,231	6,231	6,231

Note: Standard errors are displayed in parentheses below marginal effects.
† p < .10, * p < .05, ** p < .01, *** p < .001

Having a son increases mother´s child management time during workdays, and teaching time during week-end days. During workdays, mothers who are not in employment, spend about 41 extra minutes on childcare compared to mothers in full-time employment. Although economically inactive mothers spend statistically significantly more time on different child care tasks than employed mothers during workdays, the difference in the length of primary child care tasks is far smaller than the freedom from a 8-hour working day would allow. During week-ends, not employed mothers still spend about 18 minutes more, and mothers in part-time employment about 7 minutes more in primary childcare than employed mothers. If a child attends kindergarten, it increases mother´s participation in playing, while reducing time in teaching. Each additional year of mother´s age reduces overall childcare time by 2 minutes regardless of weekday. As the age of the youngest child, and the number of children are controlled for, it might indicate that older mothers might hold some cohort specific parenting techniques or simply get tired more easily.

6.4 Fathers

The results for fathers´ child care are presented in Table 2.5 for workdays and 2.6 for week-end days. The reference category is a father with secondary education (middle category), having one daughter in the 6 to 13 age group (the biggest child age group), whose wife is working full-time. Additional controls are for father´s age (from 20 to 55), and pre-school care of children below age 5. Playing with children contains the bulk of Italian fathers´ childcare. Education gradient in paternal childcare is only evident during week-ends in the domains of playing, and teaching. University-educated fathers spend, on average, nearly 8 extra minutes per week-end day on childcare compared to fathers with secondary education. Fathers with less than high school education spend significantly less time on basic care, and child management during week-ends compared to the reference category (secondary education).

There is little evidence of a “developmental gradient” in paternal childcare. During workdays, university-educated fathers spend significantly more time on basic care with their 1 to 2-year-olds, and during week-end days significantly more time with their 0 year-olds (both ~ 13 minutes). According to literature, the key age for basic care is below age 1. Lowly educated fathers spend approximately 11 minutes less on basic care with their infants during workdays than the reference group (Table 2.5). According to literature, the key developmental age for teaching is 3-5. During week-ends, university-educated Italian fathers tailor their time in basic care, and teaching according to child development literature. To conclude, there is less proof about an “education gradient” in paternal childcare than in maternal childcare, and some proof about a “developmental gradient” in paternal childcare. Although father´s child care time is on average smaller than mother

´s child care time, paternal childcare is an important input into child development, both emotionally and cognitively. For example, the reference category fathers (secondary education, having one daughter aged between 6 and 13) devote on average 59 minutes during workdays and 44 minutes during week-end days on total childcare, which is 52 per cent of mother´s total childcare during workdays, and 35 per cent during week-end days.

Having a son increases father´s childcare time by 21% or more than 9 minutes during week-ends. Having a son increases time spent on all childcare tasks during week-end days. No son effect on fathers´ time use was found during workdays. An additional child in the family means that fathers will spend less time on playing and more on basic care, teaching and child management. Having a wife who is not employed, decreases father´s involvement in all childcare activities during workdays, and in basic care and management during week-ends. However, fathers whose wives are in part-time employment, increase their playing time with children during week-ends. If a child attends pre-school care, it increases father´s time in basic care and play on all days of the week while reducing time on teaching and management during workdays. Older fathers tend to spend less time on different child care tasks than younger fathers, but parental age effect is somewhat smaller compared to mothers. There is some evidence of week-end fathering in Italy. University-educated fathers spend additional 8 minutes per day on childcare during a week-end day. This result may show time constraints during workdays. These additional week-end minutes of highly educated fathers are mainly spent on playing with children.

Table 2.5. OLS results for father´s time spent in each activity on workdays

	(1)	(2)	(3)	(4)	(5)
	Full childcare	Basic	Play	Teach	Mgmt
University	-2.98	0.34	-2.12	0.65	-1.85
	(3.92)	(1.95)	(2.33)	(1.59)	(1.37)
Less Than High School	-2.68	-0.34	-1.51	-1.19	0.37
	(2.55)	(1.27)	(1.51)	(1.03)	(0.89)
Youngest Child Aged 0	46.89***	27.06***	19.47***	1.40	-0.90
	(5.13)	(2.56)	(3.04)	(2.08)	(1.80)
Youngest Child Aged 1-2	40.76***	16.50***	25.76***	-2.85†	1.33
	(3.77)	(1.88)	(2.24)	(1.53)	(1.32)
Youngest Child Aged 3-5	21.58***	10.48***	9.62***	1.69	-0.13
	(3.79)	(1.89)	(2.25)	(1.53)	(1.33)
University x 0	-9.43	2.14	-4.80	-7.70†	0.78
	(10.56)	(5.26)	(6.27)	(4.28)	(3.70)
University x 1-2	8.50	12.95***	-0.21	-3.30	-0.94
	(7.53)	(3.75)	(4.47)	(3.05)	(2.64)
University x 3-5	-4.76	-1.74	4.10	-6.85*	-0.36
	(7.34)	(3.66)	(4.36)	(2.97)	(2.57)
<High School x 0	-15.87*	**-10.79****	1.17	-3.96	-2.37
	(7.04)	(3.51)	(4.18)	(2.85)	(2.47)
<High School x 1-2	-6.79	-1.75	-3.26	-0.17	-1.50
	(4.92)	(2.45)	(2.92)	(1.99)	(1.73)
<High School x 3-5	-13.87**	-8.93***	-3.10	-1.52	-0.43
	(4.87)	(2.43)	(2.89)	(1.97)	(1.71)
Mother works part-time	-6.48**	-0.15	-1.57	-2.95**	-1.88*
	(2.52)	(1.26)	(1.50)	(1.02)	(0.88)
Mother not employed	-12.75***	-4.22***	-3.82***	-1.96*	-2.81***
	(2.00)	(0.99)	(1.18)	(0.81)	(0.70)
Paternal age	-0.65***	-0.14†	-0.44***	-0.10	0.03
	(0.17)	(0.09)	(0.10)	(0.07)	(0.06)
N Child: Two	0.35	2.00*	-4.14***	1.42†	0.99
	(1.97)	(0.98)	(1.17)	(0.80)	(0.69)
N Child: Three or more	-2.20	2.57†	-6.48***	2.08†	-0.42
	(2.85)	(1.42)	(1.69)	(1.16)	(1.00)
Boy in family	0.51	-0.67	1.11	-0.68	0.78
	(1.73)	(0.86)	(1.03)	(0.70)	(0.61)
Pre-school care	4.30	3.43*	5.00**	-2.57*	-1.57†
	(2.70)	(1.35)	(1.60)	(1.09)	(0.95)
Constant	59.16***	11.29**	31.34***	13.21***	3.41
	(7.90)	(0.86)	(4.69)	(3.20)	(2.77)
Adj R-squared	0.14	0.12	0.15	0.01	<0.01
N	3,736	3,736	3,736	3,736	3,736

Note: Standard errors are displayed in parentheses below marginal effects.
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 2.6. OLS results for father´s time spent in each activity on week-ends

	(1) Full childcare	(2) Basic	(3) Play	(4) Teach	(5) Mgmt
University	7.85*	2.97	**4.47**†	2.18	-1.79†
	(3.95)	(2.09)	(2.56)	(1.33)	(1.08)
Less Than High School	-5.44*	-0.42	-0.73	**-3.12*****	-1.20†
	(2.54)	(1.34)	(1.65)	(0.86)	(0.69)
Youngest Child Aged 0	63.97***	40.36***	27.52***	0.62	-4.41**
	(5.39)	(2.85)	(3.50)	(1.82)	(1.47)
Youngest Child Aged 1-2	63.97***	26.36***	40.64***	-1.43	-1.63
	(3.81)	(2.01)	(2.48)	(1.29)	(1.04)
Youngest Child Aged 3-5	30.74***	11.73***	21.39***	-0.71	-1.67†
	(3.60)	(1.90)	(2.34)	(1.22)	(0.99)
University x 0	45.92***	**13.06***	29.02***	-0.05	3.76
	(10.17)	(5.38)	(6.61)	(3.44)	(2.78)
University x 1-2	-5.56	5.04	-9.82*	-1.82	1.06
	(7.44)	(3.94)	(4.84)	(2.52)	(2.04)
University x 3-5	-1.30	-5.84	-6.97	**7.08****	4.42*
	(7.40)	(3.91)	(4.81)	(2.50)	(2.02)
<High School x 0	16.21*	-5.81	16.96***	1.18	3.76†
	(7.34)	(3.88)	(4.77)	(2.48)	(2.01)
<High School x 1-2	-9.96*	**-8.79*****	-6.33†	3.51*	1.68
	(5.05)	(2.67)	(3.28)	(1.71)	(1.38)
<High School x 3-5	-0.77	-3.70	0.28	0.84	1.80
	(4.67)	(2.47)	(3.03)	(1.58)	(1.28)
Mother works part-time	7.55**	0.88	7.22***	-0.14	-0.42
	(2.51)	(1.32)	(1.63)	(0.85)	(0.69)
Mother not employed	-4.65**	-3.14**	-0.24	<-0.01	-1.30*
	(2.02)	(1.07)	(1.31)	(0.68)	(0.55)
Paternal age	-0.50**	-0.19*	-0.30**	0.02	-0.02
	(0.17)	(0.09)	(0.11)	(0.06)	(0.05)
N Child: Two	0.66	4.26***	-7.57***	2.91***	1.08*
	(1.98)	(1.05)	(1.29)	(0.67)	(0.54)
N Child: Tree or more	-3.41	5.56***	-10.97***	1.33	0.68
	(2.86)	(1.51)	(1.86)	(0.97)	(0.78)
Boy in family	9.44***	3.35***	3.02**	1.22*	1.83***
	(1.73)	(0.91)	(1.12)	(0.58)	(0.47)
Pre-school care	12.84***	6.17***	9.39***	-1.96*	-0.75
	(2.73)	(1.44)	(1.77)	(0.92)	(0.75)
Constant	44.38***	10.88**	23.41***	5.50*	4.68*
	(7.88)	(4.17)	(5.12)	(2.66)	(2.15)
Adj R-squared	0.18	0.13	0.17	0.01	<0.01
N	6,284	6,284	6,284	6,284	6,284

Note: Standard errors are displayed in parentheses below marginal effects.
† p < .10, * p < .05, ** p < .01, *** p < .001

6.5 Couples

In order to understand the whole picture of parental education and childcare time, maternal and paternal daily childcare time in two-parent families has been added together in all four key activities as well as in total childcare time. The key independent variable is the education of both parents. Mother´s education is in the first place and father´s education in the second place, after a hyphen. Due to space constraints, university education is named "high," high school education "middle," and less than high school education "low". For example, "medium-high" refers to a couple where mother has secondary education and father has tertiary education. Due to the fact that some of the nine categories of household level education are relatively small, the two youngest age groups "below 1" and "from 1 to 2 years" are added together in the OLS analyses (Tables 2.7 and 2.8 below). The reference category for couple´s education is medium-medium, reference for the number of children is 1, the reference category for the youngest child´s age is 6-13 years, the reference for mother´s paid job is full-time. The statistically significant regression coefficients of couples´ education reveal whether there is any proof of an education gradient at household level. Statistically significant interaction terms between couple´s education and child age groups will show the developmental gradient at household level, i.e. whether couples where at least one parent has tertiary education tailor their time to children´s developmental needs more than couples with secondary education. The results are presented in Table 2.7 for workdays, and in Table 2.8 for week-ends below. In order to make the main findings more easily interpretable Figures 1 to 5 illustrate the probabilities of engaging in different childcare tasks on workdays and week-ends by child´s age and parental education. In the sample, 2/3 of couples with children have an educationally homogamous marriage, i.e. parents are married to a partner with the same educational attainment.

Results from the model predicting total child care time reflect to some extent the patterns that emerged in bivariate analysis and separate analysis for mothers and fathers. An "education gradient" exists so that university-educated couples (high-high) have a higher probability to engage in basic care and management tasks during workdays, and in basic care and play during week-ends. Moreover, there exist a "developmental gradient" in total childcare time of highly educated homogamous couples when the youngest child is aged from 0 to 2 years on week-end days. The gap between university-educated couples and high school-educated couples in total care time is over 25 minutes per week-end day when youngest children are aged below 2, but roughly 10 minutes when youngest children are aged from 3 to 5, and only 5 minutes when children are aged from 6 to 13.

The differences between families are even greater with tobit analysis, but the general patterns are the same. Families with two lowly educated parents spend less time with their 6 to 13-year-old children during week-end than during workdays.

For couples´ propensity to engage in basic care, significant negative interactions emerge for low-medium and low-low couples and youngest child age groups that suggest a "developmental gradient" in couple´s time in basic care. The "education gradient" of basic care is on average 9 per cent greater for high-high couples during workdays, and 8 per cent greater during week-ends when compared to medium-medium couple. Highly educated couples have a higher probability to engage in basic care than couples with high school education or less during all developmental periods and days of the week. Still, the difference in real minutes is significantly larger during week-ends when the youngest children are infants. During week-ends, the gap between highly educated couples and couples with medium education is 64 minutes when children are aged 0, and 14 minutes when children are from 6 to 13 years old. For example, a highly educated couple with an infant spends on average 21 minutes more on basic care during week-ends than on workdays.

The education gradient is statistically significant only during week-ends when highly educated couples play with children for 8 more minutes than couples with medium education (see Table 2.8). A developmental gradient in play between couples with tertiary and secondary education is evident during week-ends when highly educated couples devote 25 minutes per day more on playing with their toddlers. However, couples with less than secondary education devote 10 minutes less on play with their children aged below age 2 when compared to couples with secondary education during week-ends. In the case of play, statistically significant difference exists between lowly educated couples and more educated couples. When the average minutes spent in play are analysed, then we see that highly educated couples spend on average 35 per cent of extra time on playing with 1-to-2-year-old children during week-ends than couples with medium education. OLS regression does not reveal any education gradient in teaching, instead a developmental gradient emerges for week-end days (Table 2.8). Highly educated couples add 11 minutes to teaching time with their 3 to 5 year-olds. Lowly educated couples with 3 to 5-year-old children devote 16 minutes per day less on teaching than couples with medium education during workdays (Table 2.7). Although management was measured quite differently in Italian data compared to the American data, the interaction terms between highly educated families and child age groups, suggest that such families engage more in child management with their 6 to 13-year-olds than with younger children, during workdays (Table 2.7). The results of week-ends are mixed.

Table 2.7. OLS results for couples´ time spent in each activity on workdays

	(1)	(2)	(3)	(4)	(5)
	Total childcare	Basic care	Play	Teach	Mgmt
High-High	20.53**	**16.08*** **	-1.29	3.40	2.33
	(7.84)	(5.94)	(3.43)	(3.12)	(2.25)
High-Medium	-3.41	2.20	-6.68	-2.74	3.80
	(10.98)	(7.06)	(4.80)	(4.37)	(3.15)
High-Low	65.06***	30.10**	22.90***	15.18*	-3.14
	(16.36)	(10.52)	(7.15)	(6.51)	(4.69)
Medium-High	1.77	-0.01	-2.75	3.41	1.12
	(8.52)	(5.48)	(3.73)	(3.39)	(2.45)
Medium-Low	0.88	-0.71	-3.46	0.98	4.06*
	(5.78)	(3.72)	(2.53)	(2.30)	(1.66)
Low-High	-34.66†	-13.97	9.69	-23.94**	-6.43
	(20.90)	(13.44)	(9.14)	(8.31)	(6.00)
Low-Medium	-6.18	-1.10	-0.20	-3.89	-0.98
	(6.66)	(4.28)	(2.91)	(2.65)	(1.91)
Low-Low	-8.07†	-1.74	-1.42	**-3.43**†	-1.45
	(4.64)	(2.99)	(2.03)	(1.85)	(1.33)
Youngest Child Aged 0-2	155.83***	116.29***	53.07***	-10.64***	-2.84
	(6.21)	(4.00)	(2.72)	(2.47)	(1.78)
Youngest Child Aged 3-5	68.74***	45.73***	10.45***	6.49*	6.33**
	(6.94)	(4.47)	(3.04)	(2.76)	(1.99)
High-High x 0-2	4.02	3.75	-0.41	-4.04	4.65
	(12.79)	(8.23)	(5.59)	(5.09)	(3.67)
High-High x 3-5	-8.88	-6.62	20.34***	-14.58*	-8.27*
	(14.41)	(9.27)	(6.30)	(5.73)	(4.14)
High-Medium x 0-2	3.95	-4.37	8.36	0.82	-0.91
	(15.31)	(9.85)	(6.70)	(6.09)	(4.40)
High-Medium x 3-5	25.66	18.20	16.76*	-1.78	-7.78
	(18.47)	(11.88)	(8.08)	(7.35)	(5.30)
High-Low x 0-2	-20.19	-10.38	-22.86*	-3.82	16.83*
	(23.01)	(14.80)	(10.07)	(9.16)	(6.61)
High-Low x 3-5	-103.82***	-34.50†	-6.81	-47.67***	-15.09†
	(31.12)	(20.02)	(13.61)	(12.38)	(8.93)
Medium-High x 0-2	29.30†	35.19***	-1.90	-9.69	5.65
	(15.75)	(10.13)	(6.89)	(6.27)	(4.52)
Medium-High x 3-5	-3.55	-6.27	9.33	-9.18	2.32

	(17.51)	(11.26)	(7.66)	(6.97)	(5.03)
Medium-Low x 0-2	-3.09	7.80	3.68	-8.93*	-5.48†
	(10.17)	(6.54)	(4.45)	(4.05)	(2.92)
Medium-Low x 3-5	-25.61*	-23.70***	9.93*	-3.41	-8.67**
	(10.73)	(6.90)	(4.69)	(4.27)	(3.08)
Low-High x 0-2	-88.60	-68.89	-12.18	-3.08	-4.56
	(82.68)	(53.18)	(36.16)	(32.90)	(23.74)
Low-High x 3-5	116.92*	171.38***	-45.90†	4.03	-12.83
	(55.01)	(35.38)	(24.06)	(21.89)	(15.79)
Low-Medium x 0-2	-55.73***	-24.55**	-28.49***	2.35	-5.09
	(12.83)	(8.26)	(5.61)	(5.11)	(3.68)
Low-Medium x 3-5	-8.05	-21.69*	19.58***	-2.28	-3.92
	(13.63)	(8.77)	(5.96)	(5.42)	(3.91)
Low-Low x 0-2	-30.53***	**-13.84***	**-14.37*****	-1.42	-0.92
	(8.49)	(5.46)	(3.71)	(3.38)	(2.43)
Low-Low x 3-5	-34.08***	-22.53***	6.11	**-15.77*****	-2.17
	(9.63)	(6.20)	(4.21)	(3.83)	(2.77)
Mother works part-time	6.97†	3.47	2.23	-0.81	2.01†
	(3.85)	(2.48)	(1.68)	(1.53)	(1.10)
Mother not employed	17.79***	8.57***	-0.17	7.73***	1.59†
	(3.14)	(2.02)	(1.37)	(1.25)	(0.90)
Mother´s age	-2.64***	-1.38***	-0.66***	-0.48***	-0.11
	(0.26)	(0.16)	(0.11)	(0.10)	(0.07)
N Child: Two	16.61***	13.37***	-9.54***	9.94***	2.79***
	(3.03)	(1.95)	(1.33)	(1.21)	(0.87)
N Child: Tree or more	11.51**	12.49***	-12.90***	11.10***	0.77
	(4.33)	(2.79)	(1.90)	(1.72)	(1.24)
Boy in family	5.07†	1.35	-0.87	1.19	3.43***
	(2.64)	(1.70)	(1.15)	(1.05)	(0.76)
Pre-school care	-4.53	-3.18	13.11***	-14.60***	0.11
	(4.22)	(2.72)	(1.85)	(1.68)	(1.21)
Constant	172.69***	70.10***	46.34***	43.97***	12.42***
	(11.51)	(7.40)	(5.03)	(4.58)	(3.30)
Adj R-squared	0.28	0.34	0.23	0.06	0.01
N	7,433	7,433	7,433	7,433	7,433

Note: Standard errors are displayed in parentheses below marginal effects.
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 2.8. OLS results for couples´ time spent in each activity on week-ends

	(1)	(2)	(3)	(4)	(5)
	Total childcare	Basic care	Play	Teach	Mgmt
High-High	13.53*	**9.33***	**6.88***	3.53	-6.26***
	(6.58)	(4.30)	(3.44)	(2.31)	(1.75)
High-Medium	4.72	1.03	5.58	1.54	-3.48†
	(7.50)	(4.90)	(3.92)	(2.63)	(2.00)
High-Low	66.19***	19.59†	32.78***	8.18	5.60
	(15.99)	(10.45)	(8.36)	(5.61)	(4.26)
Medium-High	26.61***	6.66	3.34	17.47***	-0.89
	(7.18)	(4.69)	(3.75)	(2.52)	(1.91)
Medium-Low	1.74	-0.19	2.32	1.08	-1.52
	(4.82)	(3.15)	(2.52)	(1.69)	(1.28)
Low-High	-29.71†	-10.13	1.52	-16.45**	-4.68
	(16.42)	(10.73)	(8.58)	(5.75)	(4.37)
Low-Medium	-7.97	-0.31	-2.70	-3.85*	-1.14
	(5.36)	(3.50)	(2.80)	(1.88)	(1.43)
Low-Low	-24.26***	**-9.60*****	-3.10	**-8.56*****	-2.99**
	(3.85)	(2.51)	(2.01)	(1.35)	(1.03)
Youngest Child Aged 0-2	169.75***	121.66***	59.84***	-7.83***	-3.92**
	(5.26)	(3.44)	(2.75)	(1.84)	(1.40)
Youngest Child Aged 3-5	71.04***	41.79***	37.67***	-3.45†	-4.97***
	(5.61)	(3.67)	(2.93)	(1.97)	(1.49)
High-High x 0-2	50.66***	**27.53*****	**24.84*****	-6.69†	4.95†
	(10.46)	(6.84)	(5.47)	(3.67)	(2.79)
High-High x 3-5	16.72	0.90	-4.27	**10.86***	9.21**
	(12.30)	(8.04)	(6.42)	(4.31)	(3.28)
High-Medium x 0-2	29.60**	17.05*	13.15*	0.35	-0.98
	(11.51)	(7.53)	(6.02)	(4.04)	(3.07)
High-Medium x 3-5	27.42*	15.74*	4.07	6.44	1.13
	(11.98)	(7.83)	(6.26)	(4.20)	(3.19)
High-Low x 0-2	-62.65**	-8.07	-33.72**	-9.46	-11.42†
	(24.46)	(15.99)	(12.78)	(8.57)	(6.51)
High-Low x 3-5	-33.99	11.60	-31.40*	-2.48	-11.71†
	(24.24)	(15.84)	(12.67)	(8.50)	(6.45)
Medium-High x 0-2	-22.89	-2.40	-13.22†	-8.96†	1.67
	(14.15)	(9.25)	(7.40)	(4.96)	(3.77)
Medium-High x 3-5	-17.85	-26.69**	10.31	-7.00	5.50

	(14.30)	(9.35)	(7.47)	(5.01)	(3.81)
Medium-Low x 0-2	13.54	1.97	13.11**	-2.23	0.67
	(8.28)	(5.42)	(4.33)	(2.90)	(2.21)
Medium-Low x 3-5	-18.01*	-2.00	-15.60***	-3.78	3.64
	(9.01)	(5.89)	(4.71)	(3.16)	(2.40)
Low-High x 0-2	66.40*	17.91	31.14*	-1.21	18.52*
	(30.34)	(19.84)	(15.86)	(10.64)	(8.08)
Low-High x 3-5	104.83**	-7.38	56.10**	52.21***	3.82
	(38.81)	(25.37)	(20.28)	(13.60)	(10.33)
Low-Medium x 0-2	4.81	0.01	1.44	6.14†	-2.81
	(10.47)	(6.84)	(5.47)	(3.67)	(2.79)
Low-Medium x 3-5	-17.79†	-7.34	-16.33**	2.77	3.08
	(10.73)	(7.02)	(5.61)	(3.76)	(2.86)
Low-Low x 0-2	-29.29***	**-28.09***	**-9.74***	6.98**	1.57
	(7.37)	(4.82)	(3.85)	(2.58)	(1.96)
Low-Low x 3-5	0.18	-5.94	-4.52	4.12	6.46***
	(7.47)	(4.88)	(3.90)	(2.62)	(1.99)
Mother works part-time	8.40**	-1.32	8.19***	0.50	1.01
	(3.10)	(2.03)	(1.62)	(1.09)	(0.83)
Mother not employed	6.98**	4.12*	2.44†	2.33*	-1.95**
	(2.62)	(1.71)	(1.37)	(0.92)	(0.70)
Mother´s age	-2.25***	-1.58***	-0.40***	-0.24***	-0.04
	(0.21)	(0.14)	(0.11)	(0.07)	(0.06)
N Child: Two	12.64***	14.03***	-10.02***	7.15***	1.45*
	(2.50)	(1.64)	(1.31)	(0.88)	(0.67)
N Child: Tree or more	14.10***	19.62***	-15.55***	9.84***	0.15
	(3.57)	(2.33)	(1.86)	(1.25)	(0.95)
Boy in family	10.14***	1.65	4.15***	1.94*	2.39***
	(2.17)	(1.42)	(1.13)	(0.76)	(0.58)
Pre-school care	10.84**	5.88**	14.46***	-8.03***	-1.43
	(3.50)	(2.29)	(1.83)	(1.23)	(0.93)
Constant	153.49***	82.69***	31.53***	28.32***	11.11***
	(9.42)	(6.16)	(4.92)	(3.30)	(2.51)
Adj R-squared	0.32	0.33	0.22	0.03	0.01
N	12,515	12,515	12,515	12,515	12,515

Note: Standard errors are displayed in parentheses below marginal effects.
† p < .10, * p < .05, ** p < .01, *** p < .001

6.6 Childcare in educationally heterogamous couples

Although nearly 2/3 of couples in my sample are educationally homogamous, there exist educationally heterogamous couples in our sample and in Italy. Especially interesting cases are families with extreme educational heterogamy, i.e. couples where one parent has university degree and the other one has less than high school education. For couples where the wife has university diploma and the husband less than high school degree (high-low), the coefficients for basic care, playing and teaching are greater than for a high-high couple during workdays, and they also devote more time on basic care and playing during week-end days than any other couple. However, some interaction terms are negative. When both coefficients and interaction terms are taken into account, a 0 to 2 year-old child with highly educated mother and lowly educated father, receives about 45 extra daily childcare minutes during workdays, and 61 childcare minutes less during week-end days compared to a child with two highly educated parents. Seems that mothers who are married to less educated husbands increase the time that they would otherwise spend on children when they would be married to equally educated husbands during weekdays. Still, they need to rest during week-ends. Wives in high-low marriages may also have greater bargaining power that may increase the childcare inputs from their husbands.

In couples where the husband has university education, and the wife has less than high school degree (low-high), 3 to 5 year-old children receive 131 extra minutes of daily childcare time compared to their counterparts with two highly educated parents during workdays. Low-high families tailor the composition of their their childcare time according to child development literature during week-ends. For instance by adding 31 minutes of playing time with toddlers and 52 minutes of teaching when children are aged from 3 to 5.

Children in educationally heterogamous families with one highly educated and one lowly educated parent receive more direct parental childcare than children with two parents with medium education, and in some cases even more total child care time than children with two highly educated parents. This finding may mean two things. First, the highly educated parent in educationally heterogamous families may try to make up the relative disadvantage that their children face, and do more childcare than highly educated parents in educationally homogamous families do. Second, the lowly educated parent in educationally heterogamous families may try to invest more in children than lowly educated parents in educationally homogamous families for knowing more about child development from the more educated spouse, or in order to gain approval from the highly educated

spouse (bargaining). These explanations are not mutually exclusive. Although children in educationally heterogamous families where at least one parent has higher education do not seem to be very disadvantaged in terms of total daily childcare minutes, the composition of that childcare time differs from families with two highly educated parents.

6.7 Propensities

Additional information on couples´ childcare comes from analysing the propensities to engage in any childcare activity. The graphs below show the predicted probabilities from a separate linear probability model (available upon request) of different childcare activities by parental education, and the age of the youngest child in family. It is evident from Figure 2.1 that families with educated mothers (mother´s education firstletter, father´s second letter: hh, hm, hl) have a much higher probability to provide childcare than the reference group of parents with secondary education (mm).

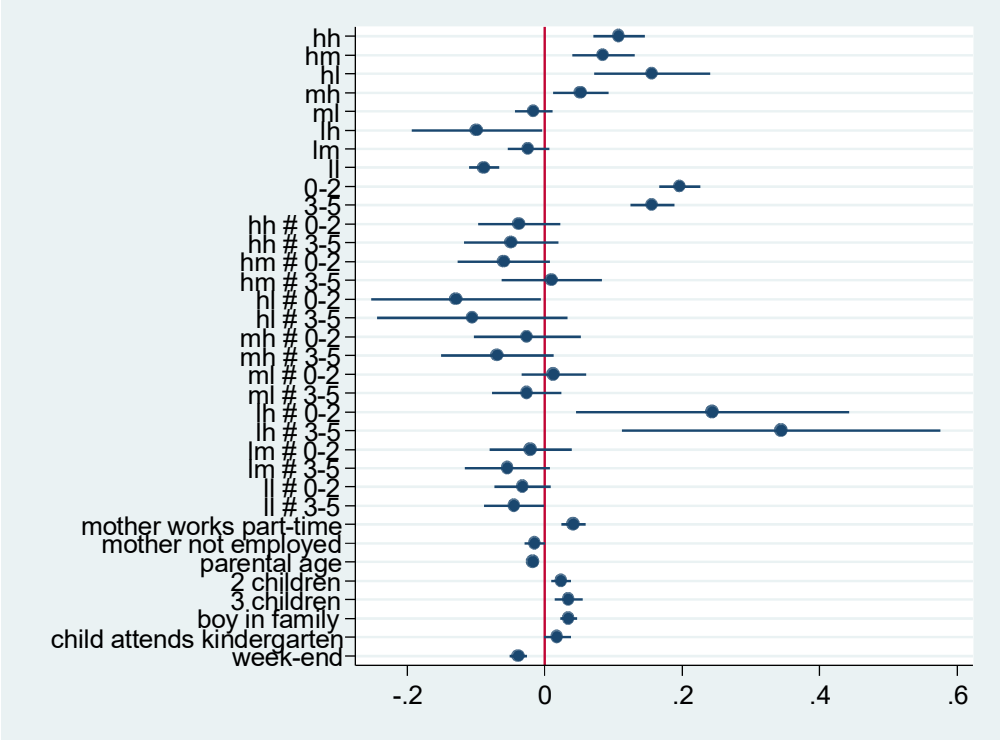


Figure 2.1 The probability of engaging in childcare on an average day by the education of both parents and the age of the youngest child, with 95% confidence intervals

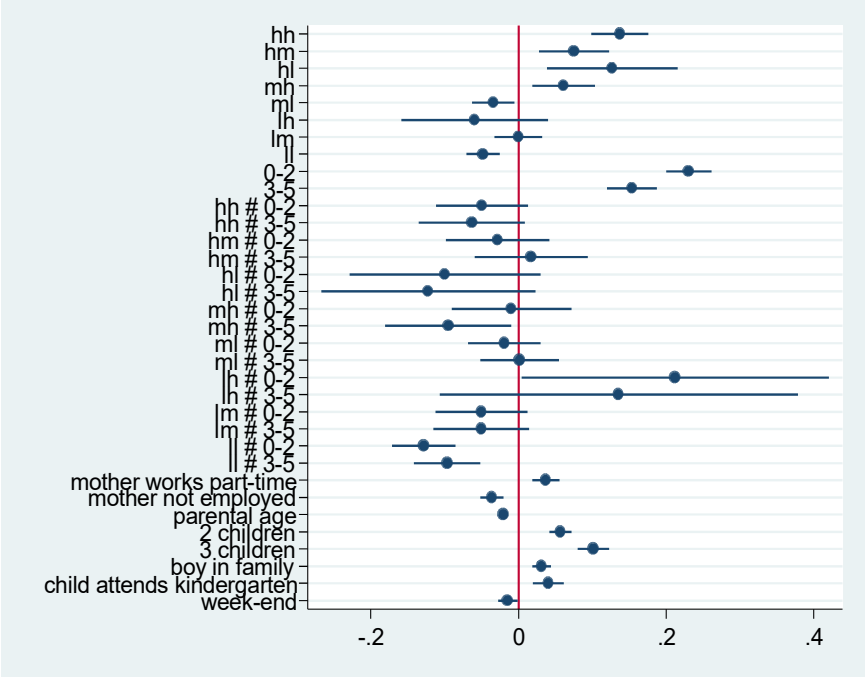


Figure 2.2 The probability of engaging in basic care on an average day by the education of both parents and the age of the youngest child, with 95% confidence intervals

The probabilities of doing basic care are quite similar with total childcare, with highly educated couples providing basic care to their children of different ages more often than couples with secondary education or less (Figure 2.2).

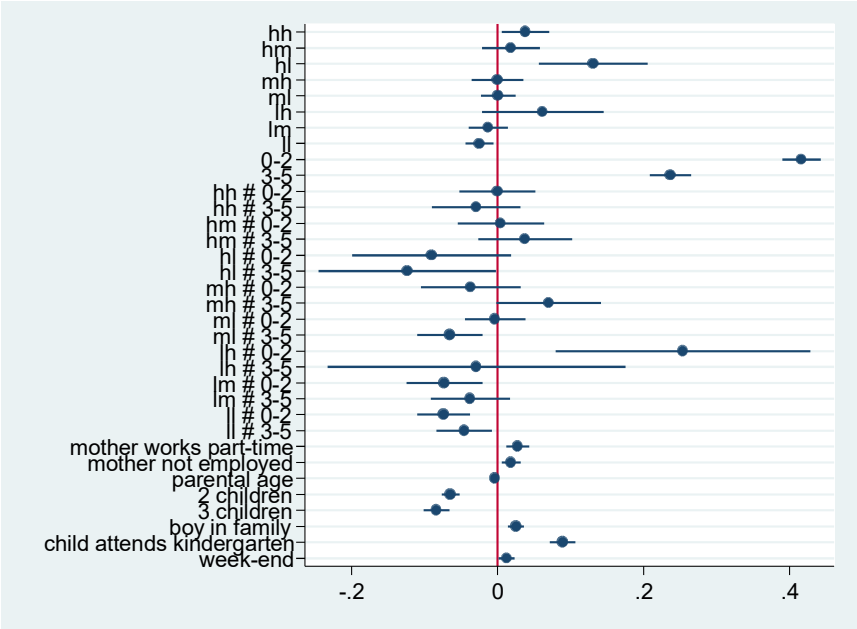


Figure 2.3 The probability of engaging in playing on an average day by the education of both parents and the age of the youngest child, with 95% confidence intervals

Quite a similar pattern emerges for play. As Figure 2.3 shows, highly educated couples have more or less the same probability of playing with a child as couples with high school education, and lowly educated couples (ll) have a lower probability of playing with children. When the youngest child is aged from 0 to 2 or from 3 to 5, parents have a 2-4 per cent higher probability of playing with their children. When the youngest child attends kindergarten, parents increase their probabiity to play with the child at home. The key age for playing with children is between 1 and 2 years of age. Families with lowly educated mothers and highly educated fathers (lh) act in accordance with this suggestion.

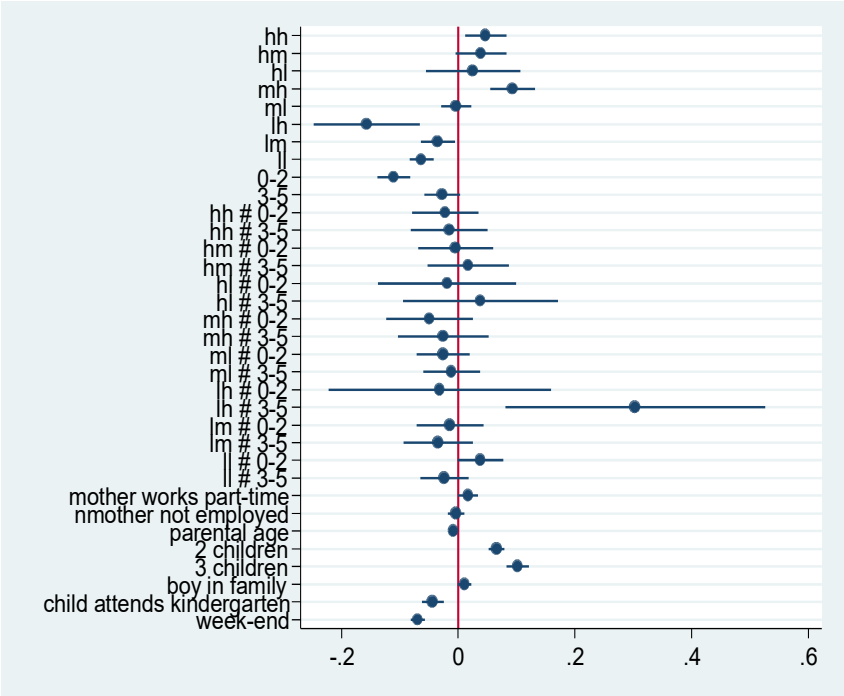


Figure 2.4 The probability of engaging in teaching on an average day by the education of both parents and the age of the youngest child, with 95% confidence intervals

According to child development literature, the key age for teaching children is from 3 to 5 years of age. Figure 2.4 shows that highly educated couples (hh, hm, mh) and have the highest probability of teaching their children (education gradient). However, highly educated fathers with lowly educated wives have the biggest positive interaction term that shows their increased probability to teach children at the right age, i.e. when children are from 3 to 5 years old.

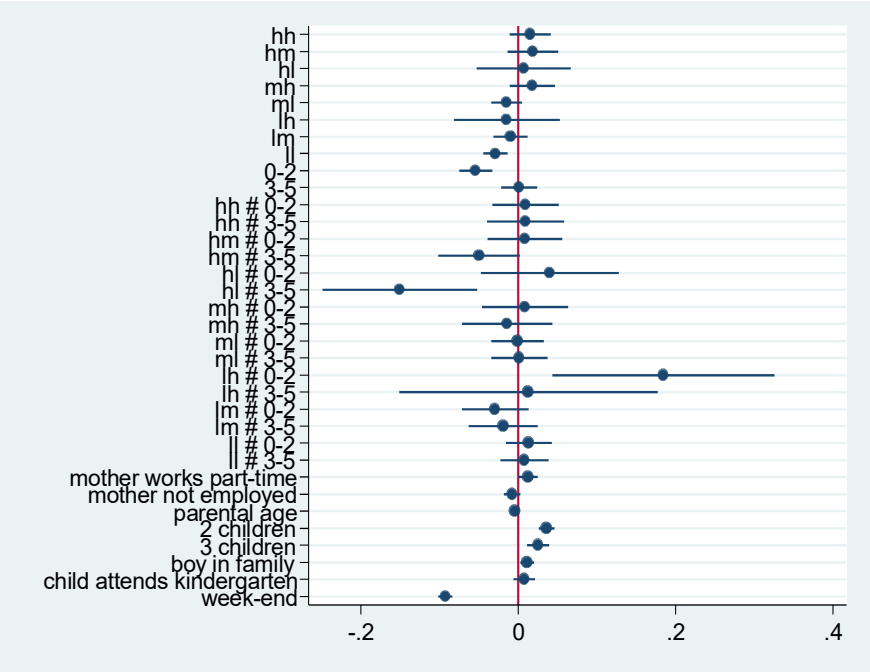


Figure 2.5 The probability of engaging in child management on an average day by the education of both parents and the age of the youngest child, with 95% confidence intervals

Finally, time use patterns of child management by Italian parents diverge largely from child development literature as well as from the results from USA (Kalil et al., 2012). The target age for child development is 6 to 13 years of age. Only 15 per cent of Italian mothers, and 7 per cent of Italian fathers were engaged in management tasks during the day when they filled in a time-diary (Table 2.1). As Figure 2.5 shows, Italian parents have quite similar propensity to engage in child development during all days of the week, and across different child age groups.

7 Discussion and Conclusion

To sum up results from OLS analyses (Tables 2.3 to 2.8), it becomes clear that in order to understand the complex dynamics of parental childcare in the family, both mother´s, and father´s time should be considered and a distinction be made between workdays and week-ends. For example, during workdays, children with two highly educated parents receive additional child management time from their mothers, and additional basic care time from their fathers when compared to children with two parents with secondary education. During week-ends when parents are expected to be more free to spend time with their children, children with two highly educated parents receive additional basic care, play, teaching and management time from parents which results in higher amount of full childcare time by both mothers and fathers during week-ends when compared to children with two parents with secondary education.

Highly educated Italian parents tailor their time like US mothers do (Kalil et al., 2012), but to somewhat smaller extent. Educational gaps in parental child care time remain statistically and substantially significant with all the control variables. While holding all other variables constant and regarding only statistically significant coefficients, 0 to 2 year-olds with two university-educated parents receive 231 extra childcare minutes (nearly 4 hours) per week, and 0 to 2 year-olds with two parents with secondary education receive additional 300 childcare minutes per week (5 hours), when compared to children of the same age growing in families with two parents who have less than high school education. Thus the weekly primary childcare gap for an infant is nearly 9 hours between highly educated and lowly educated families (calculations based on Table 2.7 and 2.8). This net difference masks important variations in basic care, play, teaching, and management which are all more pro child development in families with highly educated parents. Moreover, childcare time with highly educated parents might be more "dense" or more intellectually evolving than the same time units spent in lowly educated families.

7.1 Developmental Gradient

The present study shows how both parents´ human capital (i.e. education) influence not only the amount of time they spend with children (which may not be related to efficiency in a linear fashion) but also the composition of that time with their children at different ages. The "education gradient"

in parental childcare is found in basic care, playing, and overall childcare. More interestingly, important variations emerge in activity patterns according to child´s age. Highly educated mothers and fathers shift the composition of their time in order to promote child development at various developmental stages, especially during week-ends when they are more free from labour market constraints. "Developmental gradient" is present in basic care, playing, and teaching during week-end days.

According to hypotheses 1, highly educated parents are expected to spend more time in basic care when the child is aged below 1 year, more time in playing with children when the child is 1 to 3 years old, more time in teaching when the child is from 3 to 5 years old, and more time in child management when the child is from 6 to 13 years old. Hypotheses 1 is only partially correct in the Italian case. According to bivariate statistics, two highly educated parents 1) spend more time on basic care during week-ends when children are aged 0 , and 2) more time on playing during week-ends when children are aged 1 or 2, compared to parents with medium education. When control variables are introduced, a statistically significant developmental gradient emerges for basic care, playing and teaching during week-ends in high-high families when compared to medium-medium families. Low-low families act quite differently when compared to medium-medium families (Tables 2.7 and 2.8).

When comparing the results from Italy to those of USA, we have to be aware of the fact that activity codes inside each broad activity category differ from each other in the two countries (Table 2.2). While management tasks in USA include also activities that are done without children, e.g. waiting for children and organizing children´s free time, management tasks in Italy include mainly accompanying children. Therefore, it is not surprising that child management is not that well captured in Italy compared to the USA. Another major difference between findings from Italy and USA concerns teaching children. While the peak teaching age in USA is from age 3 to 5 (preschool period), in Italy the teaching gap between highly and lowly educated parents widens further at early school age from age 6 to 13 yeas. This may be due to the peculiarity of the Italian school system which puts more emphasis on homework than other school systems (Mencarini et al., 2014). These differences between the two countries do not have to mean that Italian parents are less aware of child development compared to the parents in the USA. The differences may well be contextual.

In a nutshell, both the "education gradient" and the "developmental gradient" exist in Italian families with two university-educated parents. The developmental gradient is particularly

pronounced among university-educated mothers and fathers. This general pattern echoes the findings reported by Ramey and Ramey (2010), who describe a "rugrat race" among highly educated parents, meaning that such parents spend an ever increasing amount of time in childcare in order to increase the chances that their children would gain access into a good college. In Italian case, the education gradient is most apparent in households with the youngest children, which may mean that parents have adopted the mantra, present in academic research (e.g. Heckman et al., 2013) and popular press, that parental investments in the earliest years are key ingredients for children´s lifelong success. Though the current data lacks any measure of child outcomes that could be used to analyse the effect of increased parental involvement on IQ, social skills, school grades etc., there are some recent population data based studies indicating that the first-borns have higher IQ-scores than the following children, and that the second-born child can only obtain the same IQ-score as the first-born in case when the first child dies in childhood (please see Kristensen & Bjerkedal, 2007 for Norway; Barclay, 2015 for Sweden). These studies stress that parental time investments are crucial for IQ development. However, a more recent study from Sweden where more control variables were employed, underlines the importance of spacing children (Barclay, 2015). When the age difference between siblings is 6 years or more, the following child can be considered as a functional firts-born having the same IQ as first-borns usually have. This result is also underlining the importance of parental time investments for child development.

7.2 Educational Homogamy and Heterogamy

In his latest book, Esping-Andersen (2009) warns about increasing social polarisation based on the educational homogamy of couples. It happens because people tend to marry a partner with similar values, interests and a world-view. Bernardi (2003) has found that educational homogamy has started to increase for the youngest cohort in Italy. In the nationally representative sample used in this thesis, approximately 2/3 of couples with children aged from 0 to 13 years have an educationally homogamous marriage. The results indicate that university-educated parents, parents with high school diploma, and parents with less than high school diploma all have statistically and substantially significant differences in childrearing activities. In purely quantitative terms, this results in a 9 hour weekly childcare gap in primary activities among 0 to 2 year-old children between a highly educated homogamous family and a lowly educated homogamous family.

Analysing both mother´s and father´s time use simultaneously provides a deeper insight into the

everyday decisions, and "rugrat race" in child care. According to hypothesis 2: *In educationally heterogamous families, the more educated parent tailors his/her childcare time more than is common for highly educated parents in homogamous couples in order to compensate for the lack of childcare knowledge from the spouse*. The most extreme cases of educational heterogamy are those where one spouse has university education and the other less than high school education. The results indicate that when a highly-educated mother is married to a lowly educated husband, their children receive even more parental care on weekly basis than children with two highly educated parents. This finding is mainly driven by highly educated mothers doing additional childcare tasks. It may partially be driven by the greater bargaining power of women in these families which may increase childcare inputs from the lowly educated husband. However, fathers in Italy mainly participate in childcare during week-ends which means that during workdays highly educated mothers have to cope alone with childcare tasks in order to avoid downward educational mobility of their children.

A different case of extreme educational heterogamy happens when a university-educated man marries a woman with less than high school diploma. In such families, children do not receive less childcare than in high-high families. During week-ends, these children receive more parental childcare than children with two parents with secondary education, and the developmental gradient is evident in playing and teaching activities over the week-end. Seems that highly educated fathers in educationally heterogamous families also compensate for the lack of childcare knowledge and involvement from their lowly educated wives. Longitudinal data with child outcomes is needed in order to answer the question whether the children in educationally heterogamous families turn out like their highly educated or lowly educated parent. At the moment we can conclude that in educationally heterogamous families the parent with higher education is more involved in child raising than is common for highly educated parents in educationally homogamous couples. From a child´s perspective, it is crucial to have at least one parent with tertiary education.

7.3 Time Constraints

"Time famine" or "time squeeze" is an increasingly common part of contemporary family life. Time constraints are greatest for dual-earning couples with children. As mother´s higher education increases her chances to work, the highly educated couples should face more time constraints than couples with high school education or less where one parent is often working part-time or is at

home with children. Fathers and mothers with high school education may surpass parents with university education in total childcare at some child development levels during workdays. However, during week-ends, university-educated parents surpass less educated parents in their combined childcare time at all child development levels. Moreover, they tend to tailor their time more than less educated parents in order to foster child development at different stages. A separate analysis not presented here, reveals that the gender gap in childcare is smaller during week-ends. Although mothers who are employed full-time, spend less time in childcare than mothers who stay at home, the general findings on the education effect remain the same. The third hypothesis: *The educational gradient is stronger for Saturdays and Sundays in general and in particular for fathers* (see Table 2.8), finds empirical support.

In USA, the education gradient in childcare is more pronounced compared to Italy. For example, during week-ends mothers with university degree spend additional 82 minutes on all childcare when children are aged 0-2 compared to mothers with less than high school education (Kalil, Ryan& Corey, 2012). In Italy, mothers with tertiary education spend around 30 extra minutes on primary child care tasks on all days compared to lowly educated mothers (see Table 2.3 and 2.4). It is important to note that on average, Italian mothers spend more time in primary childcare at all child developmental stages regardless of their educational background than American mothers. This finding is important for child well-being scholarship, and may mean either that Italian mothers face less time constraints than American mothers with small children (if they face less time constraints, they may not need to tailor their childcare time that much), or that Italian mothers are more child-oriented, regardless of their educational background.

It is important to note three limitations of the current study. First, there is no data on child outcomes at various child development levels. Second, there is no longitudinal data on the same families with children. Due to these limitations it is impossible to assess the impact of various child care activities during different child development stages on children's school outcomes, enrolment rates to universities, future work, salary, marriage, parenthood, health, and life expectancy. However, previous research (e.g. Heckman, 2013; Lareau, 2009) implies that such future benefits exist for the "concerted cultivation" of children. Third, in the current analysis we do know which child receives the childcare minutes reported by parents. Please see Chapter 4 for birth order effects in parental childcare allocations. It is plausible to presume that the youngest child in the family receives more attention than older children. Therefore, the analyses are done based on the age of the youngest child in family just like Kalil et al. (2012) have done. Moreover 1/3 of Italian families in the sample

have only one child (Table 2.1).

The main contribution of my study is the focus on how both mother´s and father´s child care time in the same family varies across families with different educational backgrounds, and children of different ages, and across different days of week. Scholars have rarely conceptualized children's life stages as a central unit of analysis, and no-one has done it while analysing the full picture of parental childcare. The main results are: 1) both education gradient and developmental gradient exist in the childcare patterns of highly educated Italian parents, raising concerns about the diverging destinies of the children of university-educated parents and their less-advantaged peers, 2) child raising differs in educationally homogamous and heterogamous families, in the latter the more educated parent compensates for the deficit from the less-educated parent´s side 3) the education gradient is greater during week-ends showing that without work-related time constraints during workdays, the education gradient in childcare would be even greater in Italy.

References to Chapter 2

ADAMSON, L. B. & BAKEMAN, R. 1984. Mothers' communicative acts: Changes during infancy. *Infant Behavior & Development,* 7**,** 467–478.

AINSWORTH, M. D., BLEHAR, M. C., WATERS, E. & WALL, S. 1978. *Patterns of attachment: A psychological study of the strange situation,* Hillsdale, NJ, Erlbaum.

AMEMIYA, T. 1973. Regression analysis when the dependent variable is truncated normal. *Econometrica,* 41**,** 997–1016.

ANGRIST, J. D. & PISCHKE, J. S. 2009. *Mostly harmless econometrics: An Empiricist´s Companion.* Princeton, Nj: Princeton University press.

ALWIN, D. 2004. Parenting practices. *In:* SCOTT, J., RICHARDS, M. & TREAS, J. (eds.) *Blackwell Companion to the Sociology of Families.* Oxford: Blackwell Publishers.

BARCLAY, K. J. 2015. A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence,* 49**,** 134–143.

BERGEN, D. & MAUER, D. 2000. Symbolic play, phonological awareness, and literacy skills at three age levels. *In:* ROSKOS, K. A. & CHRISTIE, J. F. (eds.) *Play and literacy in early childhood: Research from multiple perspectives.* Mahwah, NJ: Erlbaum.

BERK, L. E. 2001. *Awakening children's minds: How parents and teachers can make a difference,* New York, Oxford University Press.

BERNARDI, F., CHAKHAIA, L., LEOPOLD, L. 2017. 'Sing me a song with social significance': The (mis)use of statistical significance testing in European sociological research, European Sociological Review, 33(1), 1-15.

BERNARDI, F. 2003. Who Marries Whom in Italy? *In:* BLOSSFELD, H.-P. & TIMM, A. (eds.) *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies.* the Netherlands: Kluwer Academic Publishers.

BIANCHI, S. M. & ROBINSON, J. 1997. What did you do today? Children's use of time, family composition, and the acquisition of social capital. *Journal of Marriage and the Family,* 59**,** 332–344.

BLOSSFELD, H.-P. 2009. Educational Assortative Marriage in Comparative Perspective. *Annual Review of Sociology,* 35**,** 513-30.

BORNSTEIN, M. 2002. *Handbook of parenting (2nd ed., Vol. 1),* Mahwah, NJ, Erlbaum.

BOURDIEU, P. & PASSERON, J.-C. 1964. *Les Héritiers,* Paris.

BOWLBY, J. 1969. *Attachment and loss,* New York, Basic Books.

BRADLEY, R. H., CALDWELL, B. M. & ROCK, S. L. 1988. Home environment and school performance: A ten-year follow-up and examination of three models of environmental action. *Child Development,* 59**,** 852–867.

BRAZELTON, T. B. 1979. Evidence of communication during neonatal behavioural assessment. *In:* BULLOWA, M. (ed.) *Before speech: The beginning of human communication.* Cambridge: Cambridge University Press.

BREEN, R. 1996. *Regression Models. Censored, Sample-Selected, or Truncated Data,* Thousand Oaks, CA, Sage.

BREEN, R. & GOLDTHORPE, J. 1997. Explaining educational differentials: towards a formal rational action theory. *Rationality and Society,* 9**,** 275-305.

BUDIG, M. & FOLBRE, N. 2004. Activity, proximity or responsibility? Measuring parental childcare time. *In:* BITTMAN, M. & FOLBRE, N. (eds.) *Family Time: The Social Organization of Care.* New York: Routledge.

BUS, A. G., VAN IJZENDOORN, M. H. & PELLEGRINI, A. D. 1995. Joint book reading makes

for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research,* 65**,** 1-21.
CAREW, J. V. 1980. Experience and development of intelligence in young children at home and in day care. *Monographs of the Society for Research in Child Development,* 45**,** 1–115.
CASTIELLO, U., BECCHIO, C., ZOIA, S., NELINI, C., SARTORI, L., BLASON, L., D ´OTTAVIO, G., BULGHERONI, M. & GALLESE, V. 2010. Wired to be social: The ontogeny of human interaction. *PLoS ONE,* 5(10)**,** 1-10.
COLLINS, W. A., MADSEN, S. D. & SUSMAN-STILLMAN, A. 2002. Parenting during middle childhood. *In:* BORNSTEIN, M. (ed.) *Handbook of parenting (2nd ed., Vol. 1).* Mahwah, NJ: Erlbaum.
COVERMAN, S. 1985. Explaining husbands participation in domestic labour. *The Sociological Quarterly,* 26**,** 81-97.
CRAIG, L. 2006. Parental Education, Time in Paid Work and Time with Children: An Australian Time-Diary Analysis. *The British Journal of Sociology,* 57**,** 553-575.
DISHION, T. J., CAPALDI, D. M. & YOERGER, K. 1999. Middle childhood antecedents to progressions in male adolescent substance use: An ecological analysis of risk and protection. *Journal of Adolescent Research,* 14**,** 175–205.
DRYFOOS, J. 1999. The role of school in children's out-of-school time. *The Future of Children,* 9.
DUBOW, E. F., EDWARDS, D. & IPPOLITO, M. F. 1997. Life stressors, neighborhood disadvantage, and resources: A focus on inner-city children's adjustment. *Journal of Clinical Child Psychology,* 26**,** 130–144.
DUCKWORTH, E. 1972. The having of wonderful ideas. *Harvard Education Review,* 42**,** 217–231.
ELIAS, C. L. & BERK, L. E. 2002. Self-regulation in young children: Is there a role for sociodramatic play? *Early Childhood Research Quarterly,* 17**,** 1-17.
ERIKSON, E. H. 1968. *Identity, Youth and Crisis,* New York: W. W., Norton Company.
ESPING-ANDERSEN, G. 2009. *The Incomplete Revolution. Adapting to Women´s New Roles,* Cambridge, Polity Press.
GAUTHIER, A. H., SMEEDENG, T. M. & FURSTENBERG, F. F., JR. 2004. Are Parents Investing Less Time in Children? Trends in Selected Industrialized Countries. *Population and Development Review,* 30**,** 647-671.
GERSHUNY, J. 2000. *Changing Times: Work and Leisure in Postindustrial Society,* Oxford, England, Oxford University Press.
GRACIA, P. 2014. Fathers' Child Care Involvement and Children's Age in Spain: A Time Use Study on Differences by Education and Mothers' Employment. *European Sociological Review,* 0**,** 1-14.
GREENE, W. H. 2003. *Econometric analysis (5th ed.),* Upper Saddle River, NJ, Prentice Hall.
Guided tour on Tobit models [Online]. Available: http://econ.la.psu.edu/~hbierens/EasyRegTours/TOBIT.HTM [Accessed 26/05/2014]
GURYAN, J., HURST, E. & KEARNEY, M. 2008. Parental Education and Parental Time with Children. *Journal of Economic Perspectives,* 22**,** 23–46.
HART, B. & RISLEY, T. R. 1995. *Meaningful differences in the everyday experience of young American children,* Baltimore, MD: Paul H. Brooks.
HECKMAN, J. J. & KAUTZ, T. 2012. Hard Evidence on Soft Skills. *Labour Economics,* 19**,** 451-464.
HECKMAN, J. J., PINTO, R. & SAVELYEV, P. 2013. Understanding the Mechanisms Through Which an Influential Early Childhood Program Boosted Adult Outcomes. *American Economic Review,* 103**,** 2052-2086.
HOFF, E. 2003. The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development,* 74**,** 1368–1378.
HOFF, E. 2006. Language experience and language milestones during early childhood. *In:*

McCARTNEY, K. & PHILLIPS, D. (eds.) *Handbook of early child development.* Malden, MA: Blackwell Publishing.
HOOK, J. L. & CHALASANI, S. 2008. Gendered Expectations? Reconsidering Single Fathers' Child-Care Time. *Journal of Marriage and Family,* 70**,** 978-990.
HOOK, J. L. & WOLFE, C. 2012. 'New Fathers? Residential fathers' time with children in four countries. *Journal of Family Issues,* 33**,** 415-450.
HUBLEY, P. & TREVARTHEN, C. 1979. Sharing a task in infancy. *In:* UZGIRIS, E. (ed.) *Social interaction and communication during infancy.* San Francisco, CA: Jossey-Bass.
KALIL, A., RYAN, R. & COREY, M. 2012. Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children. *Demography,* 49**,** 1361–1383.
KEREN, M., FELDMAN, R., NAMDARI-WEINBAUM, I., SPITZER, S. & TYANO, S. 2005. Relations between parents' interactive style in dyadic and triadic play and toddlers' symbolic capacity. *The American Journal of Orthopsychiatry,* 75**,** 599–607.
KRISTENSEN, P. & BJERKEDAL, T. 2007. Explaining the relation between birth order and intelligence. *Science,* 316**,** 1717.
LAMB, M. E. & LEWIS, C. 2010. The Development and Significance of Father-Child Relationships in Two-Parent Families. *In:* LAMB, M. E. (ed.) *The Role of the Father in Child Development. (5th ed).* Hoboken, NJ, US: John Wiley & Sons, Inc.
LAREAU, A. 1989. *Home advantage: Social class and parental intervention in elementary education,* New York, The Falmer Press.
LAREAU, A. 2011. *Unequal Childhoods. Class, Race, and Family Life. 2nd edition with an Update a Decade Later,* Berkley, University of California Press.
LAREAU, A. & WEININGER, E. B. 2008. Class and the Transition to Adulthood. *In:* LAREAU, A. & CONLEY, D. (eds.) *Social Class. How Does it Work?* New York: Russell Sage Foundation.
LINDSEY, E. W. & MIZE, J. 2000. Parent–child physical and pretence play: Links to children's social competence. *Merrill-Palmer Quarterly,* 46**,** 565–591.
McLANAHAN, S. 2004. Diverging destinies: How children fare under the second demographic transition. *Demography,* 41**,** 607-627.
MENCARINI, L., PASQUA, S. & ROMITI, A. 2014. Children´s time use and family structure in Italy. *Families and Societies Working Paper Series,* 21**,** 1-32.
MICHAEL, R. T. 1972. *The effect of education on efficiency in consumption,* Cambridge, MA, National Bureau of Economic Research.
MOOD, C. 2010. Logistic Regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, 26 (1), 67-82.
NAGY, E. 2011. The newborn infant: A missing stage in developmental psychology. *Infant and Child Development,* 20(1)**,** 3-19.
NICHD Early Child Care Research Network. 2004. Fathers' and mothers' parenting behavior and beliefs as predictors of children's social adjustment in the transition to school. *Journal of Family Psychology,* 18**,** 628–638.
OECD, 2013a. Education at a Glance. Country Note. Italy. Available: http://www.oecd.org/edu/Italy_EAG2013%20Country%20Note.pdf [Accessed 16/10/2014]
OECD, 2013b. Education at a Glance. Country Note. United States. Availabe: http://www.oecd.org/edu/United%20States%20_EAG2013%20Country%20Note.pdf [Accessed 16/10/2014]
PANKSEPP, J. 2007. Can PLAY diminish ADHD and facilitate the construction of the social brain? *Journal of the Canadian Academy of Child and Adolescent Psychiatry,* 16(2)**,** 5-14.
PARPAL, M. & MACCOBY, E. E. 1985. Maternal responsiveness and subsequent child

compliance. *Child Development,* 56**,** 1326–1334.
PIAGET, J. 1952. *The origins of intelligence in children,* New York, Norton.
PINDERHUGHES, E. E., DODGE, K. A., BATES, J. E., PETTIT, G. S. & ZELLI, A. 2000. Discipline responses: Influences of parents' socioeconomic status, ethnicity, beliefs about parenting, stress, and cognitive-emotional processes. *Journal of Family Psychology,* 14**,** 380–400.
PLECK, J. H. 2010. Paternal involvement: Revised conceptualization and theoretical linkages with child outcomes. *In:* LAMB, M. E. (ed.) *The Role of the Father in Child Development (5th ed.).* Hoboken, NJ, US: John Wiley & Sons Inc.
PRESSER, H. B. 1994. Employment Schedules Among Dual-Earner Spouses and the Division of Household Labor by Gender. *American Sociological Review,* 59**,** 348-364.
RAMEY, G. & RAMEY, V. 2010. *The rug rat race,* Washington, DC, The Brookings Institution.
REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *electronic International Journal of Time Use Research (eIJTUR),* 12(1)**,** 49-72.
ROBERTS, J., JURGENS, J. & BURCHINAL, M. 2005. The role of home literacy practices in preschool children's language and emergent literacy skills. *Journal of Speech, Language, and Hearing Research,* 48**,** 345–359.
ROBINSON, J. 1985. The validity and reliability of diaries versus alternative time use measures. *In:* JUSTER, F. T. & STAFFORD, F. P. (eds.) *Time, Goods, and Well-Being.* Ann Arbor: University of Michigan Press.
ROGOFF, R. 2003. *The cultural nature of human development,* New York, Oxford University Press.
RUFF, H. A. & CAPOZZOLI, M. C. 2003. Development of attention and distractibility in the first 4 years of life. *Developmental Psychology,* 39**,** 877–890.
RYAN, R., KALIL, A. & COREY, M. 2011. Fathers´ Time Investment: The Developmental Gradient in Fathers´ Time with Children. *Working Paper.* Georgetown University, University of Chicago.
SAYER, LIANA C., BIANCHI, SUZANNE M. & ROBINSON, JOHN P. 2004a. Are Parents Investing Less in Children? Trends in Mothers' and Fathers' Time with Children. *American Journal of Sociology,* 110**,** 1-43.
SAYER, L., GAUTHIER, A. & FURSTENBERG, F. 2004b. Educational Differences in Parents' Time With Children: Cross-national Variations. *Journal of Marriage and Family,* 66**,** 1152–69.
SEWELL, W., HALLER, A. & OHLENDORF, G. 1970. The educational and early occupational status attainment process: Replication and revision. *American Sociological Review,* 35**,** 1014–1027.
SIGEL, I. E. 1986. Early social experience and the development of representational competence. *In:* FOWLER, W. (ed.) *Early experience and the development of competence.* San Francisco, CA: Jossey-Bass.
SIMMEL, G. 1917. *Grundfragen der Soziologie (Individuum und Gesellschaft),* Berlin und Leipzig, G. J. Göschen´sche Verlagshandlung.
SNOW, C. 2006. What counts as literacy in early childhood? *In:* MCCARTNEY, K. & PHILLIPS, D. (eds.) *Handbook of early child development.* Malden, MA: Blackwell Publishing.
TREVARTHEN, C. 2016. From the Intrinsic Motive Pulse of Infant Actions to the Life Time of Cultural Meanings. In: MÖLDER, B., ARSTILA, V. & ØHRSTRØM, P. (eds.) 2016. *Philosophy and Psychology of Time,* 225-265. Cham: Springer.
UCLA Statistical Consulting Group (2014), *Stata Annotated Output. Tobit Regression*. Available: http://www.ats.ucla.edu/stat/stata/output/Stata_Tobit.htm [Accessed 26/05/2014].
VAN DER LIPPE, T., DE RUIJTER, J., DE RUIJTER, E. & RAUB, W. 2010. Persistent

Inequalities in Time Use between Men and Women: A Detailed Look at the Influence of Economic Circumstances, Policies, and Culture. *European Sociological Review*, 1-16
VUCHINICH, S., BANK, L. & PATTERSON, G. R. 1992. Parenting, peers, and the stability of antisocial behavior in preadolescent boys. *Developmental Psychology,* 28**,** 510–521.
WALDFOGEL, J. 2006. *What Children Need,* Cambridge, Massachusetts, Harvard University Press.
WORLD BANK GROUP, 2014. Fertility rate, total (births per woman). Available: data.worldbank.org/indicator/SP.DYN.TFRT.IN [Accessed 16/10/2014]
YEUNG, W. J., SANDBERG, J. F., DAVIS-KEAN, P. & HOFFERTH, S. L. 2001. Children's time with fathers in intact families. *Journal of Marriage and Family,* 63**,** 136-154.
ZOIA, S., BLASON, L., D´OTTAVIO, G., BULGHERONI, M., PEZZETTA, E., SCABAR, A. & CASTIELLO, U. 2007. Evidence of early development of action planning in the human foetus: A kinematic study. *Experimental Brain Research,* 176**,** 217-226.

Appendix to Chapter 2

Table 2.2. Activity Codes

Core Categories	American Time Use Survey	Italian Time Use Survey
Total care	Includes all time spent in child care as a "primary activity"; this time is divided entirely below into the four activity categories.	Includes all time spent in child care as a "primary activity"; this time is divided entirely below into the four activity categories.
Basic care	"Physical care for household children" "Looking after household children (as a primary activity)" "Caring for and helping household children (as a primary activity)"	"Physical child care for household children" "Looking after household children"
Play	"Playing with household children, not sports" "Arts and crafts with household children" "Playing sports with household children"	"Playing with household children"
Teaching	"Reading to/with household children" "Helping/teaching household children (not related to education)" "Activities related to household children's education" "Talking with/listening to household children"	"Reading to and talking with household children" "Helping household children with homework"
Management	"Attending household children's events" "Waiting for/with household children" "Picking up/dropping off household children" "Activities related to household children's health" "Organization/planning for household children" "Travel related to caring for/helping household children"	"Accompanying children to school or kindergarten" "Other specified activities related to the care of household children"

CHAPTER 3

How Growing Up in a Single-Parent Family Affects Children's Use of Free Time

1 Introduction

In this paper I use data from the 2002-03 and 2008-09 Italian time-use studies to find out how minor children from intact and single-mother families of various educational backgrounds use their free time. Younger children are used as they are more vulnerable and easily influenced by parents compared to adolescents. The findings provide rich quantitative evidence on how family form and parental education combine with each other, and influence children´s use of their free time with implications for their future life chances.

We all have only 24 hours in a day which are mainly filled by sleeping, eating and study or work. The few moments of free time show who we really are or want to become. If a child watches TV a lot, especially if it is unguided by an adult, he misses the chance to read, go to a museum or participate in extra-curricular activities. If this situation is a permanent one, we can imagine that he has potentially less cultural capital, social skills, and healthy attitudes than children who have grown up with more versatile activities for free time.

Children´s use of free time mirrors parental guidance, preferences, and interest in children, and may cause differences in intelligence, education and other areas of life in the future. Although many authors show that it is mainly the education of mother that matters, the education of father plays an important role as well (Gracia, 2015;Yeung et al., 2001). Better-educated parents talk more with their children and teach them more complicated vocabulary (Hart and Risley, 1995, Lareau, 2011), provide more cognitive stimuli (Davis-Kean, 2005, Linver et al., 2002; Yeung et al., 2002), and influence their children through higher academic expectations (Davis-Kean, 2005). A child who has two university-educated parents has probably a different atmosphere at home compared to a child with university-educated mother and a father with less than secondary education. Therefore, in the final analyses, I present nine categories of family´s educational background with mother´s education in the first place and father´s education in the second place. At least as important as

parental education is family type. Single parents may have higher levels of stress caused by socioeconomic disadvantage which may lead to harsh and inconsistent parenting (McLoyd, 1998). Single parents are more prone to experience time crunch, especially when they have small children and a demanding career.

The current paper makes two main contributions. First, the time use of children is a far less explored area compared to the time use of adults. The main reason being the scarcity of surveys that include time-diaries for children. Usually time-diaries for children start from age 10 or 15. Luckily, the Italian time use survey collects data on daily activities from all family members starting from age 3. To my best knowledge, this is the first article analysing the time use of small children, thus providing a fresh view on the well-being of children. Child development does not only depend on what parents do with children, but also on what daily activities the child does herself.

Second, I investigate the impact of family form on children´s use of free time across different parental education, and child development levels. I measure quantitatively the effect of growing up with a single-mother on children´s free time by using propensity score matching. Treatment group consists of 476 children, aged from 3 to 10 years living in single-mother families. The control group size is 6,668. For children in single-mother families, only mother´s education is known, but for children in intact families, the highest educational background of both parents is used. As the key activities fostering cognitive growth vary according to child development levels, different activities for the preschool period (age 3 to 5), elementary school stage (age 6 to 10), and for the full sample of children are considered.

The activities chosen include several beneficial activities like 1) listening to a fairytale (age 3 to 5), 2) participating in organized sports (age 6 to 10), 3) having a family meal together, 4) reading by herself/ himself, and 5) various cultural activities as well as less developing activities such as 1) watching TV alone, 2) watching TV with others, and 3) playing video games and surfing on the Internet without study purpose. Not all beneficial activities are included. For example, studying and doing homework are not included as they are difficult to interpret without additional information on child´s grades, ambitions, health etc. One child may spend a lot of time on homework because she is a perfectionist and wants to earn only the top grades. Another child may ponder on homework for extended time due to concentration problems or lower ability.

To my best knowledge, only three prior studies have analysed how parents with different social

backgrounds participate in children´s free time activities. The seminal work of Lareau (2003) provides rich qualitative data on how more educated or higher class parents in US engage in concerted cultivation of their children by creating tight schedules of extra-curricular activities for their 10-year-olds. An update a decade later (Lareau, 2011) shows that such activities promoted children´s life chances, for example by winning a sports´ scholarship to enter a competitive college. Altintas´ (2012) quantitative study with US data provides evidence that parental education reduces TV watching time together with children. Gracia´s (2015) paper on UK data provides quantitative evidence that more educated parents increase time both in out-of-home as well as home-based cultural activities, while they spend less time watching TV with children. I am the first to use non-Anglo-Saxon data. In addition, none of the prior studies have included child development levels nor provided comparison between children in intact and single-mother families. The aim of this chapter is to find out how great are the adverse effects of growing up in a singlemother family on children´s use of their free time, and whether the negative effects are larger for the children of highly educated single mothers as recent findings suggest (Bernardi and Radl, 2014).

2 Theoretical Background

2.1 Effects of Parental Breakup

The pathways to single motherhood are different ranging from never married to divorced, separated and widowed. The most common and fastest growing reason in Italy is parental divorce. Union dissolution often leads lone mothers in a worse economic situation compared to marriage. After divorce, mothers often move to worse neighbourhoods, and children lose any remaining stability in their lives. Such mobility accounts for one-quarter of the relationship between family structure of origin and timely school graduation, as well as the risk of a teen birth (McLanahan & Sanderfur, 1994). Economic deprivation in childhood has been linked to poor physical health, diminished intellectual ability and academic achievement, out-of-wedlock pregnancies, and other social difficulties (Wolfinger, 2005). Income differences explain approximately half of the effects of parental divorce on timely high school graduation and premarital fertility (Biblarz & Raftery, 1999; McLanahan & Sanderfur, 1994).

Irrespective of economic consequences, divorce has several additional negative effects on child well-being. Compared to children raised in intact families, the children in divorced families have more emotional problems, are more likely to drop out of school, smoke and drink (Amato, 2000; Hetherington, Bridges & Insabella, 1998). Adult offspring of divorced families report worse psychological well-being, more marital problems, and have an approximately one-third greater chance of dying prematurely (Wolfinger, 2005). In addition, divorce affects children´s marriage timing towards early marriages irrespective of parental income and education (Axinn & Thornton, 1992). Early marriages increase the risk of divorce as people may be immature, have unrealistic expectations, and grow apart eventually. Furthermore, parental marital breakup reduces the marital commitment of offspring, and exaggerates the perception of their own marital difficulties thus leading to a divorce cycle also known as the intergenerational transmission of divorce (Wolfinger, 2005).

One should note that divorce does not influence all people in the same way. Divorce can actually benefit some individuals, lead others to temporary decrements in well-being, and force others on a downward trajectory (Amato, 2000). Even children of the same family might experience parental divorce in different ways (Conley, 2004). An older child may suffer from stress prior to the divorce

while a younger child may be bewildered by the departure of one parent from the household (Amato, 2000). Embedded in the divorce-stress-adjustment perspective there exist two contrary models. First, a crisis model assumes that divorce creates a lot of stress but most individuals return to their previous levels of functioning after some time. Second, a chronic strain model assumes that some aspects of divorce such as economic hardship, and loneliness continue indefinitely (Amato, 2000). For example, a meta-analysis of 92 studies on the well-being of the children of divorce reveal that children from divorced families scored significantly lower on a variety of outcomes from academic achievement to psychological adjustment, social competence, self-concept (Amato & Keith, 1991), and long-term health (Tucker et al., 1997). It is important to note that offspring benefit on a variety of outcomes if parents dissolve a high-conflict marriage (Hanson, 1999; Jekielek, 1998). The same studies reveal that most of the high conflict marriages are not dissolved. Longitudinal studies reveal that the gap in psychological well-being between offspring from divorced and non-divorced families grew larger with the passage of time (Cherlin, Chase-Lansdale & McRae, 1998), supporting the chronic strain model.

If scientists wish to explain a phenomenon, they must find a plausible social mechanism. One mechanism behind poorer outcomes of children from divorced families are unstable economic conditions that often lead to other disruptive life events like moving and changing schools. Another mechanism behind poor child outcomes from divorced families has also been identified. Several studies indicate that divorced custodial parents invest less time, are less supportive, establish fewer rules, use harsher discipline, provide less supervision, and engage in more conflict with their children compared with married parents (Astone & McLanahan. 1991; Hetherington & Clingempeel, 1992; Simons and Associates, 1996). Low parental functioning is linked with many negative child outcomes, for instance lower academic achievement, internalizing problems, externalizing problems, reduced self-esteem, and poorer social competence (Aseltine, 1996; Buchanan, Maccoby & Dornbush, 1996; Clark & Clifford, 1996; DeGarmo & Forgatch, 1999; McLanahan & Sandefur, 1994). Not all studies confirm the negative effects of parental divorce on child well-being. For example, Craig and Mullan (2011) find no significant effects of partnership status in physical and talk-based childcare time, suggesting that children in couple and lone parent families receive similar amounts of maternal hands-on care, all else being equal. Although lone mothers may provide for their children as well as coupled mothers do, Kim (2011) found negative effects of divorce, such as setbacks in math scores, negative effect on interpersonal skills, and more internalizing behaviour problems, even after controlling for selection factors that influence children

´s skills and traits at or before the beginning of the dissolution process. Bernardi and Radl (2014) analyse 14 countries from the Generations and Gender Survey and find that the children of separated parents have, on average, 7% lower probability to pursue a university degree compared to children in intact families. The breakup penalty is stronger for the children of highly educated parents. In order to find a plausible mechanism explaining the greater breakup penalty of highly educated parents, children´s time use should be explored.

2.2 Early Experiences, Time Use and Child Development

Recent findings in neuroscience illuminate how early years are foundational for a range of human competencies (Knudsen et al., 2006). Early experience influences the development of neural circuits that mediate cognitive, linguistic, emotional and social capacities (Katz & Shatz, 1996; Knudsen, 2004). Human abilities are formed in a sequence of sensitive periods. For example, there exist sensitive periods for language acquisition both for first and second languages. The sensitive period for language learning occurs approximately before 7 years of age (Newport, Bavalier & Neville, 2001). In a similar way, IQ-scores remain stable for whole life at around age 10 (Heckman, 2007). Evidence from experiments with other species show that the sensitive periods for circuits at lower levels in the hierarchy close before those for circuits at higher levels (DeBello & Knudsen, 2004; Pascalis et al., 2005). Brain development is driven by two interacting forces: genetics and experience. Experience is essential to the unfolding of brain development, and shaping influences are particularly powerful during sensitive periods of circuit maturation (Knudsen et al., 2006). Therefore, if parental divorce deprives small children of economic and emotional stability, it influences their brain development as well as future economic activity and success at work. Parental divorce may alter child well-being through the daily activities done by parents and children themselves. The everyday experiences play an important role together with genetics in the development of phenotype.

Several activities have been identified as of key importance for the cognitive development of children at various developmental stages. In Chapter 1, four activity categories of parents are underlined for being best suited for particular developmental periods. These are: 1) basic care during infancy, 2) play during toddlerhood, 3) teaching during preschool years, and 4) child management during middle childhood (Kalil et al., 2012). In this chapter, I am analysing children´s use of their free time in intact and single-mother families. As I have time diaries of children starting

from age 3 onwards, I am unable to analyse the active parental care and play part during the first years of life. The two most important activities for child development done by children themselves are derived from the developmental theory (Kalil et al., 2012). During preschool period, from age 3 to 5 years, children should learn as much as possible from parents. One activity that fosters the expansion of vocabulary as well as teaches various norms and rules in a society is listening to fairytale and other stories told by adults. In addition, intense listening skills teach concentration which is much needed in formal education. An example from real life is a home-based literacy program for families with 3 to 5-year-olds that improved the school readiness of children from all social classes in Great Britain (Evangelou and Sylva, 2003). During elementary school years, from age 6 to 10, organized after-school activities are of key importance. Analysing the time diaries of 0 to 12 year-old American children, Hsin and Felfe (2014) find that only educationally oriented activities, and structured activities improve child outcomes. Spending unstructured time with parent(s) may be even detrimental for child development. Therefore, I use various after school activities and organised sports as the most important child free time activity from age 6 to 10.

In addition to listening to a fairytale during preschool years, and participating in extra-curricular activities during elementary school, several studies bring out additional activities with positive and negative influence on child development. In this paper, I include three additional positive activities which are: 1) reading done by the child, 2) engagement in cultural activities like going to the theatre, concert, museum, and library (without study purpose), and 3) family meal together with other family members. While reading and cultural activities instantly increase children´s cultural capital, and vocabulary, the importance of family meals is not that obvious in social sciences. Several studies in medicine show that early life stress which may come from parental divorce is associated with the development of several psychiatric illnesses (Lewis and Olive, 2014). Gene-environment interactions may work in the other way, too. Having a daily family meal can reduce delinquent behaviour in the future, and prevent some genetic illnesses from expressing themselves. In any case, it is an opportunity for all family members to meet, talk to each other, and build emotional bonds.

Children are usually unaware of the preciousness of time, and have a different perception of time compared to adults. If they are unguided or parents have too little time for them, children may use their free time in front of TV or computer. I have selected three activities which can be detrimental or simply steal time from more important activities. These are: 1) watching TV alone, 2) watching

TV with family members older than 10 (in 2002 survey) and parents (in 2008 survey), and 3) playing video games and surfing in Internet without study purpose. The distinction in TV watching time is made because when TV is watched with others, parents may explain unfamiliar things or help to choose less violent and developmentally more rewarding programs. When child is alone in front of TV, he/she is learning to be physically and mentally passive, and may be exposed to programs not meant for children. Previous studies reveal that prolonged time spent in front of TV or computer while playing video games is detrimental if they displace participation in activities such as reading that foster cognitive development (Koolstra et al., 1996). If time in such unstructured activities is reduced, children´s cognitive abilities improve significantly, the effect is stronger for children younger than 6 years (Hsin and Felfe, 2014) .

2.3 Context

In 2011, there were 311 separations and 182 divorces for every 1,000 marriages in Italy. Although the separation and divorce rates in Italy are lower than in many European countries, they have slightly but steadily raised since 1995. As for children, the greatest change has been the huge raise in joint custody compared to exclusive custody by mothers which used to be the case in the past. In 2011, 90% of separations and 76% of divorces received joint custody of children (ISTAT, 2013).

Not all families face an equal risk of divorce. Divorce is more common in some countries, moreover, it happens more often is some social groups. William J. Goode was the first to analyse the relationship between the social composition of divorce and the level of modernization in a society (Goode, 1962, 1970, 1993). Goode expected that once the initial legal, social, and economic barriers to divorce fade away, divorce would be more common in the lower social strata. Härkönen and Dronkers (2006) test Goode´s hypothesis of an inverse relationship between the social composition of divorce and modernization in 17 countries. In Italy, women with higher education had a higher risk of divorce. The same trend was found in France, Greece, Poland, and Spain. An opposite trend was found in Austria, Lithuania, and the United States where the educational gradient of divorce is negative. No relationship between education and divorce was found in Estonia, Finland, Flanders, West-Germany, Hungary, Latvia, Norway, Sweden, and Switzerland. Another study by Blossfeld et al. (1995) found the strongest positive effects of female education on divorce in Italy. In Italy, divorce legislation is complex, and only people with more knowledge and other resources can obtain divorce. In addition, the level of de-commodification is low in Italy, thus,

options about how to manage work and childcare depend mainly on private resources more than in other countries (Esping-Andersen, 1990). One can hypothesise that once the legislation is liberalized, the number of divorces would increase, and through social learning, spread to the wider population (Härkönen & Dronkers, 2006).

Numerous studies from the United States which show adverse effects of parental divorce on child outcomes may not be plausible in Italy. Indeed, if in Italy, mainly highly educated women manage to divorce, they may have more resources to buffer their children from the negative effects of parental divorce. However, the opposite could be true – the greatest losers of parental divorce are the children of highly educated women in Italy.

2.4 Hypotheses

2.4.1 Hypothesis 1: Parental breakup penalty affects all children

Children in single-mother families have only one grown-up instead of two who takes daily care of them. If this parent is stressed, overworked or suffers from depression, children receive less parental attention, and guidance. According to hypothesis 1, children in single-mother families receive less reading at ages 3 to 5, and less extra-curricular activities at ages 6 to 10 than children in intact families. In addition, they may engage more in unstructured activities, and less in reading, and cultural activities.

2.4.2 Hypothesis 2: Children of highly educated single mothers lose most

A recent study demonstrates that in case of divorce, the children of highly educated parents lose most (Bernardi and Radl, 2014). According to hypothesis 2, children of highly educated single mothers suffer a larger penalty in developmentally enriching activities than children with less educated single mothers, when compared to children living with two highly educated parents. Due to the fact that more than two thirds of Italians have an educationally homogamous marriage, the correct reference group for the children of highly educated single mothers are children living with two highly educated parents. There is evidence of a “new father” emerging among Italian highly

educated men meaning that they participate more in daily routine childcare tasks (Rebane, 2015). A single mother with tertiary education may know what is best for her child, but she still needs to spend some time in paid work, being unable to make up for the time that her child would otherwise spend with his or her father.

3 Data and Methods

3.1 Sample

Italian time use surveys are special for at least two reasons. First, they collect very high quality data from a nationally representative sample. Second, time diaries are filled in by all family members starting from age 3. Surely parents fill in the diaries of small children, but nevertheless it is one of the few surveys which provides information on the daily activities of small children. This makes the Italian time use surveys perfect resources for studying the time use and well-being of children from intact and single-mother families. Data from the two last Italian Time Use Surveys 2002-2003 and 2008-2009 are merged in order to avoid the small N problem.

Week-end days are over represented as 1/3 of the sample families was randomly assigned a workday, 1/3 a Saturday, and 1/3 a Sunday. I differentiate between workdays and week-end days, and control for the day of week in all multivariate analyses.

Each family member fills in the time diary on the same day. The 24 hour period is divided into 10-minute intervals which is quite good precision for a time use survey. The activities are divided into primary and secondary ones. Furthermore, one has to mark who else was present and the happening place. For example, from 8.00 until 8.20 the primary activity of a child can be going to kindergarten, the secondary activity may be talking to mother. Only primary or main activities are taken into this analysis as they have a potentially stronger impact on child development than secondary activities. Future analyses on child well-being could profit from analysing also the secondary activities.

Total sample size is 7,144 children from 3 to 10 years of age. In order to analyse how the daily

activities of children in intact and single-parent families differ, I create two age groups of children according to developmental stages: 1) from 3 to 5 years (preschoolers), and 2) from 6 to 10 years (elementary school children). As there are very few single father families, only single mother families are taken into the analysis. The treatment group (children with single mothers) size is 156 children, and control group (children in intact families) size is 2,433 in the younger age group. In the older age group, the treatment group consists of 320 children, and control group is comprised of 4,235 children. There is a gender balance in all groups.

3.2 Analysis plan

First, multivariate models are used to explore whether the initial activity patterns hold when additional control variables are introduced. Descriptive statistics on the distribution on children´s activities by family type and mother´s level of education are available upon request. According to child development literature, I have chosen a set of stimulating and developing activities as well as potentially harmful ones. The beneficial activities are: listening to a fairytale (for preschoolers), participating in organized sports (for school, children), having a family meal together, reading by herself/ himself, and various cultural activities. The potentially harmful activities include watching TV alone, watching TV with others, as well as playing video games and surfing on the Internet (without study purpose). All these activities are constructed using several activity and place codes. Small differences in the activity codes exist between the two surveys from 2002-03 and 2008-09. I have given my best to merge them as smoothly as possible. For an overview of minor activity, place, and with whom codes, please see Table 3.7 in the Appendix to Chapter 3.

In the first part of multivariate analysis, first a linear probability model (LPM) is presented which shows the probability to engage in a given activity (a binary dependent variable, taking values 0 or 1), and second, an ordinary least squared (OLS) regression model is brought out that shows the mean minutes of engaging in this activity. In linear probability models as well as in OLS regression models, four different step-by-step sub-models from easiest to the most complicated one are presented:

M1) controls for the effects of single-parent family, and parental education on a given activity;

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

M2) adds two interaction terms between family type and parental education: a) single parent *

mother has tertiary education, b) single parent * mother has less than secondary education;

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\varepsilon$$

M3) adds controls for mother´s employment status, and number of children in family;

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\beta_4 X_3+\beta_5 X_4+\varepsilon$$

M4) adds additional controls for child´s gender, attending kindergarten, citizenship, non-nuclear family (i.e. A child and parent(s) living together with grandparent and/or aunths/uncles and their families), region in Italy, day of week, and the year of survey.

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\beta_4 X_3+\beta_5 X_4+\beta_6 X_5+\beta_7 X_6+\beta_8 X_7+\beta_9 X_8+\beta_{10} X_9$$
$$+\beta_{11} X_{10}+\beta_{12} X_{11}+\varepsilon$$

Finally I present propensity score matching (Rosenbaum and Rubin, 1983). The p-score (ei) denotes the probability that a child lives in a single-mother household (Zi), conditional on a set of variables (X). Children are matched according to both parents´ level of education, mother´s employment, number of children in family, age group of children in family, region in Italy, weekday and survey. After controlling for this set of variables, allocation to treatment should be random. Thus, propensity score matching method simulates a randomised experiment. The weights are defined as follows:

$$w_1=\frac{Z_i}{e_i}+\frac{(1-Z_i)}{(1-e_i)}$$

A drawback of this approach is that some variables causing parental divorce are not measured, for instance the level of conflict in family or religiosity. After p-scores are estimated through logit maximum likelihood, the balancing assumption is tested by: 1) dividing the treatment and control groups into 5 blocks based on equally spaced intervals of the p-score, and averages of treated and control group children are compared; 2) common support condition is used to drop control group children if their p-scores lie outside the pscore range for the treated. The final step after controls is to estimate the average treatment on the treated effect (ATT).

$$w_i,\ ATT=Z_i+(i-Z_i)\frac{e_i}{(1-e_i)}$$

The ATT is the expected change in performance, measured in minutes, that is thought to have been caused by living in a single-mother household. ATT is valid for children who live in single-mother households, as well as to the children who are very similar to them. Out of the many options for calculating ATT, the most often used nearest-neighbour matching is chosen.

4 Results

4.1 Descriptive statistics

One can see from Table 3.1, that Italian preschool age children in single-mother families have a slightly higher probability of listening to a fairytale (1%) as well as the mean minutes of fairytale compared to their counterparts in intact families. Elementary school children in single-mother families have 4% greater probability of participating in organized sports and a greater length of such activities compared to children in intact families. However, children in single-mother families tend to have longer unguided TV watching time, and shorter TV watching time with adults than children in intact families. Children with lone mothers have a family meal 2% less often than their counterparts with two parents. The mean length of daily family meals is also about 15 minutes longer in intact families. There are no big differences in the reading habits and cultural activities of children in different family types. The mean length of engaging in cultural activities is about 1 minute longer for children in two parent families.

Table 3.1. Overview of dependent variables

	Single mother		Intact	
Dependent variables	probability	minutes	probability	minutes
Listen to a fairytale, preschool	0.11	2.93	0.10	2.84
Organized sports, school age	0.14	12.98	0.10	9.13
Watching TV alone	0.14	10.21	0.13	8.59
Watching TV with adults*	0.68	65.44	0.71	72.18
Playing video games, internet	0.16	12.75	0.17	12.80
Family meal together	0.95	85.80	0.97	100.11
Reading	0.11	4.12	0.11	4.82
Cultural activities	0.03	2.79	0.03	3.63

* In 2002 survey, it means watching TV with family members or other relatives aged 10 or older, and in 2008 it means watching TV with mother or father present. With whom codes differ in two surveys.
Note: only main activities are included when constructing dependent variables.
Source: 2002 and 2008 Italian Time Use Surveys (ISTAT), N = 7,144

Out of the 7,144 children in sample, 93% live with two parents, and 7% live with lone mothers (please see Table 3.2 below). For parental education, a 9-category differentiation is made with mother´s education in the first place and father´s in the second place. Single-mother families are included in the groups "high-high" if they have tertiary education, "medium-medium" if they have secondary education, and "low-low" in case of less than secondary education. The greatest share or 33% of children live in families where both parents have less than secondary education. The second largest group of children live with two parents with secondary education (27%). Mother is full-time employed for 54% of children, holds a part time job for 29% of children, and is a housewife in 17% of cases.

58% of Italian children in our sample have one sibling, 21% of children have more than one sibling, while 21% of children do not have siblings. As one can see from Table 3.2, boys are slightly over-represented. 53% of the sample of 3 to 10 year old children are boys, and 47% are girls. Usually about 105 boys are born for 100 girls, so a slight abundance of boys is normal among small children. 37% of children are aged from 3 to 5 (preschool period), and 63% are aged from 6 to 10 and attend school. The vast majority of 97% of children are Italian citizens, and only 3% are immigrant children. 98% of children live in nuclear families while 2% live with extended families where more than two generations live together. All five major Italian regions are more or less equally presented, with slightly smaller sample from the islands. Week-end days account for 63% of all days which may not be a problem if the aim is to study children´s free time. 57% of the sample comes from 2002-03 survey, and 47% from the 2008-09 survey.

Table 3.6 in the Appendix provides an overview on who are the single mothers in Italy. Out of all the families with minor children from 3 to 10 years, single-mother families account for 7% in the nationally representative sample. Single-mothers are more often highly educated, dwell in North-West or Central Italy, most of them have only one child, who is more often a school child than a pre-school one. Table 3.7 in Appendix shows the distribution of children according to mother´s education and family type.

Table 3.2. Overview of independent and control variables

Variables	N	Mean
Family type: intact	6,668	0.93
Family type: single-mother	476	0.07
Parental education: high-high	474	0.07
Parental education: high-medium	310	0.04
Parental education: high-low	92	0.01
Parental education: medium-high	321	0.05
Parental education: medium-medium	1,953	0.27
Parental education: medium-low	967	0.14
Parental education: low-high	37	0.01
Parental education: low-medium	609	0.09
Parental education: low-low	2,363	0.33
Mother´s full-time job	3,853	0.54
Mother´s part-time job	2,049	0.29
Mother not employed	1,242	0.17
Number of children: one	1,506	0.21
Number of children: two	4,119	0.58
Number of children: three or more	1,519	0.21
Child is a boy	3,756	0.53
Child is a girl	3,388	0.47
Age group: kindergarten (from 3 to 5 years)	2,633	0.37
Age group: pupil (from 6 to 10 years)	4,511	0.63
Citizenship status: Italian citizen	6,946	0.97
Citizenship status: immigrant	198	0.03
Family form: nuclear	6,978	0.98
Family form: non-nuclear/ extended	166	0.02
Region: North-West	1,648	0.23
Region: North-East	1,427	0.20
Region: Central	1,194	0.17
Region: Southern	2,084	0.29
Region: Insular	791	0.11
Day: workday	2,627	0.37
Day: week-end day	4,517	0.63
Survey: 2002-03	4,091	0.57
Survey: 2008-09	3,053	0.43

N = 7,144. Source: 2002 and 2008 Italian Time Use Surveys (ISTAT).

Prior to proceeding to multivariate analyses, I would like to know whether there exist any raw differences between children in single-mother and intact families of various educational backgrounds in the probabilities and mean minutes of the 8 activities under focus. Although there were no grand differences between children in intact and single-mother families in Table 3.1, the picture may change when parental education is included. Tables on the descriptive results (shortly discussed below) are available upon request.

When we compare children of highly educated single mothers to children of two highly educated parents, there is some evidence of a time famine in single mother families. For example, at pre-school age children with university educated single mothers have nearly twice as small probability to listen to a fairytale and the mean minutes of listening to a fairytale are more than twice smaller. At elementary school age, children of highly educated single mothers have a 2% lower probability to participate in organized sports as well as smaller average minutes of doing sports compared to children with two highly educated parents. However, the picture is quite reversed for children of single mothers with secondary education or less.

In addition to the two key age specific activities fostering child development, I have included additional activities of children´s free time. The probabilities and means of TV watching, video games, family meal, reading, and cultural activities are measured using the full sample of 3 to 10 year-old children. Children of highly educated single mothers have a 1% greater probability of watching TV alone compared to the children of highly educated couples. However, they are exposed to unguided TV watching for twice as long as children in “high-high” intact families. The probability to watch TV with parents or older family members is smaller and the mean length of guided TV watching shorter for children with university-educated single mothers. Children of highly educated single mothers have a 6% lower probability to waist their free time on video games and surfing in Internet, and their mean minutes of video games are also smaller than those of children with two highly educated parents. Children with university-educated single mothers have even a greater probability of having a family meal than their counterparts in intact families, but the mean length of a family meal is about 12 minutes shorter. Children of single mothers with tertiary education have a 1% lower probability to read by themselves, but the mean length of reading is slightly longer compared to children of couples with tertiary education. The probability of engaging in cultural activities is 2% greater for children of highly educated single mothers, and they also

spend more time, on average, on cultural activities that children of highly educated couples. We will see whether these patterns hold when control variables are introduced.

4.2 Multivariate analysis

4.2.1 Part One: Results from Regression Analyses

For each activity, there are two tables: a) linear probability model for the probability of engaging in this particular activity on a given week day, and b) OLS regression for the average minutes spent in this activity. Each table consists of four models, starting with a simple model which analyses the core effects of single mothering and parental education (M1), then adds interaction terms between single mother and mother´s highest educational attainment (M2), and additional controls (M3 and M4). Only statistically significant coefficients at 95% confidence interval are presented below.

1) The probability of listening to a fairytale/story at pre-school age (from 3 to 5 years) is about 12% for the whole sample of preschoolers (Table 3.8a in Appendix). The probability is lowered by 5% if both parents have less than secondary education (low-low), by another 5% if the family has three children or more, and by 5% if the child is immigrant (M4). Children listen less to fairytales in Central and Southern Italy, and more in North-East Italy, compared to the reference group of North-West Italy. If mother works full-time, child has a 3% higher probability of listening to a fairytale. No effect of single mothering, child´s gender, attending kindergarten, non-nuclear family type, weekday, and survey was found. Table 3.2 shows that the average minutes of listening to a fairytale are between 2 and 3 minutes for the whole sample of preschoolers (those who listen and those who do not). Children of lowly educated parents receive less fairytale: –1.54 minutes in medium-low families, and -2.02 minutes in low-low families. Living in non-nuclear family reduces fairytale length by -1.43, on average. Children of full-time working mothers receive on average 1.49 minutes of fairytale more than children of not employed mothers (M4 in Table 3.8b, please see the Appendix).

2) The probability to participate in organized sports at elementary school age (from 6 to 10 years) increases by 8% if the child has a single mother (Table 3.9a). However, the interaction term between single mother and tertiary education is -10%. Girls and children in non-nuclear families have a 5% lower probability to participate in sports. Immigrant children have a 7% lower probability to participate, and all children have a 10% lower probability to do sports on week-end

days compared to workdays. Mother who works part-time, increases the probability of child´s participation in sports by 3%. Children in North-East Italy have also a 3% higher probability to participate in organized sports (Table 3.9a). Table 3.9b in Appendix shows the OLS analysis of the mean minutes of participating in organized sports. Children of single mothers engage in sports for 6 minutes more than children in intact families. Mother´s full-time and part-time jobs increase her child´s sporting time by 2 and nearly 5 minutes respectively. Girls, immigrant children, and children in non-nuclear families have, on average, lower minutes of participating in sports. Children do sports about 7 minutes less during week-end days compared to workdays (Table 3.9b).

All the following models are run with the whole sample of 3 to 10 year-old children.

3) The probability to watch TV alone is lowered by 4% or 5% if the family has two or three children, respectively (Table 3.10a in Appendix). The interaction term between single mother and less than secondary education is significant and positive, meaning that children with lowly educated single mothers have, on average, 6% higher probability to watch TV alone than children in intact families with secondary educational attainment. Girls watch TV 2% less often than boys. Kindergarten children watch TV 5% less often than elementary school children. Immigrants watch TV 6% less often than Italian children of the same age. Children watch TV alone by 3% more often during week-end days than during workdays. Italian children have increased their unguided TV watching probability by 3% between 2002 and 2008 (Table 3.10a). Table 3.10b in Appendix provides an overview of the mean minutes of unguided TV watching. Although the core effect of single mother is significant and negative (-3.7 minutes), the interaction terms between single mother and her education are significant and negative. Taken together, the children of highly educated single mothers watch, on average, 5 minutes more TV while being alone, and children of lowly educated single mothers watch 3 minutes longer TV alone. More children in family, being a girl, and being a preschooler lowers unguided TV watching time. Children in North-Eastern Italy watch TV alone longer than in other Italian regions. Children watch TV alone longer during week-end days and in 2008 (compared to 2002).

4) Tables 3.11a and 3.11b provide an overview of watching TV with family members aged 10 or older (in 2002 survey) or with parents (in 2008 survey). The probability of watching TV with others is 80% which is much lager than the probability of watching TV alone (16%). Children with two university-educated parents watch TV with others 7% less often than their counterparts with parents who have secondary education. Kindergarten children watch TV with parents 4% less often than elementary school children. Children have 13% lower probability to watch TV with parents in 2008

than five years earlier (Table 3.11a). Table 3.11b illustrates that children of two highly educated parents watch, on average, nearly 14 minutes less TV each day, and children with two lowly educated parents watch TV with parents 8 minutes more than children of parents with medium education. Girls watch TV with parents 5 minutes less than boys, immigrants watch 8 minutes less than Italian citizens. Children in North-East Italy watch TV with adults 9 minutes less than in other parts of Italy. On average, children watch TV with parents for 11 minutes longer during week-ends than during workdays. However, children watch TV with others for 22 minutes less in 2008 than five years earlier.

5) The probability to play video games and surf in Internet is 14% lower for girls than for boys, 15% lower for preschoolers than for pupils, 7% lower for migrants than citizens, and 8% smaller for children in non-nuclear families compared with children in nuclear families (M4 in Table 3.12a). Children in Central and Insular Italy have a 3-4% higher probability to play video games than children in other Italian regions. Children have 3% higher probability to play video games during week-ends compared to workdays, and in 2008 compared to 2002 (Table 3.12a in Appendix). Children with two highly educated parents play video games nearly 4 minutes per day less than the reference group (Table 3.12b). Girls play, on average, video games 12 minutes less than boys, preschoolers 12 minutes less than school children, children in non-nuclear families 5 minutes less than their counterparts in nuclear families. Children in Insular Italy play video games, on average, 3 minutes longer than children in other regions. The average minutes of playing video games is 3 minutes longer during week-end days compared with workdays.

6) The probability of having a family meal together is 98% in Italy. Immigrants have a 5% smaller probability of a family meal, the probability of daily family meal(s) is 1% higher during week-ends, and the probability of a family meal is 4% lower in 2008 than in 2002 (Table 3.13a in Appendix). The mean length of a family meal is 91 minutes for children of two parents with secondary education (Table 3.13b). Children of single mothers have about 12 minutes shorter family meal than the children in reference group. Children whose mothers work full-time have 4 minutes shorter family meals, however, children whose mothers work part-time have 8 minutes shorter family meals. Additional children in family reduce the length of family meal. Preschool children, immigrant children, and children in North-Eastern Italy have on average shorter family meals. The length of family meals was reduced by 5 minutes between 2002 and 2008. During week-ends, family meals are nearly half an hour longer than during workdays (Table 3.13b).

7) Tables 3.14a and 3.14b show the results for reading by herself/ himself. Children with two highly educated parents have a 6% higher probability, and children with highly educated mothers and fathers with secondary education have a 5% higher probability to read by themselves than children of two parents with secondary education. However, children of two parents with less than high school degree read 4% less often, and children of mothers with less than secondary education and fathers with secondary education read 3% less often than the reference group. Children whose mothers work part-time have a 2% higher probability, girls have 1% higher probability, and children in North-East Italy have a 4% higher probability to read compared to the reference group. Having a sibling reduces reading probability by 2%, being a preschool child reduces reading probability by 11%, living in a non-nuclear family reduces reading probability by 5%, and living in Southern Italy reduced reading probability by 3% (Table 3.14a). The average length of reading is 2-3 minutes longer in high-high, and high-medium families, and about 2 minutes shorter in low-low families. Girls read on average 1 minute more, preschool children 5 minutes less, children in non-nuclear families 2 minutes less, children in North-Eastern Italy read for 2 minutes longer, and children in Southern Italy 1 minute shorter than the reference group.

8) The analyses on engaging in cultural activities are presented in Tables 3.15a and 3.15b in the Appendix. Children with two highly educated parents have a 4% higher probability, children in high-low as well as in low-medium families have a 3% lower probability of doing any cultural activities, compared to children in medium-medium family. Girls have 1% higher probability of doing cultural activities. Overall, week-end days increase the probability of cultural activities by 2%. Table 3.15b illustrates that the mean length of a child´s cultural activities is significantly shorter in all family types where the mother has low education (less than secondary), but also in families where mother has university education and father has less than secondary education. Girls do cultural activities 1 minute longer, and children in non-nuclear families for 2 minutes shorter than the reference group. Children engage in cultural activities for 3 minutes longer during week-end days (Table 3.15b).

4.2.2 Part Two: Propensity Score Matching

Table 3.3 below presents the ATT estimates for the whole sample of children, and Table 3.4 shows the results for the sub-sample of children living with university-educated mothers. The propensity score logistic regression estimations, and the number of blocks are available upon request. The number of blocks for the full sample was 5, and 3 for the highly educated sub-sample. Treatment

group children are matched to very similar control group children. The statistically significant results from Table 3.3 show that the children in single mother families tend to listen to a fairytale for a bit longer, watch TV alone for a longer time each day, and their daily family meals (combined) are substantially shorter each day. The analysis done separately in the sub-sample of children with university-educated mothers (Table 3.4) does not contain any statistically significant results, which may be driven by a small N problem.

Table 3.3. Impact of living in a single-mother household on children´s free time activities: ATT

Number of treated	476
Number of controls	6,668
Listening to a fairytale	0.823*
Participating in organised sports	3.999
Watching TV alone	1.858*
Watching TV with parents	1.051
Playing video games	0.077
Family meal	-15.274***
Reading by herself	-1.046
Cultural activities	-3.068
T. in com. sup.	476
C. in com sup.	2401

Note: Activities are measured in mean minutes per day;
***, **, and * denote respectively the 1%, 5%, and 10% significance levels.

Table 3.4. Impact of living in a highly-educated single-mother household on children´s free time activities: ATT

Number of treated	68
Number of controls	812
Listening to a fairytale	-0.534
Participating in organised sports	2.134
Watching TV alone	7.252
Watching TV with parents	0.026
Playing video games	-8.892
Family meal	-4.015
Reading by herself	-4.634
Cultural activities	2.407
T. in com. sup.	68
C. in com sup.	199

Note: Activities are measured in mean minutes per day;
***, **, and * denote respectively the 1%, 5%, and 10% significance levels.

5 Discussion

5.1 Single-mother families in Italy

If only one adult cares for the child and has to manage all job related stress as well as housekeeping tasks, she may not be as efficient mother as mothers of small children in stable unions. However, we can bring in a parallel with mother´s market work. There has been a long argument that working mothers are not as good as stay-at-home mothers. Today we know that although full-time working during a child´s first year of life brings along negative consequences for the child, working mothers of older children are preserving the most developing child-related activities, and trade quantity for quality in childcare time (Hsin and Felfe, 2014). Moreover, unstructured daily activities with a parent may be detrimental for child development (ibid.).

Single-parenthood is not as common in Italy than in many other Western countries. The process of legal divorce is very long and complicated, and not everyone can afford it. Before analysing children´s time diaries from intact and single-mother families, I would like to know who are the single mothers in Italy. Several statistical characteristics of single mothers are brought out in Table 3.6 in the Appendix. Single mothers tend to be more educated, have more often only one child, and live in North-Western or Central Italy. Although single-mother families are not very common in Italy, their number is rising. The share of single-mother families has grown by 2% between 2002 and 2008 among all families with 3 to 10 year old children. The paths to single motherhood are different including divorced, legally separated, never married, and widowed mothers. However, they all share the characteristic of only one adult catering for child(ren) and providing a means for living.

Highly educated women have higher expectations regarding a fulfilling adult relationship. If their expectations are not met, they are more willing and also have more means to leave the relationship. Highly educated women have usually higher salary, may have flexible job hours, and can afford to hire nannies and housekeepers. Therefore, they should be the most capable of minimizing the penalties of single parenthood. The main research question in this chapter is: *How do children´s time use patterns differ in intact and single-mother families?* An additional hypothesis is: *Children with highly educated single mothers suffer a small penalty in developmentally enriching activities when compared to children living with two highly educated parents.* In other words, are the single mothers with tertiary education able to raise children as well as an intact family where both parents

have a tertiary education.

The reason for comparing the children of highly educated single mothers to the children of highly educated couples is the fact that 67% of Italian children live with two educationally homogamous parents. Educational homogamy seems to be the first choice of potential partners (for a longer overview, please see Chapter 1). Therefore, I compare the time use of children in lone parent families to the time use of children in intact families where both parents have the same educational background.

5.2 Children´s time use in single-mother and intact families

Table 3.1 provides a description of children´s activities by family type. At first glance the children of single mothers do not seem to be much worse off than children in intact families. Children in single parent households have a 1% higher probability of watching TV alone, and 2% lower probability of having a family meal than their counterparts in intact families. When children are grouped according to their parent´s highest educational attainment, then differences in children´s time use appear. For example, children of single mothers with medium or low education receive on average more fairytale telling than children of two parents with medium or low education, respectively. Children of single mothers with secondary education or less seem to profit from single-parenthood compared to their counterparts in intact families also in organized sports, and watching TV with family members less often than they would in intact families. According to descriptive results they do not do much worse in reading or cultural activities than children in intact families with the same educational backgrounds.

The picture is quite different for children of highly educated single mothers. The descriptive results of listening to a fairytale, participation in organised sports, unguided TV watching, and reading by themselves show that the children of highly educated single mothers do worse in their free time use than children of highly educated couples. They do, however, engage in cultural activities more often, and play video games less often than their counterparts living with two highly educated parents. Descriptive results support the recent finding that the breakup penalty is stronger for children of highly educated parents (Bernardi and Radl, 2014). A possible explanation is that highly educated parents are best aware of new parenting trends, the importance of time inputs in children, and the windows of opportunity in child development. University-educated Italian fathers share more parenting tasks than less educated fathers (please see Chapter 1). The children in high-high

families are best off in terms of parental time inputs and advice on how to plan and use their free time because both parents actively seek to foster child development. Moreover, it is easier to learn when one has many teachers who reassert the same truths. In addition, intact families are probably better off economically and there is less economic stress and many tedious tasks can be outsourced and replaced by developmentally nourishing activities for children.

Results from propensity score matching show that the children of single mothers have approximately 15 minute shorter family meals, but there is some evidence of longer bed-time stories as well as slightly longer time of unguided TV-watching (Table 3.3). On one hand, parental breakup does not affect all of children´s free time activities, which is a positive. On the other hand, children in single-mother families receive less face-to-face interaction with parents during meals, and in front of TV. There is some evidence from concrete daily activities supporting the first hypothesis:

Parental breakup penalty affects all children

Multivariate analysis reveals that even with all the control variables, the children of highly educated single mothers have a small penalty in time use. Among the two most important activities for child development - listening to a fairytale at age 3 to 5, and participating in organized sports at age 6 to 10, the children of highly educated single mothers are 2% less likely to participate in organized sports when compared to the reference group of children of two parents with secondary education (M4 in Table 3.9a). The children of two highly educated parents do not differ statistically from the reference group in the probability to participate in sports. It is possible that the children of highly educated single mothers also have a small penalty in listening to a fairytale at preschool age as the descriptive results indicate. Due to the small number of 3 to 5 year old children of highly educated single mothers in our sample, the multivariate results may be statistically not significant due to the small n problem.

In addition to the two most developmentally enriching activities for children, I consider six other activities of children´s free time. Out of these, three may be detrimental for child development: watching TV alone, watching TV with parents, and playing video games and surfing in Internet. The distinction in TV watching time is made because TV watching alone is potentially more harmful for young children. Three additional positive activities of children´s free time include a family meal, reading by herself/himself, and participating in cultural activities. First I would like to

see if there is an increase in potentially harmful activities for children in single parent families compared to their counterparts in intact families. Second, I will analyse the three additional beneficial activities and see if children in single parent families suffer a small penalty.

The children of lowly educated single mothers have a 6% greater probability of watching TV alone than the reference group (Table 3.10a). The children of highly educated single mothers are exposed to unguided TV watching, on average, for 5 minutes longer than the control group children (M4 in Table 3.10b). This is even more than the additional 3 minutes of unguided TV watching of the children with lowly educated single mothers. Children in single mother families do not differ from the reference group in TV watching time with older family members. However, children in highly educated intact families have 7% lower probability to watch TV with parents, and their mean daily TV watching time is nearly 14 minutes smaller from the reference group of children in intact families with medium education (Tables 3.11a and 3.11b). Children of single mothers do not differ statistically from the reference group in playing video games and surfing in Internet without study purpose. Children in highly educated intact families play video games, on average, for 4 minutes less than the children in reference group (Table 3.12b). To sum up detrimental activities for child development, children in highly educated single mother households watch TV more often, and for longer time periods, as well as play video games for a longer time than children with two highly educated parents. These differences are not huge, but they are statistically significant, and may translate into future differences which are not so trivial. For example, children whose parents divorce have on average 7% lower probability of achieving a university degree than children in intact families (Bernardi and Radl, 2014).

In the domain of positive activities for filling free time, children in single parent families are as likely as other children to have a daily family meal. The length of a family meal is on average 12 minutes shorter in single parent families (Table 3.13b), but given the fact that the Italian family meals are already much longer than common in other countries, it may not be something negative. As for reading done by the child herself/himself, children of single-mothers do not differ from the reference group. Out of all the activities in this chapter, child´s reading habits seem to depend most on parental education (Tables 3.14a and 3.14b). Children in highly educated intact families have 6% higher probability to read, and read on average 2 minutes longer each day than the children in reference group. In highly educated intact families, children have 4% higher probability to engage in various cultural activities such as going to the theatre, concert or museum, compared to the reference group of children in intact families with secondary education. To sum up, children of

highly educated single mothers read less often, engage in cultural activities less often, have shorter family meals as well as shorter reading time than similar children of highly educated couples. Therefore the second hypothesis finds support:

Children of highly educated single mothers suffer a larger penalty than children of less educated mothers, in developmentally enriching activities when compared to children living with two highly educated parents.

Unfortunately I am unable to measure the effect of single-parent penalty in children´s time use on their school achievement. This chapter shows that children living with single mothers do not use their free time as constructively as children living with two parents. The penalty is greater for children of highly educated single mothers.

Although one may presume that if in Italy mainly highly educated mothers manage to divorce, they may possess resources to buffer their children from the negative effects of divorce. Recent Italian time use data proves the opposite. Children from divorced and separated families have only one grown-up instead of two who takes daily care of them. If this parent is stressed, overworked or suffers from depression, children receive less parental attention, including less key activities for each child development stage than children in two-parent families.

6 Conclusion

The aim of this chapter is to explore whether the daily time use patterns differ for children in intact and divorced families. I analyse the time-diaries of 476 Italian children from single-mother families, and compare the results to 6,668 Italian children from intact families. All children are aged from 3 to 10 years. The total sample consists of 7,144 children´s time diaries, and was created by merging two latest time use surveys from 2002-03 and 2008-09.

The most notable results is that in case of parental separation, children spent less time having meals with their mothers and have a slightly longer time of unguided TV-watching. When children´s activities in highly educated single mother households are compared to children in intact families where both parents have tertiary education, then a small penalty emerges in most activities. Children in highly educated single mother households are 2% less likely to participate in organized sports during elementary school, watch TV more often, and for longer time periods, as well as play

video games for a longer time, read less often, engage in cultural activities less often, have shorter family meals than similar children of highly educated couples. These differences in children´s use of their free time may lead to future differences in educational attainment, salary, and lifelong health.

It should be stressed once more that the differences are, however, small in size. The incidence of divorce is also very limited in Italy and it would therefore be interesting to apply the same research question and design to other countries where parental separation is more common.

References to Chapter 3

ALTINTAS, E. 2012. Parents´ Time with Children. Micro and Macro Perspectives. Unpublished Dissertation, University of Oxford, Department of Sociology.

AMATO, P. R. 2000. The Consequences of Divorce for Adults and Children. *Journal of Marriage and the Family,* 62**,** 1269-1287.

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

ASELTINE, R. H. 1996. Pathways linking parental divorce with adolescent depression. *Journal of Health and Social Behavior,* 37**,** 133-148.

ASTONE, N. & MCLANAHAN, S. S. 1991. Family structure, parental practices, and high school completion. *American Sociological Review,* 56**,** 309-320.

AXINN, W. G. & THORNTON, A. 1992. The Influence of Parental Resources on the Timing of the Transition to Marriage. *Social Science Research,* 21**,** 261-285.

BERNARDI, F., BOERTIEN, D. & GEVEN, K. 2015. Parental Separation and Offspring´s Wealth in the US. *Working Paper.*

BERNARDI, F. & RADL, J. 2014. The long-term consequences of parental divorce for children's educational attainment. *Demographic Research,* 30**,** 1653-1680.

BIBLARZ, T. J. & RAFTERY, A. E. 1999. Family Structure, Educational Attainment, and Socioeconomic Success: Rethinking the "Pathology of Matriarchy". *American Journal of Sociology,* 105**,** 321-365.

BLOSSFELD, H.-P., DE ROSE, A., HOEM, J. M. & ROHWER, G. 1995. Education, Modernization, and the Risk of Marriage Disruption in Sweden, West Germany, and Italy. *In:* OPPENHEIM MASON, K. & JENSEN, A. (eds.) *Gender and Family Change in Industrialized Societies.* Oxford: Clarendon Press.

BUCHANAN, C. M., MACCOBY, E. E. & DORNBUSH, S. M. 1996. *Adolescents after divorce,* Cambridge, MA, Harvard University Press.

CHERLIN, A. J., CHASE-LANSDALE, P. L. & McRAE, C. 1998. Effects of divorce on mental health throughout the life course. *American Sociological Review,* 63**,** 239-249.

CLARK, R. & CLIFFORD, T. 1996. Toward a resources and stressors model: The psychological adjustment of adult children of divorce. *Journal of Divorce and Remarriage,* 25.

CONLEY, D. 2004. *The Pecking Order. Which Siblings Succeed and Why,* New York, Pantheon Books.

CRAIG, L. & MULLAN, K. 2011. Lone and Partnered Mothers´ Childcare Time Within Context in Four Countries. *European Sociological Review,* 0**,** 1-15.

DAVIS-KEAN, P. 2005. The influence of parental education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology,* 19**,** 294-304.

DeBELLO, W. M. & KNUDSEN, E. I. 2004. Multiple Sites of Adaptive Plasticity in the Owl's Auditory Localization Pathway. *The Journal of Neuroscience,* 24**,** 6853-6861.

DeGARMO, D. S. & FORGATCH, M. S. 1999. Contexts as predictors of changing maternal parenting practices in diverse family structures. *In:* HETHERINGTON, E. M. (ed.) *Coping with divorce, single parenting, and remarriage: A risk and resilience perspective.* Mahwah, NJ: Erlbaum.

ESPING-ANDERSEN, G. 1990. *The Three Worlds of Welfare Capitalism,* Cambridge, Polity Press.

EVANGELOU, M. & SYLVA, K. 2003. *The Effects of the Peers Early Education Partnership (PEEP) on Children's Developmental Progress. Brief No: RB489,* London, Department for Education and Skills.

GOODE, W. J. 1962. Marital Satisfaction and Instability. A Cross-Cultural Analysis of Divorce Rates. *In:* BENDIX, R. & LIPSET, S. M. (eds.) *Class, Status, and Power. Social Stratification in Comparative Perspective.* New York: The Free Press.
GOODE, W. J. 1970. *World Revolution and Family Patterns,* New York, The Free Press.
GOODE, W. J. 1993. *World Changes in Divorce Patterns,* New Haven, Yale University Press.
GRACIA, P. 2015. Parent-child leisure activities and cultural capital in the United Kingdom. The gendered effects of education and social class. Social Science Research, 52, 290-302.
GRIFFIN, K. W., BOTVIN, G. J., SCHEIER, L. M., DIAZ, T., MILLER, N. L. 2000. Parenting practices as predictors of substance use, delinquency, and aggression among urban minority youth: Moderating effects of family structure and gender. *Psychology of Addictive Behaviors*, 14(2), 174-184.
HANSON, T. L. 1999. Does parental conflict explain why divorce is negatively associated with child welfare? *Social Forces,* 77**,** 1283-1316.
HART, B. & RISLEY, T. R. 1995. *Meaningful differences in the everyday experience of young American children,* Baltimore, MD: Paul H. Brooks.
HECKMAN, J. J. 2007. The technology and neuroscience of capacity formation. *PNAS*.
HETHERINGTON, E. M., BRIDGES, M. & INSABELLA, G. M. 1998. What Matters? What Does Not? Five Perspectives on the Association Between Marital Transitions and Children´s Adjustment. *American Psychologist,* 63**,** 167-184.
HETHERINGTON, E. M. & CLINGEMPEEL, W. G. 1992. Coping with marital transitions. *Monographs of the Society for Research in Child Development,* 57**,** 2-3.
HSIN, A. & FELFE, C. 2014. When Does Time Matter? Maternal Employment, Children's Time With Parents, and Child Development. *Demography,* 51**,** 1867-94.
HÄRKÖNEN, J. & DRONKERS, J. 2006. Stability and Change in the Educational Gradient of Divorce. A Comparison of Seventeen Countries. *European Sociological Review,* 22**,** 501-517.
ISTAT. 2013. Separations and Divorces in Italy. Year 2011. Available: http://www.istat.it/en/archive/91141.
JEKIELEK, S. M. 1998. Parental conflict, marital disruption and children´s emotional well-being. *Social Forces,* 76**,** 905-935.
KALIL, A., RYAN, R. & COREY, M. 2012. Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children. *Demography,* 49**,** 1361–1383.
KATZ, L. C. & SHATZ, C. J. 1996. Synaptic Activity and the Construction of Cortical Circuits. *Science***,** 1133-1138.
KIM, H. S. 2011. Consequences of Parental Divorce for Child Development. *American Sociological Review,* 76**,** 487-511.
KNUDSEN, E. I. 2004. Sensitive periods in the development of the brain and behavior. *Journal of Cognitive Neuroscience,* 16**,** 1412-1425.
KNUDSEN, E. I., HECKMAN, J. J., CAMERON, J. L. & SHONKOFF, J. P. 2006. Economic, neurobiological, and behavioral perspectives on building America´s future workforce. *PNAS,* 103**,** 10155-10162.
KOOLSTRA, C. M., VAN, T. H. A. & VOORT, D. 1996. Longitudinal effects of television on children´s leisure-time reading: A test of three explanatory models. *Human Communication Research,* 23**,** 4-35.
LAREAU, A. 2003. *Unequal Childhoods. Class, Race, and Family Life,* Berkeley, Los Angeles, University of California Press.
LAREAU, A. 2011. *Unequal Childhoods. Class, Race, and Family Life. 2nd edition with an Update a Decade Later,* Berkley, University of California Press.

LEWIS, C. R. & OLIVE, M. F. 2014. Early-life stress interactions with the epigenome: potential mechanisms driving vulnerability toward psychiatric illness. *Behav Pharmacol.,* 25**,** 341-51.

LINVER, M., BROOKS-GUNN, J. & KOHEN, D. 2002. Family processes as pathways from income to young children´s development. *Developmental Psychology,* 38**,** 719-34.

McLANAHAN, S. & SANDEFUR, G. 1994. *Growing up with a single parent: What hurts, what helps,* Cambridge, Massachusetts, Harvard University Press.

MCLOYD, V. 1998. Socioeconomic disadvantage and child development. *American Psychologist,* 53**,** 185-204.

NEWPORT, E. L., BAVELIER, D. & NEVILLE, H. J. 2001. Critical thinking about critical periods: Perspectives on a critical period for language acquisition. *In:* DOUPOUX, E. (ed.) *Language, Brain and Cognitive Development: Essays in Honor of Jacques Mehler.* Cambridge, MA: MIT Press.

PASCALIS, O., SCOTT, L. S., KELLY, D. J., SHANNON, R. W., NICHOLSON, E., COLEMAN, M. & NELSON, C. A. 2005. Plasticity of face processing in infancy. *Proceedings of the National Academy of Sciences,* 102**,** 5297-5300.

REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *electronic International Journal of Time Use Research (eIJTUR),* 12**,** 49-72.

ROSENBAUM, P.R. & RUBIN, D.B. 1983. The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrika*, 70 (1): 41-55.

SIMONS, R. L. & ASSOCIATES 1996. *Understanding differences between divorced and intact families,* Thousand Oaks, CA, Sage.

TUCKER, J. S., FRIEDMAN, H. S., SCHWARTZ, J. E., CRITIQUI, M. H., TOMLINSON-KEASEY, C., WINGARD, D. L. & MARTIN, L. R. 1997. Parental divorce: Effects on individual behavior and longevity. *Journal of Personality and Social Psychology,* 73**,** 381-391.

WOLFINGER, N. H. 2005. *Understanding the divorce cycle: the children of divorce in their own marriages,* New York, Cambridge University Press.

YEUNG, W. J., LINVER, M. & BROOKS-GUNN, J. 2002. How money matters for young children ´s development: Parental investments and family processes. *Child Development,* 73**,** 1861-79.

YEUNG, W. J., SANDBERG, J. F., DAVIS-KEAN, P. & HOFFERTH, S. L. 2001. Children's time with fathers in intact families. *Journal of Marriage and Family,* 63**,** 136-154.

Appendix to Chapter 3

Table 3.5. Dependent variables are derived from the following activity, place, and with whom codes

Dependent variables	2002-2003	2008-2009
Listen to a fairytale	**7.2.9.1 Ascoltare una favola**	**7.1.4 Ascoltare una favola**
Organized sports	**6.1.1 Camminare, passeggiare, guardare le vetrine, fare escursioni a piedi** 6.1.3 Ciclismo, sci, pattinaggio 6.1.3.1 Ciclismo 6.1.3.2 Sci 6.1.3.3 Pattinaggio 6.1.4 Giochi con la palla 6.1.4.1 Calcio, calcetto 6.1.4.2 Pallavolo, pallacanestro 6.1.4.3 Tennis, squash 6.1.4.9 Altri sport con la palla 6.1.5 Ginnastica 6.1.6 Fitness 6.1.7 Sport acquatici, sport nautici 6.1.7.1 Bagni (mare, lago, fiume, piscina) 6.1.7.2 Nuoto e altri sport acquatici 6.1.9 Altri sport 6.1.9.1 Danza classica, moderna, jazz, ecc. (come sport) 6.1.9.2 Arti marziali 6.1.9.3 Automobilismo, motociclismo, go-kart, ecc. 6.1.9.9 Altri sport specificati **If luogo =** 29 Luoghi al chiuso attrezzati per lo sport (palestra, piscina, ecc.) , 30 Luoghi all'aperto attrezzati per lo sport (campo sportivo, stadio, ecc.) , oppure 31 Luoghi al chiuso attrezzati per lo spettacolo (cinema, teatro, auditorium, ecc.)	**6.1.2 Jogging, corsa** 6.1.3 Ciclismo, sci, pattinaggio 6.1.3.1 Ciclismo 6.1.3.2 Sci, pattinaggio 6.1.4 Giochi con la palla 6.1.4.1 Calcio, calcetto 6.1.4.2 Pallavolo, pallacanestro 6.1.4.3 Tennis, squash 6.1.4.9 Altri sport con la palla 6.1.5 Ginnastica, fitness 6.1.6 Sport acquatici, sport nautici 6.1.6.1 Nuoto e altri sport acquatici 6.1.6.2 Vela, canoa, windsurf ed altri sport nautici 6.1.7 Danza classica, moderna, jazz, ecc. (come sport) 6.1.9 Altri sport specificati e non specificati If luogo==29 Luoghi al chiuso attrezzati per lo sport (palestra, piscina, ecc.) 30 Luoghi all'aperto attrezzati per lo sport (campo sportivo, stadio, ecc.) 31 Luoghi al chiuso attrezzati per lo spettacolo (cinema, teatro, auditorium, ecc.)
Watching TV alone	**8.2.1 Guardare la televisione** 8.2.1.1 Guardare i cartoni animati e altri programmi televisivi per bambini 8.2.2 Guardare, registrare videocassette, DVD	**8.2.1 Guardare la televisione, videocassette, dvd, dvx** 8.2.1.1 Guardare i cartoni animati e altri programmi televisivi per bambini e ragazzi (per rispondenti fino a 17 anni) 8.2.2 Guardare programmi televisivi, film,

	8.2.2.1 Guardare registrazioni di cartoni animati, film per bambini e ragazzi **And codice con chi**==1 da solo	video su Personal Computer o Internet 8.2.2.1 Guardare i cartoni animati e altri programmi per bambini e ragazzi su Personal Computer o Internet (per rispondenti fino a 17 anni) And codice con chi==1 da solo
Watching TV with adults*	**8.2.1 Guardare la televisione** 8.2.2.2 Guardare i cartoni animati e altri programmi televisivi per bambini 8.2.3 Guardare, registrare videocassette, DVD 8.2.3.1 Guardare registrazioni di cartoni animati, film per bambini e ragazzi con chi=3, con familiari conviventi di 10 anni e piu con chi=4, con familiari non conviventi	**8.2.1 Guardare la televisione, videocassette, dvd, dvx** 8.2.1.1 Guardare i cartoni animati e altri programmi televisivi per bambini e ragazzi (per rispondenti fino a 17 anni) 8.2.2 Guardare programmi televisivi, film, video su Personal Computer o Internet 8.2.2.1 Guardare i cartoni animati e altri programmi per bambini e ragazzi su Personal Computer o Internet (per rispondenti fino a 17 anni) And codice con chi==2 con madre oppure 3 = con padre
Playing video games, internet	**7.3.3 Giochi con il computer, videogiochi** 7.3.3.1 Giochi con il computer 7.3.3.2 Videogiochi 8.4.1.1 Internet	**7.3.3 Giochi con il computer, videogiochi** 7.3.3.1 Giochi con il computer 7.3.3.2 Videogiochi 7.2.2 Accesso alle informazioni tramite il computer: Internet, CD-rom, DVD
Family meal together	**0.2.1.1 Pasti principali con chi=3, con familiari conviventi di 10 anni e piu con chi=4, con familiari non conviventi**	**0.2.1.1 Pasti principali with mother or with father present**
Reading	**8.1.1 Lettura di periodici** 8.1.1.1 Quotidiani 8.1.1.2 Riviste settimanali, quindicinali, mensili, ecc. 8.1.2 Lettura di libri 8.1.3 Leggere fumetti, giornalini, per bambini e ragazzi 8.1.9 Altre letture	**8.1 LETTURE** 8.1.1 Lettura di quotidiani 8.1.1.1 Lettura di quotidiani su Internet 8.1.2 Lettura di riviste periodiche 8.1.2.1 Lettura di riviste su Internet 8.1.3 Lettura di libri 8.1.3.1 Lettura di libri su Personal Computer o Internet 8.1.4 Leggere fumetti, giornalini, per bambini e ragazzi (per rispondenti fino a 17 anni) 8.1.9 Altre letture specificate e non specificate
Cultural activities	**5.2.2 Teatro, concerto** 5.2.2.1 Teatro 5.2.2.2 Concerto 5.2.3 Mostre, musei 5.2.3.1 Mostre	**5.2.2 Teatro, concerto** 5.2.3 Mostre, musei 5.2.4 Biblioteca (non per studio) 5.2.9 Escursioni, gite ed altre attività specificate e non specificate legate al

5.2.3.2 Musei	divertimento o
5.2.4 Biblioteca (non per studio)	alla cultura
5.2.9 Escursioni, gite ed altre attività specificate legate al divertimento o alla cultura	

Table 3.6. Probability of being a single mother, row % (N)

	Single mother	Intact
Education		
High	8% (68)	92% (812)
Medium	6% (200)	94% (3,044)
Low	7% (208)	93% (2,805)
Area		
North-West Italy	9% (149)	91% (1,499)
North-East Italy	6% (92)	94% (1,335)
Central Italy	8% (95)	92% (1,099)
Southern Italy	5% (107)	95% (1,977)
Insular Italy	4% (33)	96% (758)
Number of children		
1 child	12% (186)	88% (1,320)
2 children	5% (217)	95% (3,902)
3 or more children	5% (73)	95% (1,446)
Child age group		
Pre-school age children	6% (157)	94% (2,476)
School children	7% (319)	93% (4,192)
Survey		
2002-2003	6% (238)	94% (3,853)
2008-2009	8% (238)	92% (2,815)
Total	7% (476)	93% (6,661)

Table 3.7 Number of children in each age group by mother´s education

	Single mother		Intact	
Child age group	Pre-school	School	Pre-school	School
Education				
High	26	42	333	479
Medium	63	137	1,177	1,867
Low	68	140	960	1,845

Note: Small N problem. There are 26 children with university-educated single mothers regardless of whether I use age as a grouping variable (group 1: 3-to-5-year-olds, group2: 6-to-10-year-olds) or school subscription information (group 1: subscribed in school for the current academic year, group 2: subscribed in kindergarten, nursery or no subscription).

Table 3.8. OLS for the minutes of listening to a fairytale at ages 3 to 5 (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	0.28 (0.85)	1.10 (1.63)	0.84 (1.69)	0.83 (1.67)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	0.17 (1.16)	0.63 (1.30)	0.40 (1.32)	0.46 (1.30)
High-medium	0.02 (1.19)	0.09 (1.21)	-0.27 (1.28)	-0.25 (1.31)
High-low	8.01 (9.48)	8.08 (9.48)	8.09 (9.41)	8.25 (9.37)
Medium-high	-0.49 (1.00)	-0.42 (1.01)	-0.33 (1.00)	-0.18 (1.00)
Medium-low	-1.52* (0.76)	-1.45† (0.78)	-1.47† (0.78)	-1.54* (0.75)
Low-high	-0.66 (3.02)	-0.59 (3.03)	-0.16 (2.91)	0.03 (2.90)
Low-medium	-0.85 (1.11)	-0.78 (1.13)	-0.43 (1.10)	-0.35 (1.07)
Low-low/ low	-2.56***	-2.51***	-2.05***	-2.02** (0.64)
	(0.61)	(0.65)	(0.061)	
single*tertiary		-3.47 (2.53)	-3.45 (2.54)	-3.53 (2.53)
single*less than secondary		-0.64 (1.90)	-0.51 (1.94)	-0.32 (1.93)
Mother´s employment status (Ref not employed)				
Mother works full-time			1.71* (0.83)	1.49† (0.84)
Mother works part-time			0.70 (0.53)	0.44 (0.54)
Family size (Ref One child)				
Two children			-0.14 (0.59)	-0.16 (0.60)
Three or more children			-0.92 (0.67)	-0.88 (0.67)
Gender: Girl				0.59 (0.50)
Attends kindergarten				0.61 (0.69)
Immigrant				1.69 (3.37)
Non-nuclear family				-1.43** (0.46)
Region in Italy (Ref North-West)				
North-East				0.91 (0.69)
Central				0.24 (1.10)
Southern				-0.96 (0.62)
Insular				0.15 (0.83)
Week-end day				0.29 (0.52)
Survey: 2008 *(Ref 2002)*				-0.09 (0.60)
Constant	3.74***	3.67***	3.18***	2.30* (1.12)
	(0.59)	(0.61)	(0.74)	
R-squared	0.01	0.02	0.02	0.02
N	2,619	2,619	2,619	2,619

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.9. OLS for the minutes of participating in organized sports at ages 6 to 10 (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	4.42† (2.29)	6.63† (3.64)	6.48† (3.64)	6.27† (3.58)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	-0.88 (1.98)	0.98 (2.13)	-0.07 (2.14)	-0.07 (2.07)
High-medium	2.25 (2.74)	2.50 (2.74)	2.06 (2.74)	2.78 (2.68)
High-low	-4.34 (3.06)	-4.09 (3.07)	-3.97 (3.03)	-5.57† (3.04)
Medium-high	7.04* (3.40)	7.29* (3.40)	7.04* (3.42)	7.08* (3.32)
Medium-low	0.33 (1.76)	0.58 (1.77)	0.50 (1.77)	0.20 (1.76)
Low-high	-6.61* (3.03)	-6.36* (3.04)	-5.78† (3.03)	-4.92 (3.17)
Low-medium	-0.66 (1.98)	-0.41 (1.99)	0.37 (2.01)	0.29 (2.00)
Low-low/ low	-1.93 (1.32)	-1.63 (1.36)	-0.44 (1.42)	-0.32 (1.43)
single*tertiary		-7.44 (5.84)	-7.53 (5.76)	-6.90 (5.68)
single*less than secondary		-2.86 (5.07)	-3.40 (5.09)	-2.61 (5.07)
Mother´s employment status (Ref not employed)				
Mother works full-time			2.36† (1.26)	2.14† (1.26)
Mother works part-time			5.38** (1.81)	4.72** (1.76)
Family size (Ref One child)				
Two children			0.41 (1.49)	0.33 (1.47)
Three or more children			-0.98 (1.65)	-0.64 (1.64)
Gender: Girl				-4.86***
				(1.00)
Immigrant				-6.53***
				(1.49)
Non-nuclear family				-5.52** (1.82)
Region in Italy (Ref North-West)				
North-East				3.08 (1.88)
Central				-0.11 (1.63)
Southern				-1.90 (1.40)
Insular				-1.42 (1.72)
Week-end day				-7.42***
				(1.10)
Survey: 2008 *(Ref 2002)*				-0.76 (1.10)
Constant	9.53***	9.28***	7.23***	15.06***
	(0.99)	(1.01)	(1.77)	(2.37)
R-squared	<0.01	<0.01	0.01	0.03
N	4,507	4,507	4,507	4,507

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.10. OLS for the minutes of watching TV alone (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	1.28 (1.54)	-2.86† (1.54)	-3.22* (1.54)	-3.70* (1.54)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	0.25 (1.37)	-0.78 (1.40)	-0.67 (1.40)	-0.99 (1.41)
High-medium	-1.12 (1.73)	-1.54 (1.74)	-1.53 (1.75)	-1.78 (1.79)
High-low	-4.17* (1.78)	-4.60** (1.78)	-4.56* (1.79)	-4.86** (1.76)
Medium-high	-1.70 (1.35)	-2.12 (1.36)	-2.04 (1.36)	-2.27† (1.35)
Medium-low	-0.43 (1.03)	-0.86 (1.05)	-0.90 (1.05)	-0.91 (1.04)
Low-high	-3.76 (2.53)	-4.19† (2.54)	-4.41† (2.52)	-4.50† (2.50)
Low-medium	1.88 (1.60)	1.46 (1.61)	1.35 (1.61)	1.08 (1.60)
Low-low/ low	1.83* (0.93)	1.18 (0.98)	1.24 (0.98)	1.03 (1.00)
single*tertiary		8.36† (4.86)	8.21† (4.85)	9.04† (4.77)
single*less than secondary		6.78* (3.21)	6.75* (3.20)	6.72* (3.21)
Mother´s employment status (Ref not employed)				
Mother works full-time			-0.17 (0.84)	-0.57 (0.85)
Mother works part-time			-0.89 (0.91)	-1.16 (0.94)
Family size (Ref One child)				
Two children			-1.64† (0.90)	-2.29* (0.90)
Three or more children			-2.73* (1.14)	-3.43** (1.15)
Gender: Girl				-1.81** (0.69)
Age group: kindergarten *(Ref elementary school)*				-4.32*** (0.65)
Immigrant				-2.50 (2.42)
Non-nuclear family				-0.46 (2.46)
Region in Italy (Ref North-West)				
North-East				-0.80 (0.98)
Central				2.43* (1.20)
Southern				0.96 (1.01)
Insular				<-0.01 (1.17)
Week-end day				1.44* (0.71)
Survey: 2008 *(Ref 2002)*				1.91* (0.75)
Constant	8.09*** (0.66)	8.51*** (0.68)	10.25*** (1.09)	11.37*** (1.40)
R-squared	<0.01	<0.01	<0.01	0.01
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.11. OLS for the minutes of watching TV with family members aged 10 or older (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	-6.14† (3.61)	-5.29 (5.51)	-4.49 (5.60)	-2.23 (5.36)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	-15.58***	-16.01***	-15.65***	-13.78***
	(3.90)	(4.30)	(4.34)	(4.27)
High-medium	-8.74† (5.18)	-8.65† (5.21)	-7.73 (5.27)	-6.13 (5.24)
High-low	-13.14† (7.44)	-13.05† (7.46)	-13.30† (7.34)	-9.29 (7.38)
Medium-high	0.18 (5.58)	0.27 (5.62)	0.41 (5.60)	-0.19 (5.61)
Medium-low	3.85 (3.51)	3.93 (3.56)	4.25 (3.57)	5.10 (3.50)
Low-high	3.21 (16.72)	3.29 (16.73)	1.85 (16.76)	0.22 (16.06)
Low-medium	5.73 (4.26)	5.82 (4.30)	4.48 (4.31)	4.33 (4.30)
Low-low/ low	10.49***	10.75***	8.55** (2.97)	8.16** (2.94)
	(2.74)	(2.93)		
single*tertiary		2.75 (9.65)	3.20 (9.67)	1.52 (9.26)
single*less than secondary		-2.77 (8.01)	-1.90 (7.98)	-2.73 (7.72)
Mother´s employment status (Ref not employed)				
Mother works full-time			-4.37† (2.46)	-1.82 (2.49)
Mother works part-time			-8.83** (2.93)	-4.26 (2.95)
Family size (Ref One child)				
Two children			1.66 (2.39)	0.11 (2.36)
Three or more children			5.32† (3.20)	3.20 (3.18)
Gender: Girl				-4.86** (1.83)
Age group: kindergarten *(Ref elementary school)*				-8.42*** (1.85)
Immigrant				7.12 (7.76)
Non-nuclear family				-5.52 (6.72)
Region in Italy (Ref North-West)				
North-East				-9.36** (3.15)
Central				1.67 (3.24)
Southern				5.26† (3.01)
Insular				0.66 (3.62)
Week-end day				11.38***
				(2.05)
Survey: 2008 *(Ref 2002)*				-22.00***
				(2.14)
Constant	69.23***	69.14***	70.49***	77.53***
	(2.00)	(2.08)	(2.92)	(3.95)
R-squared	0.01	0.01	0.01	0.04
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.12. OLS for the minutes of playing video games and surfing in Internet (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	0.39 (1.93)	4.25 (3..61)	4.59 (3.64)	4.13 (3.52)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	-3.44* (1.68)	-2.60 (1.79)	-2.74 (1.80)	-3.68* (1.79)
High-medium	-0.03 (2.29)	0.37 (2.29)	0.36 (2.30)	0.26 (2.21)
High-low	-2.25 (3.82)	-1.85 (3.83)	-2.00 (3.81)	-2.24 (3.59)
Medium-high	-0.47 (2.43)	-0.07 (2.44)	-0.10 (2.44)	-0.69 (2.35)
Medium-low	-0.61 (1.47)	-0.22 (1.48)	-0.09 (1.48)	-0.29 (1.45)
Low-high	17.10 (12.79)	17.50 (12.79)	17.57 (12.84)	16.33 (12.39)
Low-medium	2.57 (2.03)	2.96 (2.03)	2.97 (2.05)	2.13 (1.97)
Low-low/ low	-0.11 (1.16)	0.52 (1.20)	0.28 (1.22)	-0.25 (1.21)
single*tertiary		-6.94 (5.32)	-6.70 (5.35)	-4.67 (5.20)
single*less than secondary		-6.55 (4.33)	-6.39 (4.34)	-6.82 (4.20)
Mother´s employment status (Ref not employed)				
Mother works full-time			0.32 (1.12)	-0.23 (1.13)
Mother works part-time			-1.07 (1.20)	-1.72 (1.23)
Family size (Ref One child)				
Two children			1.97† (1.06)	0.06 (1.04)
Three or more children			3.09* (1.47)	1.12 (1.42)
Gender: Girl				-12.09***
				(0.82)
Age group: kindergarten *(Ref elementary school)*				-11.42***
				(0.76)
Immigrant				-2.85 (2.84)
Non-nuclear family				-4.78* (2.32)
Region in Italy (Ref North-West)				
North-East				-0.23 (1.30)
Central				0.90 (1.42)
Southern				1.81 (1.26)
Insular				3.41* (1.70)
Week-end day				3.30***
				(0.89)
Survey: 2008 *(Ref 2002)*				1.36 (0.95)
Constant	12.90***	12.50***	10.85***	19.48***
	(0.84)	(0.85)	(1.27)	(1.78)
R-squared	<0.01	<0.01	<0.01	0.06
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.13. OLS for the minutes of family meals (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	-15.05***	-14.18***	-14.44***	-12.07**
	(2.94)	(4.27)	(4.30)	(4.00)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	-4.85 (3.12)	-5.10 (3.32)	-4.44 (3.36)	-3.29 (3.29)
High-medium	-0.18 (3.69)	-0.09 (3.71)	0.74 (3.75)	-1.24 (3.50)
High-low	-9.20 (5.60)	-9.11 (5.61)	-9.14 (5.61)	-6.43 (5.42)
Medium-high	-5.23 (4.17)	-5.15 (4.19)	-4.81 (4.17)	-4.78 (3.97)
Medium-low	-3.22 (2.48)	-3.13 (2.52)	-3.03 (2.51)	-2.55 (2.38)
Low-high	-0.02 (7.30)	0.07 (7.31)	-1.72 (7.32)	-2.78 (7.57)
Low-medium	-2.98 (2.59)	-2.89 (2.62)	-4.25 (2.64)	-3.60 (2.49)
Low-low/ low	0.38 (1.85)	0.61 (1.95)	-0.94 (2.00)	-0.48 (1.94)
single*tertiary		1.53 (9.53)	1.39 (9.51)	1.07 (8.95)
single*less than secondary		-2.42 (6.26)	-1.87 (6.23)	-3.57 (6.09)
Mother´s employment status (Ref not employed)				
Mother works full-time			-4.32* (1.80)	-4.00* (1.77)
Mother works part-time			-8.91***	-7.95***
			(1.91)	(1.88)
Family size (Ref One child)				
Two children			-2.91† (1.74)	-3.20† (1.68)
Three or more children			-3.41 (2.25)	-4.52* (2.16)
Gender: Girl				0.52 (1.22)
Age group: kindergarten *(Ref elementary school)*				-2.13† (1.26)
Immigrant				-9.06† (4.86)
Non-nuclear family				-5.88 (4.59)
Region in Italy (Ref North-West)				
North-East				-2.60 (2.09)
Central				1.91 (2.09)
Southern				4.34* (1.89)
Insular				3.77 (2.56)
Week-end day				27.61***
				(1.37)
Survey: 2008 *(Ref 2002)*				-5.52***
				(1.48)
Constant	101.37***	101.28***	107.01***	91.09***
	(1.43)	(1.48)	(2.19)	(2.72)
R-squared	0.01	0.01	0.01	0.08
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.14. OLS for the minutes of reading (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	-0.66 (0.79)	-1.17 (1.27)	-1.18 (1.27)	-1.56 (1.28)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	2.46* (1.09)	2.25† (1.16)	2.02† (1.19)	2.14† (1.17)
High-medium	2.88* (1.45)	2.83† (1.46)	2.68† (1.46)	3.22* (1.45)
High-low	2.29 (2.62)	2.23 (2.62)	2.18 (2.59)	2.76 (2.58)
Medium-high	0.43 (1.01)	0.37 (1.02)	0.32 (1.02)	0.51 (1.01)
Medium-low	-0.46 (0.75)	-0.51 (0.76)	-0.49 (0.76)	-0.53 (0.75)
Low-high	-2.24 (1.79)	-2.29 (1.79)	-2.07 (1.80)	-2.17 (1.76)
Low-medium	-0.63 (0.91)	-0.68 (0.92)	-0.57 (0.90)	-0.78 (0.90)
Low-low/ low	-1.81***	-1.87***	-1.85***	-1.96***
	(0.52)	(0.55)	(0.56)	(0.56)
single*tertiary		1.59 (3.36)	1.78 (3.39)	1.92 (3.35)
single*less than secondary		0.66 (1.55)	0.74 (1.55)	1.25 (1.55)
Mother´s employment status (Ref not employed)				
Mother works full-time			0.74 (0.55)	0.30 (0.55)
Mother works part-time			0.50 (0.59)	0.05 (0.60)
Family size (Ref One child)				
Two children			0.10 (0.49)	-0.69 (0.49)
Three or more children			1.64* (0.75)	0.68 (0.74)
Gender: Girl				0.98* (0.42)
Age group: kindergarten *(Ref elementary school)*				-5.26***
				(0.37)
Immigrant				0.03 (1.36)
Non-nuclear family				-2.31***
				(0.47)
Region in Italy (Ref North-West)				
North-East				1.79* (0.74)
Central				-0.32 (0.67)
Southern				-1.03† (0.57)
Insular				0.51 (0.78)
Week-end day				0.48 (0.44)
Survey: 2008 *(Ref 2002)*				-0.48 (0.45)
Constant	5.21***	5.27***	4.56***	6.80***
	(0.44)	(0.46)	(0.62)	(0.82)
R-squared	0.01	0.01	0.01	0.03
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses
† p < .10, * p < .05, ** p < .01, *** p < .001

Table 3.15. OLS for the minutes of cultural activities (full sample), clustering on household id.

	M1	M2	M3	M4
Single mother	-1.22 (1.10)	-2.28 (1.49)	-2.38 (1.49)	-2.18 (1.48)
Family-level education (Ref medium-medium/ medium)				
High-high/ high	2.94 (2.10)	2.20 (2.24)	2.12 (2.27)	2.28 (2.28)
High-medium	-1.32 (1.35)	-1.43 (1.37)	-1.67 (1.38)	-1.95 (1.36)
High-low	-3.32* (1.40)	-3.43* (1.42)	-3.41* (1.42)	-3.11* (1.43)
Medium-high	-0.94 (1.74)	-1.04 (1.75)	-1.06 (1.76)	-0.92 (1.32)
Medium-low	0.56 (1.29)	0.45 (1.31)	0.41 (1.33)	0.37 (1.32)
Low-high	-3.17* (1.53)	-3.28* (1.55)	-2.91† (1.55)	-2.84† (1.56)
Low-medium	-3.07**	-3.18** (1.04)	-2.81**	-2.71** (1.02)
	(1.02)		(1.02)	
Low-low/ low	-2.11* (0.83)	-2.19* (0.91)	-1.62† (0.87)	-1.50† (0.87)
single*tertiary		5.45 (6.30)	5.35 (6.31)	5.28 (6.28)
single*less than secondary		0.70 (1.68)	0.48 (1.67)	0.45 (1.67)
Mother´s employment status (Ref not employed)				
Mother works full-time			1.27 (0.78)	1.07 (0.78)
Mother works part-time			1.77† (1.05)	1.52 (1.04)
Family size (Ref One child)				
Two children			0.37 (0.83)	0.38 (0.82)
Three or more children			-1.05 (0.85)	-1.11 (0.85)
Gender: Girl				1.14* (0.56)
Age group: kindergarten *(Ref elementary school)*				-0.17 (0.52)
Immigrant				-1.04 (1.19)
Non-nuclear family				-1.70***
				(0.54)
Region in Italy (Ref North-West)				
North-East				1.23 (1.05)
Central				0.91 (1.03)
Southern				-0.23 (0.84)
Insular				0.87 (1.22)
Week-end day				3.29***
				(0.57)
Survey: 2008 *(Ref 2002)*				0.04 (0.71)
Constant	4.52***	4.63***	3.78***	0.88 (1.23)
	(0.74)	(0.77)	(1.08)	
R-squared	<0.01	<0.01	0.01	0.01
N	7,126	7,126	7,126	7,126

Note: Standard errors in parentheses, † p < .10, * p < .05, ** p < .01, *** p < .001

CHAPTER 4

Birth Order Effects in Interactive Childcare

1 Introduction

Scholarship points out that first-born children have better chances in life than higher order births (e.g. Conley, 2004). The cause might not be solely genetic as a Norwegian study underlines that men who had been raised as the eldest, even if they had been born second or third, had slightly higher IQ-scores than their younger brothers (Kristensen & Bjerkedal, 2007). In this paper, I am testing one mechanism that might explain such differences, namely parental time investments into their first-, second-, and third-born children. Using sibling fixed-effects, ordinary least squared regression, linear probability, and logistic regression models with Italian time-use data from 2002-2003, I am testing how much mothers and fathers of the same family participate in interactive childcare tasks as the main activity with their first-born versus higher-order children, while differentiating families by mother´s education. A complementary analysis was done with the education of both parents and the results are robust. Interactive childcare activities, and the frequency and quality of parent-child interactions are considered to be the cornerstone of literacy development and later academic success (e.g. Lareau, 2003). The analysis is based on 3807 children in the age gap between 3 and 11 years of age (preschool and elementary school age) with at least one sibling living at home.

The main contribution of this chapter is the in-depth analysis of *targeted* childcare activities. I consider only those interactive care tasks where a parent´s and a child´s time diaries overlap by time, place, and activity. A limitation of this approach is losing many cases as the place codes are often left blank. However, it is the only way to measure which child gets most of parent´s attention. As the share of parents with tertiary, secondary and less than secondary education in this sub-dataset is similar to the overall division of parents by educational background, losing cases should not lead to biased results. A full overview of childcare activities by parental education and child development levels is provided in chapter 1. Every child´s birth order is calculated using the number of children in family (a family level variable) and each child´s age (age is given in each individual time diary). The final chapter unites parental childcare, parental education, and child

development stages from first chapter, and intact versus lone-mother families from chapter two, adding birth order information. It is a novel approach and to my best knowledge, birth order effects in targeted childcare activities have not been studied before with time-use data. In order to understand the story of parental education and birth order effects, I consider the amount of primary childcare time provided by both parents within one day as well as the propensity to receive any interactive childcare activity in a random day, as well as the probability of receiving more parental stimuli than average children (at least 3 hours per day), while controlling for child´s age, mother´s employment status, child´s gender, weekday, and other possible factors.

2 Theoretical focus

2.1 Resources and efficiency

The roulette of life determines the country, gender, race, class, birth order, and general health condition that we are born with. Contrary to a popular belief, the family is not a safe haven: the amount as well as the quality of parental time investments depends on sibship size and composition (Conley, 2004; Lareau, 2003). In "The Pecking Order" Dalton Conley brings out several colourful examples of how siblings turn out differently. The most extreme one is the case of Bill Clinton who became the president of the United States, but whose brother was a drug addict and dealer. In Conley's account, the reason for such sibling divergence was growing up in a poor family headed by a lone mother. Another intriguing standpoint by Conley is the fact that the majority of income differences in the US exists between sibling of the same family, and not between families from different social strata (Conley, 2004). No similar results are available for Europe but hypothetically speaking, siblings should be more alike in Europe as there are less opportunities for geographical mobility, and there is no "American dream"-like story in early socialisation.

According to Becker and Tomes (1986) parents with lower income are not able to invest optimally in the human capital formation of their offspring. For example, poor families may not be able to accommodate tuition fees in tertiary education. These under-investments lead to higher degrees of sibling resemblance in lower social strata. An alternative standpoint is offered by Conley et al. (2007, 2008) claiming that disadvantaged families behave efficiently by investing in the child for whom they expect higher return rate, and advantaged families behave inefficiently by trying to provide equal social standing for every child. As a result, siblings from higher-class families

resemble each other more than siblings from lower-class families.

In addition to the literature on cumulative advantage and path dependence, Fabrizio Bernardi brings out an additional mechanism producing social inequalities at early ages, namely the mechanism of compensatory advantage (Bernardi, 2014). The age differences between children are greatest in the first grade. Thus, the school systems with rigid cut-off dates put younger children in class at a disadvantaged position. In France, the children born in the end of the year face a larger risk of grade repetition, but this risk is much larger for pupils born to parents with lower educational backgrounds (ibid.). Another article based on English data supports the generic nature of the compensatory advantage mechanism (Bernardi & Grätz, 2015). Somewhat surprisingly, parental support in homework, private lessons, and school choice do not show a strong mediating role in the compensatory advantage story (ibid.).

In her longitudinal ethnographic study, Lareau captures episodes in poor families´ lives where parents exert their resources to make children happy. For example, the lone mother of Tyrec Taylor accompanies her son to football matches using several connections of public transportation. Another example is that of Katie Brindle´s lone mother who is happy to be able to afford a bus ticket once in a while to take her third baby for a drive which she knows he loves (Lareau, 2003). Although all parents displayed in her book are devoted to their children, middle-class parents have simply more time, money, and know-how. At the abstract level, Lareau distinguishes two ideal types of parenting. Middle-class families indulge I *concerted cultivation*, by enrolling their children to several after school activities, choosing their friends, being heavily involved at school, giving active advice on college choices, finding job opportunities during tertiary education etc. Poor and working-class families use a more traditional way of child upbringing referred to as *inclination towards natural growth*. In this framework, parents strain every nerve to provide their children with shelter, food, and clothing, but lack the courage to confront school teachers when their children are done injustice, lack energy to play with their children, lack money to buy a home outside of criminal neighbourhoods, lack private transportation to drive their children to organised sports, lack knowledge on crucial school transformations etc. A follow-up study one decade later reveals that children from middle-class families are college students whereas children from working-class or poor families are either high school drop-outs, home-makers, or service class/ blue collar workers. Jessica Irwin is the only exception to the rule of inherited social position as she is in tertiary education despite of being bi-racial and having a working-class background (Lareau, 2011). Siblings turned out quite similarly in Lareau´s research, a finding that does not support Conley´s

claim of greater sibling differences in lower-class families.

2.2 Birth Order

Lareau documented different parental investments by birth order. For instance, the middle-class parents of Garrett Tallinger invested more time and money in their first-born son than to the second-born and third-born sons (Lareau, 2011). Kristensen and Bjerkedal (2007) analysed the IQ test scores of 250,000 Norwegian conscripts while controlling for birth order. The findings converge to earlier studies showing a negative correlation between birth order and intelligence. However, intelligence level depends on social rank in family and not only on birth order, giving stronger support to socialisation in the nature-nurture debate. Findings show that a second-born or third-born son can achieve the average IQ level of a first-born son in cases where the first son(s) had deceased (Kristensen & Bjerkedal, 2007). A complementary study using the military records of Swedish conscripts arrives to the same results (Barclay, 2015) with the addition of controlling for socio-economic status and sibship size – variables that do not change the results. Still, the negative association between birth order and intelligence among brothers disappears once the interval between births is longer than 6 years (Barclay, 2015). Another study finds that in the cases of close spacing, i.e. the difference between births is 2 years or less, math test scores of older siblings decrease by 0.65 standard deviations, but there is no effect on the test scores of younger siblings (Buckles & Munnich, 2012). Some studies stress that there can be several "functual first-borns" in one family: the first child of each gender as well as each child whose birth spacing from the closest same-sex sibling is 5 years or more (Salmon & Schumann, 2011). Recent studies are good news for parents: although it is unethical to control for the birth order and sex of children, keeping a longer spacing between births increases children´s levels of intelligence.

Conley et al. have studied sibling correlations with large datasets, finding that siblings raised in relatively disadvantaged families have lower correlations in socio-economic status when compared to their counterparts from advantaged families (Conley & Glauber, 2008). However, using family fixed effects models, he finds that with regard to behavioural outcomes, siblings with disadvantaged background turn out to be more similar than siblings with affluent family resources (Conley, Pfeiffer, Velez, 2007). When turning attention to larger families, Conley (2000) finds that the number of opposite sex siblings hurts most the educational attainment of the only sibling from other gender. Many researchers point out that siblings with different ages apprehend family transitions like moving, receiving an additional sibling or parent´s union dissolution in diverse ways. Grätz

(2015) found that in Germany, higher birth order brings additional penalty on grade point average, and upper track attendance in high school if parents separate while children are in early teens. However, the double disadvantage arising from birth order and parents´ divorce is alleviated if parents have higher education.

2.3 The Italian Context

According to Esping-Andersen´s seminal work *The Three Worlds of Welfare Capitalism*, Italy is classified at the abstract level as a conservative/corporatist welfare state, characterised by modest levels of decommodification, and strong church/traditional norms (Esping-Andersen, 1990). The numerous critics have argued that Mediterranean countries should be a distinct group, and no country is a pure type in Esping-Andersen´s typology. Contemporary Italy is a mixed case with huge differences between various regions in North and South. Time-use studies reveal that Italian children are especially time intensive, and most of this additional workload is still borne by mothers, a result that explains partially the lowest low fertility story in Italy (Craig & Mullan, 2011; Tanturri, 2012).

The recent drastic falls in fertility in Western societies cannot be explained by classic explanations such as women´s increased job-market participation. Instead, gender equity within households should be analysed (Mills et al., 2008). Employed Italian women may not want to bear the dual burden alone, especially when there are practically no work-life reconciliation policies at state level, and traditional gender norms favour men. In these circumstances, women choose to be permanently childless or in other words *childfree* and sometimes also *single by choice* (Tanturri & Mencarini, 2008). Projections for Europe show a growing trend of lifetime childlessness, with Italy being slightly quicker than several Northern European, Central and Eastern European countries (Tanturri et al., 2015). From the economic perspective, couples may decide to have fewer children due to rising opportunity costs of exiting and re-entering labour market as well as the rising cost of raising children. Postponing or not having children may help women to escape gender inequity within family (Tanturri et al., 2015), but desired fertility is higher than actual fertility across Europe (Tanturri, 2014).

A recent cross-national comparative study reveals that Italian mothers with a child aged below 5 years spend more time on housework, and less time on market work, and leisure each week than their counterparts in France, Sweden, and the USA (Anxo et al., 2011). The results are both

statistically and substantially significant, illustrating how different country contexts shape gender roles in different ways. Using the 2002-03 Italian Time-Use Survey, Tanturri finds that if a family has a child aged below 3 years, parents´ workload increases on average by 3 hours per day, a cost disproportionally carried by mothers (Tanturri, 2012). The same survey reveals that only a minority of Italian fathers performs routine child care tasks on daily basis (Tanturri & Mencarini, 2009). Using the same survey, I intend to find out how parents with different levels of education (a proxy for social status) invest time in their first-born and later-born children.

2.5 Hypotheses

Hypothesis 1:

On average, higher-order children receive less interactive care from parents than their first-born counterparts.

This effect should be especially strong if there is close spacing between births (2 years or less). More educated parents may be able to compensate for this functional disadvantage (Hypothesis 2b).

From the literature on efficiency and differential resource allocation to children by family´s social stratum, the second hypothesis is derived:

Hypothesis 2:

Parents with tertiary education make time transfers in their children in a more uniform manner than less educated parents.

This hypothesis can be disentangled if the quantity of time and birth order are taken into consideration:

Hypothesis 2a: Children of university-educated parents have higher probability of receiving more interactive care than average children.

Hypothesis 2b: Parents with tertiary education invest developmental time more equally in their children, regardless of birth order.

Infants and toddlers are especially time-consuming, while teenagers are more independent. This is

not such a problem for the current research as only younger children in preschool and elementary school age are considered. Bernardi brings out the compensatory class effect arising from social origin, meaning that higher class or more educated parents are able to protect their children from various adverse effects (Bernardi, 2014). The compensatory class effect may also be in operation when more educated parents try to alleviate the disadvantage arising from birth order, especially if they have more knowledge about child development as well as flexitime jobs.

With regard to the general topic of efficiency, an additional point should be emphasised. Thus far we lack the knowledge about the marginal return rate to time investments in children. We do know that early intervention brings along desirable changes in shaping human skills such as the Big Five which are even more important than IQ for success in life (Heckman & Kautz, 2012). Still, we do not know how much time should be invested for optimal development. Thus far the majority of parents and researchers have implied "the more, the better." However, it is plausible to presume that although developmental activities with children bring along positive outcomes, the relationship between time invested in middle-childhood and cognitive outcomes as an adult is not linear, especially for great time quantities.

3 Data

Data come from the 2002-03 Italian Time-Use Survey. Italian time-use data is unique because it contains detailed time-diaries of all family members starting already from age 3. In most time use surveys, children´s diaries are available from age 10 or even later. Although parents fill in minor children´s diaries, they provide us with valuable insight into the daily time allocation of small children. As the aim of this chapter is to analyse one possible mechanism potentially producing lifelong inequalities both between and within families, starting from early ages, the 2002-03 Italian Time-Use Survey is the only available source of information.

The reason for excluding the more recent data from the 2008-09 time-use survey is the lack of filled in place codes. In each time diary, the respondents are asked to write their primary and secondary (if applicable) activities with 10-minute intervals for the entire 24-hour day. In addition, people are asked to indicate where this activity takes place (*place* code), and who else was present during this activity (*with whom* code). Unfortunately, the *place* and *with whom* codes are often left blank. The 2002-03 survey is an exception – it contains a fine record of place and with whom codes. As the

aim of this paper is to analyse only targeted childcare activities (reading to, talking with a child, helping with homework, playing with the child etc.), in the first step I filtered out only those parents who indicated childcare activities as their main activity as well as a *place* code where these activities happened. In the next step, I united these parental diaries to their children´s diaries if at least one of their children (from age 3 to 11 years) had indicated being in the same place at the same time with this parent. A limitation of this approach is loosing several cases. The main strength is that now we know with which child a parent is talking with or reading to. The age gap from 3 to 11 years is chosen for the following reasons: 1) adult-child interaction is the key developmental impact throughout that period, and 2) these ages cover preschool years as well as elementary school in Italy. In the third sand final step in data preparation, only families with 2 or 3 children living at home were left in in order to compare the birth order effects both between and within families.

Out of the 7854 parents with at least one child below age 18 present in the 2002-03 time-use data, about one third had only one child and for that reason could not be incorporated in this chapter on birth-order effects. After uniting the parents´ and children´s diaries by place codes, and reducing the sample to children either in pre-school or elementary school age (from age 3 to 11), the sample size shrank to 3946. The lost cases include 1) children aged between 12 and 18 or younger than 3 years, 2) families where parents have not reported any child care activity as their main activity during that day, and 3) cases where child care activity is reported but the place code is missing which makes it impossible to unite parents´ and children's diaries. Attempts were made to use with whom codes instead and in addition to place codes but it did not improve the analytical sample size. Fortunately, the analytical sample does not differ from the original sample in terms of the distribution of parental education, gender and family type and size.

Fixed effects models work best when there are multiple categories, instead of just three birth order effects. The 2002-03 Italian time-use survey contains large families, including families with one to seven children. While the interaction in big families is definitely worth investigating, families with four, fife, six and seven children constitute to less than 4% of the families sampled. No highly-educated mother had more than four children, and only mothers with less than secondary education had seven children. Surely there is a story of additional inequalities waiting to be explored in this direction. Given that there is quite a big drop-out rate from the analytical sample due to the lack of filled in place codes, we have information on birth order effects on parental time allocation only for 28 fourth-born, 14 fifth-born, and 3 seventh-born children. In the final analysis these children were left out as they were outliers with regard to parent-child interaction and too small and heterogamous

to be analysed as a distinct category. An additional analysis made with all children reveals that the nest eggs in large families receive quite a lot of attention, sometime seven more than the first-borns. After matching time-diary data with background information from family-level survey, the final analytical sample consists of 3735 children from 2746 families.

A major limitation of time-diary study is the lack of information on child outcomes. Another limitation is that the minutes used in different activities do not reveal the quality of reading, fairytale telling, playing etc. Still, time-diaries provide prescious knowlege about family´s time allocations in measurable terms without intervening in family life. Research on human skill formation underlines the importance of early investments that provide the basis for later learning, and adult achievement (Heckman, 2007). For this reason, the current chapter focuses on the youngest age groups available in time-use data, i.e. children from age 3 up to 11 years of age.

4 Methods

Time diary methods are less prone to suffer from social desirability bias (Altintas, 2016; Bianchi et al., 2006; Gershuny, 2000). This is especially important in the present case as interactive childcare activities like reading to a child or helping a child with homework are likely to be over-reported in stylised questions (Hofferth, 2006).

The main dependent variable named interactive childcare comprises the main activities of both parents such as reading to a child, talking with a child, playing with a child, helping with homework etc. that are targeted to that particular child within one random day. Unspecified childcare activities are not included in the interactive childcare variable. The unit of analysis is a child. In this chapter, my biggets contribution to the literature is the creation of the dependent variable by uniting the diaries of parents and children of the same household by place and time codes. It was possible only by using Java and MSQL. My future plans include writing a piece of code in STATA or RStudio so that other time-use specialists could unite multiple diaries across several variables in a few clicks.

The two key independent variables are the birth order of that particular child, and mother´s highest educational level achieved. The independent variable birth order is also created by myself by using the age of respondents and the number of children in each household. I have done a separate analysis with the educational level of both parents, and the results are robust. I control for the child ´s age as younger children usually need more intensive care than older ones. The sample consists of

children aged from 3 to 11, and the results are robust with a smaller sample of children aged from 3 to 8 years. Several family-level indicators may reduce the amount of interactive care that a child would receive otherwise. For that reason, I control for the age difference with the nearest sibling, mother´s employment status, and whether the family has two parents or only one. Due to cultural variance within Italy, I also control for the region where the child lives. As parents have different time constraints during workdays and week-ends days, the type of the day is controlled for.

The analysis is done in three steps. First, ordinary least squared (OLS) estimates are used in order to predict the amount of interactive care that a child receives from his or her parents in minutes per day given his or her birth order. The results from linear probability model (LPM) are complementary in order to test whether the propensity of receiving interactive care from parents depends on the child´s birth order. In some cases, the main result lies in the interaction term. Therefore the following interaction will be used: birth order * mother´s education. The underlying assumption is: more educated mothers are better aware of child development literature and try to invest more equally in all children, not only in their first-borns. This interaction term helps to answer the first hypothesis. All standard errors are clustered by the household id. The formulas for OLS and LPM are basically the same, with the exception that in OLS, the dependent variable is continuous (interactive care from parent(s) in minutes per day), while the dependent variable in LPM is binominal (0 if the child did not receive any interactive care from parents or 1 if he/she did receive interactive care from parents). The most parsimonious formula for Model 1, encompassing only birth order and mother´s education (analysis was also made by both parents´ education, but it did not change the results) as independent variables is:

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\varepsilon$$

Model 2 measures also the interaction effects between birth order and mother´s education:

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\varepsilon$$

Finally, Model 3 adds some “main suspects” like child´s exact age, age difference with the nearest sibling, mother´s employment status, family type, week day, and region of Italy as control variables:

$$y=\beta_0+\beta_1 X_1+\beta_2 X_2+\beta_3 X_1 X_2+\beta_4 X_3+\beta_5 X_4+\beta_6 X_5+\beta_7 X_6+\beta_8 X_7+\beta_9 X_8+\varepsilon$$

Logistic regression was also carried out as a robustness check to LPM. The results are robust and available upon request. All the OLS, LPM and logistic regression analyses were carried out separately for the full sample of 3 to 11-year-old children, and to the siblings sub-sample comprising of siblings aged from 3 to 11 only. The siblings sample consists of 2169 children, belonging to 1038 families with at least one sibling whose age bracket is the same: from age 3 to age 11. The full sample comprises of 3735 children aged from 3 to 11 years who have at least one sibling below age 18 still living at home. The reason for replicating the analysis with the sub-sample of siblings belonging to the same age bracket is to test whether parents with closely-spaced children face hasher trade-offs with regard to which child they devote their time. In all the analyses, only two-child and three-child families are included as there is the small n problem with larger families. A complementary analysis reveals that the 4th and 5th children are outliers that would change the results obtained from regressions.

In the third and final step, fixed effects models are done using the siblings sub-sample. The idea behind comparing siblings with fixed effects models is that the model takes care of all the shared background characteristics that are not available in data, e.g. home atmosphere, income, living arrangements, etc. The idea behind FE is a simple linear estimate:

$$y_{it} = \beta X_{it} + \alpha_i + u_{it}$$

where

y_{it} – denotes the dependent variable, observable for a particular child

X_{it} – denotes the family-invariant or child´s personal regressor matrix

β – is the slope

α_i – denotes the family-effects shared by all siblings, but not measured in data

u_{it} – is the error term

FE models directly control for α_i - the unobserved sibling-invariant family-of-origin effect:

$$y_{it} - \overline{y_i} = (X_{it} - \overline{X_i})\beta + (\alpha_i - \overline{\alpha_i}) + (u_{it} - \overline{u_i})$$

Since $\alpha_i = \overline{\alpha_i}$ because siblings share the same unobserved and unmeasured family-of-origin effects, the shared unobserved family heterogeneity is simply deleted out from the FE models.

5 Findings

5.1 Descriptive Statistics

The dependent variable called interactive childcare is composed of various childcare activities provided by both parents, which are marked as the main activity of parents and where the place code overlaps with the place code of a child belonging to the same household. Unspecified childcare activities (code 389) are not included under interactive childcare. All the original activity codes related to childcare are brought out in Appendix.

Table 4.1. The Composition of Dependent Variable *Interactive Childcare*

Only Primary/ Main Activities	Mean minutes per day	S.D.	Probability (%)
Physical care and supervision (codes 381, 3811, 3812)	89.5	178.6	72.3
Help with homework (code 382)	21.9	67.6	31.9
Playing, reading, and talking to children (codes 383, 3831, 3832)	31.4	84.3	27.9
Accompanying children to school/ kindergarten (codes 384, 3841)	8.3	81.8	12.4

N=3735, children aged from 3 to 11
Source: Italian time-use Survey 2002-2003

Of course, the composition of childcare activities is age dependent. The figure below illustrates the composition of interactive childcare for an average 3-year-old child compared to an 11-year-old child.

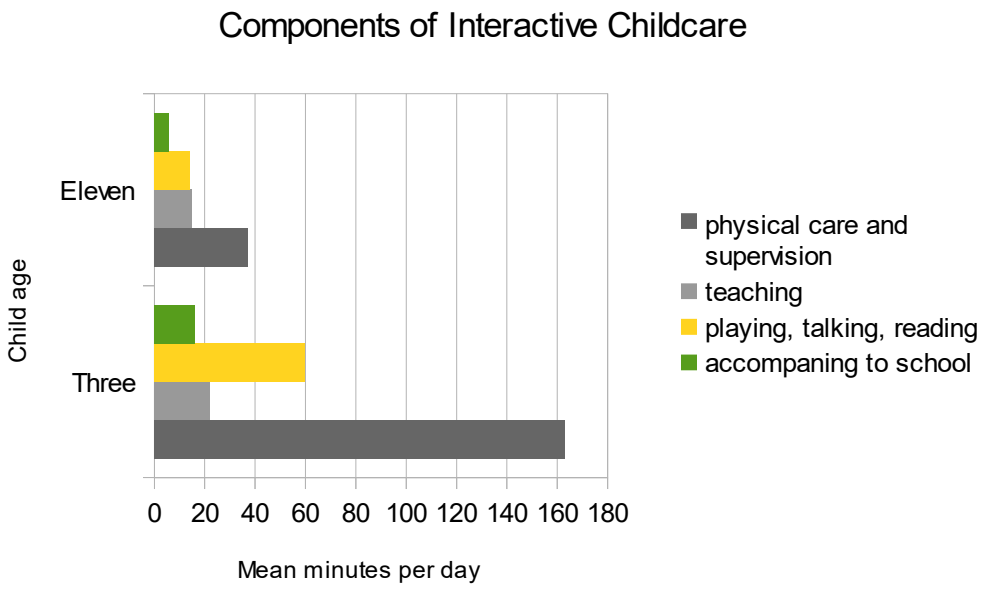


Figure 4.1 – The components of interactive childcare variable for an average 3-year-old compared to an average 11-year-old child

The distribution of interactive childcare variable is illustrated on Figure 4.2. As with all childcare variables, the distribution is heavily skewed to the right.

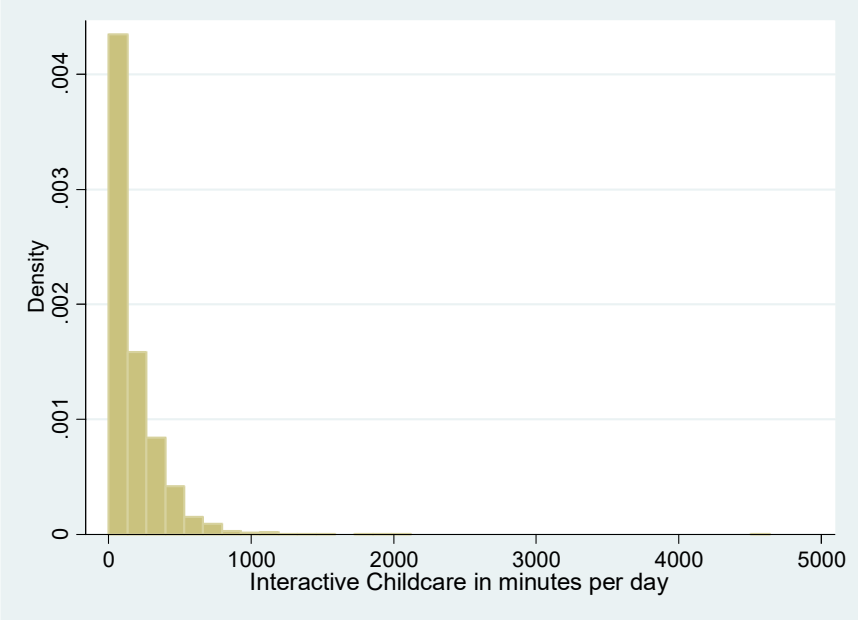


Figure 4.2 – The distribution of interactive childcare variable

Table 4.2 presents the descriptive statistics for variables used in the final analysis. Although the sub-sample of siblings within the same age bracket is much smaller than the full sample of 3 to 11 year-old children with sibling(s), the distribution of variables is nearly identical in the two samples. In the same age siblings sub-sample, there are slightly more first-borns than later borns, and more mothers with secondary/ medium education than mothers with less than secondary degree. Both sub-samples are very similar to the full nationally representative sample presented in Chapter 1.

Table 4.2. Descriptive statistics for variables used in the full sample of 3 to 11 year-old children (N=3735)

Variable	Mean	Std. dev.	Minimum	Maximum	N
Birth order (first)	0.36	0.48	0	1	1361
Birth order (second)	0.49	0.36	0	1	1814
Birth order (third)	0.15	0.36	0	1	560
Parental education (high)	0.15	0.35	0	1	546
Parental education (mid)	0.49	0.50	0	1	1840
Parental education (low)	0.36	0.48	0	1	1349
Age in 2002/03	7.20	2.57	3	11	3735
Male	0.53	0.50	0	1	3735
Week-end day	0.64	0.48	0	1	3651
Interactive childcare received from parents (in minutes per day)	175.41	244.22	0	4640	3735
Interactive childcare dummy	0.81	0.39	0	1	3735

Source: Italian time-use survey 2002-03.

Prior to proceeding with the analysis, I control for the correlations between variables. The correlation between interactive childcare and birth order is weak and negative (-0.0908) indicating that second and third born children receive less childcare than first-born siblings. The correlation between mother´s education and interactive childcare is weak and positive (0.0385) showing that the children of more educated mothers tend to receive more interactive childcare. The strongest correlation (-0.2063) exist between region and mother´s employment status, emphasising that Italy is a very diverse country with regard to gender norms and possibilities.

To check whether the relationships between interactive childcare and the explanatory variables are statistically significant, separate analysis of variance is used for each independent variable. All statistically significant variables are presented in table 4.3. Number of observations for all the analyses of variance is 3635. Once the sample is limited to 2 and 3 child families, the number of children in family is no longer statistcally significant. Child´s gender is also statistically not significant. Weekday is significant only for the propensity of receiving interactive childcare (Table 4.4).

Table 4.3. Analysis of variance for the amount of interactive childcare

Variable	**Adjusted R-squared**
Birth order	0.0467 ***
Mother´s education	0.0147 ***
Child´s age	0.0743 ***
Age difference with the nearest sibling less than 2 years	0.0006 †
Mother´s employment status	0.0013 *
Single parent family	0.0054 ***
Region	0.0020 *

Notes: probability > F is † ≤ 0.1, * ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001.
Source: Italian time-use survey 2002-03.

Table 4.4. Analysis of variance for the propensity of receiving interactive childcare

Variable	**Adjusted R-squared**
Birth order	0.0212 ***
Mother´s education	0.0138 ***
Child´s age	0.0156 ***
Age difference with the nearest sibling less than 2 years	0.0010 *
Mother´s employment status	0.0019 *
Single parent family	0.0017 **
Region	0.0034 *
Weekday	0.0023*

Notes: probability > F is † ≤ 0.1, * ≤ 0.05, ** ≤ 0.01, *** ≤ 0.001.
Source: Italian time-use survey 2002-03.

5.2 Part One of Analysis: OLS and LPM

The following OLS assumptions are tested prior to analysis: linearity between each independent variable and dependent variable, normality of residuals and homoskedasticity. STATA checks for

multicollinearity itself. All the independent and control variables have a linear relationship with dependent variable. The normality of residuals is tested through comparing the Kernel density estimates to the normal density curve. In all cases, the two curves practically overlap. The heteroscedasticity graphs show that residuals are not always equally distributed on both sides of the 0-line. As the dependent variable is heavily right-skewed, logistic regression is used in the next part to complement OLS results.

OLS models (please see Table 4.5 below) shows that second-born children receive, on average, 81 minutes per day less interactive childcare tasks from parents, and third-born children receive, on average 111 minutes per day less interaction with their parents than their first-born counterparts. However, children with mothers who have secondary or tertiary education receive about 41 to 48 minutes per day more interaction with parents than children with lowly educated mothers. The most parsimonious OLS model is presented also on Figure 4.3 below.

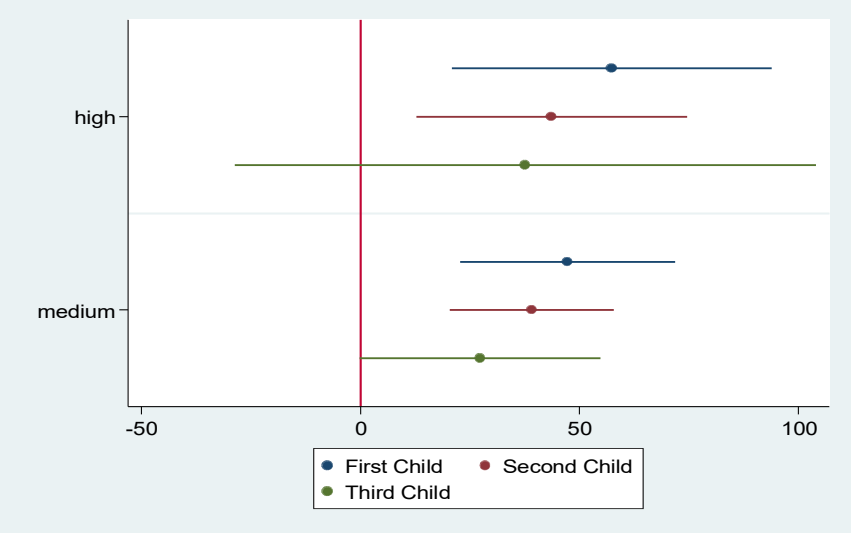


Figure 4.3 – The OLS estimates of the mean minutes of interactive childcare by mother´s education and child´s birth order (mothers with low education are the reference category). 95% confidence intervals provided.

Linear probability models (Table 4.6) show that second-born children receive face-to-face interaction with parent(s), 8% less often, and third-born children 16% less often than they would if they were born first. Children with mothers with at least secondary education receive 8 to 9% more often interaction with parents than their counterparts with less educated mothers. Here, the results from the most parsimonious models are presented. After control variables are added, the main results become larger, but the interaction terms alleviate the results for 2nd and 3rd born children with more educated mothers (Tables 4.5 and 4.6 below).

Table 4.5. Results from OLS model predicting the amount of interactive childcare activities that a child receives from parents in minutes per day, birth order effects (clustered by hhid)

	Model 1	Model 2	Model 3
Independent Variables			
Birth order (Ref: First)			
Second child	-81.5*** (5.8)	-76.1*** (8.3)	-87.8*** (8.0)
Third child	-110.9*** (8.6)	-101.1*** (11.4)	-114.4*** (10.7)
Mother´s education (Ref: Less than Secondary)			
Tertiary (high edu)	48.4*** (14.4)	57.4** (18.6)	46.7** (18.0)
Secondary (middle edu)	40.7*** (8.3)	47.3*** (12.5)	47.4*** (12.2)
Interaction: 2nd child*high edu		-13.7 (18.2)	-1.4 (16.6)
Interaction: 2nd child*middle edu		-8.2 (12.3)	-6.2 (11.4)
Interaction: 3rd child*high edu		-19.7 (36.9)	-17.8 (34.5)
Interaction: 3rd child*middle edu		-20.0 (18.3)	-35.1* (16.9)
Control Variables			
Child´s age *(exact age between 3 and 11)*			-22.9*** (1.4)
Age difference with the nearest sibling less than 2 years			13.2 (14.5)
Mother´s employment status (Ref: Not employed)			
Mother works full-time			-30.4*** (9.1)
Mother works part-time			-20.9† (11.4)
Single-parent family *(Ref: Intact family)*			-57.6*** (12.5)
Region			-0.5 (2.7)
Constant	193.3*** (6.7)	189.1*** (8.4)	373.3*** (17.2)
Adjusted R-squared	0.06	0.06	0.15
N	3,722	3,722	3,722

Notes: † P<0.1, *P<0.05, ** P<0.01, *** P<0.001; standard errors in the parentheses.
Source: Italian time-use survey 2002-03.

Table 4.6. Results from LPM predicting the propensity that parents engage in interactive childcare activities with that child on a random day, birth order effects (clustered by hhid)

	Model 1	Model 2	Model 3
Independent Variables			
Birth order (Ref: First)			
Second child	-0.08*** (0.01)	-0.10*** (0.02)	-0.10*** (0.02)
Third or higher order child	-0.16*** (0.02)	-0.20*** (0.03)	-0.21*** (0.03)
Mother´s education (Ref: Less than Secondary)			
Tertiary (high edu)	0.09*** (0.03)	0.05† (0.03)	0.04 (0.03)
Secondary (middle edu)	0.08*** (0.02)	0.06*** (0.02)	0.06** (0.02)
Interaction: 2nd child*high edu		0.05† (0.03)	0.06* (0.03)
Interaction: 2nd child*middle edu		0.02 (0.02)	0.02 (0.02)
Interaction: 3rd child*high edu		0.09 (0.08)	0.14† (0.07)
Interaction: 3rd child*middle edu		0.09† (0.05)	0.07 (0.05)
Control Variables			
Child´s age *(exact age between 3 and 11)*			-0.02*** (<0.01)
Age difference with the nearest sibling less than 2 years			0.04† (0.02)
Mother´s employment status (Ref: Not employed)			
Mother works full-time			-0.01 (0.02)
Mother works part-time			0.02 (0.02)
Single-parent family *(Ref: Intact family)*			-0.05 (0.04)
Week-end day *(Ref: Workday)*			-0.04** (0.01)
Region			<-0.01 (0.01)
Constant	0.82*** (0.01)	0.84*** (0.02)	1.03*** (0.03)
Adjusted R-squared	0.03	0.03	0.06
N	3,722	3,722	3,722

Notes: † P<0.1, *P<0.05, ** P<0.01, *** P<0.001; standard errors in the parentheses.
Source: Italian time-use survey 2002-03.

5.3 The Second Part of Analysis: Fixed Effects Models

Although I try to control for as many variables as possible in OLS, LPM and logistic regression analyses presented above, there may still be underlying confounding variables that influence both the dependent and key independent variables. Sibling fixed effects models help to get rid of the family-level heterogeneity that siblings share, for instance the atmosphere at home, parenting-styles, factors influencing household income etc. There are three kinds of fixed-effects models in this part: 1) models predicting the amount of interactive care in minutes per day (Table 4.7), 2) models predicting the probability of receiving any interactive care from parents on a random day (Table 4.8), and 3) models predicting the probability of being in the higher interactive care group (3 hours per day or more; Table 4.9). All the analyses are done for the full sample of 3 to 11 year-olds. All the variables that siblings share whether measured in survey or unmeasured, are cancelled out by fixed effexts models.

Table 4.7. Fixed effects model predicting the amount of interactive childcare that a child receives from parents in minutes per day, birth order effects

	Main effects	Controls
Independent Variables		
Birth order (Ref: First)		
Second child	6.6 (4.8)	3.2 (9.2)
Third child	18.7† (10.9)	12.4 (18.6)
Control Variables		
Child´s age *(exact age between 3 and 11)*		-1.0 (2.5)
Child is a boy *(Ref: Girl)*		-1.8 (6.3)
Constant	156.8*** (3.5)	166.9*** (24.3)
R-squared within	<0.01	<0.01
R-squared between	0.09	<0.01
R-squared overall	0.04	<0.01
N observations *(children)*	3,722	3,722
N groups *(families)*	2,621	2,621

Notes: † P<0.1, *P<0.05, ** P<0.01, *** P<0.001; standard errors in the parentheses.
Source: Italian time-use survey 2002-03.

Table 4.8. Fixed effects model predicting the probability of receiving interactive childcare from parents, birth order effects

	Main effects	Controls
Independent Variables		
Birth order (Ref: First)		
Second child	-0.01** (0.01)	0.01 (0.01)
Third child	-0.01 (0.01)	0.03 (0.02)
Control Variables		
Child´s age *(exact age between 3 and 11)*		0.01* (<0.01)
Child is a boy *(Ref: Girl)*		-0.01 (0.01)
Constant	0.82*** (<0.01)	0.76*** (0.03)
R-squared within	0.01	0.01
R-squared between	0.02	0.04
R-squared overall	0.01	0.03
N observations *(children)*	3,750	3,750
N groups *(families)*	2,642	2,642

Notes: † P<0.1, *P<0.05, ** P<0.01, *** P<0.001; standard errors in the parentheses.
Source: Italian time-use survey 2002-03.

Table 4.9. Fixed effects model predicting the probability of being in the high interactive childcare group (3 hours of care or more per day), birth order effects

	Main effects	Controls
Independent Variables		
Birth order (Ref: First)		
Second child	0.01 (0.01)	<0.01 (0.02)
Third child	-0.01 (0.03)	-0.02 (0.04)
Control Variables		
Child´s age *(exact age between 3 and 11)*		<-0.01 (0.01)
Child is a boy *(Ref: Girl)*		0.02 (0.01)
Constant	0.32*** (0.01)	0.34*** (0.06)
R-squared within	<0.01	<0.01
R-squared between	0.02	0.07
R-squared overall	0.01	0.05
N observations *(children)*	3,750	3,750
N groups *(families)*	2,642	2,642

Notes: † P<0.1, *P<0.05, ** P<0.01, *** P<0.001; standard errors in the parentheses.
Source: Italian time-use survey 2002-03.

The main finding from the fixed effects models is that there is much more variability between families than within families (R-squared between are greater than R-squared within) with regard to investing interactive care into small children. The models are statistically significant although most of the variables are insignificant. From tables 4.7 to 4.9, only two birth order effects are statistically significant. Third-born children receive on average 19 minutes more of interactive care from parents each day than their first-born siblings (Table 4.7). This is approximately a 12% increase from the constant of 157 minutes per day. Second-born children are on average 1% less likely to receive any interactive care from parents than their first-born counterparts (Table 4.8). As a robustness check, the fixed effects models were run separately for the families with highly-educated mothers, mothers with secondary education, and lowly educated mothers. No additional statistically significant findings emerged.

6 Conclusions

The aim of this chapter is to disentangle one mechanism that produces inequalities, namely the different time investments of parents into their first-, second- and third-born children. Though evidence exists about 1) higher IQ scores of first-born brothers compared to their second- and third-born counterparts in many countries (Barclay, 2015; Kristensen & Bjerkedal, 2007) and 2) experiments that boost both IQ scores and social skills of small children through various interactions with grown-ups at early ages (FPG Child Development ..., 2016; Heckman & Kautz, 2012; Schweinhart et al., 2005), the actual mechanism producing these inequalities that have a lifelong impact on our lives, namely the varying time investments of parents to their children with different birth order, has not been studied to such an extent before. Thanks to good-quality time-use data and possibilities from modern technology, I was able to create a birth order variable as well as to link the daily time-use diaries of parents to the time-diaries of their children by using time and place codes within each household. To my best knowledge, nothing like this has been done before. Some distinguished researchers like Annette Lareau (2003, 2011) and Dalton Conley (e.g. 2000, 2004) have presented mainly qualitative or descriptive analyses on the birth order issues with regard to inequality. I am able to control some hypotheses that many parents as well as several researchers have been wondering about with data on more than 3700 children coming from more than 2000 families. With recent nationally representative data from Italy, I test the following two hypotheses:

Hypothesis 1: On average, higher-order children receive less interactive care from parents than their first-born counterparts.
Hypothesis 2: Parents with tertiary education make time transfers in their children in a more uniform manner than less educated parents.

Let use look at the latter hypothesis first. By using results from OLS and LPM, there are statistically and substantially significant differences in the amount of interactive care as the primary activity that siblings receive from their parents. Linear regression with the full sample of 3 to 11 year-old children with one or two siblings (Table 4.5) shows that even after controlling for all possible variables, second-born children receive on average, 88 minutes less, and third-born children 114 minutes less interactive care from parents each day than the first-born children of same age. Linear probability model (Table 4.6) illustrates that not only the minutes of daily care differ between children with different birth order, also the probability of receiving any interactive care from parents is 10% lower for the second-born, and 21% lower for the third-born children when

compared to first-born children. The results from OLS and logistic regression are very similar. If we want to see, who are the children in the higher interactive care group, i.e. children receiving 3 hours or more interactive care per day, then second-borns have 21% lower probability and third-borns 29% lower probability than first-borns to belong to that group. However, the results from fixed effects analyses show different results. Third-born children have an advantage of 19 minutes per day, but this effect disappears when the age of the child is controlled for. As a robustness check, the same analyses have been carried out with a much smaller sub-sample of children who have at least one sibling in the same age span. The results from same age siblings sub-sample are similar to those of the full sample of 3 to 11 year-old children, and are available upon request. Only statistically significant results are used. To conclude, results from quantitative analysis support the second hypothesis that postulates that on average, higher-order children receive less interactive care from their parents than their first-born siblings.

Now, let´s turn our attention to the second hypothesis on the alleviating affect of mother´s education on children´s birth order. The first hypothesis can be disentangled if the quantity of time and birth order are taken into consideration:

Hypothesis 2a: Children of university-educated parents have higher probability of receiving more interactive care than average children.
Hypothesis 2b: Parents with tertiary education invest developmental time more equally in their children, regardless of birth order.

First, children in families with highly educated mothers receive more interactive care than their counterparts with less educated families. OLS results (Table 4.5) show that the bonus of having a university-educated mother is about 47 minutes per day, a result that is practically the same as the children of mothers with secondary education receive. The control group consists of mothers with less than secondary education – a group that is still relatively large in Italy. In the light of this finding, hypothesis 1a should be reworded: the children of mothers with tertiary or secondary degree have a considerably higher probability of receiving interactive care than the children coming from less educated households. In order to answer hypothesis 1b, the interaction terms between birth order and mother´s education must be scrutinised. All other things being constant, the children of highly-educated mother receive on average: 420 (first), 332 (second), and 306 (third) minutes of interactive childcare per day. The children of mothers with secondary education receive very similar average scores if they are born first or second, but the third-borns experience a steeper fall: 421

(first), 333 (second), and 271 (third) minutes per day. The children of mothers with less than secondary education display the lowest daily time investments: 373 (first), 286 (second), and 259 minutes (third). These numbers are based on own calculations of statistically significant results presented in Table 4.5. The probability of receiving any interactive care on a random day, falls by 10% for the second-borns of lowly educated mothers, and 4% for the children whose mothers have secondary education or more. Again, the difference is made by the third child: the third borns have 21% smaller probability of receiving daily interactive care in lowly educated households, 17% smaller probability in households with medium education, and only 7% smaller probability of receiving care in highly educated households when compared to their first-born siblings within the same families (Table 4.6). These results are both statistically and substantially significant, illustrating the point that parents with tertiary education invest in a more uniform way in their children regardless of birth order. Going back to the discussion about resources and efficiency, these results support Conley´s work (2004): the lowly educated families seem to optimise by investing more in one of their children, most often to their first-born child regardless of child´s gender. Conversely, educated parents are not that efficient and try to invest time more equally into their children with different birth order.

References to Chapter 4

ALTINTAS, E. 2016. The Widening Education Gap in Developmental Child Care Activities in the United States, 1965-2013. *Journal of Marriage and Family,* 78**,** 26-42.

ANXO, D., MENCARINI, L., PAILHÉ, A., SOLAZ, A., TANTURRI, M. L. & FLOOD, L. 2011. Gender differences in time use over the life course in France, Italy, Sweden, and the US. *Feminist Economics,* 17**,** 159-195.

BARCLAY, K. J. 2015. A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence,* 49**,** 134–143.

BECKER, G. S. & TOMES, N. 1986. Human capital and the rise and fall of families. *Journal of Labor Economics,* 4**,** S1-S39.

BERNARDI, F. 2014. Compensatory Advantage as a Mechanism of Educational Inequality. A Regression Discontinuity Based on Month of Birth. *Sociology of Education,* 87(2)**,** 74-88.

BERNARDI, F. & GRÄTZ, M. 2015. Making Up for an Unlucky Month of Birth in School: Causal Evidence on the Compensatory Advantage of Family Background in England. *Sociological Science*, 2, 235-251.

BIANCHI, S. M., ROBINSON, J. P. & MILKIE, M. A. 2006. *Changing rhythms of American family life,* New York, Russell Sage Foundation.

BUCKLES, K. S. & MUNNICH, E. L. 2012. Birth Spacing and Sibling Outcomes. *The Journal of Human Resources,* 47**,** 613-642.

CHERLIN, A. J. 2010. Demographic trends in the United States: A review of research in the 2000s. *Journal of Marriage and Family,* 72**,** 403-419.

CONLEY, D. 2004. *The Pecking Order. Which Siblings Succeed and Why,* New York, Pantheon Books.

CONLEY, D. 2000. Sibship Sex Composition: Effects on Educational Attainment. *Social Science Research,* 29**,** 441-457.

CONLEY, D. & GLAUBER, R. 2008. All in the family? Family composition, resources, and sibling similarity in socioeconomic status. *Research in Social Stratification and Mobility,* 26**,** 297-306.

CONLEY, D., PFEIFFER, K. M. & VELEZ, M. 2007. Explaining sibling differences in achievement and behavioral outcomes: The importance of within- and between-family factors. *Social Science Research,* 36**,** 1087-1104.

CRAIG, L. & MULLAN, K. 2011. How Mothers and Fathers Share Childcare: A Cross-National Time-Use Comparison. *American Sociological Review,* 76**,** 834-861.

ESPING-ANDERSEN, G. 2009. *The Incomplete Revolution. Adapting to Women´s New Roles,* Cambridge: Polity Press.

ESPING-ANDERSEN, G. 1990. *The Three Worlds of Welfare Capitalism,* Cambridge: Polity Press.

FPG CHILD DEVELOPMENT INSTITUTE OF THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL 2016. *The Abecedarian Project* [Online]. Available: http://abc.fpg.unc.edu [Accessed August 11th 2016].

GERSHUNY, J. 2000. *Changing Times: Work and Leisure in Postindustrial Society,* Oxford, England, Oxford University Press.

GRÄTZ, M. 2015. When Growing Up Without a Parent Does Not Hurt: Parental Separation and the Compensatory Effect of Social Origin. *European Sociological Review,* 31**,** 546-557.

HECKMAN, J. J. 2007. The technology and neuroscience of capacity formation. *PNAS*.

HECKMAN, J. J. & KAUTZ, T. 2012. Hard Evidence on Soft Skills. *Labour Economics,* 19**,** 451-

464.
HOFFERTH, S. L. 2006. Response bias in a popular indicator of reading to children. *Sociological Methodology,* 36**,** 301-315.
KORNRICH, S. & FURSTENBERG, F., JR. 2013. Investing in children: Changes in parental spending on children, 1972 to 2007. *Demography,* 50**,** 1-23.
KRISTENSEN, P. & BJERKEDAL, T. 2007. Explaining the relation between birth order and intelligence. *Science,* 316**,** 1717.
LAREAU, A. 2011. *Unequal Childhoods. Class, Race, and Family Life. 2nd edition with an Update a Decade Later,* Berkley, University of California Press.
LAREAU, A. 2003. *Unequal Childhoods. Class, Race, and Family Life,* Berkeley, Los Angeles, University of California Press.
MILLS, M., MENCARINI, L., TANTURRI, M. L. & BEGALL, K. 2008. Gender equity and fertility intentions in Italy and the Netherlands. *Demographic research,* 18**,** 1-25.
MONNA, B. & GAUTHIER, A. H. 2008. A review of the literature on the social class and economic determinants of parental time. *Journal of Family and Economic Issues,* 29**,** 634-653.
RALEY, K. & BUMPASS, L. 2003. The topography of the divorce plateau: Levels and trends in union stability in the United States after 1980. *Demographic Research,* 8**,** 245-260.
REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *electronic International Journal of Time Use Research (eIJTUR),* 12**,** 49-72.
SALMON, C. & SCHUMANN, K. 2011. *The Secret Power of Middle Children,* New York, NY, Plume.
SCHWEINHART, L. J., MONTIE, J., XIANG, Z., BARNETT, W. S., BELFIELD, C. R. & NORES, M. 2005. *Lifetime effects: The HighScope Perry Preschool study through age 40.,* Ypsilanti, MI, HighScope Press.
TANTURRI, M. L. 2014. Why fewer babies? Understanding and responding to low fertility in Europe. *In:* ABELA, A. & WALKER, J. (eds.) *Contemporary Issues in Family Studies: Global Perspectives on Partnerships, Parenting and Support in a Changing World.* Oxford: John Wiley & Sons.
TANTURRI, M. L. 2012. How Much Does a Child Cost Its Parents in Terms of Time in an Aged Society? An Estimate for Italy with Time Use Survey Data. *In:* DE SANTIS, G. (ed.) *The Family, the Market or the State? Intergenerational Support Under Pressure in Ageing Societies.* Dordrecht, New York: Springer.
TANTURRI, M. L., MILLS, M., ROTKIRCH, A., SOBOTKA, T., TAKÁCS, J., MIETTINEN, A., FALUDI, C., KANTSA, V. & NASIRI, D. 2015. State-of-the-art report Childlessness in Europe. *Families and Societies Working Paper Series,* 32**,** 1-53.
TANTURRI, M. L. & MENCARINI, L. 2009. Fathers' involvement in daily childcare activities in Italy: does a work-family reconciliation issue exist? *ChilD Working Paper,* 22**,** 1-21.
TANTURRI, M. L. & MENCARINI, L. 2008. Childless or Childfree? Paths to Voluntary Childlessness in Italy. *Population and Development Review,* 34**,** 51-77.

Appendix to Chapter 4

ORIGINAL ACTIVITY CODES FROM 2002-2003 SURVEY

3.8 CURA DI BAMBINI/RAGAZZI DELLA PROPRIA FAMIGLIA
- 3.8.1 Cure fisiche e sorveglianza
  - 3.8.1.1 Cure fisiche
  - 3.8.1.2 Sorveglianza
- 3.8.2 Aiutare i bambini/ragazzi a fare i compiti
- 3.8.3 Giocare, leggere e parlare con bambini/ragazzi della famiglia
  - 3.8.3.1 Giocare con i bambini/ragazzi
  - 3.8.3.2 Leggere e parlare con i bambini/ragazzi
- 3.8.4 Accompagnare i bambini/ragazzi
  - 3.8.4.1 Accompagnare i bambini/ragazzi a scuola o all'asilo
- 3.8.9 Altre attività specificate legate alla cura di bambini/ragazzi

CHAPTER 5: General Conclusion

1 Early childhood inequalities

According to Charles Wright Mills (1959), "it is the social scientist's task to translate personal troubles into public issues." The current thesis does indeed translate personal troubles and experiences into objects of research. I started my dissertation when my first child was one year old, and I had the second one during my PhD studies. Time became the scarcest resource, and a full night's sleep the most desirable achievement. The time devoted to the thesis had to be negotiated and balanced with time spent with the children. I had to discover which activities were more congenial depending on my children's age. I had to divide my time between them. I had to find their talents and the best extra-curricular activities for them, be their taxi-driver, and act as private teacher for their school entrance exams. I had to negotiate my time with my partner who was holding several jobs and doing PhD studies simultaneously, while living in a different country. In the end, I am a tightrope-walker's apprentice, learning how to balance weekday and weekend time, work and family life.

But early childhood is far from being only a personal issue, and it has become a crucial area of research both in applied economics and social stratification during the past decade or more. Starting from the works of Sara McLanahan (2004) and Annette Lareau (2003), there is a growing consensus that social inequalities are increasing for the next generation. Scientists have identified several social forces operating behind the scenes that lead to the growing disparities in the resources of children. Some of the major culprits are changing labour-market demands, better birth-control technologies, lagging welfare-state family policies (McLanahan, 2004), new roles for women in society, challenges arising from the knowledge economy, demographic challenges arising from low fertility and an ageing population (Esping-Andersen, 2009), increasing educational and occupational homogamy especially at the top and bottom of the social hierarchy (Blossfeld & Timm, 2003), enforced by the different family planning strategies and sibship sizes of different social strata (Conley, 2004), and toughened by the different parenting types of different social

classes (Lareau, 2003). As a result, dual-earner, double-career couples have more resources and fewer children to whom to devote their time, money, and different types of accumulated capital. They often have flexi-time jobs that make it easier to reconcile work and family life, and much better knowledge of the recent changes in the literature on child development. Lareau describes the parenting strategy of the middle and upper-middle class as "concerted cultivation", as parents see their children as lifelong projects that need expert knowledge and help (Lareau, 2003). The parenting of working-class and poor families stands as a diametric opposite to this, and is described as "the accomplishment of natural growth", where just the essentials like food, shelter, and clothing are provided, and children are allowed to play by themselves (ibid.). Working-class and poor parents also wish the very best for their children, but are unable to provide the same amount of care because of their long and rigid work hours, their reliance on public transportation, their lack of knowledge about recent trends in the literature on child development, and so forth.

Time-use research verifies these results by showing a general increase in childcare time for mothers and fathers on workdays and weekends alike in an array of countries over the past decades (Altintas, 2016; Bianchi, 2000; Bittman, 1999; Chalasani 2007; Fisher, McCulloch & Gershuny, 1999) with a critical childcare gap remaining or even growing between highly educated and less educated parents (Bonke and Esping-Andersen, 2009; Chalasani 2007). Parenting style is a crucial social mechanism that produces and maintains inequalities, which is recognised by sociologists (e.g. Lareau, 2003). If the groundwork or early investment is lacking, it is nearly impossible to lay the bricks for the next developmental levels in a life-cycle analysis (Erikson, 1950). Research into human skill formation underlines the importance of early time investments in creating gaps in the cognitive development levels of children raised by different socio-economic groups (Heckman, 2007). Longitudinal research stresses that early investments should be coupled with positive intervention strategies during teenage years so that the same levels of cognitive achievement are maintained, but social skill formation happens mainly during the pre-school years and might even dominate cognitive abilities in shaping the life chances of children (Heckman & Kautz, 2012).

Given the growing interest in the transmission of social inequalities during the early phases of the life-course, in both academic literature and policy-oriented research, this thesis has investigated several social mechanisms that cause relative disadvantage at early ages. It has done so using detailed time diary data and focusing on the various social background influences that create

inequalities in parent-child shared time. More precisely, it 1) has measured the quantitative differences in parental time investments in small children by parental education and child development stages; 2) has compared children's free time usage in intact and single-parent households; and 3) has analysed the interactive time parents invest in their first-born, second-born, and third-born children by mother's education.

The main strength of this thesis is the attempt to use time-use data in innovative ways, by comparing parental time investments across siblings, analysing the time use of children, and differentiating families by the educational backgrounds of both parents. This was made possible by one of the best data sets available in time use research in terms of detailed activity codes, children's time-diaries from age three onwards, and huge data sets of 55,773 individuals in 2002-03, and 44,606 individuals in 2008-09. It is worth mentioning that Italy is studied relatively little compared to the USA and the UK. The research questions, on how family type and birth order affect childcare investments are relatively new in time-use research.

The conclusion summarises the main results of the previous chapters and discusses their broader implications. Finally, some limitations of the empirical analyses are highlighted and a number of ideas for future research are put forward.

2 Summary of the main results

In Chapter 2 I address questions generally related to the educational gradient in childcare. The sub-sample for the analyses consists of 19,988 parents in intact families with at least one child between the ages of 0 and 13. The data come from the Italian time-use surveys of 2002-03 and 2008-09.

The first key question addressed in Chapter 2 was whether *more educated parents simply provide more childcare than less educated parents do (the education gradient in childcare) or do they also tailor their childcare time in accordance with the literature on child development in order to foster their children's cognitive development (the developmental gradient)?*

Kalil, Ryan, and Corey (2012) have conducted a similar study with US mothers (N=6640) by using 2003-07 ATUS data. The developmental and educational gradients in childcare by mothers are somewhat larger in the US than in Italy, meaning that highly educated mothers are more aware of the importance of tailoring their childcare time to suit child development needs. The added value of the thesis comes from expanding the educational and developmental gradient analysis to fathers, and performing a joint analysis of the childcare time of couples, while presenting the findings separately for working days and weekend days.

Separate OLS analyses for the childcare time of mothers and fathers provide evidence of the education gradient. Highly educated mothers spend on average 25 minutes more on childcare on working days, and 13 minutes more on weekend days than do mothers with secondary education, controlling for occupational status and other socio-demographic factors. Less educated mothers spend on average eight minutes less on childcare during working days, and 16 minutes less on weekend days than mothers with medium-level education. The childcare gap in investments by mothers is 223 minutes per week, meaning the child of a highly educated mother receives on average 3 hours and 43 minutes more face-to-face primary childcare from its mother each week than its counterpart living with a less educated mother gets. There is no evidence of an education gradient in the childcare of fathers on working days, but on weekend days, highly educated fathers spend eight minutes more and less educated fathers five minutes less on various childcare tasks than fathers with secondary education do. These findings have two important implications. First, there is less gender inequality in childcare among the highly educated couples at weekends. Second, social background inequality in child care is stronger at weekends. This finding fits with the literature on schools as the great equalisers in children's cognitive skills, and the roaring increase in inequalities during summer vacations, which account for up to 90 per cent of the unexplained inequality in the total inequality in the learning rates of children (Downey, von Hippel & Broh, 2004).

There is some evidence of a developmental gradient: the results suggest that there is an interaction term between the mother's education and the child's age in the mother's time spent teaching their three to five-year-olds on weekend days. In other words, the children of highly educated mothers have a seven per cent higher probability of receiving teaching from their mother on weekend days at the developmental stage of three to five years than the children of secondary-educated mothers. Highly educated fathers spend an additional 13 minutes on basic care tasks when their children are

aged from nought to two years old, regardless of the week day. Moreover, highly-educated fathers devote an additional 29 minutes per day to playing with their newborns at weekends. Results from censored regression analyses support the findings from the OLS regressions. The effect sizes in time-use data may seem small in a daily context, but translate into much larger effects over the course of years.

The next question in Chapter 2 arises from the first one: *how prevalent is the involved "new father" in Italy? If parents have more flexibility at weekends, do all social strata indulge in intensive weekend parenting?*

It may well be that the social norms for the new father evolved among the more educated social groups in the USA, and are currently diffusing across societies and social groups. In Italy, fathers with a post-secondary degree spend about eight minutes more time on childcare on weekend days than fathers with a secondary degree. Remarkably, during the first year of a child's life, more educated fathers devote on average at extra 46 minutes per weekend day to childcare. Though most of this extra time is spent playing, at 30 minutes or half an hour, about 13 minutes per day are spent on routine tasks such as nappy-changing, feeding, or hushing the baby. Although all fathers seem to be very occupied on working days, which finish quite late in Italy, the more educated fathers spend about 13 minutes on workdays on the routine tasks with their toddlers aged one to two. This evidence shows that the new father in Italy is a father with post-secondary education, which is 12 per cent of fathers in the nationally representative sample. He is more than a weekend father, as he also provides routine childcare on working days. However, he spends substantially more time with his young child on weekend days, when he has more free time. Fathers with secondary education or less spend significantly less time with their children.

The following question in Chapter 2 relates to the combined childcare of partners: *How do couples share childcare time in educationally homogamous unions: How does a child's life differ if it has two parents with post-secondary degrees rather than two parents with less than secondary degrees?*

When the childcare of partners is combined, the greatest divergence occurs between couples with

less than a secondary degree and the rest. The educationally homogamous less educated couples (39 per cent of mothers, and 46 per cent of fathers have less than a secondary degree in the nationally representative dataset) spend on average 23 minutes less time on children aged from nought to five on working days, and about 19 minutes less on weekend days than couples with secondary education who have children in the same age groups. Given that couples with post-secondary education increase their total childcare time on weekend days by 21 minutes, the differences between educationally homogamous families grow larger. With all control variables held constant, a child below the age of three receives 149 minutes of face-to-face interactive childcare on a weekend day if its parents have post-secondary degrees, but only 109 minutes if its parents have less than secondary education. Quantitatively speaking, the child of the less educated couple receives only 73 per cent, or less than three quarters, of the childcare it would receive if the parents had post-secondary education.

Moreover, there is a negative developmental gradient in the childcare of less educated parents in all activity types and on all weekdays: basic care, playing, teaching, child management, and total childcare, especially when the children are aged from nought to two, and from three to five (the reference group is couples with secondary education and a child aged from six to 13). This means that parents with post-secondary degrees tailor their childcare time more in each child development stage than other parents do. This finding is in line with the research by Annette Lareau (2003, 2011) that suggests that middle class parents, which are couples with university degrees, also provide qualitatively better childcare, including various practices like answering questions with questions, using sophisticated vocabulary, running more organised activities, and not using imperatives. The findings based on the childcare investments of couples suggest that educational homogamy might drive an accumulation of disadvantage for children in the lower socio-economic stratum.

The last question in Chapter 2 explores questions that have not been asked before in time-use research: *How do couples with extreme educational heterogamy divide childcare, for instance where there is a university educated mother with a husband who has less than a secondary degree, or a highly educated father married to a less educated wife?*

The child care patterns of partners with extreme educational heterogamy have not been studied before. The most intensive case of parenting happens when a highly educated woman has a child

with a partner with a low level of education. Their child receives 31 minutes more childcare on working days and 28 minutes more childcare on weekend days, than do children born to couples with a secondary degree and a tertiary degree. This child receives substantially more basic care and play than all the other children. There could be several explanations for this. First, highly-educated mothers might earn more than their less educated partners, and so have more bargaining power inside the family, asking their partners to devote more care to their child than is usual for all other fathers, even those with tertiary education. Second, the less educated father may want to demonstrate his super-dad powers so that his wife knows that he is worth more than the highly-educated potential male partners. Third, such families may have fewer financial resources than the educationally homogamous highly-educated couples, but still dream of providing their child with everything possible in life, thus compensating for their lack of financial resources with additional investments of time in children. Further research is needed to answer the question whether these additional time transfers to children are usually motivated by the highly educated mothers (the doing gender hypothesis) or by the less educated fathers (the super-father hypothesis).

The other extreme case of educational heterogamy happens when a highly educated man has children with a woman with little education. A child from this type of union receives less teaching on working days and weekend days and less basic care on weekend days than the child of two parents with secondary degrees. However, when this child is aged between three and five years, it receives an additional 48 minutes of daily care on weekend days. One possible explanation for this type of childcare pattern is the convergence towards the mother's childcare preferences on working days, and an inclination towards the father's childcare norms on weekend days. Maybe the intensive weekend fathering compensates to some degree for the lack of teaching and other important activities on working days. Longitudinal data are needed to answer the question of whether children in such families turn out like their highly educated father or their less educated mother, who was nevertheless upwardly mobile in the marriage market.

In Chapter 3, the research shifts to the children's own time use in intact and non-intact families. The key question is: *Are there differences in free time use between children who grow up in intact families and those who live with separated or single mothers*?

Previous research has shown that there is a penalty in educational attainment for children of

divorced parents. Amato's overview of past research on divorce summarises the main findings, that children of divorced parents score lower on several emotional, behavioural, social, health, and academic outcomes than children in two-parent families do; as adults, they tend to have lower educational attainment and lower psychological well-being, and they also report more problems in their own partnerships (Amato, 2010). According to Amato (2010), the effects of parental divorce may persist into adulthood and have life-long consequences. However, parental divorce does not have the same impact on all children, as marital discord prior to the divorce conditions the effects on children (ibid.). It has been argued that the increased number of divorces in many Western societies over the last four decades has exacerbated socio-economic inequalities, lowering the propensity for intergenerational economic mobility by consolidating single-motherhood among less educated women (McLanahan & Percheski, 2008). A counterfactual to this research comes from the findings of Bernardi and Boertien (2016a). They use fine data over several decades from Germany, Italy, the UK and the USA, and find that the academic attainment gap between children of highly educated and less educated mothers is not increased by the presence of single-parent families (ibid.).

Propensity score matching is used to identify the treatment group of children who are raised in a household with a single mother and a control group of children who are raised by two parents. The only aspect of the children's lives that is scrutinised is their personal free time. The reason for this is that we all sleep, eat and study as children, but our free time is more of a mirror for family choices. This is also connected to Lareau's ideal types of parenting as the middle class parents provide a lot of organised activities for their children, perhaps even too many as none of the weekdays is left unfilled, and some days have several extra-curricular classes, while the working class parents provide some organised afternoon classes that are often related to the child's wishes, talents and pleas (Lareua, 2003).

The main result is that family type matters much less than expected in the organisation of the children's free time. From among an array of daily activities, the only remarkable difference between children in intact families and those in non-intact families is that the daily meals of children of lone mothers are 15 minutes shorter at ages six to 10 for all daily mealtimes with an adult combined than those of children in intact families.

Studies on the consequences of parental separation have also shown that in some countries the so-called "divorce penalty" on children's socio-economic outcomes seem to be larger for the children of a highly educated mother (Bernardi and Radl 2014). Following this line of inquiry, a second research question is addressed in Chapter 3:

To what extent can a highly educated single-mother alleviate the relative disadvantage that arises from the father being absent? Or is the opposite true, and is compensating for the absence of a highly-educated involved father a far more difficult task than compensating for the absence a less educated father?

Given the results from Chapter 2, where the childcare of more educated couples is characterised by education and developmental gradients (Rebane, 2015), it may be plausible that more educated mothers are able to alleviate the relative disadvantage arising from lone parenthood. Some recent articles (Bernardi & Boertien, 2016b; Bernardi & Radl, 2014) show the opposite, as the disadvantage for educational attainment associated with parental separation is larger for the children of a highly educated mother. The results from matching in Chapter 3 suggest that that family type makes no impact on children's time use when the mother has post-secondary education. Several robustness checks are run, and the results from ordinary least squared regressions (OLS) and linear probability models (LPM) show more or less the same story with a few small exceptions. In general, six to 10-year-olds have an eight per cent higher probability of participating in organised sports if they have a single mother. This result does not hold for the children of highly educated single mothers, whose probability of participating in sports is about two per cent lower. The children of highly educated single mothers watch television for about six minutes more each day than do children in the reference category of children in an intact family with two parents with secondary degrees. All children with single mothers have shorter mealtimes with a parent and possibly shorter conversations with a parent than children in intact families, and the difference is the same as in the results from matching at 15 minutes less each day. The results show a very high degree of similarity in the free time use of children aged three to ten from single-parent families and intact families. While all the children in single-parent families have shorter daily meals, those of highly educated single-mothers face some additional inequalities, in the lower probability of participating in organised sports, and more time spent watching television unsupervised. These

results seem to converge with the findings of Bernardi et al. (Bernardi & Boertien, 2016b; Bernardi & Radl, 2014).

Chapter 4 brings together the topics discussed earlier of the impacts of parental education and family type, and adds a further layer to the story: the effect of birth order.

How many minutes of interactive childcare do parents devote to their first, second, and third child each day (controlling for the child's age)? Are more educated parents able to compensate for the relative disadvantage that arises from birth order? How does the child's gender, and age difference with the nearest sibling affect the amount of childcare time it receives from its parents?

Using Java and SQL to unite the time diaries of all family members through place codes, activity codes, and time of day reveals a unique opportunity, as exactly how many minutes each day parents invest in their first, second, and third-born children can be measured, while the children's age and gender and many other socio-demographic factors such as the mother's education, the family type, and the mother's labour force participation can be controlled for. The analysis is based on 3735 children from 2746 families. The OLS model shows both substantively and statistically significant disadvantages for second and third-born children relative to the first child in terms of the interactive daily childcare received from both parents. The second-child disadvantage is 88 minutes, and third-child disadvantage is 114 minutes each day. Children of mothers with secondary and post-secondary education receive 47 minutes more daily childcare than their counterparts with less educated mothers, but the interaction terms between mother's education and birth order are not statistically significant. A linear probability model on the probability of a child receiving any interactive childcare during a given day shows a positive interaction effect between birth order and higher education for the mother. On average, the probability of receiving interactive care from parents is 10 per cent lower for the second child and 21 per cent lower for the third child than for their first-born sibling. This relative disadvantage is alleviated by six per cent for the second child and 14 per cent for the third child if the mother has post-secondary education. Fixed effects models show some evidence of a "nest-egg advantage", where third children receive on average an extra 19 minutes of interactive care each day if all other things are held constant and the unobserved heterogeneity in the family is deleted.

Additional findings from Chapter 4 show that the gender of a child does not alter the amount of parental care or the probability of it being received. The research on the IQ scores of brothers shows that the social rank inside the family, where one is raised as the first son even if he is not necessarily born as the first child, plays a more important role than the actual birth order (Kristensen & Bjerkedal, 2007). A more recent study reveals that the negative association between birth order and intelligence among brothers disappears when the spacing between siblings is longer than six years (Barclay, 2015). The current thesis also investigates some aspects of spacing. The general assumption is that closely spaced siblings, where brothers and sisters have an age difference with their nearest sibling of less than two years, receive less childcare because parents are under severe pressure and are overtired. The results show the opposite to be the case, as there seems to be a small spill-over effect of parental time, with a four per cent higher probability of it being received, if the siblings are closely spaced.

3 Policy

Policies that interfere with how parents use their time with their children are difficult if not impossible to justify on a normative base (Swift, 2004). The positive view is that just the description and explanation of some phenomenon should be presented. The normative view adds values such as social fairness or proposes some desirable long-term goals for public policy. All the empirical chapters in this thesis have been written with the virtues of the positive science in mind. Only this subsection strays from the general path, mainly because social justice is desirable, especially where small children are concerned. However, is social justice only about providing equal opportunities to all children or does it have to coincide with complete statistical independence between the family of origin and the family of destination? Swift argues for all children to have fair access to high-quality education and to bedtime stories, but he does not rule out effort or personal desires such as following in their parents' footsteps (ibid.). According to Swift, children might just want the same kind of jobs that they observe their parents doing. As societies get richer, their living standards should rise anyway compared to those of their family of origin. If the principal goal of people is to live better than their parents did and to avoid downward mobility, there should be nothing wrong in there being some statistical similarities between the occupational class of adults and that of their parents (ibid.). We cannot, and should not forbid parents from reading bedtime stories to their children, or prevent them from having intellectually stimulating conversations during car drives and meals, introducing their children to high-achieving friends, and being a role model.

However, one finding from this thesis might have implications for policy towards reducing inequalities. That is the finding that there is slightly more social background inequality for educationally homogamous couples at weekends. This finding relates to results in the stream of research on schools as the great equalisers (Downey, von Hippel & Broh, 2004). In this respect, a policy encouraging early childcare and time in a childcare institution might have an equalising effect. Universal good-quality, state-provided nurseries and kindergartens would allow mothers to return to the labour market while also contributing to the socialisation and early development of children. It should be noted though that the estimated differences are at the margins and parents could always find a way to put an additional 15 minutes into some cognitively enhancing activity.

It is surprising that driving a car requires a licence, but having and raising children is something so personal that parents are left alone, sometimes without any state help or guidance. There could be more information on child raising at all levels of society. One positive example is the UK, where all pregnant women are invited to a parenting club during regular check-ups with the doctor. These clubs offer help and support during pregnancy, with free CDs with films about how the baby is growing inside the womb and how parents can influence it, plus leaflets, books, regular e-mails and more, and in the challenging first years of a child's life. To keep a lot of mothers interested and regularly following the information on child development, either at meetings or simply by email, attractive gift vouchers for baby's and mother's goods are often handed out, and the atmosphere, tone, photos and so on are very family friendly and simply beautiful. There is an abundance of online, television and printed resources on parenting, but it is not always easy for a starting family to orient itself in the profusion of information, which is often full of inconsistencies. Thus parenting clubs that preselect the most critical information and present it on a weekly basis to suit the child's development have the potential to help many exhausted and sleep-deprived parents.

A wish list with several points for social planners arises from this thesis. One point is the guidance and friendly support mentioned above, which can come from parenting clubs, hospitals, family centres, free lectures and online courses. Another is the need to reconcile working life with family life. Society needs both an active workforce, and the next generation. Untangling the Gordian knot of work-family balance is the key to a sustainable and successful country.

The EU has been trying to reform family leave policies since the 1980s. As a result, the Maternity Leave Directive was accepted in 1992, followed by the Parental Leave Directive in 2010 (European Parliament, 2017). This year, the European Commission is discussing a pan-European law that would guarantee all fathers paternity leave of at least 10 working days. The member states have adopted quite an array of parental leave and home care policies depending on their social, cultural and historical contexts, with varying duration and average payment rates. The EU average is 21.8 weeks of paid employment-protected maternity leave, followed by an average of 43.8 weeks of paid parental care and home care leaves, which is predominantly available to mothers (OECD, 2017). As not only countries, but also families differ, the EU might want to introduce more flexible forms of paid parental care systems just like Germany, Scandinavian countries and the Baltic countries have done. In these countries, both parents are entitled to take time off with their newborn and they receive their previous salary for 12 months or more. The rules vary from country to country, for instance for whether parents can simultaneously take several months off work or must take turns at home care. In Sweden 90 days of the full 480 days of paid parental leave are reserved for fathers only. There is also a father's quota in Norway and Iceland.

For children, services might be more important than money. Some ideas that Italy might want to adopt are: 1) the expansion of universal and free good-quality child care services to children below the age of three, and 2) longer school hours in primary education, at ages six to 10, and particularly in lower secondary education at ages 11 to 14. These ideas are confirmed by earlier research, as Italian children are very time demanding both at early ages and onwards (Tanturri, 2012), and they spend fewer hours at school than their counterparts in other Western countries while also having large amounts of homework each day (Mencarini, Pasqua & Romiti, 2014)

4 Limitations

This study has limitations that are mostly due to limitations in the available data. The first serious problem is the lack of information on child outcomes like grades at school, retaking exams or test scores. It is not currently possible to link the consequences of social background inequality in parental time-use to the actual, measurable child outcomes. In other words, it is not possible to investigate the assumed mechanisms that link parental time use to child outcomes. This problem could be alleviated if the time-use surveys were longitudinal, making it possible to keep track of

particular individuals at various points in time. In a longitudinal time-use survey, the causal links between parental time investments at time t_1, the transition from school to university at t_2, and occupational status and marriage at t_3 could be established. Alternatively, later school results from administrative data could be matched to the time-use survey.

A second limitation is that the time-use surveys do not include information on children's endowments such as their birth weight and height or their Apgar score. This type of information would allow scholars to investigate how parents respond to their children's birth endowments either by compensating for or reinforcing the initial shortfalls. It would allow us to test empirically Conley's hypothesis that middle-class families tend to compensate if one of their children lags behind in order to provide their children with equal opportunities in life, while working-class families tend to reinforce the initial inequalities by putting all their eggs in one basket due to their severe economic constraints (Conley, 2004).

The third limitation is associated with the estimation of causal effects. Given the data available, this thesis has tried to do its best, and has gone further than most of the previous studies that use time-use data to tackle the problems of endogeneity. However, we know that social life is complex, and there may be unobserved characteristics that create the self-selection into divorce (Amato, 2010) or motivate partners to have more children than the prevalent social norm foresees (Conley, 2004).

The current thesis is purely quantitative, though the nature of childcare is qualitative. The underlying assumption is that all parents want the best for their children and provide the best service they can, tailored for each of their child's individual needs. However, the qualitative research of Annette Lareau highlights some bottlenecks in the childcare practices of working-class and poor parents (Lareau, 2011).

5 Ideas for further research

Further research is needed in the time use of children, lone mothers and lone fathers from various social backgrounds. For amazing social science research that can make causal claims, the future

time-budget surveys could ideally combine time use data with child outcomes, and be longitudinal. Despite the convergence of countries in various realms of life (Gershuny, 2000), it would be interesting to study various social background characteristics in childcare multi-nationally. Hopefully there will be a day when it is possible to combine genetic data from national gene banks with time-use data, and find out how genes and social background influence each other during human socialisation.

The major ideas for further research are 1) to compare the childcare investments of various socio-demographic groups between Southern European countries, where the divorce rates are low, and some countries where the divorce rates are much higher, such as Belgium, Hungary or the Czech Republic, while also controlling for the divorce penalty in society; 2) to scrutinise the level of enjoyment of various childcare activities by the age, gender and education of parents and other factors, which may lead to differences in the transmission of positive feelings from parents to children; 3) to explore the educational and developmental gradients in summer holidays in comparison to the school year; 4) to make geographical areas the core of childcare analysis in Italy, using special modelling techniques in RStudio; and 5) to link the time use of children and their parents to some measurable child outcomes by linking administrative data or in some other way.

The author of this thesis would like to continue with research into the well-being of children and families. Future ideas include research into the time use, sleep and happiness of new parents, and a longitudinal survey of low birth-weight children and their outcomes later, at kindergarten and school and later, while providing a random treatment group with free baby swimming lessons and physiotherapy. All child-related research has the potential to save and improve lives. For this reason, scientists from all fields should collaborate on it.

References to the General Conclusion

ALTINTAS, E. 2016. The Widening Education Gap in Developmental Child Care Activities in the United States, 1965-2013. *Journal of Marriage and Family,* 78**,** 26-42.

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

BARCLAY, K. J. 2015. A within-family analysis of birth order and intelligence using population conscription data on Swedish men. *Intelligence,* 49**,** 134–143.

BERNARDI, F., BOERTIEN, D., 2016.a Non-intact families and diverging educational destinies: A decomposition analysis for Germany, Italy, the United Kingdom and the United States, *Social Science Research.* Available at: https://www.researchgate.net/publication/308352413_Non-intact_families_and_diverging_educational_destinies_A_decomposition_analysis_for_Germany_Italy_the_United_Kingdom_and_the_United_States [Accessed Jan 31st, 2017].

BERNARDI, F. & BOERTIEN, D. 2016.b Understanding Heterogeneity in the Effects of Parental Separation on Educational Attainment in Britain: Do Children from Lowed Educational Backgrounds have Less to Lose? *European Sociological Review*, doi: https://doi.org/10.1093/esr/jcw036

BERNARDI, F. and RADL, J. 2014. The Long-Term Consequences of Parental Divorce for Children's Educational Attainment. *Demographic Research,* 30 (61), 1653-1680.

BIANCHI, S. 2000. Maternal employment and time with children: Dramatic change or surprising continuity? *Demography,* 37**,** 401-414.

BITTMAN, M. 1999. Parenthood without penalty: Time use and public policy in Australia and Finland. *Feminist Economics,* 5**,** 27-42.

BLOSSFELD, H.-P. & TIMM, A. 2003. *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies.* The Netherlands: Kluwer Academic Publishers.

BONKE, J. & ESPING-ANDERSEN, G. 2009. Family Investments in Children—Productivities, Preferences, and Parental Child Care. *European Sociological Review,* 27(1), 43-55.

CHALASANI, S. 2007. The changing relationship between parents´ education and their time with children. *Electronic International Journal of Time Use Research (eIJTUR),* 4**,** 93-117.

CONLEY, D. 2004. *The Pecking Order. Which Siblings Succeed and Why,* New York: Pantheon Books.

DOWNEY, D. B., VON HIPPEL, P. T. & BROH, B. A. 2004. Are Schools the Great Equalizer? Cognitive Inequality during the Summer Months and the School Year. *American Sociological Review*, 69(5), 613-635. Available at: https://www.jstor.org/stable/3593031?seq=1#page_scan_tab_contents [Accessed Jan 31st 2017]

ERIKSON, E. 1950. *Childhood and Society*, New York: Norton & Company.

ESTONIA STATE PORTAL 2016. *Family and Children's Allowances.* Available at: https://www.eesti.ee/eng/toetused_ja_sotsiaalabi/toetused_ja_huvitised/pere_ja_lastetoetused [Accessed Jan 27th 2017]

ESPING-ANDERSEN, G. 2009. *The Incomplete Revolution. Adapting to Women´s New Roles,*

Cambridge, Polity Press.

ESPING-ANDERSEN, G. 1990. *The Three Worlds of Welfare Capitalism,* Cambridge: Polity Press.

EUROPEAN PARLIAMENT, 2017. Maternity, paternity and parental leave in the EU. Available at: http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2017)599323 [Accessed 12/7/2017]

FISHER, K., MCCULLOCH, A. & GERSHUNY, J. 1999. British fathers and children: A report for Channel 4 'Dispatches'. Available at: http://www.iser.essex.ac.uk/press/doc/2000-12-15.pdf. [Accessed 12/7/2017]

GERSHUNY, J. 2000. *Changing Times: Work and Leisure in Postindustrial Society,* Oxford, England, Oxford University Press.

GRACIA, P. 2014. Fathers' Child Care Involvement and Children's Age in Spain: A Time Use Study on Differences by Education and Mothers' Employment. *European Sociological Review,* 0**,** 1-14.

GROVE, W.M. et al. 1990. Heritability of substance abuse and antisocial behavior: A study of monozygotic twins rared apart, *Biological Psychiatry*, 27 (12), 1293-1304.

HECKMAN, J. J. & KAUTZ, T. 2012. Hard Evidence on Soft Skills. *Labour Economics,* 19**,** 451-464.

HECKMAN, J. J. 2007. The technology and neuroscience of capacity formation. *PNAS*.

KALIL, A., RYAN, R. & COREY, M. 2012. Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children. *Demography,* 49**,** 1361–1383.

KRIEGER, N. et al. 2005. Lifetime socioeconomic position and twins´ health: An analysis of 308 pairs of united states women twins, *PLoS Med*, 2(7): e162. doi:10.1371/journal.pmed.0020162

KRISTENSEN, P. & BJERKEDAL, T. 2007. Explaining the relation between birth order and intelligence. *Science,* 316**,** 1717.

LAREAU, A. 2011. *Unequal Childhoods. Class, Race, and Family Life. 2nd edition with an Update a Decade Later,* Berkley, University of California Press.

LAREAU, A. 2003. *Unequal Childhoods. Class, Race, and Family Life,* Berkeley, Los Angeles, University of California Press.

MCLANAHAN, S. & PERCHESKI, C. 2008. Family Structure and the Reproduction of Inequalities. *Annual Review of Sociology*, 34, 257-276.

MCLANAHAN, S. 2004. Diverging destinies: How children fare under the second demographic transition. *Demography,* 41**,** 607-627.

MENCARINI, L., PASQUA, S. & ROMITI, A. 2014. Children´s time use and family structure in Italy. *Families and Societies Working Paper Series,* 21**,** 1-32.

MILLS, C. W. 1959. *The Sociological Imagination*. New York: Oxford University Press.

OECD Family Database. 2017. Key characteristics of parental leave systems. Avaliable at https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf [Accessed 12/7/2017]

REBANE, M. 2015. Double advantage or disadvantage? Parental education and children's developmental stages in Italy. *electronic International Journal of Time Use Research (eIJTUR),* 12(1)**,** 49-72.

SWIFT, A. 2004. Would Perfect Mobility be Perfect? *European Sociological Review*, 20(1), 1-11.

TANTURRI, M. L. 2012. How Much Does a Child Cost Its Parents in Terms of Time in an Aged Society? An Estimate for Italy with Time Use Survey Data. *In:* DE SANTIS, G. (ed.) *The Family, the Market or the State? Intergenerational Support Under Pressure in Ageing Societies.* Dordrecht: New York: Springer.

UNITED NATIONS Population Division, 2015. World Population Prospects, the 2015 Revision. Available at: https://esa.un.org/unpd/wpp/ [Accessed 23/1/2017]