



Master thesis

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Family dissolution and childrens well-being

A quantitative sociological analysis of the impact of family
dissolution and family structures on childrens well-being

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Abstract

This study examines the impact of family dissolution and different post-dissolution family structures for childrens well-being. The family as a social institution have undergone great changes in the last centuries. During the second demographic transition, family relationships in the Western world have been characterised by increasing rates of movement in and out of couple relationships, cohabitation rather than marriage, multiparter fertility and increasingly fluid family structures. As a result, a large share of children today grows up in families which dissolve during their childhood and are restructured in more complex constellations. These developments have given rise to a strong social narrative that family dissolution and complex family structures have a negative impact on childrens well-being. However, scholars have argued for a long time that more empirical knowledge is needed to determine whether the associating between family dissolution and lower well-being of children is in fact causal. Furthermore, we know little about the role of post-dissolution family structure in this association. I apply pooled OLS, fixed effects, and staggered difference-in-difference (DID) models to high-quality Danish longitudinal survey data and administrative data, to test and examine the effect of family dissolution on childrens well-being. Furthermore, I examine whether four different post-dissolution family structures with and without stepparents moderates this effect. I found that, even when using a staggered DID model, family dissolution does seem to have a negative effect on childrens well-being. Furthermore, the gap in well-being between children in intact and non-intact families seems to increase over time from 0.15 standard deviation the first three years after family dissolution to 0.2 standard deviation eight to twelve years after. While there seems to be an effect, it is, however, small in practice. I find no clear evidence that the post-dissolution family structure seems to moderate this effect. Future studies should therefore direct their attention to how we might best support children going through family dissolution, and whether certain groups of children are particularly vulnerable in this transition. Since the differences between children in intact and non-intact families are small once you account for different confounding variables, focussing on the impact of social inequality between childrens families might thus be a more fruitful perspective when it comes to supporting childrens well-being.

Table of content

1 INTRODUCTION.....	5
2 TRENDS IN FAMILY DISSOLUTION.....	9
3 LITERATURE REVIEW	13
3.1 Findings.....	13
3.1.1 Family dissolution and well-being.....	13
3.1.2 Post-dissolution family structures and childrens well-being.....	15
3.2 Methods.....	17
3.3 Defining and measuring well-being.....	19
4 THEORETICAL FRAMEWORK	21
4.1 Family dissolution as changes in structure.....	21
4.2 Changes in resources	24
4.3 Changes in family roles and relationships.....	25
4.4 Changes in family identity.....	29
4.5 Summary and hypotheses.....	30
5 METHODOLOGICAL DESIGN.....	32
5.1 Research design.....	32
5.2 The counterfactual set-up.....	33
5.3 Panel data approaches.....	35
The difference and difference estimator.....	38
Addressing the parallel trends assumption.....	40
Robustness of the two-way fixed effect estimator in a staggered DID setting	42
6 DATA AND SAMPLE	43
6.1 Danish Longitudinal Survey of Children.....	43
6.2 Danish administrative data	46

6. 3 Operationalization	48
6.3.1 Well-being - the Strength and Difficulties questionnaire	48
Reconstructing a Quasi SDQ.....	50
6.3.3 Family dissolution.....	54
6.3.4 Post-dissolution family structures	55
6.3.5 Control variables	55
6.4 Analysis of representativity.....	58
7 ANALYSIS	58
7.1 Summary statistics (table 5)	59
7.2 Hypothesis 1: The effect of family dissolution on childrens wellbeing.....	60
7.2.1 Pooled OLS	60
7.2.2 Fixed effects	63
7.2.3 The difference in difference estimator	65
7.2.4 Dynamic effects and the parallel trends assumption	66
7.2.5 Robustness checks.....	68
7.2.6 Summary regarding the first hypothesis.....	73
7.3 Hypothesis 2: post-dissolution family structures as moderators.....	73
7.3.1 Pooled OLS, fixed effects and staggered difference-in-difference	75
7.3.2 Summary regarding the second hypothesis.....	77
8 DISCUSSION	78
8.1 Findings.....	78
8.2 Methods and data.....	80
9 CONCLUSION	82
BIBLIOGRAPHY.....	84
APPENDIX.....	92

1 Introduction

The family as a social institution have undergone great changes in the last centuries. During the second demographic transition, family relationships in the Western world have been characterised by increasing rates of movement in and out of couple relationships, cohabitation rather than marriage, multiparter fertility and increasingly fluid family structures. This means that a large share of children today grow up in families which dissolve during their childhood and are restructured in more complex constellations (Seltzer 2019). However, we still know very little about the implications of these changes for children. My ambition in this study is therefore to examine the impact of family dissolution and different post-dissolution family structures for childrens well-being.

The family is generally considered to be childrens primary social unit because families are the ones who attends to childrens needs, care for them, supports them, and carry out the main socialization during childhood (Cheal 2003:1). For many years, sociology has therefore regarded the family as an essential societal institution of social and moral reproduction. Talcott Parsons (1943, 1955) famously argued that the family had two main functions. First, the family carries out the primary support and socialization of children by tending to their needs and help them internalize societal culture, norms, and values. Second, the family ensures the stabilization of adult personalities by grounding them in this unit through obligations. These crucial functions, he argued, had to take place in a small kinship group (Parsons 1943; Parsons and Bales 1955).

Historically, the Western ideal of a family has revolved around the idea of a small and stable family characterized as a continuous community of need (Beck-Gernsheim 1998). Looking back at the pre-industrial society, family relationships in the feudal family was essentially based on work and economy. All familiar activities were closely coordinated for the sake of a common goal, namely, to preserve the family unit of productivity such as the family farm. All family members, including children, had specific roles in relation to the division of labour, and everyone shared a common family biography. Children in the feudal society therefore grew up in families which can be characterized as tightly knit communities of need, built on common obligation of solidarity (Beck-Gernsheim 1998).

Influenced by increasing individualization, the common obligation and biography which had dominated family life began to deteriorate. In industrial society, the family formed a new relationship with the labour market and lost its function as a working and economic unit. In the first phase, men began to seek employment outside of the home which caused a new division of labour to dominate family life. While men would engage in employment outside of the home, women were relegated to the private sphere of home and children. This new division of labour created new set of roles – the breadwinner, homemaker, and child – and a slightly modified version of the obligation of solidarity which dominated in the feudal family (Beck-Gernsheim 1998). Sociology referred to this family model as the nuclear family (Cheal 2003:1; Silva and Smart 1999). Parents still relied on one another for economic production, but as children grew up disconnected from this production a new culture of childhood emerged. As the family moved into the private sphere, children increasingly became subject to special attention and affection. Families became increasingly focused on etiquette and proper upbringing of children, and by the nineteenth century, children had gained a central status as part of the nuclear family institution (Retford 2016).

In late modernity, however, the division of labour which formed the base of the nuclear household evolved. With the implementation of the welfare state during the 20th century, a long list of social security reforms offered a social security net outside of the family institution, which (at least in principle) dissolved the economic dependency between couples. Furthermore, as women increasingly engaged in both education and labour market, they moved outside of the private family sphere and established themselves as economically independent. The traditional family roles which originated in the gendered division of labour thus began to dissolve, and parents began to share the parental obligations more equally (Beck-Gernsheim 1998). These developments simply changed the power of economic structures to shape families. In 1998, Ulrich Beck stated:

“After the industrial world order made of classes, social strata, and nuclear families there only flutters a loose aggregate of flying leaves composed of individuals”

(Beck in Castrén et al., 2021, p. 31)

In the Normal chaos of love (1995), Beck and Beck-Gernsheim argue that as the mutual dependence between couples decreased with individualization, parents became the authors of

their own style of life, and the family transformed from a community of necessity to elective relationships. Today, children grow up in families which are no longer together by the same degree of obligation and permanence (Beck and Beck-Gernsheim 1995). As the modern family has been released from material and solidary necessity (although there is still advantages to family unions), it is characterized by weaker and more changeable structural relations and roles. Furthermore, the symbolic construction of identity related to family has changed under influence of individualization, as individual identity is now emphasized as being distinct from and more important than the common family identity (Beck-Gernsheim 1998). The individual attachment to the family thus stand as potentially weakened. Generally, as the rules of normalcy which originated in economic necessity are no longer valid, it is no longer quite clear who or what constitutes a family.

These changes has caused a general concern over family morality and values, and a long debate in social sciences as to whether the family as a social institution is in moral crisis. According to Carol Smart and Bren Neale (1997), it is argued that the fluid post-modernist trends in family formation has produced pluralizing values, growing moral diversities and an exercise of selfish choice, which undermines the moral and social stability of the family as an institution. Divorce is perhaps the most obvious example of an object of concern over moral decline. Divorce has been associated with broken families, poorly socialized and integrated children, delinquency and unemployment, cycles of lone motherhood, burdens on the public purse and the end of traditional values (Smart and Neale 1997). If there is no longer any stable primary unit of socialization, what happens to social and moral reproduction that it used to perform? And which alternative social units are supposed to tend to the needs of children, who still are entirely dependent on the care and socialization which used to belong in the traditional family?

My intention with this historical framing is to show that the structural changes in society over the last centuries has caused structural changes in families, which leaves the modern family in an unsettled state. Families have gone from close-knit communities of need with clear roles and division of labour to elective affinities because couples are no longer bound together by necessity, obligation, or solidarity to the same extend as earlier. All of these structural changes are driven by adults and may therefore not in themselves say very much about what has changed for children. But as I have shown historically, changes in family structures are also changes in family roles, distribution of resources, and symbolic construction of family related identity. They

therefore change the key elements within the families, which facilitates childhood. Family dissolution is perhaps the clearest example of how changes in family structure may result in changing roles, resources and identities exerting an influence on the children. Not only does family dissolution cause a dissolution of the original family structure in which a child grows up – it also implies a transition into a post-dissolution family structure, which may or may not include new members such as stepparents. This implies an entirely new distribution of resources and roles as well as a reconstruction of family identity. I argue that family dissolution therefore is a manifestation of the fluid modern family in its outermost consequence, and we need to understand what implications this has for children. My thesis will thus be guided by the following research question:

How does family dissolution affect the well-being of children? And does the association between well-being and family dissolution vary across different post-dissolution family structures?

In the following sections, I initially set out to examine the trends in family dissolution and post-dissolution family structures in Denmark to map the extent of the phenomenon under investigation. Next, I turn to the literature to examine what we already know about how family dissolution and post dissolution family structures affects childrens well-being. In relation to this, I also examine how we can understand well-being as a social phenomenon. Finally, I engage theories which can help me understand what implication family dissolution has for the family context in which children grow up, and how this can affect their well-being. Since little sociological theory has been developed to conceptualize the impact of family dissolution on child wellbeing in a coherent framework, I use theoretical perspectives on family structure, resources, roles, and identity to develop a framework for understanding how family dissolution and changing family structures may conceivably impact child well-being. Finally, I carry out an empirical analysis to formally test these associations on new high-quality data with a more advanced methodological design than used in previous studies, as a much-needed contribution to the discussion of causality and heterogeneity.

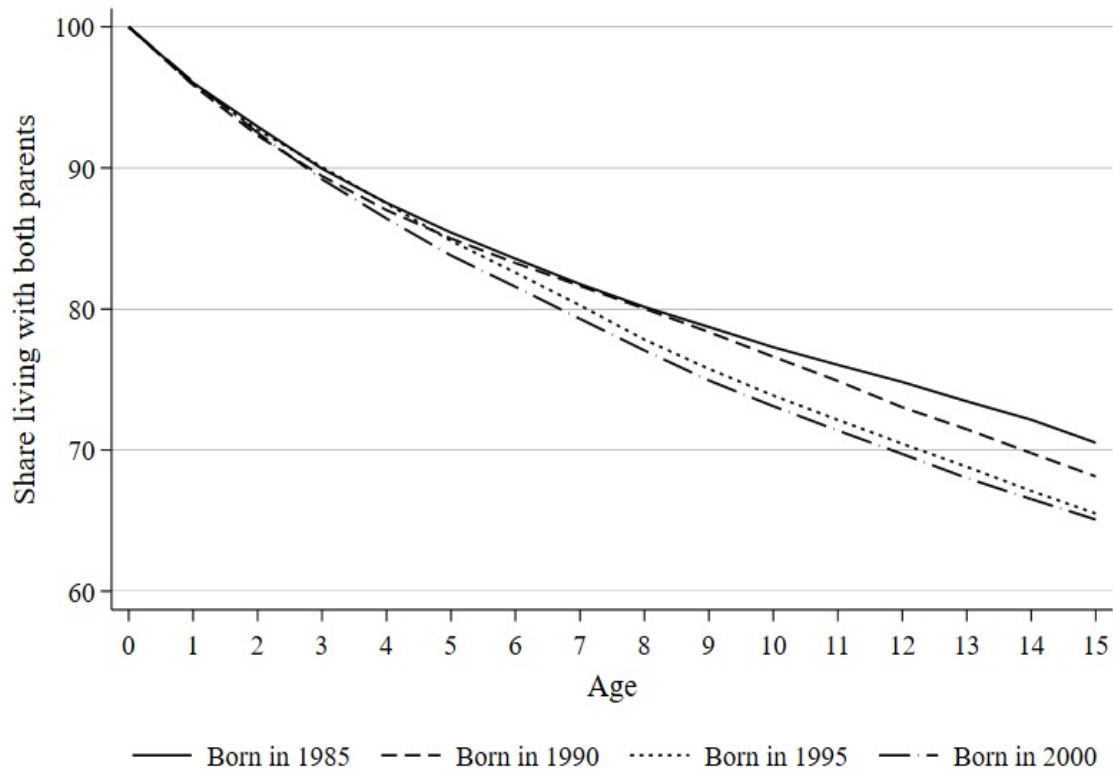
2 Trends in family dissolution

Developments in family dissolution has often been described in terms of parental divorce. According to the OECD family database, the past five decades have been characterized by declining marriage rates and increasing divorce rates (OECD Family Database 2020). This tells a general story that marriages are becoming increasingly unstable, leading one to suspect that families including children are becoming increasingly less stable too.

Trends in divorce rates, however, are not necessarily the most informative sources of information when it comes to covering the trend of how many children actually experience family dissolution. Procreation within non-marital cohabiting unions has increased substantially in Western world in the last decades (Lesthaeghe 2010; Van De Kaa 1987), and as a result, it has become more common to have children outside of legal marriage (Boertien 2020; Manting 1996; Perelli-Harris et al. 2012). In other words, the conjugal relationship is not necessarily a good frame of reference when it comes to describing the development of family dissolution involving children in Denmark. I argue that it is more appropriate to examine the trend in family dissolution by looking at the number of children who start their life in intact families with two cohabiting parents and experiences their parents moving apart during childhood. To examine this, figure one (next page) shows the share of all Danish children from four cohorts (born in 1985, 1990, 1995 and 2000) who live with both parents, distributed across the first 15 years of their lives.

As evident from figure one, the share of children living with both parents decreases substantially over the first 15 years of the childrens lives for all four cohorts. 70 % of children born in 1985 still lived with both of their parents at the age of 15, while same only counts for about 65 % for those born in 2000. The share of children experiencing their parents moving apart during childhood thus seem to have increased by cohort. Furthermore, the curve appears to be steepest in the first years of the children's life, suggesting that the risk of family dissolution is at its highest in the earliest years of childhood. These findings are supported by findings by other scholars (Lindhardt, Larsen, and Lange 2007; Nørtoft 2018; Ottosen and Stage 2012).

Figure 1: Share of Danish children living with both parents (by age and cohort)

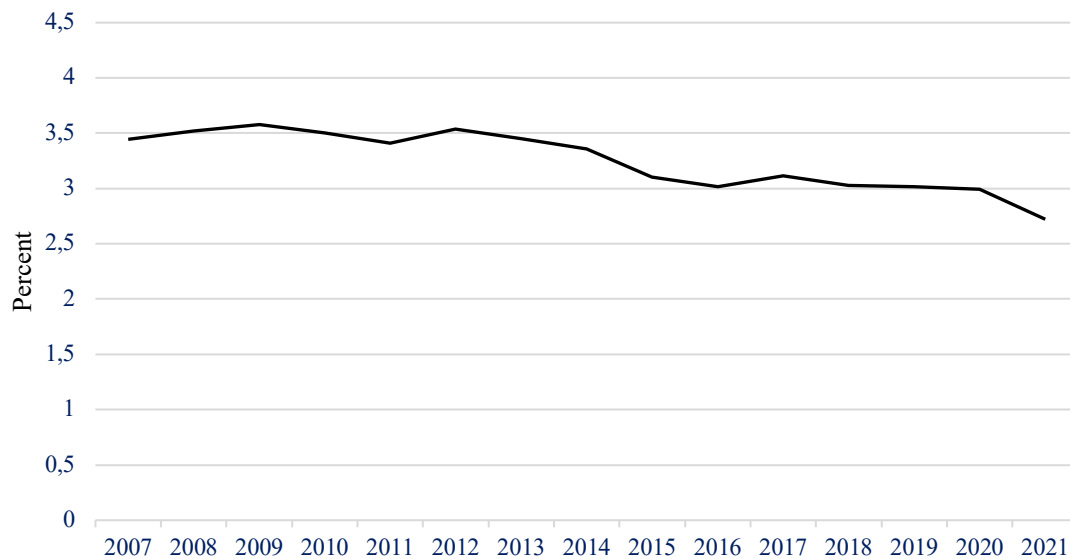


Source: Own calculations, administrative data from Statistics Denmark

Note: The figure includes all Danish children in respective cohorts who were living with their parents at age 0.

Another way to examine the trend in children experiencing family dissolution is to examine the share of children in a specific age interval experiencing parents moving apart each year as suggested by Nørtoft (Nørtoft 2018). Figure two shows the share of children aged 0-16 experiencing parents moving apart each year from 2007-2021. It shows that there is in fact a slightly downward facing trend in the share of children experience parents moving apart each year from about 3.4 % in 2008 to about 2.8 % in 2022.

Figure 2: Percentage of children (aged 0-16) experiencing parents moving apart per year, 2007-2021



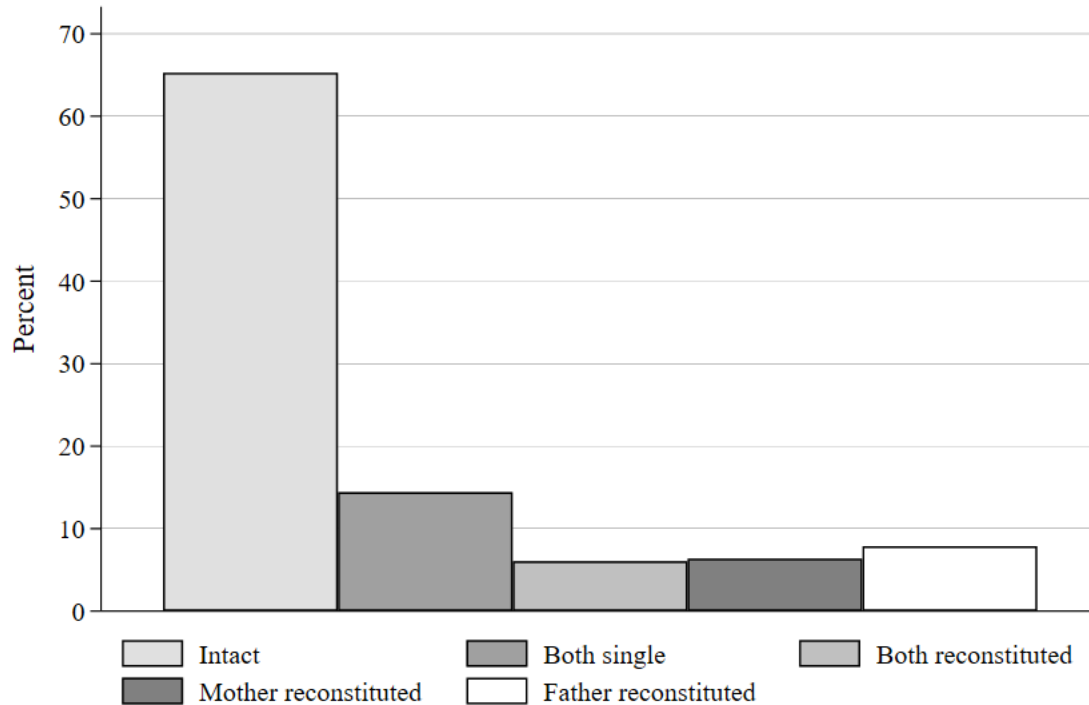
Source: (Statistics Denmark 2022b)

The rate of children experiencing family dissolution each year thus seems to have decreased slightly for the last 10-15 years, indicating that Danish families involving children are in fact becoming increasingly stable. This tendency is, however, quite modest. If we are to believe the trends depicted in figure one, still about a third of Danish children in newer cohorts experience family dissolution before the age of 15 and grow up outside of two-parent families.

Understanding the implications of this phenomenon is thus an important contribution to our knowledge of childrens well-being.

Furthermore, to examine how family dissolution affects the well-being of children and whether the relationship between well-being and family dissolution vary across different post-dissolution family structures, it is relevant to examine which types of families these children find themselves in after family dissolution. Following the second demographic transition, a rise in multi-partner fertility has increased the share of children growing up in combined family constellations with stepparents and siblings (Fallesen and Gähler 2020; Gähler and Palmtag 2015). This means that more and more children grow up in single- and stepparent families, depending on whether their parents reconstitutes with new partners after family dissolution. Figure three shows the distribution of children born in 2000 by the age of 15 in five different family structures, according to the relationship status of their parents:

Figure 3: distribution of children in five different family structures by age 15, (full cohort of 2000)



Source: Own calculations, administrative data from Statistics Denmark

Note: A parents is defined as reconstituted if the parent is cohabiting with a new partner.

Just as figure one, figure three shows that about 65 % of the children born in 2000 still lived in intact two-parent families at the age of 15. Of the remaining 35 % who lived in non-intact families, 14 % had no stepparents (defined as new cohabiting partners of either parent), approximately 6-7 % had one stepparent with either their mother or father, and about 8 % had two stepparents. There is thus a distribution of children living in all four types of post-dissolution family structures with and without stepparents, but most children in non-intact families still only have single parents at age 15.

To conclude, about one third of Danish children from younger cohorts experience family dissolution during childhood and thus grow up in different types of post-dissolution family structures, with and without stepparents. Examining the impact of family dissolution and restructuring on childrens well-being is therefore an important contribution which concerns a

considerable part of the Danish population. In the next section, I turn to the literature in order to examine, what is already known about this association.

3 Literature review

This section is dedicated to reviewing the literature and map out what is already known about the connection between family dissolution, post-dissolution family structures and childrens well-being. As I will show, this association has been studied with numerous outcomes and measures of well-being, ranging from economic wellbeing to mental illness and social conduct. I therefore also examine how the literature defines and measures well-being in order to qualify my understanding of well-being in relation to family dissolution.

3.1 Findings

3.1.1 Family dissolution and well-being

The literature shows that the connection between childrens well-being and family dissolution have been of interest to the academic fields for several decades. However, the vast majority of previous studies has only studied the impact of parental divorce on childrens well-being rather than family dissolution including cohabiting unions. Studies consistently show that children of divorce experience lower levels of well-being than children in intact families (Amato 2000, 2010; Amato and Keith 1991; Cherlin et al. 1991; Cherlin, Chase-Lansdale, and McRae 1998; Demo and Acock 1988; Fallesen and Gähler 2020). Through time, studies have shown how children of divorce scored significantly lower than their peers in intact families on a variety of outcomes including academic achievement, conduct, psychological adjustment, self-concept, and social competence (Amato and Keith 1991). Most studies have generally found small effects sizes, ranging from 0.08 standard deviation on psychological adjustment to 0.23 on conduct (Amato 2000, 2010; Amato and Keith 1991). Many studies suggest that effect of divorce on childrens well-being decline over time (Amato 1988; Hetherington, Cox, and Cox 1985; Wallerstein 1984), although some find that parental divorce during childhood or adolescence continues to have a negative effect when a person is in his or her twenties and early thirties

(Cherlin et al. 1998). Others suggest that lower levels of well-being can already be detected prior to the actual separation of parents, but that this is likely due pre-existing differences between intact and non-intact families (Strohschein 2012).

The literature generally suggests two explanations for why children in non-intact families might have lower well-being than their peers in intact families. First, parental divorce causes a range of emotional stressors, which can influence childrens well-being negatively. Children often react to divorce with shock if the divorce is unexpected, anger due to changes and disruption of family life, grief over missing family members, and regret at the loss of a parent (Öberg Bente and Öberg Gunnar 1987). Children of divorce also experience elevated stress levels, which can influence well-being directly (Evans and Kim 2007). According to the Divorce-Stress-adjustment-Perspective as presented by Hetherington (1979), family dissolution involves a series of transitions causing several different stressors such as moving, changing school, changing to alternate living arrangements, and general changes in everyday routines, which can increase negative emotions as well as behavioral and health outcomes for both parents and children. As a result, children may feel abandoned by their parents, worry about the future, and blame themselves for the divorce (Hetherington 1979). Two contrary models are embedded in this perspective. The first, which can be referred to as a crisis model, suggests that divorce is a range of disturbances, which individuals can adjust to over time. The second, the chronic strain model, suggests that family dissolution involves chronical strain like economic hardship, loneliness, and an increasing parental burden. Successful adjustment therefore depends on the extend of symptoms as well as the childs ability to adjust to the new reality (Amato 2000; Hetherington 1979).

A second explanation is based on a resource perspective. Married two-biological-parent families are often economically advantaged compared to single-parent or stepparent families (Brown and Manning 2009; Ram and Hou 2003). Particularly mothers, who often have lower income levels than fathers, can struggle economically after family dissolution, causing lower living standards for her children. Some studies find that the drop in family income can force families to move into poorer neighborhoods and children to attend schools lacking adequate facilities and engage in undesirable peer groups (Hetherington and Stanley-Hagan 1999; Ram and Hou 2003). Furthermore, economic strain might also cause parents to work more to make up for lost income, resulting in less time investment in the child. Some studies suggest that single parents make

fewer demands on children, do not adequately monitor their behavior, and engage in less effective parenting (Bernardi et al. 2013).

Over the time, several studies have also shown that some of the association between parental divorce and childrens-wellbeing can be explained by pre-divorce family and individual characteristics such as socioeconomic resources or marital conflict (Amato 2000; Brand et al. 2019; Demo and Acock 1988; Furstenberg and Teitler 1994; Ginther and Pollak 2004). Generally, family dissolution and complex family structures have increasingly become concentrated among the less privileged (Gähler and Palmtag 2015). This means that deciding whether the differences in well-being among children in intact and non-intact families is complicated by selection into family dissolution. I return to this in section 3.2.

3.1.2 Post-dissolution family structures and childrens well-being

According to Jani Turunen (2013), both Swedish and international research on children's emotional well-being show an association between low levels of well-being and children living in single-parent and stepfamily households (Turunen 2013). Particularly the single parent family structure is associated with lower levels of parent-child interaction, parental supervision, support, and control. These are all family dynamics that have been shown to correlate with negative consequences for childrens wellbeing (Demo and Acock 1988). From a resource perspective, the introduction of stepparents could improve children's standard of living and access to parental resources. However, studies consistently indicate that children in stepfamilies exhibit more problems than children in intact families and – sometimes – also than children in single parent families (Amato 2005; Bernardi et al. 2013; Coleman, Ganong, and Fine 2000; Sweeney 2010). Findings and explanations for this are many and inconclusive. Moving from a single-parent family to a stepfamily is generally associated with increased economic resources in the family. However, studies find that family income alone is generally unable to account for observed well-being differences across family structure groups (Sweeney 2010). Turning to parental resources, stepparents can both free time for the original parent to monitor the child and engage in parenting themselves. On the other hand, stepparents might also compromise the attention of the parent. Thomson et al. (2019), finds that that stepfamily formation does not increase the supervision of children (Thomson, Winkler-Dworak, and Beaujouan 2019). Other studies have found that mothers tend to be less supervising after remarrying, and that parental monitoring is

also less effective in reconstituted families (Bernardi et al. 2013). When it comes to stepparents own involvement in parenting activities, some argue that specially non-married stepparents are often less involved with children than original parents (Brown and Manning 2009; Manning 2015). The literature suggest a variety of different explanations for this. First of all, Cherlin (1978, 1994) argues stepparent families are “incompletely institutionalized” compared to intact families, which can lead to uncertain expectations with respect to family roles, rights (Cherlin 1978; Furstenberg and Teitler 1994). Furthermore, stepfamilies are built on existing foundations of partnership and parenthood, which can create issues of family ties spanning across multiple households potentially causing tension and conflict around children (Spanier and Furstenberg 1987). From a stress and instability perspective, the introduction of stepparents may also disrupt the child's family environment, resulting in stress leading to internal family conflict. Hetherington and Kelly (2002) finds a 5- to 7-year period of elevated stress and destabilization after a stepfamily formation (Hetherington and Kelly 2002). On the other hand, a stepparent may also function as an additional positive adult role model within the household. This has been shown in the case of criminology, where a Danish study have shown that having a stable stepfather can diminish the influence of paternal conviction on a child's chances of conviction (Anker and Andersen 2021).

Generally, studies have found that living in stepparent families rather than in single parent families is associated with relatively poorer well-being with respect to emotional outcomes but better well-being with respect to health and some behavioral outcomes (Sweeney 2010). However, findings are inconclusive and the explanations offered in the literature points in many directions. Finally, several studies also find that children and parents in stepfamilies tend to differ in preexisting characteristics from those in single parent families (Amato, 2010). This means that deciding whether the differences in well-being among children in single-parent families and stepparent families is also complicated by selection into different post-dissolution family structures.

To sum up, the literature generally finds that children in non-intact families have lower levels of well-being than their peers in intact families. The main theoretical explanations for this is that family dissolution causes emotional distress and elevated stress levels due to the changes in relation to parental ties and everyday life as well as a decline in economic and parental resources. Although different post-dissolution family structures with or without stepparents might moderate

these changes differently, the literature generally finds children in both single and stepparent families experience lower well-being than their peers in intact families. The current literature offers many different explanations for why family dissolution might harm childrens well-being and how stepparents may or may not contribute to this. But I argue that a more coherent theoretical framework is needed to address these challenges from a sociological perspective. In section four, I therefore offer a theoretical framework drawing on theory on structure, resources, roles, and identity to combine the explanations listed above.

Finally, studies points to a considerable selection into family dissolution and different post-dissolution family structures. There has thus been agreement on the field for a long time that further efforts are needed to answer the question of causality in the association between family dissolution and childrens well-being (Amato 2010; Amato and Keith 1991; Turunen 2013). In the next section, I therefore review the methodological approaches, which has been applied to study the association between family dissolution and children well-being, to examine the methodological state of the art.

3.2 Methods

As previously argued, some association between parental divorce and childrens-wellbeing can be explained by pre-divorce family and individual characteristics such as socioeconomic resources or marital conflict (Amato 2000; Brand et al. 2019; Demo and Acock 1988; Furstenberg and Teitler 1994; Ginther and Pollak 2004). Therefore, determining whether the differences in well-being between children in intact and non-intact families is an fact causal is an ongoing challenge in the literature. To solve the issue of selection into family dissolution, studies often includes educational level, labour market participation and income levels as statistical control variables (Heaton 2002; Musick and Micheltmore 2015; Rotz 2016; Wagner 2020). However, during the early 2000's more advanced methodological designs were applied in studies of divorce as an attempt to account for this selection. In one if the first studies using fixed effect models, Cherlin, Chase-Lansdale, and McRae (1998) found that part of the negative effect of parental divorce on grown children was a result of factors that were present before the parents' marriages dissolved. In other words, selection did seem to interfere with their results. However, they still found a negative effect of divorce on psychological distress in children, which lasted into adulthood (Cherlin et al. 1998). Other studies have applied either lagged dependent variables or individual, sibling or state fixed effects designs to study the effect of parental divorce on a range of other

different outcomes such as behavioral problems, self-esteem, educational outcomes, non-marital birth risks and suicide. These studies suggest that divorce can still affect children even after controlling for individual/group-invariant characteristics and observable confounders (Cherlin et al. 1998; Ermisch and Francesconi 2001; Gruber 2004; Sun 2001; Sun and Li 2002). However, some also found a substantial degree of variability in children's outcomes, indicating heterogeneity (Amato and Anthony 2014; Amato and Keith 1991).

More advanced methods such as propensity score matching, SEM models, multi-stage models, and causal mediation analysis have been applied in newer studies finding effects of the impact of family dissolution on many different outcomes (Brand et al. 2019; Gustavsen, Nayga, and Wu 2016; Hawkins, Amato, and King 2007; Heinesen 2019; Kim 2011), but very few have applied such methods to studies of well-being. In a recent and Danish study, Laird et al. (2020) uses Danish administrative data to estimate the effect of divorce on mental health by applying sibling fixed effects estimators. They find small but significant evidence that parental divorce in early childhood leads to higher risk of mental health problems of children in adulthood measured as receiving treatment at a psychiatric hospital and consumption of antidepressant medication and benzodiazepines (Laird, Nielsen, and Nielsen 2020). This study is thus a strong contribution when it comes to estimating a causal effect of family dissolution in a Danish context. However, they still only estimate the impact of formal divorce rather than including cohabiting unions. Furthermore, by operationalizing mental health as psychiatric treatment or use of antidepressants and benzodiazepines, one might argue that their results relates to mental illness rather than mental health in a broader sense.

The number of studies using strong methodological design strategies beyond control variables to examine heterogeneity in post-dissolution family structures is particularly limited. In a recent study from 2020, Fallesen and Gähler use multiple OLS regression on data from the Children of Immigrants Longitudinal Survey in four European countries to correlate 15 family types and living arrangements with adolescent's internalizing problem, self-esteem, and life satisfaction. They find that children in intact families exhibit better wellbeing than peers in dissolved families, and that children in other types of living arrangements differs with regard to reported wellbeing (Fallesen and Gähler 2020). In a Danish study, Ottosen and Dahl (2012) examine the association between alternate living arrangements of Danish children in non-intact families using multiple logistic regression analysis on the Danish Longitudinal Survey of children from 1995.

They conclude that there is considerable selection into alternate living arrangements, and that once they control for different measures of social and socioeconomic confounding, they find no association between alternate living arrangements and children's well-being (Ottosen and Stage 2012). In a recent study from 2022, Augustijn (2022) investigated the relationships between different types of post-dissolution families and parents' and children's well-being. Using data from the German Family Panel and fixed-effects regression, she found that neither physical custody arrangements nor stepfamily status were related to children's mental and physical health (Augustijn 2022). The literature is thus inconclusive when it comes to establishing whether different family structures moderate the effect of family dissolution, and very few studies have used more advanced methodological designs. The main barrier seems to be the lack of new good data on complex family structures which allows for more advanced methodological designs – but conclusions on the role of different post-dissolution family structures with and without stepparents also remain less well established, because studies often have not formally tested differences between these groups (Sweeney 2010).

After reviewing the literature, I argue that there is a gap in the literature when it comes to determining whether there is in fact a causal impact of family dissolution (in a broader sense than just divorce) on children's well-being as well as a potential moderating effect of different post-dissolution family structures. We need to test the association with a stronger methodological design on modern data of high quality, in order to determine whether the narrative that family dissolution is harmful for children is in fact true, or whether it is just a result of selection bias. Furthermore, we need to establish whether the post-dissolution family structure plays any role in this association. Finally, the current literature has studied this association with many different outcomes and measures of well-being, ranging from economic wellbeing to self-esteem, educational outcomes, mental illness, suicide rates, and social conduct etc. In the next section, I therefore examine how the literature defines and measures well-being in order to qualify our understanding of well-being in relation to family dissolution.

3.3 Defining and measuring well-being

In order to understand the impact of family dissolution and post-dissolution family structures on children's well-being, it is crucial to define what well-being is. The concept of well-being is exceptionally broad and used in many different ways across scientific disciplines. From a child's

perspective, well-being can be described as a state where a child is free from obstacles and can be everything that she has the potential to be (Ottosen and Ottosen 2010). There are of course, many factors which contribute to this realization, and well-being is usually referred to as a multidimensional construct which incorporates both mental/psychological, physical, and social dimensions. Through an extensive literature review Pollard and Lee (2003) examined how the literature generally understands and measures well-being. They found five distinctive domains related to well-being: physical, psychological, cognitive, social, and economic (Pollard and Lee 2003). The physical domain of course relates well-being to physical health, often measured as general physique, physical activity, and risk behaviour such as smoking and alcohol consumption. The psychological domain usually refers to wellbeing in relation to emotions, social behaviour, mental health, and the absence of mental illness. The social domain includes more sociological perspectives on well-being such as family and peer relationships, access to social and personal resources including social and communicative skills. The cognitive domain primarily relates well-being to intellect and educational attainment; however, some studies also argue that creativity, memory, concentration, and academic ability are related to wellbeing. Finally, the economic domain usually relates wellbeing to the economic resources and living standards (Pollard and Lee 2003).

The literature therefore suggests that childrens wellbeing can be influenced by a variety of factors. While some of these are factors are mainly internal (intellect or cognitive capacity, for example), others are related to the environment in which children grow up. In the next section, I set out to develop a theoretical framework, which relates family dissolution and different post-dissolution family structures to these domains of wellbeing.

4 Theoretical framework

In this section, I present my theoretical framework for understanding how family dissolution and post-dissolution family structures can affect childrens well-being through the concepts of structure, resources, roles, and identity.

4.1 Family dissolution as changes in structure

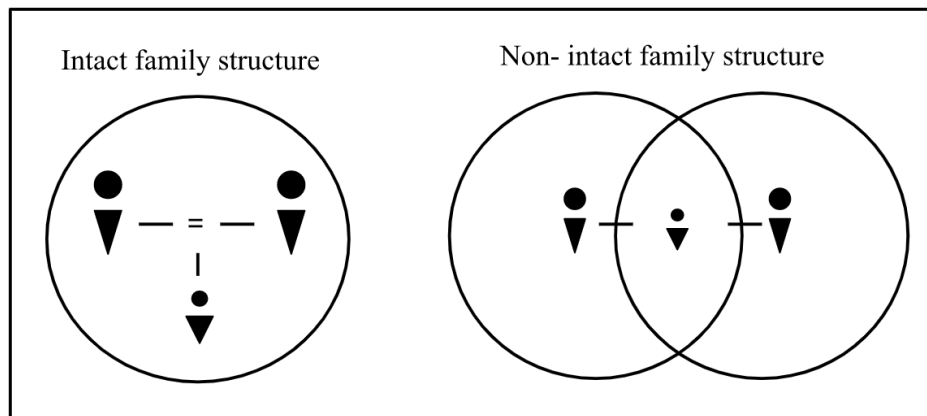
As argued in section one, the modern family is characterized by weaker and more changeable structural relations and roles, and family dissolution is a clear example of a social event which changes a childs family structure. I argue that applying the concept of structure as a heuristic tool allows me to articulate the impact of family dissolution on children through changes family resources, roles, and identity. As I will show in the following sections, these are all important elements of the families role in childrens well-being.

The structure of a family relates to who are considered part of a childs family. A popular way to define such structures amongst sociologists is by use of the term *family boundaries*, which are boundaries drawn between those who are part of a family and those who are not (Cheal 2003; Seltzer 2019; Silva and Smart 1999). The historical transformation of the modern family is therefore to a large degree a structural transformation towards a family with increasingly fluid boundaries, as it is no longer a given who or what constitutes a family.

According to Seltzer (2019), families can be defined in two ways. First, families are made up of relationships between individuals. Second, families are collections of individuals whose lives are linked to form units. For example, children are linked to their parents as a result of the parental link constituted through their relationship. Through their parents, children are simultaneously linked to each parents extended family network, including grandparents, aunts, uncles, cousins etc. Children are on the other hands also parts of their parents family units (Seltzer 2019).

Drawing on Seltzers conceptualization, an intact family can be depicted as one unit consisting of cohabiting parents and children, where the ties between parents are still intact (see figure four). Non-intact families, on the other hand, could be described as a dissolvment of the ties between parents, causing a transition from the intact family unit into two separate new units.

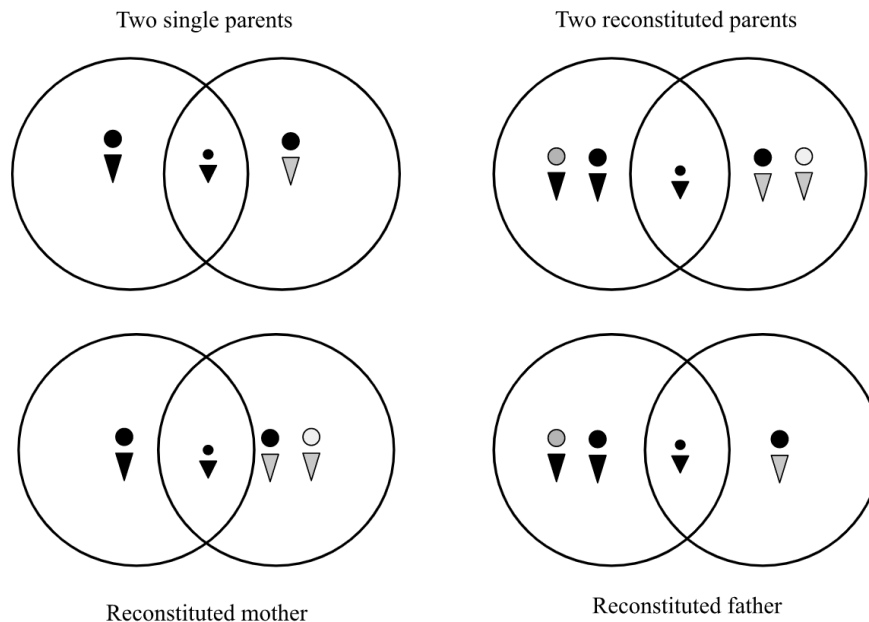
Figure 4: Illustration of an intact- and non-intact family structure, inspired by Seltzer (2019)



One way to view family dissolution is thus to regard it as a transition from an intact family structure including parents and children, to a new type of non-intact family structure. Children in non-intact families can thus be part of two separate family units, one with each parent, which are only connected through the ties to the child. In the case of family dissolution, it is therefore not only the tie between parents which breaks, but also the ties between the family networks of each parent.

Figure four is of course a simplified example of post-dissolution family structure. After family dissolution, a child's family structure is dependent on the relationship status of each parent. If a child's parents reconstitute after family dissolution, they form new ties and thus entirely new family units with their new partner. This means that the relationship status of a child's parents can pose another restructuring of a child's family units on top of the family dissolution, by introducing new ties between children and stepparents. Taking the relationship status of two parents into consideration, there are four basic post-dissolution family structures, which children can find themselves in dependent on their parents' relationship status (see figure five).

Figure 5: four types of post-dissolution family structures, based on parents relationship status



This structural perspective is efficient in order to get an idea about where to draw the boundaries around a family. One clear challenge related to non-intact family structures, however, is of course who should really be counted as part of a child's family. Depending on whether one asks a parent or a child, answers might for example differ with regard to whether a stepparent is part of the family (Brown and Manning 2009). In the post-modern setting, there is no longer any traditional rules which one can rely on to determine family bonds. However, as studies find that cohabitation is a strong proxy for child and stepparent interaction (Brown 2004), I argue that as soon as a child gains a cohabiting stepparent, this stepparent should be regarded as part of the family structure.

The family structure in itself is not necessarily important for children's well-being. But as previously argued, changes in family structures impose changes in the distribution of resources, roles, and family identity. In the next section, I therefore use the heuristic of family structure to examine how family dissolution and transition into new post-dissolution family structures can impact children's well-being through these concepts.

4.2 Changes in resources

Because changes in family structure such as family dissolution changes who are part of a child's family, they also impact the resources which a child has access to. Parental resource theory suggests that parents basically provide their children with two things: money and time (Bernardi et al., 2013). While economic resources supply children with the necessary living conditions, time gives parents the opportunity to socialize, support and control to their children. Family dissolution is associated with a decline in both. When a family dissolves, children can experience one or both parents in more strained economic situation than before. Particularly mothers who often have lower income levels than fathers, can struggle economically after family dissolution, resulting in lower living standards for the child. Economic strain might also cause parents to work more to make up for lost income, resulting in less time investment in the child and thus less available parental resources. Children might thus experience parents being more distant, less available for interaction and less engaged in child monitoring and discipline (Bernardi et al. 2013; Ram and Hou 2003). The decline in resources caused by family dissolution can therefore impact both the economic domain of children's well-being through lower living standards and the social domain through less time investment and parent/child interaction.

From a resource perspective, gaining stepparents could thus be regarded as a “injection” of new resources. As previously argued, stepparent families are usually economically advantaged compared to single parent families (Sweeney, 2010). Stepparents can therefore contribute economically to the family unit and thus increase the living standards of the family. This might also free more time for the original parent, which can be reinvested in the child. Furthermore, the presence of a stepparent might be positively related to parenting, as stepparents can encourage parents and partake in raising the children, adding extra parental resources (Hetherington 1979, 2006). On the other hand, stepparents might also compromise the attention of the parent. Parents who form new unions with new partners must divide their time and attention between the new partner and their child. As previously argued, studies have found that mothers tend to be less supervising after remarrying, and that parental monitoring is also less effective in reconstituted families (Bernardi et al. 2013).

Changes in family structure such as family dissolution and reorganization into post-dissolution family structures can thus affect children through the changes in parental and economic resources. This perspective mainly relates to the social and economic domains of well-being –

the amount of contact children have with their parents and the social and economic resources parents can provide for their them. However, changes in family structures also causes changes in childrens lives, which have more emotional impact.

4.3 Changes in family roles and relationships

As argued in section one, structural changes in families also causes changes in internal family roles. I argue that this also counts in the case of family dissolution. Family roles can be defined as specific positions within a family structure, which determines the individuals expected behaviour (Bell 2014). From a functionalist perspective, the roles of parents can thus be defined in terms of the functions they are expected to carry out for children by fulfilling their needs through physical maintenance, care, socialization, as well as maintaining motivation and morale through love (Cheal 2003; Seltzer 2019). Morgan (1996) named these functions *family practices*. Family practices involves activities which secure children and other family members from risk such as collective pooling of income, allocating of tasks and collective decision making related to everyday life. Most importantly, family practices also includes care. According to Morgan, care – contrary to housework – involves negotiations and responsiveness to other's needs. This makes care both a form of work and love and is in many ways what is specific about family roles and obligations (Morgan 1996). Related to the five domains of well-being, I argue that the role of a childs parents from these definitions therefore is to secure both the physical, psychological, social, and economic aspects of the childs well-being through family practices related to childcare.

Psychological theory also regard parental roles as crucial in terms of the emotional aspects of well-being. According to attachment theory (Gale 2021), the role of parents is to act as a childs primary caregivers. A central argument in attachment theory is that having a secure base in the form of close attachment to the primary caregivers is crucial to a childs emotional socialization and development because a secure connection to the primary caregivers enables children to explore the world with confidence, knowing that they can seek comfort and safety with their parents in case of danger or anxiety. Secure attachment patterns in childhood are also a vital base for children to form healthy and stable social relationships with others in the future (Gale, 2021).

Family roles that are created with the formation of intact families are usually well-defined and well-known, but new types of transitions such as family dissolution can result in ambiguity about

family roles and boundaries (Cheal 2003). When a family dissolves, all family roles and practices related to a child suddenly has to change. While parents could previously divide parenting responsibilities amongst them, each parent now have to function as primary caregiver to the child in their new family units independently from the other parent. Children can therefore suddenly find themselves in a new situation, where parents have to restructure their parenting roles and engage in caregiving practices, which they didn't use to (Hetherington and Stanley-Hagan 1999).

According to attachment theory, family dissolution can be seen as a transition from a stable family structure with two well-defined attachment figures and parent roles, to a new setting where a child's attachment figures suddenly are separated into two new family units. This transition can reduce a child's confidence in who and where her attachment figures are, their availability and responsiveness and in her perceived acceptability in the eyes of her attachment figures. As a result, these changes can cause disruption of important attachment bonds and have a negative impact on the strength of the relationship between child and parents, causing emotional damage both in childhood and later in life in terms of lower self-esteem, lower confidence in others and mental health problems (Feeney and Monin 2016). Attachment theory thus argues that family dissolution can have serious negative impacts on emotional and psychological aspects of children's wellbeing.

According to Smart and Neal (1999), the challenges that children experience in relation to the transformation into non-intact families can be quite different in mother and father households. As I have shown in section one, the family roles of men and women have historically been defined by the gendered division of labour in families. This have constructed different attitudes towards childcare responsibilities between fathers and mothers. Based on qualitative studies, Carol Smart and Elisabeth Silva (1999) argues that mothers and fathers often think differently about their parenting role and the enclosed responsibilities and obligations. For example, mothers are often more likely to prioritize childcare and limit labour market participation than fathers, who on the other hand are more likely to compromise their caregiving responsibilities (Silva and Smart 1999). Some argue that this is due to the fact that women think of caregiving in a more practical sense such as seeing to a child's needs, whereas men often have a more diffused sense of understanding of caregiving, which often involves fewer practical responsibilities and relates to the securing the family in a more general sense (van Dongen 1995; Tronto and Fisher

1990). Mothers are therefore also often seen as primary caregivers and attachment figures rather than fathers (Gale 2021). Because fathers usually spend less time and engage less in practical childcare and emotional work with their children than mothers, pre-dissolution fatherhood can be a poor preparation for post-dissolution fatherhood relative to motherhood. Fathers might struggle to establish themselves as independent attachment figures without the mediating role of the mother. Children might thus experience a less secure emotional attachment and weaker tie with their fathers after family dissolution (Smart Carol and Neale Bren 1999). On the other hand, while mothers are often more experienced in establishing strong emotional ties with their children, they often struggle more financially in their transition to the role as sole providers. In mother households, children might thus experience more economic strain and a mother who is less available than she used to be (Silva and Smart 1999; Smart and Neale 1999).

The internal relationship between a child's parents can also play a part in her well-being. Parents usually want to redefine themselves and create new independent roles and biographies with their children after family dissolution. But if they both are to be involved parents, they have to remain in some kind of relationship with each other. This means that parents have to set up new moral horizons which takes the other into consideration (Silva and Smart, 1999). Parents will often have to co-parent across households, which blurs the boundaries between a child's the new families units and between parent roles. Both parents and children must continually evaluate and negotiate family practices, roles, and relationships. This might cause even more frustration and insecurity within children about their own as well as their parents roles in relation the themselves and each other (Hetherington and Stanley-Hagan 1999). Furthermore, co-parenting across households requires a great amount of negotiation and communication between parents. The conflict level between parents is thus a key factor in the creation of successful post-dissolution families for children, if they are to keep a strong and relationship with both of their parents (Hanson, McLanahan, and Thomson 1996; Hetherington 2006). All of this can be complicated further by the introduction of stepparents.

Family roles in reconstituted families

The introduction of stepparents can be regarded as an entirely new role entering a child's life causing a yet another restructuring of family roles and relationships on top of the transition from intact to a non-intact family. This restructuring can prove particularly challenging, as there are a few cultural norms guiding expectations and behaviors of stepfamily members (Sweeney 2010). As

argued by Cherlin & Furstenberg (1978, 1994) the incompletely institutionalized status of stepfamilies can lead to uncertain expectations of the role which a stepparent can take in relation to the child. Marsiglio (2004) describes the entry into a stepfamily role as a complicated “family dance”, which requires a negotiation about the stepparents place in both their partner's life, the child's life, and often also the life of the other original parent (Marsiglio 2004). This can be reflected in issues such as how to choose the proper use of kinship terms without overstepping the mark in terms of the already established parent roles, what rights and obligations is associated with stepfamily membership, and what family practices a stepparent should engage in (Cherlin, 1978; Cherlin et al., 1991). Poorly defined roles of stepparents involves a risk of poorly defined relationships and weak ties between children and stepparents. If the relationship between child and stepparent is not manifested through engagement in family practices related to the child, this might compromise the parental potential of the stepparent. Furthermore, the quality of stepparent–stepchild relationships is important to children's wellbeing because, while children can benefit both emotionally from friendly stepparent–stepchild relationships, poor relationships can cause high levels of family conflict and less supportive stepparent-child relationships (Ganong et al. 2020).

The introduction of stepparents can also cause stir in the existing roles and foundations of parenthood. Reconstituted parents must divide their time and attention between the new partner and their child, which might result in role conflict and lower parental involvement. Suddenly, a child's parent is no longer just a parent, but also a partner to a new stepparent. This can cause feelings of insecurity within the child about how her own role fits into the new relationship, and how it changes the relationship between the child and her original parent. All these insecurities related to the stepparent role entries can thus cause frustration, jealousy, rivalry and anger within children (Bernardi et al. 2013; Jensen and Shafer 2013; Mitchell et al. 2015). Finally, role conflict between original parents and stepparents can create tension and conflict between a child's parents, given rise to an emotionally strained environment which can be harmful to children's stress levels and emotional well-being (Hanson et al. 1996). Altogether, while stepparents might contribute with economic and parental resources, they pose a challenge to children's well-being in the form of a complicated restructuring of a child's family roles and relationships, which can impact the emotional domain of well-being negatively. Whether a stepparent has a positive or negative influence on a child's well-being might thus depend on the quality of the relationship

between children and stepparents as well as a successful establishment of the internal family roles, rights and obligations.

4.4 Changes in family identity

The changes in family roles and practices which are caused by restructuring of a family does not only relate to the resources and roles within a family – it also changes the child's perception of family and self-identity. According to Epp and Prince (2008) family identity can be defined as follows:

“Family identity is the family’s subjective sense of its own continuity over time, its present situation, and its character. It is the gestalt of qualities and attributes that make it a particular family and that differentiate it from other families”

(Epp and Price 2008, p. 52)

Family identity is thus a symbolic construction of common identity, which distinguishes a child's family as a specific social unit different from other families. According to family identity theory, the common family identity influences not only the development of individual identities as family members, but also individual aspects of personal identity (Scabini and Manzi 2011). This means that the common family identity which children are part of plays a central role in their own individual identity and self-perception.

Family identity is to a large degree constructed through family practices (Cheal 2003). When a child's parents meet, they have to combine their individual identities and biographies in order to construct a new common family identity. This includes constructing everyday routines, a family narrative, family rituals, rules, and family values. All of these practices contribute to the symbolic construction of “who we are as a family” and therefore also to the child's own narrative about who she is as an individual (Epp and Price 2008). In other words, family practices can be regarded as a way to perform family identity. This means that everyday family practices, the ways of doing things such as dining rituals, bedtimes, holiday, birthdays, special cultural or religious occasions such as Christmas etc. facilitates a child's lifeworld and own narrative. For example, a family identity built on a strong narrative such as “*we are an active family*” can be performed through everyday routines or rituals such as family sports, living location close to nature or sport facilities, or perhaps active holidays.

In the case of family dissolution, the common family identity that the child was brought up with dissolves with the family structure. As the intact family unit dissolves into separate units, each parent suddenly have to construct new family identities with their children independent of their previous partner - a new narrative about who “we” are without mom/dad. As a result, children simultaneously have to come to terms with the loss of the shared family identity that they grew up with and restructure their own identity to their new separated family life, which will include new narratives, rituals, and possibly homes and rules. This restructuring of identity requires a highly emotionally demanding effort of children, which can influence their feelings of self-worth, confidence causing lower levels of psychological well-being (Feeney and Monin 2016; Hetherington 1979; Smart Carol and Neale Bren 1999).

I argue that same counts in the construction of stepparent families. If a child's parents remarry or move in with a new partner after family dissolution, a new merge of identity takes form in the joining of two families into a new family biography. Once again, all family practices such as table manners, curfew, bedtime, tv-restrictions etc. have to be renegotiated. The construction of a family identity in stepparent families might in fact prove even more trouble. As argued by Epp and Price (2008), families face competing interests and demands in their construction of a common identity. This could be particularly challenging in stepparent families, where the negotiations of family practices has to consider both the established “we” between child and the original parent as the new “we” between parent and stepparent (and child). Children might thus find themselves in a compromise between their old identity bond with the original parent and the new identity bond between parent and stepparent. Furthermore, children will often have to alternate between two households with two different set of family practices and cultures (Beck-Gernsheim 1998). Generally, children in complex post-dissolution family structures are required to handle an emotionally challenging restructuring and of identity, which are most likely more complex than those of their parents, because children have to navigate between different family units simultaneously.

4.5 Summary and hypotheses

In this section, I have reviewed the literature on the association between family dissolution and transition to post-dissolution family structures and childrens well-being. Many studies have found that children in non-intact families experience lower well-being than their peers in intact families. However, several scholars still argue that this association needs to be tested on newer

data with more advanced methodological approaches, in order to determine whether it is in fact causal. Furthermore, more studies are needed in order to examine the potential heterogeneity of this effect with regard to different post-dissolution family structures, as the current studies are few and inconclusive. The literature points to many different explanations as to why family dissolution should cause lower levels of well-being, but little sociological theory has been developed to conceptualize the impact in a coherent framework. In this section, I have argued that by seeing family dissolution and transition into different post-dissolution family constellations as changes in family structure, the impact of children can be described through changes family resources, roles, and identity. Family dissolution often cause a decline in the economic and parental resources available to the child. Furthermore, structural changes in family causes changes in family roles, and both parents and child will have to adjust to a new scenario, where the parental responsibilities can no longer be shared by two parents to the same extend. Finally, family dissolution requires a demanding restructuring of childrens self-identity, as all the everyday practices and rituals which used to constitutes a childs life world and family identity must be redefined in new settings. Together, all of these changes can thus affect both the economic, social and psychological domains of wellbeing by lowering childrens living standards and create more insecure family ties and emotional strain and distress. Based on the previous findings and these theoretical perspectives, I formulate the following hypotheses:

Hypothesis 1: *Experiencing family dissolution during childhood has a negative effect on well-being*

While previous studies are inconclusive as to whether different post-dissolution structures moderate the effect of family dissolution on childrens well-being, there are some theoretical perspectives which might suggest that children in single parent vs. stepparent families might differ with regards to well-being. On one hand, stepparents can increase both the economic and parental resources which are available to a child and function as positive role models. On the other hand, stepparent/child relationships are often complicated, and the introduction of stepparents can give rise to feelings of insecurity, jealousy, and anger within the child by imposing on the relationship between child and parent. Furthermore, stepparents can complicate the communication between parents, causing more conflict and emotional consequences for childrens well-being. In light of these insights, I argue that while there might be differences in

well-being between children in single- and stepparent families, there is no clear explanation in terms of which might be more beneficial. I therefore formulate the following second hypothesis:

Hypothesis 2: *The impact of experiencing family dissolution during childhood varies with different post-dissolution family structures with and without stepparents.*

In the next section, I set out to test these two hypotheses on new high-quality data and a more advanced methodological design than previous studies, in order to put the established finding and narrative that family dissolution has a negative effect on childrens well-being to test and contribute to our understanding of the role of different post-dissolution family structures in relation to this.

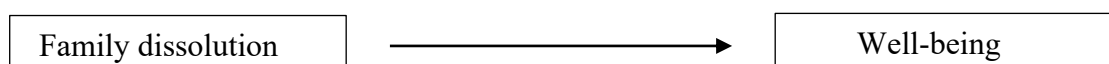
5 Methodological design

This section presents the methodological design I use to examine my two hypotheses, 1) that family dissolution has a negative effect on the wellbeing of children, and 2) that the impact of family dissolution varies with different post-dissolution family structures. First, I present the basic causal set-up that I use to evaluate which methods are needed in order to capture a causal effect of family dissolution. Then, I present the identification strategies and models that I use to examine both hypotheses. Finally, I provide a presentation of the data and operationalization used in the analysis as well as an analysis of representativity.

5.1 Research design

My main hypothesis examines whether experiencing family dissolution in childhood has a negative causal effect on a child's well-being as depicted in the following model:

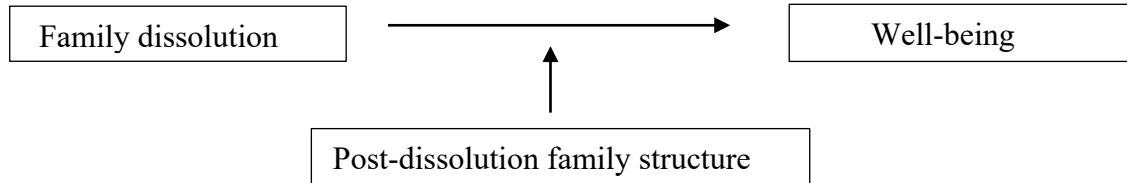
Figure 6: hypothesis one



The goal of my analysis is thus primarily to test, whether the association between family dissolution and wellbeing that has been found in the literature many times can in fact be

described as causal. Next, my second hypothesis examines whether this effect is moderated by different post-dissolution family structures, as depicted in the following model:

Figure 7: hypothesis two



With inspiration from the theoretical framework that I presented in the previous section, I examine four different post-family structures related to the relationship status of a child's parents after family dissolution: 1) both parents are single, 2) both parents are reconstituted, 3) only the mother is reconstituted, and 4) only the father is reconstituted. This allows me to examine differences between single parent vs. stepparent family structures, as well as whether impact of these two structures differ between mother and father households.

However, as I have shown, the literature finds evidence for a rather strong selection into family dissolution. To estimate a causal effect, my methodological design must address this issue.

5.2 The counterfactual set-up

I start from basic principles of standard causal analysis, namely *comparison* (Krause 2016). In its simplest form, the estimation of a causal effect is simply done by comparing a treatment group cases which are exposed to a certain treatment, with a control group of cases that are not. In the present case, treatment is defined as experiencing family dissolution. I present this using *Neymann Potential Outcomes model*. This framework assumes that subjects in the study group have two potential outcomes; one under treatment and one under control (Dunning 2012). Either the family dissolves during childhood ($D = 1$) or it doesn't ($D = 0$). The potential outcomes for each individual can thus be noted as:

$$\text{Potential outcome} = \begin{cases} Y_{1i} & \text{if } D_i = 1 \\ Y_{0i} & \text{if } D_i = 0 \end{cases}$$

where Y_{0i} is the well-being status of an individual in an intact family and Y_{1i} is the well-being status of an individual in a non-intact family. Ideally, I want to know the difference between Y_{1i} and Y_{0i} as the measured differences between those two outcomes could purely be ascribed to treatment. The observed outcome can thus be noted in terms of potential outcomes as

$$Y_i = \begin{cases} Y_{1i} & \text{if } D_i = 1 \\ Y_{0i} & \text{if } D_i = 0 \end{cases}$$

$$= Y_{0i} + (Y_{1i} - Y_{0i}) D_i$$

where $Y_{1i} - Y_{0i}$ is the causal effect of family dissolution on wellbeing. The dilemma is, however, that one can never observe an individual in both scenarios (Angrist and Pischke 2009; Dunning 2012). Either the family dissolves during childhood or it doesn't. Therefore, the fundamental challenge in this methodological design is to find an identification strategy, which can identify individuals that can serve as good counterfactuals to one another.

It is, however, possible to observe a distribution of both Y_{1i} and Y_{0i} in a study sample, which means that treatment status is different from different people. The sample presented in section x includes both children experiencing family dissolution and children which do not. This allows me to compare the average outcomes of those who experience family dissolution with the average outcomes of those who remains in intact families. This comparison is linked to the average causal effect by the following equation:

$$E[Y_i|D_i = 1] - E[Y_i|D_i = 0] =$$

$$E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 1] +$$

$$E[Y_{0i}|D_i = 1] - E[Y_{0i}|D_i = 0]$$

The equation states that the observed difference in outcomes equals the average treatment effect on the treated plus selection bias. The average effect on the treated are thus the average difference between the outcome of those who were treated and what would have happened to them, had they not been treated. However, as the latter case is counterfactual and unobservable,

this model is purely theoretical. In the real world, it is only possible to compare treated cases to non-treated cases, and this poses the obstacle that there might be differences between the two groups. The observed difference in outcome status therefore adds the selection bias term, which consists of those differences between the two groups, which might make one group more likely to be treated than the other. As I have shown in section three, the literature already suggests a range of socioeconomical factors which pushes this mechanism in the case of family dissolution and childrens well-being. Such variables are referred to as confounders (Angrist and Pischke 2009). As confounders such as those described in section three compromises the estimation of a true treatment effect, the challenge of the current methodological design is to eliminate selection bias.

The gold standard of causal methodological designs is the randomized controlled trial, sometimes referred to as clinical trials, which makes use of random assignment of treatment (Krause 2016). Random assignment of treatment solves the selection problem because it makes treatment D_i independent of potential outcomes. Under the assumption of random assignment of treatment, the treatment and control group on average will be identical as $N \rightarrow \infty$ by the simple principle that the mean of a random sample is an unbiased estimator for the mean of the population (Angrist and Pischke 2009). However, true experimental set-ups requires one to be able to manipulate treatment assignment - such as by use of a coin-toss - to ensure complete randomization. In the case of family dissolution and childrens well-being, such experiments are clearly in disagreement with basic ethics of scientific practice. In other cases, exogenous shock introducing randomization of treatment assignment can be used for natural experiment designs (Dunning 2012). When neither of these solutions are available, one must turn to other approaches in order to aim to isolate variation in treatment that mimics true randomization. In the next section, I will present my methodological approach which exploits the structure of panel data.

5.3 Panel data approaches

In the absence of true randomization or exogenous shocks to family dissolution, I must attempt to deal with confounders in other ways. Standard multiple regression methods usually try to rule out confounding by controlling for observed characteristics likely to affect both outcome and treatment. If *unobserved* confounders still remain, however, estimates will be biased, and often in an unknown direction. In the case of panel data with repeated observations on individuals over

time, one can use strategies which exploits time or cohort dimensions of the data to control for unobserved but time invariant (fixed), omitted variables.

Using pooled OLS on a panel dataset, I can treat the dataset as a cross-section and estimate models of the following form:

$$\textbf{Model 1 (Pooled OLS): } y_{it} = \beta_0 + \delta D_{it} + \mathbf{X}'_{it}\boldsymbol{\rho} + u_{it}$$

where y indicates the wellbeing of individual i in time period t , and D is a treatment variable, indicating whether individual i lives in an intact or non-intact family in period t , and X is a vector of observed control variables including parents' income, educational level, and labour market participation. To examine hypothesis two, I use the same model but exchange the binary treatment parameter to four new internally excluding treatment parameters each representing a post-family structure:

Model 1b (hypothesis 2):

$$y_{it} = \beta_0 + \sum_{s=1}^4 \delta_s D_{its} + \mathbf{X}'_{it}\boldsymbol{\rho} + u_{it}$$

where D_{its} is a set of four dummies indicating whether individual i in period t has either $s = 1$ two single parents, $s = 2$ both reconstituted parents, $s = 3$ a reconstituted mother and single father, or $s = 4$ a reconstituted father and a single mother. These four dummies can thus be considered interactions between family dissolution and the post-dissolution family structure of the child. In the pooled OLS setup, the error term u_{it} is given by:

$$u_{it} = \alpha_i + \varepsilon_{it}$$

and thus includes both an unobserved individual specific component α_i and the random independent error term ε_{it} resulting the errors u_{it} to be positively correlated over time. There are two assumptions necessary for the pooled OLS estimator to deliver consistent estimates:

Assumption 1: $E(x_{it}, \varepsilon_{it}) = 0$, there is no correlation between explanatory variables and the random error term ε_{it}

Assumption 2: $E(x_{it}, \alpha_i) = 0$, there is no correlation between the explanatory variables and the individual specific component α_i .

Both assumptions therefore related to exogeneity of the explanatory variables conditional on the compound error term u_{it} . When these assumptions are met, a pooled OLS will deliver consistent estimates. In the case of well-being and family dissolution, however, these assumptions could be considered strong. As argued in section three, some studies find that some of the differences in well-being between children in respectively treatment group (non-intact families) and control group (intact families) could stem from unobserved characteristics.

When one is not comfortable assuming that $E(x_{it}, \alpha_i) = 0$, the individual term α_i can be accounted for by within-transforming the data using fixed effects models. By treating α_i as a parameter to be estimated, I can estimate deviations from means which kills the unobserved individual effects. Now the assumption need only be that selection into family dissolution is based on unobserved *but fixed* individual characteristics and observed covariates (Angrist and Pischke, 2009). With the fixed effects approach, I can add the individual specific parameter α_i to the previous model:

$$\textbf{Model 2 (fixed effects): } y_{it} = \alpha_i + \delta D_{it} + \mathbf{X}'_{it}\boldsymbol{\rho} + \varepsilon_{it}$$

and essentially control for individual specific time invariant characteristics. In this model, the parameter of interest δ indicates the association between family dissolution and well-being, α_i is an individual specific parameter (individual fixed effect), and X is a vector of control variables including parents' income, educational level, and labour market participation. Just like in model 1, to examine hypothesis two, I exchange the binary treatment parameter with a set of four dummies indicating which of the four post-dissolution family structures the child lives under:

Model 2b (hypothesis 2):

$$y_{it} = \alpha_i + \sum_{s=1}^4 \delta_s D_{its} + \mathbf{X}'_{it} \boldsymbol{\rho} + \varepsilon_{it}$$

The fixed effect estimator is unbiased if I am willing to assume strict (or strong) exogeneity of x_{it} conditional on α_i . This would imply, that the treatment variable D indicating the state of family dissolution in each time period is uncorrelated with the error term in each time period. When assumptions are met, family dissolution is considered to be as good as randomly assigned conditionally on the individual specific term α_i and observed control variables. However, if there are still unobserved confounders which vary over time, my treatment estimator will be biased. In order to try to account for this selection, I expand the fixed effect model to a difference-in-difference estimator by introducing time-fixed effects as well.

The difference and difference estimator

The difference-in-difference (DID) design is a quasi-experimental alternative to RCT designs described earlier based on a study population divided into a treatment group and a control group. However, contrary to RCT's, treatment is not randomly assigned to study units. In order to account for confounders, the DID design assume that confounders varying across the groups are time invariant, and time-varying confounders are group invariant. Together, these assumptions are referred to as the common trend assumption (Wing, Simon, and Bello-Gomez 2018).

The simplest form of the DID involves only two groups ($g = 1,2$) observed in two time periods ($t = 1,2$) – this is usually referred to as a 2X2 DID. In the first period, both groups are exposed to the control condition, and in the second period, only group 2 are exposed to treatment.

Treatment is noted as D_{gt} and takes the value of either 0 or 1 for each group in each time period. $g = 1,2$, so $D_{gt} = 0$ in for both groups in period 1 and $D_{gt} = 1$ for group 2 in period 2.

However, the basic design of DID can be expanded to cases where treatment occurs in multiple groups and multiple time periods. In the recent DID literature, this is referred to as a staggered difference-in-difference design (Baker, Larcker, and Wang 2022; Cunningham 2021:9). Such models are typically estimated using two-way fixed effect models which allows one to include several periods for both treatment and control groups and stag treatment (Cunningham 2021:9.6). As the study sample used in this study observes one group of individuals, who never experience

family dissolution and three groups of individuals, who experience family dissolution at different times during their childhood, the staggered DID model is suitable.

Just as with the 2X2 DID, D_{it} takes the value of 1 if individual i lives in a non-intact family at period t . The model for the untreated outcome is

$$Y(0)_{it} = \alpha_i + \lambda_t + \varepsilon_{it}$$

Where α_i is an individual fixed effect representing the combined effects of the time-invariant characteristics of individual i , and λ_t is a time fixed effect representing the combined effects of the time-variant but individual-invariant confounders. Both individual effects and time trends thus come from underlying differences in unobserved covariates across individuals and periods, which are controlled for by including fixed effects. With a staggered DID setup, I can obtain the following model:

$$\textbf{Model 3 (staggered DID): } y_{it} = \alpha_i + \lambda_t + \delta D_{it} + \mathbf{X}'_{it}\boldsymbol{\rho} + \varepsilon_{it}$$

where δ is the treatment effect parameter measuring the average effect of family dissolution on the treated (ATT), α_i is an individual specific parameter (individual fixed effect), λ_t are time fixed effects, and X is a vector of control variables including parents' income, educational level and labour market participation. The ATT represents the effect on the treated compared to the counterfactual case where they were not (Wing et al. 2018). Only in the case where family dissolution is assigned completely at random, the ATT can rightfully be interpreted as an average treatment effect (ATE) (Cunningham 2021:9). Just like in model 1 and 2, to examine hypothesis two, I exchange the binary treatment parameter with a set of four dummies indicating which of the four post-dissolution family structures the child lives under:

Model 3b (hypothesis 2):

$$y_{it} = \alpha_i + \lambda_t + \sum_{s=1}^4 \delta_s D_{its} + \mathbf{X}'_{it}\boldsymbol{\rho} + \varepsilon_{it}$$

Addressing the parallel trends assumption

As I have shown earlier, the counterfactual scenario on which the DID estimator relies cannot be observed. The parallel trends assumption is therefore needed in order for the treatment parameter estimate to deliver consistent results. Theoretically, we need to believe that the treatment group had behaved as the control group, had they not been treated. The parallel trends assumption states that unobserved confounders are either time-invariant individual characteristics or time-varying factors that are individually invariant. This implies that the time series of outcomes in each individual should differ by a fixed amount in every period and should exhibit a common set of period-specific changes (Wing et al. 2018). Furthermore, for the differencing setup to work, the timing of treatment exposures in the DID design must be statistically independent of the potential outcome distributions (conditional on the group- and time-fixed effects). This is referred to as strict (or strong) exogeneity. In the present case, family dissolution in period $t+1$ cannot be predicted by the child's well-being in period t . Finally, there can be no anticipation effect, as anticipation of an upcoming family dissolution might cause behavioral changes with the child. In the case of family dissolution, this could potentially turn out to be problematic, as it is rather likely that children experience stir or conflict prior to the family dissolution. It is therefore not unlikely that I will find anticipation close to event time 0.

Essentially, all these assumptions relate to the parallel trends assumption, which can never be truly validated. What the econometric literature typically advises one to do as an attempt to test it anyway, is to examine placebo pre-treatment leads of the DID coefficient. If DID coefficients in the pre-treatment periods are not statistically different from zero, then the difference-in-differences between treatment and control groups can be said to have had parallel trends prior to treatment. If this is the case, the argument behind this test is thus: if they had parallel trends before, why shouldn't they have had after? (Cunningham 2021:9.4). Introducing pre-treatment variables also allows me to examine anticipation effects.

There are several advantages to examining the treatment parameter over time. The DID model presented in the previous section (model 3) estimates a time constant treatment effect, a so-called step-impact function (Ludwig and Brüderl 2021). This requires the assumption that the impact of family dissolution on well-being is immediate and constant over time. In other words, this model treats family dissolution as a discrete life event which causes an immediate impact on a child's well-being that does not evolve over time. As I have shown, sociological theory suggests that

family dissolution should be examined as a process consisting of several steps and transformations. It is therefore particularly interesting to examine how the impact of family dissolution on well-being evolves over time. With a long running panel including both treated and never treated such as the one I will present in the next section, I am able to estimate time-varying/dynamic treatment effects, giving insight to the longer-term effects of family dissolution. Furthermore, assuming a time constant effect can in fact bias my estimates. When treating a time-varying treatment effect as constant, one risks a negative weighting bias. This has been proven to be particularly problematic with staggered treatment (Goodman-Bacon 2021). The FE estimator of time constant treatment effects down-weights observations later after treatment and is thus biased towards early treatment effects (Ludwig and Brüderl 2021). If the shock of family dissolution causes a big effect in the early stages, which then declines, the FE estimator would provide an upward biased treatment effect (and negatively biased in the contrary case).

To model a time-varying treatment effect which allows me to examine pre- and post-treatment effects, I use a flexible dummy impact function, where I replace the parameter D_{it} with a set of dummies – one for each observation period before and after the first observation period, where I observe that treatment has occurred (Ludwig and Brüderl, 2021). There are several ways to approach this depending on how to define the control group. I use two strategies.

First, I include those who are more than four years away from experiencing family dissolution in the control group of those who remain in intact families. I then estimate a two-way fixed effect model including one pre-treatment dummy and three post-treatment dummies (the available time periods are of course dependent on the dataset, which I will present in section x):

Model 4 (dynamic TWFE model):

$$y_{it} = \alpha_i + \lambda_t + \sum_{\ell=-1}^3 \delta_{\ell} D_{it\ell} + \mathbf{X}'_{it} \boldsymbol{\rho} + \varepsilon_{it}$$

where D_{it} is a set of dummies for experiencing family dissolution ℓ observations periods away from when they were first observed as being treated ($\ell = 0$), α_i is an individual specific parameter (individual fixed effect), λ_t are time fixed effects, and X is a vector of control variables including parents' income, educational level, and labour market participation. This

allows me to compare the well-being of children who experience family dissolution before and after the event to a control group of children in intact families as well as children more than four years away from family dissolution, while holding individual characteristics, age and control variables fixed.

As an alternative and robustness check to model 4, I keep the treatment group and control group separated and apply a staggered difference-in-difference setup using individual and age fixed effects combined with event time dummies and a vector of control variables. In this model it is necessary to omit one event-time dummy as an anchor in time in order to identify the others. I omit the last observation period before treatment is observed in order to estimate an immediate impact of family dissolution relative to the last period, where the individuals were in an intact family:

Model 5 (dynamic staggered DID):

$$y_{it} = \alpha_i + \lambda_t + \sum_{\ell \neq -1} \delta_\ell D_{it\ell} + \mathbf{X}'_{it}\boldsymbol{\rho} + \varepsilon_{it}$$

where D_{it} is a set of dummies for experiencing family dissolution ℓ observations periods away from when they were first observed as being treated ($\ell = 0$), α_i is an individual specific parameter (individual fixed effect), λ_t are time fixed effects (or age fixed effects, as there is no well to separate time, age and cohort in this case), and X is a vector of control variables including parents' income, educational level and labour market participation. This allows me to compare the well-being of children who experience family dissolution before and after the event to themselves right before family dissolution, relative to children in continuously intact families at a similar age.

Robustness of the two-way fixed effect estimator in a staggered DID setting

Although the two-way fixed effect estimator is commonly used to estimate a DID model with differential timing of treatment, newer literature has directed its focus on the shortcomings of this estimator (Cunningham 2021:9.6). In a 2021 article, Goodman-Bacon decomposes the two-way fixed effects estimator to show that it is a weighted average of all potential 2X2 DID estimates where weights are both based on group sizes and variance in treatment (Cunningham

2021:9.6.1; Goodman-Bacon 2021). In staggered treatment designs with differential timing of treatment, different groups spend different amounts of time under treatment. For example, in this study, the first group to be treated are under treatment for three observation periods, whereas the last group to be treated are only under treatment for one (this will be elaborated in the next section on data). Goodman-Bacon argues that this is problematic, because the length of time a group spends in treatment determines its treatment variance, which ultimately affects the weight that 2X2 plays in the final adding up of the DID parameter (Cunningham 2021:9.6.1). In other words, the DID estimator averages treatment effect heterogeneity and is thus biased if there is treatment heterogeneity of family dissolution between age groups (Goodman-Bacon 2021). To address this problem, I estimate stacked regressions of model 4 and 5, where I separate the three groups which experience family dissolution at different ages and compare each of them to a clean control group of never treated individuals. Comparing these results elucidates any treatment heterogeneity between age groups.

With the basic models in place, I now turn to data. In the next section, I present the data that my study is based on along with a section on operationalization and variables.

6 Data and sample

The current study is based on data from two sources, 1) the Danish Longitudinal Survey of Children and 2) Danish administrative data. In this section, both data sources are presented along with operationalization.

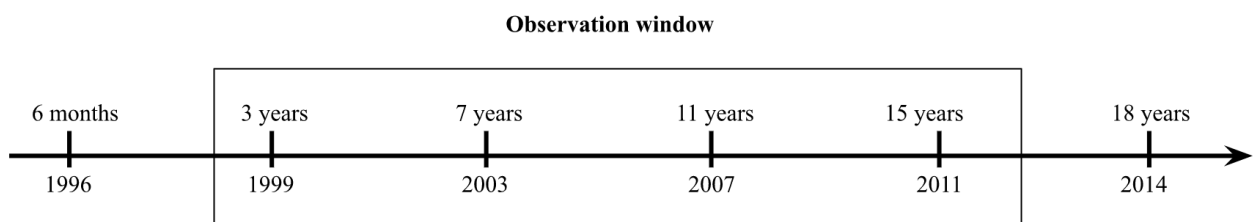
6.1 Danish Longitudinal Survey of Children

The Danish Longitudinal survey of children (DALSC) is a Danish panel survey implemented by VIVE in 1995. It follows a representative sample of 6.000 Danish Children from birth into adulthood and holds a wide range of questions concerning the experience of living and being brought up as a child in Denmark. This particular survey is a beneficial data source due to the panel structure of the survey programme, and the fact that it is built on a representative sample of Danish children, which gives a good base for making statistical generalizations (Bay and Rathlev 2017; Hansen and Hjorth Andersen 2013). Finally, the DALSC dataset contains a validated measurement instrument of childrens wellbeing (this will be elaborated in the section on operationalization) as well as identification key variables, which allows me to connect each

respondent to Danish administrative data. Thereby, it is possible to link a variety of relevant high-quality information to the children and their families.

DALSC is a cohort survey as all 6.000 respondents were born in the fall of 1995. The first survey interview took place at the age of six months, and interviews followed at the ages of 3, 7, 11, 15 and finally 18 years. In fact, another round was carried out in 2021, but data from this round was not released at this point (VIVE 2022). Figure eight shows the timeline of the survey implementation:

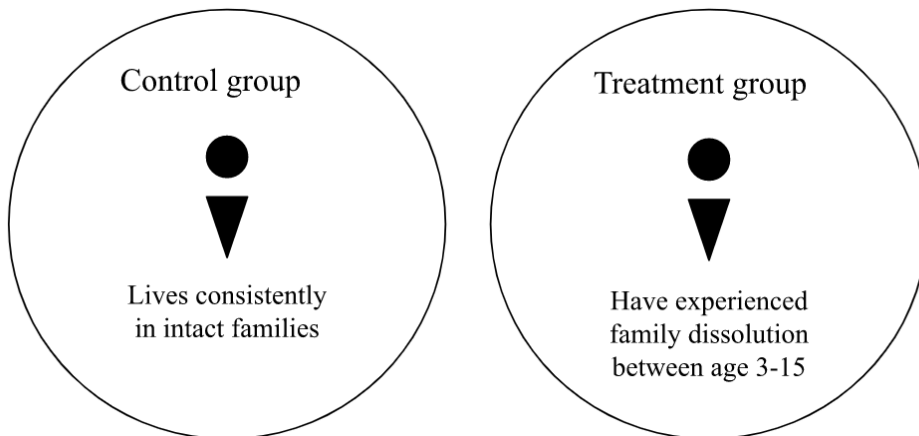
Figure 8: DALSC survey rounds



As evident from the figure, this study is based on DALSC observations from the years 1999, 2003, 2007 and 2011 and thus have a selected observation window. I exclude children younger than three years, as I believe that very young childrens experience of family dissolution is not comparable to that of older children, who have more cognitive capacity to understand the changes that family dissolution causes. Furthermore, as children above 15 are much more likely to live outside of their family, they are excluded to sustain a more comparable sample.

As the methodological design presented in the last section requires at least one observation pr. individual before family dissolution, the sample used in this study only includes children who lives in intact families at age three. The basic treatment group thus consists of children who experience family dissolution between the age of 3-15 years, and the basic control group consists of children who lives continuously in intact families (at least within the observation window). For an illustration of treatment and control group, see figure nine.

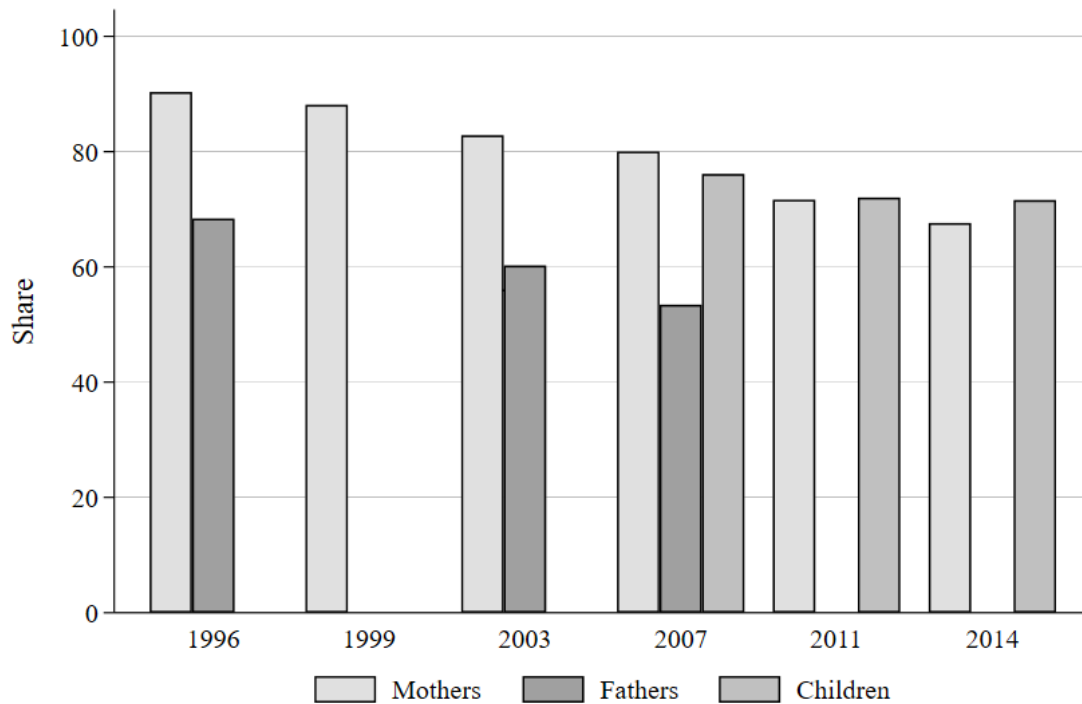
Figure 9: treatment and control group



However, as I only observe my sample every fourth year, I cannot be sure to observe treated individuals in the exact year that they experience family dissolution. For example, if individuals are treated at age 7, I can observe them in one non-treated period and three treated periods. However, I cannot differentiate between whether I observe them as treated for the first time zero or three years after the actual family dissolution took place. This means that I do not simply observe them in year -1, 0, 1 and 2 relative to treatment, but rather - 4 to -1 years before and 0-3 years, 4-7 years and finally 8-12 years after treatment. As individuals can thus experience family dissolution at age 7, 11 or 15, I have an observation window ranging from -12 to -9 years, -8 to -5 years or -4 to -1 years *before* family dissolution, to 0-3 years, 4-7 years or finally 8-12 years *after* treatment (depending on the age of at treatment).

DALSC contains three main types of survey questionnaires, 1) mother questionnaires, 2) father questionnaires and 3) child questionnaires. However, as the mother questionnaires were the only ones used in all survey rounds, they are the only consistent questionnaires allowing for long term comparisons. Furthermore, as evident from figure 10, the response rates are noticeably higher for the mother survey compared to the father survey:

Figure 10: DALSC Survey Response Rates.



Source: own calculations, DALSC

As the methodological design for this study depends on comparable repeated measures, and since the mother survey is implemented in every round with high response rates, the current study will be based on the mother surveys. It should be noted that the mother questionnaires can also be answered by a father or other legal guardians should the mother be absent (but this is seldom the case).

The typical problem with survey data, of course, is missing information, which can compromise the size and representativity of the final analytical sample. An analysis of representativity will thus be presented in section 6.4.

6.2 Danish administrative data

The second data source used in the current study is official Danish administrative data. I use administrative data to supplement the survey data from DALSC with high quality variables indicating both family dissolution, post-dissolution family structure and socioeconomic control variables.

Supplementing DALSC with administrative data has several advantages. First of all, it is possible to find information on not only the children in the survey, but also both of their parents, and potential bonus parents and follow their attributes over time (Møberg 2017). As the DALSC is only collected every four years, administrative data also enables me to follow specifically what happens in-between survey rounds. Second, administrative data does not hold non-response issues as the survey inevitably does. In DALSC, some mothers might opt out of answering specific questions or not finishing the entire survey questionnaire, causing missing data. In some cases, such missing information can be found using administrative data. Finally, administrative data does not suffer from recollection issues like it's often discussed with surveys. This is particularly important in this case, where mothers are only interviewed every four years. Recalling exactly when one moved apart from a partner or how old the child was at the time might be challenging. Therefore, using time exact administrative data can rectify such bias in data (Møberg 2017). The specific registers used are presented in table 1:

Table 1: Included registers

Register	Description
BEF	BEF contains statistics on the entire Danish population, its size and composition. Based on the CPR register, it holds basic information on gender, family connections, age, addresses, relationship status, immigration, and several other things. It is updated every year by the 31st of December.
UDDA	UDDA is a register containing yearly information on the population's educational attainments. More specifically, it holds information on the highest levels of education acquired by each individual (coded by ISCED-2011). UDDA is updated every year and refers back to the educational status of the population by October the year before.
IND	IND is the population income register. It holds information on all types of income reported to the authorities for tax payment. Income is measured both on individual and household level.
RAS	RAS is a yearly register holding information on the population's

	primary attachment to the labor market with reference to the last week of November.
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Source: (Statistics Denmark 2022c, 2022f, 2022d, 2022e)

Administrative data, however, is not without challenges and limitations. As argued by Møberg (2017) administrative data is collected for administrative purposes. This means that the cogency of the variables may not live up to the standards required for research. For example, different political requirements to the data collection may cause variables to change over time, compromising the precision and comparability of operationalization. Paying close attention to documentation is thus of high importance (Møberg 2017). Changes often occur over time and within variables. Therefore, measurement validity will be addressed in the following section on operationalization.

6. 3 Operationalization

This section presents the operationalization of the variables included in the following analysis. To begin with, I direct my attention to the dependent variable (Y) measuring childrens well-being. Hereafter, the main variable of interest (treatment variable = D) indicating family dissolution will be presented along with the four variables indicating post-dissolution family structures used for analysis of hypothesis two. Finally, I present my control variables.

6.3.1 Well-being - the Strength and Difficulties questionnaire

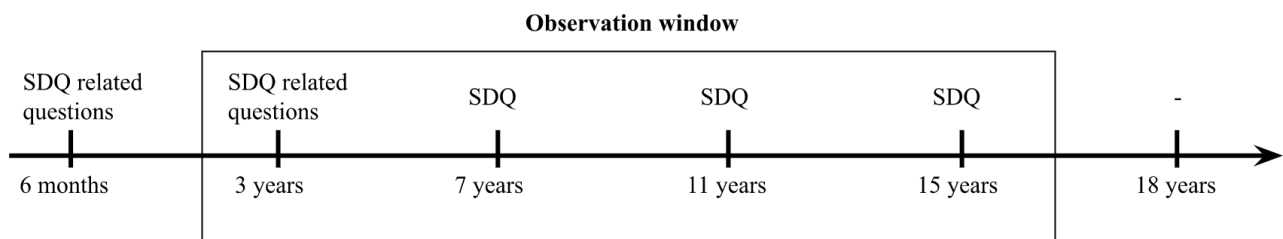
As I have argued in section 3.3, wellbeing is a multidimensional construct, and empirical studies are usually only able to examine one or two of such measures. One of the things making the DALSC a desirable data source is the therefore that it contains *Strengths and Difficulties Questionnaire* (SDQ). The SDQ is a measure instrument of psychological wellbeing and daily functioning developed for children and adolescents (Socialstyrelsen 2017; STQ.dk 2022). It is designed to give a multi-dimensional perspective on childrens well-being and functioning in everyday life and has therefore been recommended as one of the preferred measurement instruments for social-emotional function and psychological well-being (Kiil, Arendt, and Rosholm 2016) as well as a screening tool for health professionals (STQ.dk, 2022). The SDQ is therefore a desirable measurement of wellbeing because it's an index of several factors, which I have argued in section four is likely to be influenced by changes in family. The SDQ contains a total score of wellbeing calculated on the basis of four subscales measuring emotional problems,

behavioral problems, hyperactivity, and peer problems (Andersen, Deding, and Lausten 2010). Relating this to the domains presented previously, the SDQ allows me to work with a measure of wellbeing which includes both psychological, cognitive, and social dimensions of wellbeing. Contrary to other scales such as the Rutter-scale, the SDQ focus on both desirable and undesirable traits. It is therefore argued to be more motivating for respondents to answer, as well as reducing halo effects (Andersen et al. 2010; Goodman 1997).

The SDQ is calculated from a one-page (25 questions) questionnaire (available in table A, appendix). All questions are statements about the child's behavior, personality, social relations, and psychological traits all answered on a three-point likert scale (1 “not true”, 2 “somewhat true” or 3 “certainly true”) or, 4) a “don’t know” category. All questions fall within five subscales 1) emotional problems, 2) behavioral problems, 3) hyperactivity, 4) peer problems and 5) prosocial behavior. However, only the first four subscales are used to calculate a total SDQ score, where lower scores of indicates less problems and higher scores indicates more problems. All subscales are based on an equal number of questions and thereby contribute equally to the total SDQ score. Importantly, as only the four negatively focused subscales are used to calculate the total SDQ score, the score should be interpreted as a measure for difficulties - and not strengths (Andersen et al., 2010b).

The SDQ is only implemented in the survey from age 7 through 15 (in the mother surveys) (Østergaard 2022). However, three larger batteries of questions strongly related to those used to calculate SDQ scores are present in both the 6 months and 3 years survey rounds (see figure 11).

Figure 11: Implementation of SDQ in DALSC



Researchers from the department of children and family at VIVE have therefore suggested constructing quasi SDQ for the 1996 and 1999 questionnaires using factor analysis in a working paper from 2010 (Andersen et al. 2010). This could allow comparisons over time from an earlier

starting point. In the next section, I will therefore reconstruct the quasi SDQ as suggested in the working paper by Andersen et al. (2010) in order to examine whether a factor analysis can create a good comparable measure of the SDQ in 1999 for use in the analysis. Whereas Andersen et al. (2010) suggests using a quasi SDQ from both the 1996 and 1999 survey rounds, I argue that the comparability of a measure from the age of 6 months (1996) and up to the age of 15 is not feasible. The SDQ was developed for children from the age of 2 years, and thus comparing outcomes over time would violate the instrument's validity (STQ.dk 2022). I will therefore only construct a quasi SDQ for 1999.

Reconstructing a Quasi SDQ

The DALSC survey round of 1999 contains three batteries of questions (see tables A.3-A.5 in appendix) giving a total of 42 questions. 24 of these questions were drawn from (or inspired by) the Child Behavior Checklist, another instrument often used to assess a variety of behavior problems in children and adolescents (Andersen et al. 2010). Theoretically, many of these 42 questions resemble the original 25 SDQ questions to a great extent. Furthermore, all questions are answered on the same three-point likert scale. A comparison of the questions from the survey round of 1999 and the original SDQ questions are available in table A.2 (appendix).

As evident from table A.2, very close matches can be found in the 1999 survey round to 20 of the 25 original SDQ questions. Five questions, however, are not matched to a satisfactory extent. These five questions refer to behavior related to lying, stealing, preferences of adults over children and one question on physical well-being. These measures thus cannot be included in the quasi SDQ. Likewise, some questions used in the 1999 survey round are not part of the 25 SDQ questions. These questions will still be included in the exploratory factor analysis, as they are part of operationalized survey batteries and still thematically strongly related to the 25 SDQ questions. By including these 42 items in the exploratory factor analysis, the goal is to construct a scale similar to the SDQ from these questions.

Handling non-response items

The 42 questions from 1999 are coded with values 1,2,3 or 8 (the last being the “don’t know” category) or missing. As it is unclear what the “don’t know” category entails, this category is coded as missing for all questions. This unfortunately causes 42 % of the observations to have

missing data on one or more of the 42 items used for the factor analysis. Missing values poses a substantial problem as factor scores will be computed for complete cases alone. Furthermore, as argued by Durrant (2009), a major concern with missing data is if the non-response mechanism is unknown, that is, knowledge of how nonresponse for each variable is generated (Durrant 2009). It is thus necessary to investigate the distribution of missing values to understand which assumptions are necessary to make.

After removing one question responsible for most missing values (the last question in table A.2), 36 % of observations still have missing values on one or more of the remaining 41 questions. However, 99 % only have missing values on 5 questions or less. Observations with missing on more than five are dropped. The distribution of missing values are now presented in table two:

Table 2: missing values on one or more of the 41 SDQ questions used for quasi SDQ

	Frequency	Percentage	Accumulated pct.
Missing on 0 items	3.383	64.44	64.4
Missing on 1 item	1.149	21.89	86.3
Missing on 2 items	1.149	7.8	94.1
Missing on 3 items	407	3.7	97.8
Missing on 4 items	80	1.5	99.33
Missing on 5 items	35	0.67	100
Total	5.250	100	

A closer examination of the non-response mechanism suggest that there might be *some* bias in the non-response mechanism related to education (see section A.2 in appendix). It is thus not entirely safe to assume that the data is missing at random (Durrant 2009).

With this knowledge, the missing data problem is addressed with imputation. As defined by Durant (2009) imputation is not ideal as it is essentially an attempt to make (qualified) guesses about non-observed values. Treating imputed values as observed values can cause bias and underestimate the true variance in the sample (Durrant 2009). However, in this particular case,

imputation seems like a good solution because missing on just one of the 41 items will cause listwise deletion in the factor analysis, causing a great loss of data. As we have seen from table two, 36 % of the respondents have missing on one item or more, and only 2 % have missing on four items or five (tops) out of 41 items. There are thus quite few values which will need to be imputed for each individual and on many different questions. Furthermore, as all variables are statistically highly related to each other (as they should be for use in a factor analysis), there will be plenty of good auxiliary variables available for imputation on non-response items.

Educational level will also be included as an extra auxiliary variable as this variable seems to influence the non-response mechanism particularly (see table A.6, appendix). Finally, imputation will only be carried out on variables which will serve as individual contributors to the following factor analysis, which is built on the total variation of all 41 items.

I use nearest neighbor hot deck imputation, which works with a donor/recipient set up, where a value from a record with an observed item, the donor, is passed on to a record with a missing value on that item, the recipient (Chen and Shao, 2000). The advantage of hot deck imputation methods is that missing values are replaced by actual observed values, which makes them highly suitable for categorical data (as with the 41 items for imputation in this case). Furthermore, hot deck methods are non-parametric as opposed to regression imputation techniques using predicted values from regression models, which can suffer from model misspecification. This is also an advantage in the case of skewed data, as no distributional assumptions are needed. Imputed values will have the same distributional shape as the observed data (Chen and Shao 2000; Durrant 2009). For a more thorough description of the imputation, see section A.2 in the appendix.

Exploratory factor analysis

After imputing missing data, I run a factor analysis based on the 41 survey items. As evident from table A.2 (appendix), the 41 questions remaining from the 1999 survey round share great resemblance to the 25 questions used to calculate the SDQ. Theoretically, this gives me reason to believe that the 41 questions from 1999 could in fact be driven by the same latent factors as the SDQ. If this is the case, these factors could contribute to a good quasi SDQ measure. I therefore run an exploratory factor analysis to examine whether these factors can be found empirically in data. The exploratory factor analysis is exactly designed to identify common latent factors which

drives measured variables (Fabrigar and Wegener 2012; Watkins 2018). For a full description of the factor analysis, see section A.3 in the appendix. Based on the factor analysis, I examine both a three- and four-factor solution. Table three presents the five subscales of the SDQ along with my interpretation of the factors from the two factor solutions:

Table 3: SDQ subscales and quasi SDQ factors

SDQ subscales	Quasi SDQ (4 factors)	Quasi SDQ (3 factors)
Peer problems	Negative social behaviour	Negative social behaviour/hyperactivity
Hyperactivity	Hyperactivity/concentration issues	Hyperactivity / restlessness/ concentration issues
Emotional problems	Anxiety / passive/insecure behaviour	Restless/anxious/asocial
Prosocial behaviour	Positive social behaviour	-
Behaviour problems	-	-

The table shows that the factor analysis provides a four-factor solution which shares great resemblance with the first four SDQ subscales. It is, however, not able to find the fifth subscale regarding emotional problems. These findings correspond to those of Andersen et al (Andersen et al. 2010:12). The three-factor solution provides unclear conceptual distinctions, which do not resemble the SDQ subscales very clearly. The four factor solutions therefore seem like the best choice in order to maintain a clear theoretical interpretation of the factors.

Following the strategy of Andersen et al. (2010), I calculate a total measure from the four-factor solution without the *positive social behavior* factor, in order to attain measure which only measures weaknesses like the SDQ. Each factor is weighted equally to ensure that all factors contribute equally to the scale, since each factor is based on a different number of items. After standardizing the original SDQ measures from 2003, 2007 and 2011, the correlation coefficient

of between the original SDQ measure from 2003 and the quasi SDQ measure from 1999 is 0.46. Andersen et al. (2010) finds a similar correlation coefficient on 0.45. To compare with the original SDQ scores, the correlations between original SDQ measures from 2003 and 2007 are 0.61 and for 2007 and 2011, 0.59. The quasi-SDQ thus seems to have a smaller but convincing correlation with the original SDQ measure. This could be due to measurement error stemming from both differences in developmental stages, and from measurement error between the items used for the quasi SDQ compared to those used for the SDQ. In order to address this, I will run a robustness check on my analysis using only the original SDQ score.

To sum up, I will use the quasi SDQ measure, which I have constructed through a factor analysis as a measure of my dependent variable in 1999. To ensure comparison across the quasi SDQ used in 1999 and the original SDQ scores used in 2003, 2007 and 2011, the outcome variable is standardized for all years.

6.3.3 Family dissolution

The primary treatment variable D will indicate family dissolution defined as having two parents who previously lived together moving apart. As previously argued, a great number of Danish children grow up with cohabiting parents rather than legally married parents. I argue that parental cohabitation is therefore a stronger measurement of intact families than simply conjugal marriage between parents.

The variable for family dissolution is constructed on the basis of an address identification variable drawn from the population register BEF described in table one. This variable measures the exact address of a person down to apartment level and is thus highly precise. Furthermore, the variable is stable over time, as its definition does not change within the time window of this study. The treatment variable takes the value of 0 as long as both parents share an address and shifts to 1 as soon as I observe that their addresses differ. The treatment variable is thus a binary variable and treatment assignment is an absorbing state, as a unit treatment status takes to value of 1 from the moment treatment occurs and thereafter does not return to zero. For a detailed description of the data and coding documentation see section B.1 in the appendix.

6.3.4 Post-dissolution family structures

In relation to hypothesis two, I wish to examine whether or not the impact of experiencing family dissolution during childhood is moderated by different post-dissolution family structures with and without stepparents. As I have shown with sociological and psychological theory, family practices related to childcare are highly gendered, which might give rise to different challenges in post-dissolution mother and father households. To measure post-dissolution family structures, I therefore examine four different structures dependent of parental relationship status, which allows for a differentiation between mother and father households:

- Both parents are single
- Both parents are reconstituted
- Mother is reconstituted (father is not)
- Father is reconstituted (mother is not)

As previously argued, I find cohabitation to be the best proxy for interaction between stepparent and child. therefore, a parent is defined as reconstituted when he or she is cohabiting with a new partner after family dissolution. Each family structure is coded as four internally excluding dummy variables indicating which post-family structure the child lives with after family dissolution. For a detailed description of the data and coding documentation see section B.2 in appendix.

6.3.5 Control variables

As previously argued, several studies finds that selection into family dissolution is driven by socioeconomic factors such as parental income, education, and labour market participation. I therefore include measures of these factors as control variables in my analysis.

The educational level of each parent as measured as the highest level of formal education achieved by each parent at every observation year. Parents educational level can thus increase over time. I use information from the educational register from DST, which hold highly precise information on the highest level of education of the population each year defined by Disced-15 classification (Statistics Denmark 2022g). I recode the standard classification of educational

levels by statistics Denmark into six categories (see table four). For a detailed description of the data and coding, see section B.3 in the appendix.

To measure the parents income level, I use the total yearly personal income defined as all labour market related income, public transfers, income from personal assets and other registered income in the income register from DST (Statistics Denmark 2022h). As opposed to only including wage, I argue that this is the best measure for exactly how much money an individual earns across different income sources. The income variable is made up in DKK each year and calculated to be pr. 10.000 DKK to ease interpretation of the income coefficients. For a detailed description of the data and coding, see section B.3 in the appendix.

Finally, labour market participation is measured as parents' primary connection to the labour market by ultimo November (Statistics Denmark 2022i). I have measured the primary labour market connection in each year from 1999 through 2011 for all parents in the sample. This allows me to measure whether a parent has been continuously employed, unemployed or outside of the workforce during the entire observation window rather than only looking at their labour market participation in the specific years that I observe (1999, 2003, 2007 and 2011). From this information, I construct three internally excluding dummy variables that are measured in each observation period: 1) the parent has been employed continuously for the last three years, 2) the parent has been unemployed within the last three years, or 3) the parent has been outside of the work force for three years. For a detailed description of the data and coding, see section B.3 in the appendix.

An overview of all variables is available in table four:

Table 4: Table of variables

Variable	Measuring	Coding	Time periods
Id	Each unique individual	12-cifers double (unique)	Constant across all observation periods.
Y: SDQ score	Well-being	Z-standardized	Measured each observation period.
Treatment (D)	Family dissolution	Binary {0,1}	Measured each observation period.
Post-dissolution family structure (four treatment groups for hypothesis two)	Whether a childs parents are reconstituted after family dissolution	Four dummies, 1) both single, 2) both reconstituted, 3) mother reconstituted, 4) father reconstituted	Measured each observation period.
Education (control)	Highest educational level (mother and father)	Six dummies: 1) Primary education (reference group) 2) General upper secondary education 3) Vocational education 4) Short-cycle higher education 5) Medium-cycle higher education 6) Long cycle higher education	Measured each observation period.
Income (control)	Disponible income (mother and father)	Continuous (in 10.000 DKK)	Measured each observation period.
Labour market participation	Whether a parent has been either 1) continuously employed (ref. category), 2) unemployed, or 3) outside of the workforce, within three years from each observation period	Three dummies, 1) employed (reference category) 2) unemployed 3) outside of workforce	Measured three years back from each observation period

6.4 Analysis of representativity

As stated, the original 6.000 study units randomly chosen to participate in DALSC make up a representative sample of Danish children born in 1999 (VIVE 2022). However, some units drop-out before the end of the data window of this study and are thus not included in the final sample, as my final sample only include individuals with full observations on all variables in all four observation periods. In order to examine the drop-out mechanism, I use a range of covariates from 1996 (the very first survey year) on the entire study group (6.000) to predict their chances of being in the final study sample (for a detailed description and full regression table, see section C in appendix). The analysis showed that the drop-out-mechanism is biased. Older mothers as well as ethnically Danish, higher educated and employed parents with higher incomes are more likely to be included in the final study sample. Furthermore, those living in the Capitol Region of Denmark are underrepresented compared to the other four regions. Particularly parents educational levels are troublesome. For example, mothers with long cycle higher education are 20 % more likely to be included in the final sample than mothers with primary school as their highest level of education in 1999. This is an important limitation to this study, which has consequences for the generalization of my findings and will be discussed further in the discussion section.

7 Analysis

This section presents the results from my analysis. To start, I present results concerning the main hypothesis, namely that experiencing family dissolution during childhood has a negative effect on well-being. Second, I present results regarding hypothesis two, that the effect of family dissolution varies across different family structures with and without stepparents.

Table five presents a table of summary statistics on the variables that are used for analysis. The dataset used for analysis is a balanced panel dataset with 3,048 unique individuals observed in four time periods giving a total number of 12,192 observations. The outcome variable SDQ is standardized to a mean of 0 and a standard deviation of one. The primary treatment variable D measuring family dissolution as well as the four post-dissolution family structure variables are all dummy coded. Finally, a variety of control variables are presented - all dummy coded apart from income, which is treated as a continuous variable.

VARIABLES	N	Mean	SD	Min (average of bottom 5 %)	Max (average of top 5 %)
SDQ score	12192	0.0000	1,00	-1,30	2,73
Family dissolution	12192	0,12	0,32	0	1
Single mother	12192	0,08	0,26	0	1
Single father	12192	0,07	0,26	0	1
Reconstituted mother	12192	0,04	0,20	0	1
Reconstituted father	12192	0,05	0,21	0	1
Y early disp. income (mother, 10,000 DKK)	12192	29,94	12,88	9,235	67,31
Y early disp. income (father, 10,000 DKK)	12192	40,48	19,89	9,98	98,83
Unemployed within 3 year (mother)	12192	0,08	0,28	0	1
Unemployed within 3 year (father)	12192	0,04	0,20	0	1
Out of workforce within 3 year (mother)	12192	0,14	0,35	0	1
Out of workforce within 3 year (father)	12192	0,05	0,22	0	1
Primary edu (mother)	12192	0,12	0,33	0	1
L. secondary edu (mother)	12192	0,08	0,27	0	1
Up. secondary edu (mother)	12192	0,41	0,49	0	1
L. tertiary edu (mother)	12192	0,04	0,20	0	1
M. tertiary edu (mother)	12192	0,27	0,44	0	1
L. tertiary edu (mother)	12192	0,08	0,27	0	1
Primary edu (father)	12192	0,17	0,37	0	1
L. secondary edu (father)	12192	0,04	0,20	0	1
Up. secondary edu (father)	12192	0,47	0,50	0	1
L. tertiary edu (father)	12192	0,07	0,26	0	1
M. tertiary edu (father)	12192	0,14	0,35	0	1
L. tertiary edu (father)	12192	0,11	0,31	0	1
Number of unique observations	3048	3048	3048	3048	3048

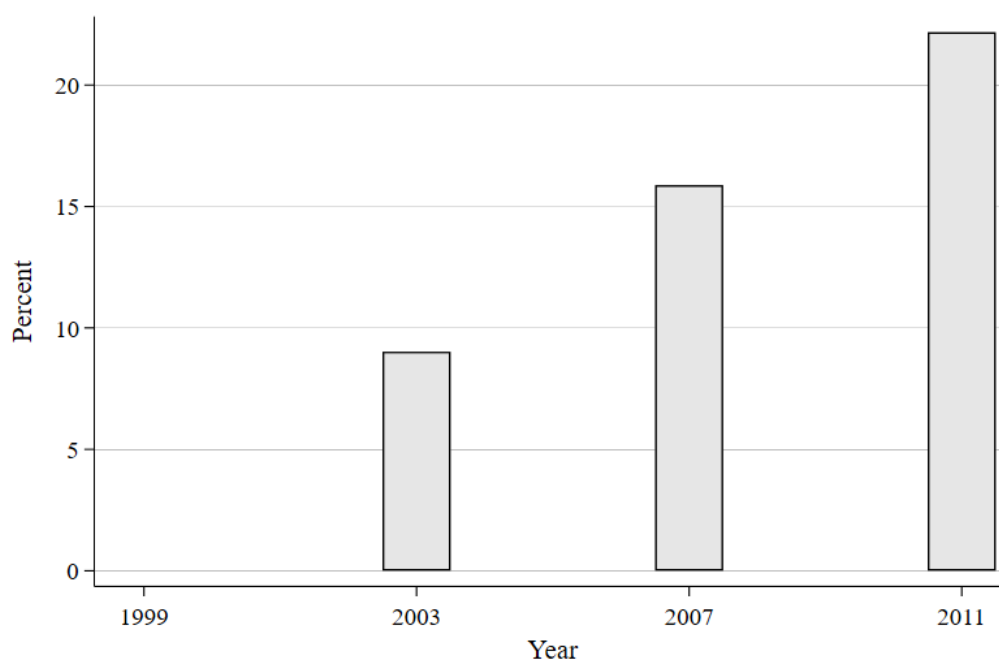
7.1 Summary statistics (table 5)

7.2 Hypothesis 1: The effect of family dissolution on childrens wellbeing

This section presents results from the analysis concerning the first hypothesis of my thesis, namely the hypothesis that experiencing family dissolution during childhood has a negative effect on childrens well-being.

To get a better sense of the development of treatment in the sample over time, figure 12 show the share of the sample which have experienced family dissolution over the four observation periods.

Figure 12: Share treated by observation years



Source: own calculations, administrative data from Statistics Denmark

The figure show that the entire sample remains non-treated in the first year of observation, 1999 (at age three). By 2003, approximately nine percent are treated. This share increases to sixteen percent in 2007 and finally 23 percent in the last observation year, 2011 (age 15).

7.2.1 Pooled OLS

I start by examining the relationship between family dissolution and well-being is by estimating a pooled OLS model, where the panel structure of the data is ignored, and the dataset is treated

as a cross section dataset. Table six presents the treatment parameter estimates from model 1 with and without controls:

Table 6: Model 1, Pooled OLS with and without controls

Outcome variable: SDQ	Without controls	With controls
Family dissolution	0.2829*** (0.0386)	0.2659*** (0.0386)
	0.0000	0.0000
Constant	-0.0333** (0.0142)	0.4026*** (0.0612)
	0.0192	0.0000
Observations	12,192	12,192
R-squared	0.0083	0.0461
Controls	NO	YES

Clustered standard errors in parentheses

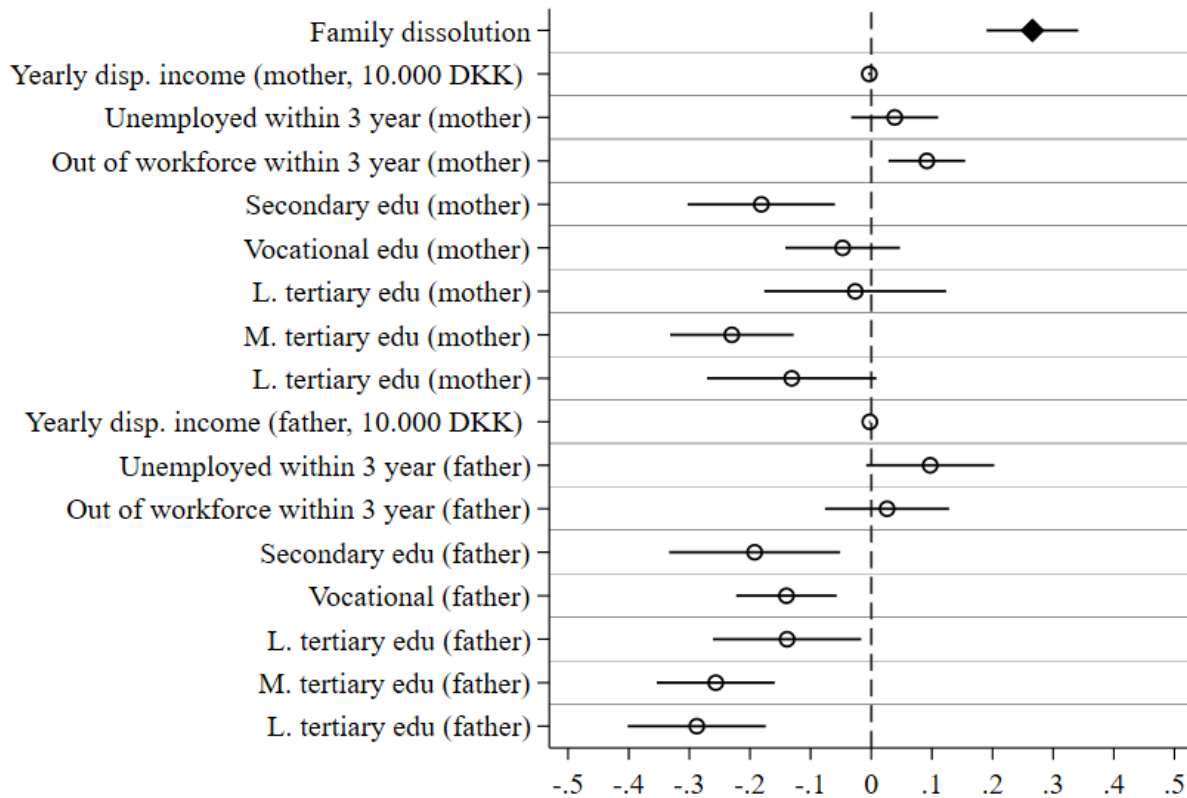
*p<.05; **p<0.01; ***p<.001

Note: Full regression table available in appendix (table D.1).

From the treatment parameter estimate in column one, model 1 show that experiencing family dissolution is associated with a 0.28 standard deviation increase in the SDQ score when no controls are included. In other words, this suggests that experiencing family dissolution is associated with lower levels of well-being, and that the results is statistically significant (p-value < 0.0000). However, as argued in section, the pooled OLS estimator is only unbiased when there is no correlation between the explanatory variable of interest D and the error term. Therefore, the second column includes parents' income, educational level, and labour market participation as control variables. When comparing the parameter estimates in the model with and without control variables, the treatment parameter estimate drops from a 0.28 to a 0.266 standard deviation. Adding control variables thus decrease the parameter estimate slightly, although still significant at a five percent level, suggesting that the uncontrolled model was slightly upwards biased.

Figure 13 show the parameter estimate for the treatment parameter as well as all control variables:

Figure 13: coefficient plot, model 1



Note: Standard errors clustered at individual. Full regression table available in appendix (table D.1)

Source: Own calculations based on DALSC and data from Statistics Denmark

When examining the control variables, it is clear that higher education for both parents are associated with lower SDQ scores. For mothers, however, having vocational training or secondary education as the highest level of education is not significantly different having only primary school as the highest completed level of education (the reference category). Loose attachment to the labour market also seems to be associated with higher SDQ scores, however, only the parameter for mothers being out of the workforce and fathers being unemployed are statistically significant at respectively a five and ten percent level. From the parameter estimates regarding income, the models shows that although they are significant for both mothers and fathers, an increase in mothers wages on 10.000 DKK is associated with a decrease in SDQ score

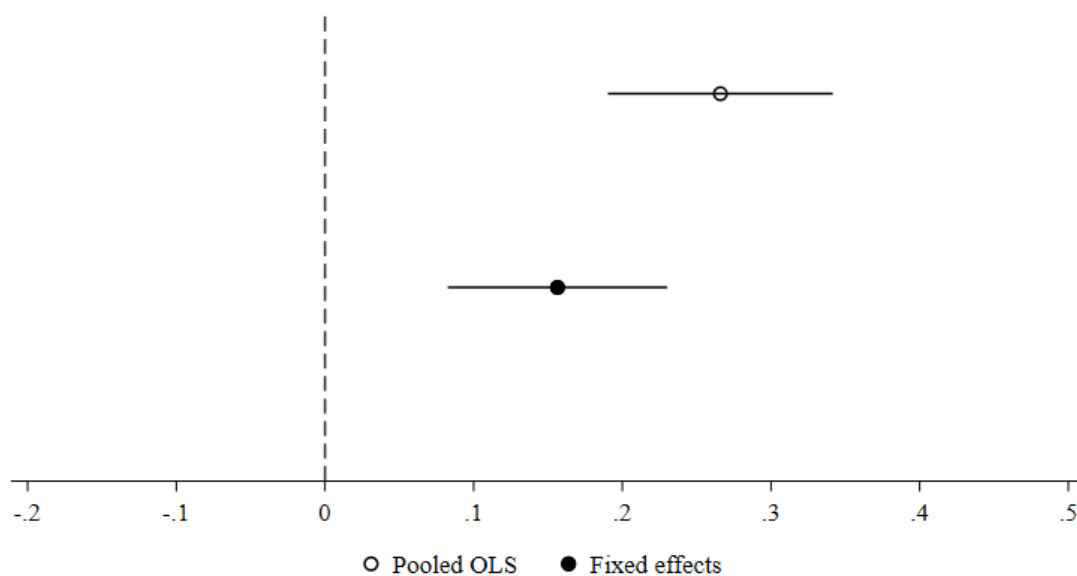
on -0.0032 SD, and for fathers, -0.0025 SD (both significant at a five percent level).

Conclusively, the control variables generally indicate that higher socioeconomic resources are associated with higher levels of wellbeing. However, after adding control variables, family dissolution is still associated with higher SDQ scores and thus lower levels of wellbeing. This finding thus preliminarily supports hypothesis one. However, using pooled OLS, it is only possible to account for observed confounders. In the next section, I therefore introduce individual fixed effects to account for fixed individual characteristics.

7.2.2 Fixed effects

In order to expand the analysis and account for unobserved fixed individual characteristics, I add individual fixed effects to my model. This absorbs all individual specific time invariant variation such as basic personality traits, general ability, time-invariant parent characteristics and all other things which are specific to each individual and do not change over time. Figure 14 compares the pooled OLS estimate from model 1 to the fixed estimator as presented in model 2:

Figure 14: coefficient plot, model 1 and 2



Note: Both models includes control variables. Standard errors clustered at individual level. Full regression table available in appendix (table D.2).

Source: Own calculations based on DALSC and data from Statistics Denmark

By including individual fixed effect, the treatment parameter estimate indicating family dissolution drops dramatically from 0.26 to 0.16 standard deviation. This points to the conclusion that model one suffered from upward bias stemming from unobserved individual characteristics. The fixed effects estimate suggest that experiencing family dissolution is associate with a 0.16 SD drop in SDQ score when controlling for fixed individual characteristics as well as parents educational level, labour market participation and income level. Table seven compares the treatment parameter estimate from the model two with and without control variables:

Table 7: Model 2, individual fixed effects model with and without controls

	(1)	(2)
Outcome variable: SDQ	Without controls	With controls
Family dissolution	0.1251*** (0.0365)	0.1564*** (0.0376)
Constant	0.0006 -0.0147*** (0.0043)	0.0000 0.0775 (0.1461)
Individual FE	0.0006	0.5957
Observations	Yes	Yes
R-squared	12,192	12,192
Number of unique observations	0.0018	0.0038
Controls	3,048	3,048
	NO	Yes

Clustered standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

Note: Full regression table available in table D.2 (appendix)

As evident from the table, adding observable controls actually increases the parameter estimate for family dissolution, suggesting that time-variant observables also contributes to the model and corrects for downwards bias in the simple fixed effects model without controls. However, when including fixed effects, only the income variables are significant at a five and ten percent level (see full regression table in appendix, table D.2). After adding fixed effects as well as control

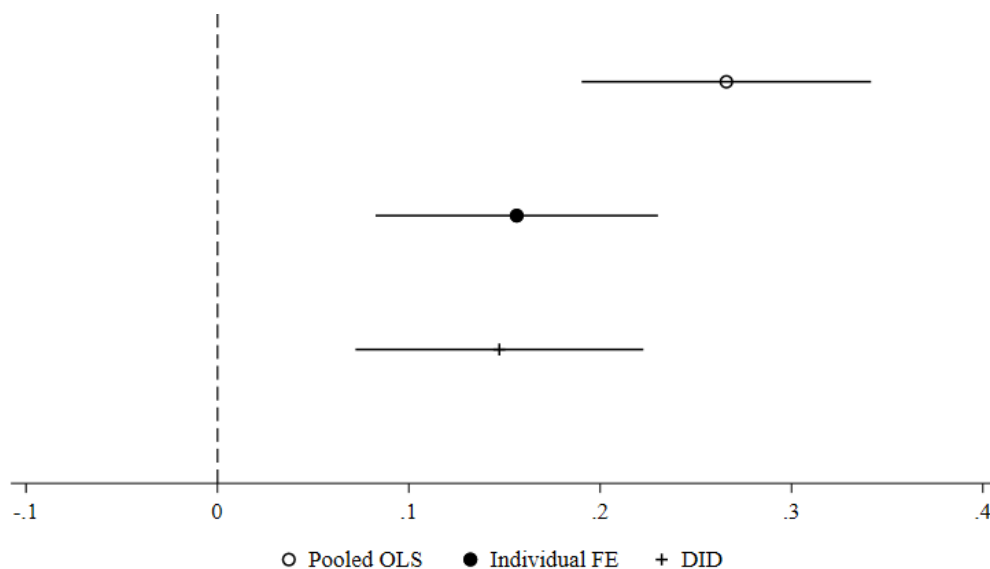
variables, the results still supports hypothesis one, that family dissolution is associated with a decrease in wellbeing.

7.2.3 The difference in difference estimator

The fixed effects estimator presented above only delivers an unbiased estimate if family dissolution is randomly assigned when accounting for the individual time-invariant characteristics. If there are still unobserved confounders which vary over time, the treatment estimator will still be biased. In order to account for this selection, I expand the fixed effect model to a staggered difference-in-difference model by introducing time fixed effects.

Figure 15 present the treatment parameter estimates of family dissolution from the pooled OLS model (model one), fixed effects model (model two) and staggered DID model (model three) all including control variables:

Figure 15: coefficient plot, model 1, 2 and 3



Note: All models includes control variables. Standard errors clustered at individual level.

Full regression tables available in appendix (tables D.1-3).

Source: Own calculations based on DALSC and data from Statistics Denmark

Compared to the pooled OLS estimate, both the fixed effect model and the DID model estimates noticeably lower parameter estimates for family dissolution. Compared to the fixed effects estimate on 0.156, the DID estimate only drops slightly to 0.147 standard deviation, and it is still statistically significant ($p\text{-value} = 0.0001$). In the DID model, the parameter estimate represents the difference in difference between non-treated and treated individuals compared to themselves in a non-treated point in time and controlling for age. The DID estimator essentially rules out any confounding between the treatment and control group, which stems from individual- and time variant selection. That of course leaves time- and individually invariant selection. However, adding control variables does not seem to change the treatment parameter estimate noticeably, and only the parameters on parents income are significant at a 10 % level with small effect sizes (full regression table available in appendix, table D.3). This indicates that the DID model accounts for a lot of selection, as these are obvious individual- and time-variant confounders.

To conclude, the DID estimator suggest that the average treatment effect on the treated is 14.7 percent of a standard deviation in SDQ score. However, this ATT is only unbiased if the assumptions of the DID design is met. As mentioned in the methods section, the most crucial assumption regarding DID models is the parallel trends assumption. Furthermore, the last model predicts an immediate and permanent change in the SDQ score when an individual experiences family dissolution. The next section is thus dedicated to examining the parallel trends assumption and estimate dynamic treatment effects of family dissolution.

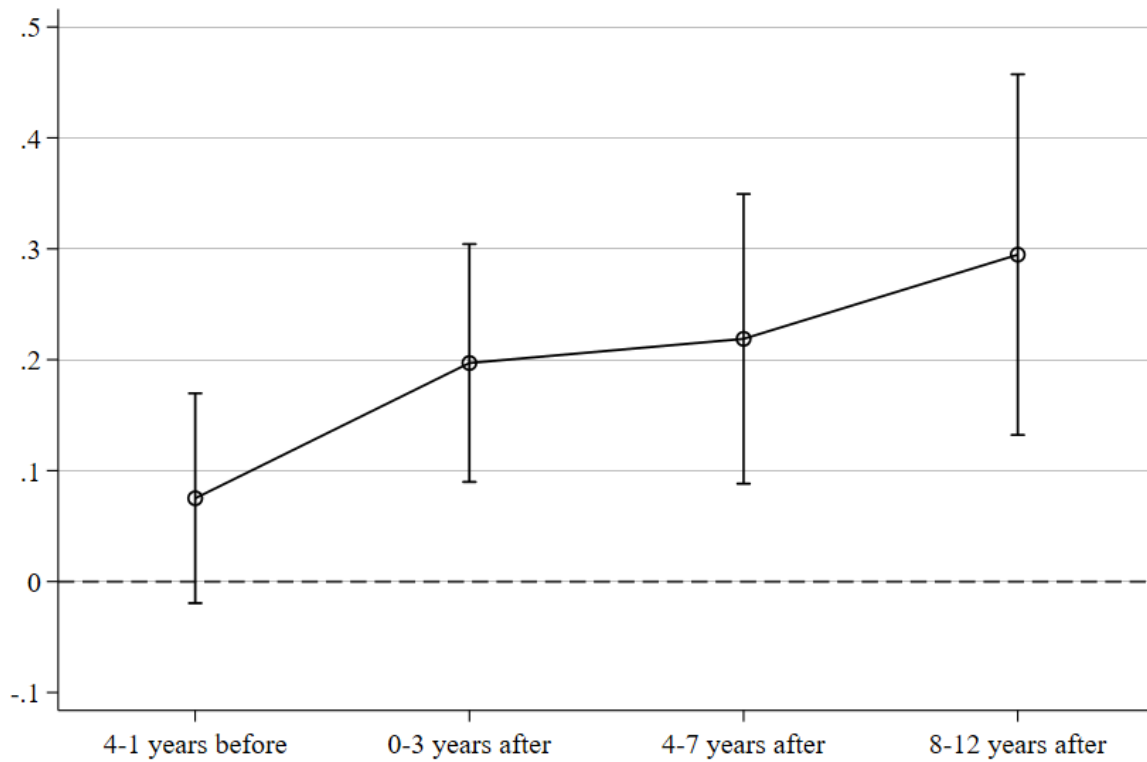
7.2.4 Dynamic effects and the parallel trends assumption

To estimate a dynamic impact function, I introduce pre- and post-treatment dummies for every observation period relative to the observation period where family dissolution is first observed.

Figure 16 present the results from model four, a dynamic two-way fixed effects model with control variables, where the control group consists of those who are never treated as well as those who will not experience family dissolution for at least another four years. The first thing to notice from figure 16 is the positive association between time since family dissolution and SDQ score. Zero to three years after family dissolution, the SDQ score of children in non-intact families seems to be 20 percent of a standard deviation higher than the control group. After 4-7 years, this difference has risen to approximately 22 percent, and after 8-12 years to almost 30

percent. In other words, the gap in wellbeing between children who have experienced family dissolution and those who have not seems to increase over time.

Figure 16: dynamic effects, model 4



Note: The model includes control variables. Parameter estimates for periods 0-12 years after are significant at a 5 % significance level, while the parameter estimate for the 4-1 years before parameter is not (p-value = 0.1195). Full regression table with exact p-values available appendix, table D.4).

Source: own calculations, administrative data from Statistics Denmark and DALSC

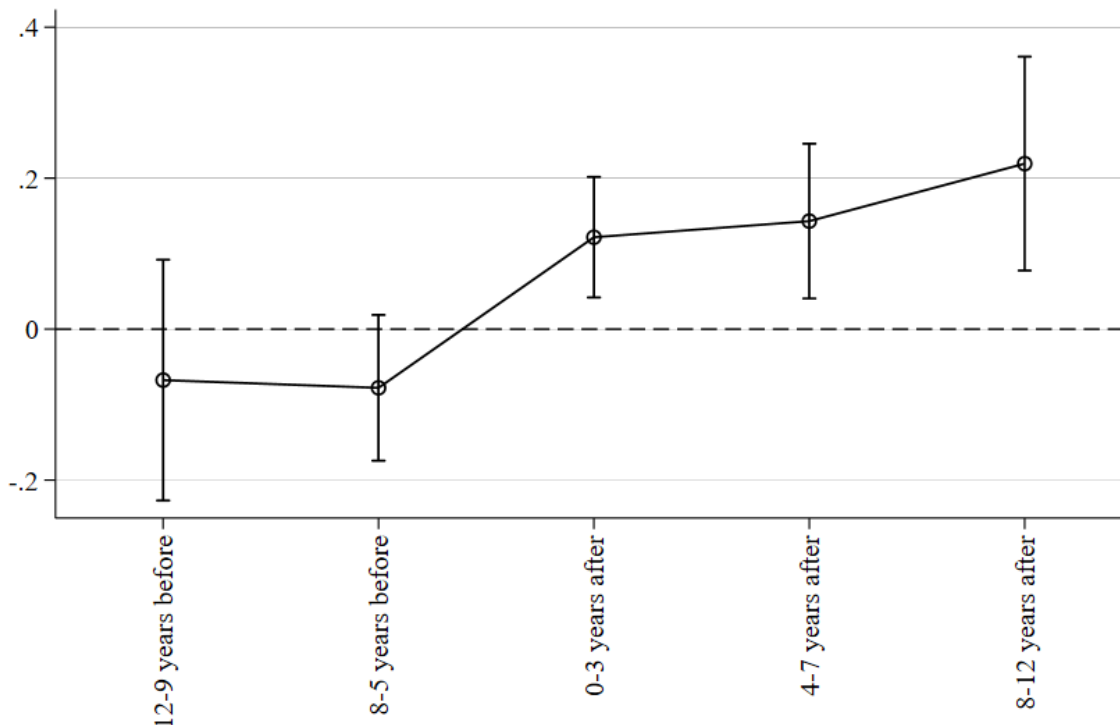
The second important thing to notice is that the pre-treatment estimate indicating the effect of being 4-1 years away from experiencing family dissolution. The parameter estimate indicates an effect of approximately 7 % of a standard deviation on the SDQ score compared to the control group. This could indicate some anticipation effect, however, as evident from the confidence intervals, the difference it is not significantly (p-value=0.1195). In other words, children whose parents are about to dissolve their relationship does seem to have lower levels of wellbeing before the actual dissolvment of their family occurs than children in the control group, but the difference is not statistically significantly different. This supports the assumption of no anticipation effect. It is important to remember that this estimate is based on both children who

are four years away from experiencing family dissolution and children only one year away and thus very close. This could explain the slightly higher point estimate, as anticipation effect might be stronger to those who are only one or two years away from family dissolution. It also means that this parameter cannot tell anything about the difference within this group (just as the other parameter estimates concerning the other groups). Furthermore, as evident from the rather wide confidence intervals, the groups supporting the 4-7 years and 8-12 years after estimates are quite small and should be interpreted with caution, as they have limited generalizability.

7.2.5 Robustness checks

As an alternative and robustness check to model 4, I apply a staggered difference-in-difference setup using individual and time fixed effects combined with pre- and post-treatment dummies and a vector of control variables as presented in model 5. In this model it is necessary to omit one event-time dummy to include in the reference category in order to specify an anchor in time. I omit the last observation period before family dissolution is observed in order to estimate an immediate impact of family dissolution. Results are presented in figure 17.

Figure 17: dynamic effects, model 5



Note: Parameter estimates for periods 0-12 years after are significant at a 5 % significance level, while the parameter estimate for the 12-9 and 4-1 years before parameters are not (p-value = 0.4065, p-value = 0.1144). Full regression table with exact p-values available in appendix (table D.4).

Source: own calculations, administrative data from Statistics Denmark and DALSC

In this model, the pre- and post-treatment dummies should be interpreted as staggered difference-in-difference estimates. Each estimate is the difference in differences between those are treated relative to themselves 4-1 years before family dissolution, and the difference between those never being treated relative to themselves at a similar age. This model therefore allows for the treatment and control group to have different levels prior to treatment, as long as the parallel trend assumption is valid.

Figure 17 show the same tendency as figure 16. The effect of family dissolution seems to increase over time, making the gap between those in intact families and those in non-intact families larger and larger. 0-3 years after family dissolution, children in non-intact families seem to have approximately 12 percent of a standard deviation higher SDQ scores than children in intact families. After 8-12 years, this estimate rises to approximately 14 percent and after 8-12 years, 22 percent of a standard deviation.

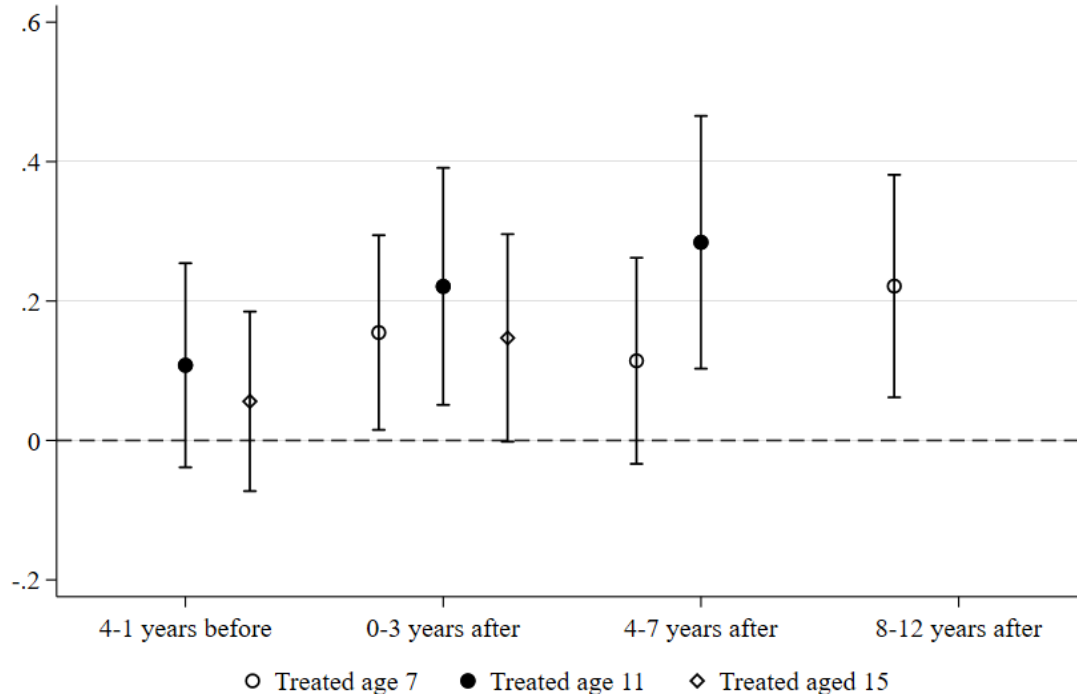
Regarding the pre-trend, the parameter estimates concerning 12-9 years before treatment as well as 8-5 years before treatment actually seems to be lower in the treatment group than in the control group, although not significantly different at a 5 percent level. In other words, the pre-trend estimates supports the parallel trends assumption, which is required for the difference-in-difference estimators to be unbiased. The treatment and control group does thus not seem to vary before treatment occurs, which at least suggests that it is reasonable to assume that they would have evolved equally over time, had the treatment group not been treated. However, as always, the causality of the results should be interpreted with caution. Although the pre-treatment dummies suggest that there are parallel pre-trends, unobserved variation between individuals over time may still bias the results.

When comparing the estimates to model four, estimates from model five are lower. The explanation seems to lie in the assumptions about the control group and the pre-trends. Model four assumes that those who will not experience family dissolution for at least another four years are equal to those who never do. However, as evident from figure 17, they actually seem to have slightly lower (although not significantly different) levels on the SDQ score prior to treatment than those who are never treated. Although this finding is surprising, it can contribute to explain

why model eight estimates higher effects than model nine. Rather than allowing treatment and control group to have different levels (but parallel trends) as in model five, model four needs for the those being more than four years away from being treated to be exactly like those who never are to deliver consistent estimates. As the treatment group does in fact seems to lie a little lower than the never treated, the treatment estimates of model 4 might be slightly inflated.

As argued in the methods section, newer literature argues that modeling dynamic treatment effects in a staggered implementation design can lead to faulty weighting as the staggered treatment groups spend different time under treatment and thus come to function as controls to each other. One way to address this critique is to carry out robustness checks by running separate regressions on each treatment group where the control group only includes never treated individuals. Figure 18 show a robustness check, where I run three separate regressions of model 4 (one for each group experiencing family dissolution respectively at age 7, 11 or 15 compared to a clean control group of those in continuously intact families).

Figure 18: grouped regression (model 4)



Note: Full regression table with exact p-values available in appendix (table D.5).

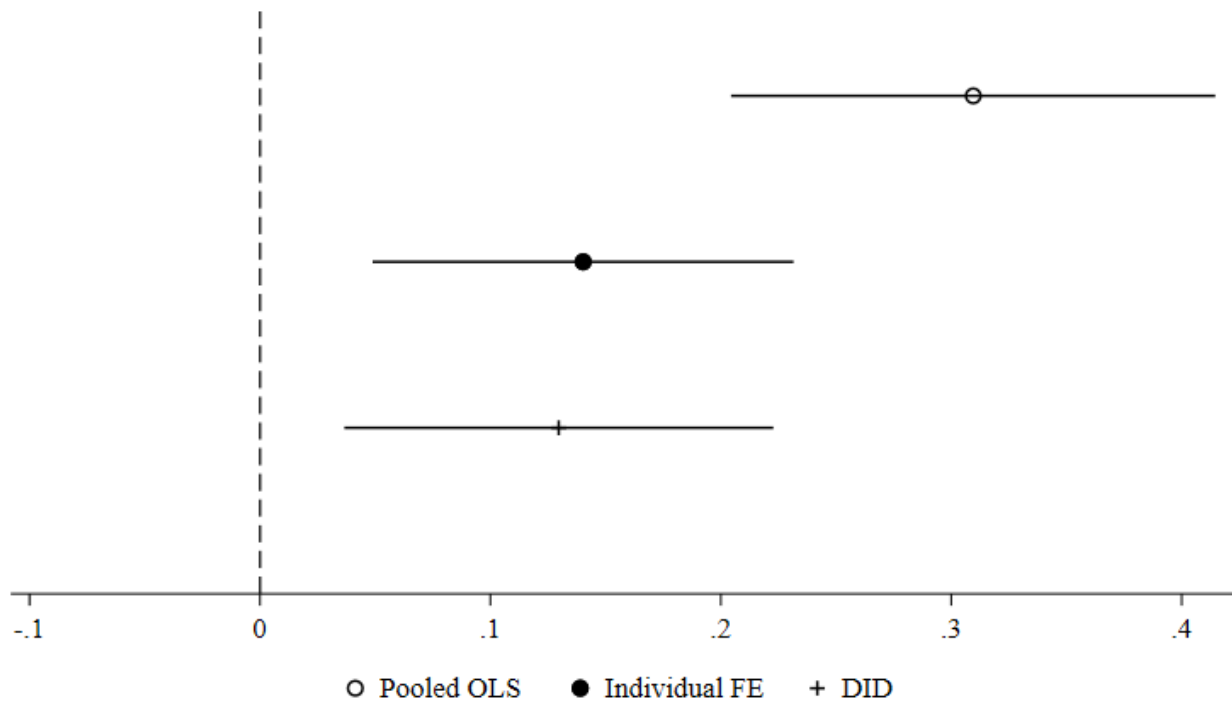
Source: own calculations, administrative data from Statistics Denmark and DALSC

By separating the treatment groups, the number of treated individuals in each regression is quite low (ca. 200). It is therefore not surprising, that figure 18 show large confidence intervals and more insignificant parameter estimates than in the non-grouped models. However, the figure does show the same tendencies. The gap between children who have experienced family dissolution and those who have not seems to increase over time. Before experiencing family dissolution, however, they do not seem to be significantly different. Those who experience family dissolution already seems to have slightly higher SDQ scores before family dissolution, but none are significantly different at a five or 10 percent level.

For the group who experience family dissolution at age three, the parameter measuring the effect of family dissolution 4-7 years after are in fact not statistically significant (p-value 0.129). This could suggest some heterogeneity across the groups. However, given the large confidence intervals and the fact that the parameter for the same group 8-12 years after increase again, the overall impression is that the gap in wellbeing between children in intact and non-intact families seems to increase over time.

Finally, I run a robustness check regarding the dependent variable the SDQ score. As mentioned in the methods and data section, the previous analysis was built on a quasi SDQ measure including a quasi SDQ measure for the 1999 survey round, which I constructed using factor analysis and data imputation. To check whether this method seems reasonable, figure 19 presents a version of model one, two and three (all including control variables) using only the original SDQ measures from 2003, 2007 and 2011 (standardized within years for comparison). This means that the sample is reduced to children who lives with both parents in 2003 and who either stays in an intact family throughout 2007 and 2011 or experiences family dissolution in either of the two years (n=2,773).

**Figure 19: Parameter estimates of treatment parameter D, model 1,2, and 3
(reduced sample and standardized original SDQ score)**



Note: All parameter estimates are significant at a 5 % significance level. Full regression table with exact p-values available in appendix (table D.6).

Source: own calculations, administrative data from Statistics Denmark and DALSC

The parameter estimates on the reduced sample and original SDQ scores are very close to those presented in figure 15, which was built on the full sample and quasi SDQ. To compare the two models, the precise estimates are presented in table eight:

Table 8: comparison of treatment parameter estimates from figure 15 and 19.

	Pooled OLS	Individual FE	DID
Full sample and quasi SDQ	0.266***	0.156***	0.147***
Reduced sample, original SDQ only	0.3095***	0.1402**	0.129***

Comparing the two approaches, the parameter estimates seems indeed very close, although it should be noted that the reduced sample estimates are one or two percentage points lower.

Overall, I argue that this supports the previous findings, but that there are some measurement insecurities as to the exact size of the estimates.

7.2.6 Summary regarding the first hypothesis

In this section, I have carried out an analysis to test my main hypothesis, that experiencing family dissolution during childhood has a negative effect on childrens well-being. First, I compared a pooled OLS estimator to a fixed effect- and difference-in-difference estimator. The analysis showed that the difference-in-difference model estimated a constant ATT on 0.147 standard deviation, indicating that children who experience family dissolution have lower levels of well-being than children in intact families. The fixed effects model estimated a very similar effect size, but the pooled OLS seemed to overestimate the effect due to selection bias. When allowing for dynamic effects, the analysis show that the difference between children in intact and non-intact families increase over time. Depending on model specification, I found an effect of family dissolution between 0.12 to 0.20 SD in the first three years after family dissolution to between 0.22 to 0.29 SD after 8-12 years. Robustness tests showed that while there might be some heterogeneity between children who are treated at different ages, the overall trend is the same. A robustness check using a reduced sample with original SDQ scores supports the findings but estimates effects which are one or two percentage points lower. This could be due to changes in sample size. To summarize conservatively cross all models, taking the confidence intervals, group sizes and reservations into account, the first part of the analysis suggests an average treatment effect on the treated on about 15 percent of a standard deviation in the first years after dissolution to about 20 percent 8-12 years after. In other words, the findings supports the hypothesis that experiencing family dissolution during childhood has a negative effect on childrens well-being, and that this effect increases over time. In the next section, I present the analysis for my second hypothesis.

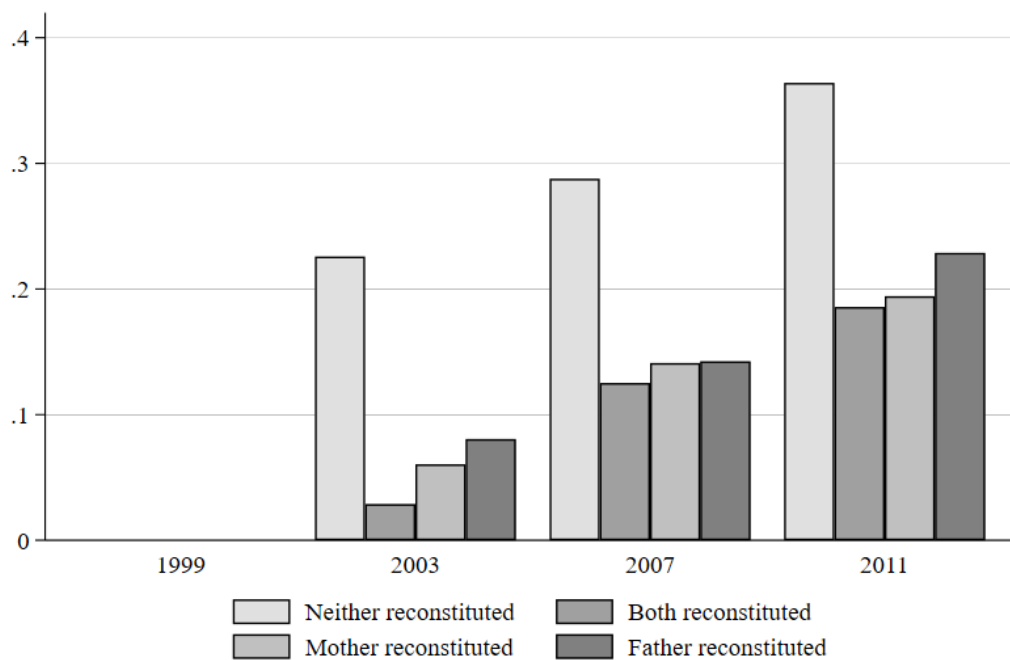
7.3 Hypothesis 2: post-dissolution family structures as moderators

In the previous part of the analysis, I showed through multiple models that children in non-intact families experience lower levels of well-being than children in intact families. This part of the analysis relates to my second hypothesis, namely that the impact of experiencing family dissolution during childhood varies with different post-dissolution family structures with or without stepparents in mother and father households. In this analysis, I thus study four types of

post-dissolution family structures: *two single parents*, *two reconstituted parents*, *a reconstituted mother*, and *a reconstituted father* as moderators for the effect of family dissolution, to test whether it might vary across different types of family structures.

Figure 20 shows the development in post-dissolution family structures concerning only the individuals who experience family dissolution at some point during the observation period.

Figure 20: Distribution of post-dissolution family structures each year



Source: own calculations, administrative data from Statistics Denmark and DALSC

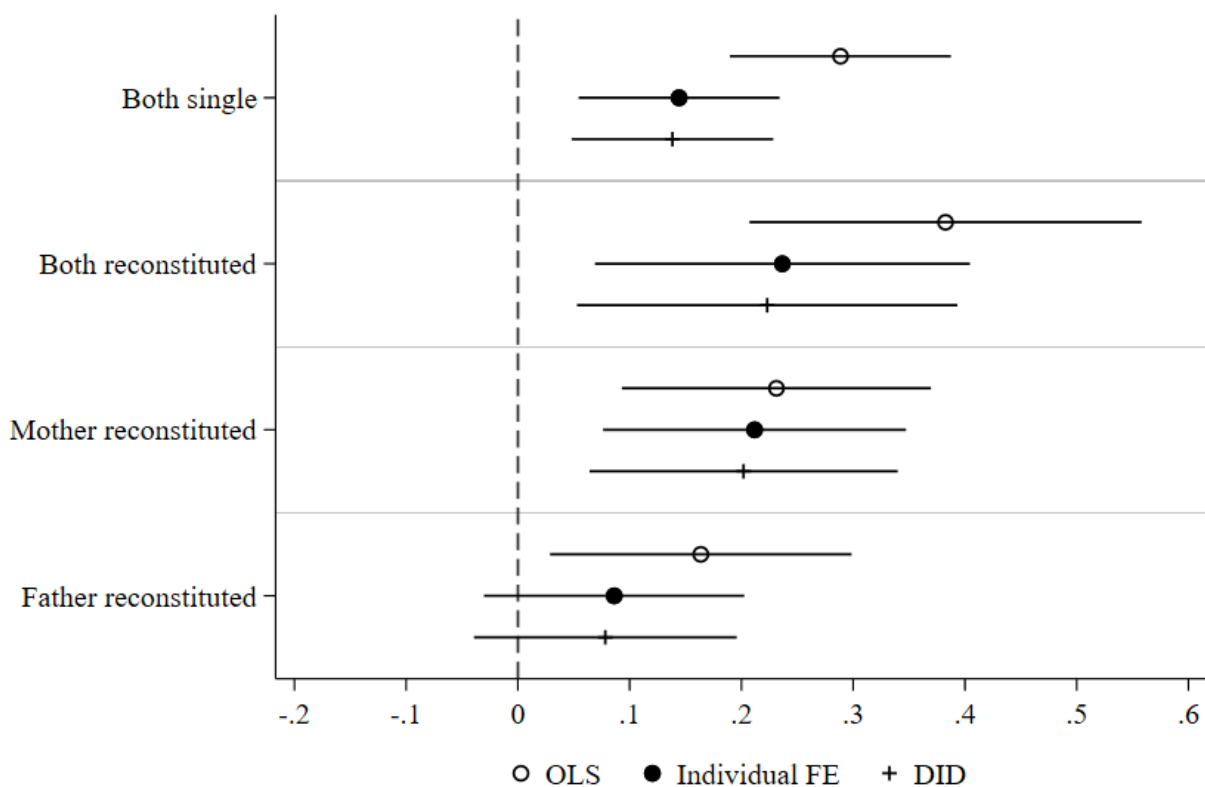
As evident from the figure, none of the treated individuals are treated in 1999. From 2003 and forward, most treated individuals live in family structures where neither their mother nor father are reconstituted in all periods. Contrary, the smallest groups in all observation periods are those with both parents reconstituted. Over time, the share of individuals with either mother or father reconstituted are increasingly similar, although more fathers seem to reconstitute earlier after family dissolution than mothers. Comparing this distribution to the full population distribution in section two, the groups thus seem to follow the same pattern. The figure also shows that the groups are modest in size (around 200 observations), particular the group where both parents are reconstituted. This will affect the security of my estimation in the following analysis.

7.3.1 Pooled OLS, fixed effects and staggered difference-in-difference

To test the four different post-dissolution family structures as moderators of the impact of family dissolution, I apply the same models as in the previous section, a pooled OLS model, an individual fixed effect model and a staggered difference-in-difference model. I also include the same control variables, namely parents educational level, income, and labour market participation. However, rather than only having one parameter of interest (family dissolution), I now introduce the four types of post-dissolution family structures as parameters of interests and test them against children in intact families. These four parameters should really be regarded interactions between family dissolution and post-dissolution family structures.

Figure 21 show the four parameters of interest from the pooled OLS model (model 1b), the fixed effect model (model 2b) and the staggered DID model (model 3b) which all includes control variables:

Figure 21: coefficient plot, model 1b, 2b and 3b



Note: Full regression table with exact p-values available in appendix (table D.7).

Source: own calculations, administrative data from Statistics Denmark and DALSC

The first thing to notice from figure 21 is that, just as I showed in hypothesis one, the pooled OLS estimates are much higher than the estimates from the individual fixed effect model and staggered DID model, apart from the parameter concerning structures with only reconstituted mothers. Also, the fixed effects model and staggered DID model estimates very similar parameter. Across all models, the parameter estimates for the treatment groups *Both single*, *Both reconstituted*, and *Mother reconstituted* seem to be positive and significant at a five percent significance level. This points to the conclusion that children in either of these three post-dissolution family structures all have lower levels of well-being than children in intact families. However, the parameter estimate for the last group, *Father reconstituted*, is smaller and not significantly different from zero. At first sight, this suggests that children who have a reconstituted father, but a single mother, does not have significantly lower levels of wellbeing than do children in intact families. However, it is also clear from the plot that the confidence intervals are quite large for all four groups. As evident from the figure 18, the groups on which the analysis of hypothesis two is build are rather small, although they increase over time as more children experience family dissolution. This is particularly visible in the confidence intervals of the group with two reconstituted parents, but looking down over the four family structures, their confidence intervals all overlap, also in the DID model. This suggest that there might not be any substantial differences between the four groups.

To test whether the four treatment groups are jointly significantly different from zero, I apply a Wald test. The Walds-test returns a test-statistic on 4.28 and a p-value on 0.0019, and can I thus reject the null-hypothesis that the parameters are jointly equal to zero. The finding from the previous analysis thus seem to be supported from this finding: children in non-intact families does seem to have lower levels of well-being. It is however not entirely clear, whether there is some degree of moderation between the four types of post-dissolutin family structures, that I have examined here. While there are some differences in the sizes of the point estimates, and while one category is not significantly different from zero, the confidence intervals of all four parameter overlap. To formally test this, I apply a Walds test to test whether the coefficients of the four groups are different from each other. The results are presented in table nine:

Table 9: Wald test, treatment parameters

	F (df, 3047)	df	p > F
Both single – both reconstituted = 0	0.90	1	0.3441
Both single – mother reconstituted = 0	0.70	1	0.4025
Both single – father reconstituted = 0	0.85	1	0.3573
All	1.14	3	0.3322

The Walds-test returns a F-statistic on 1.14 and a p-value of 0.33. A pairwise testing also show that none of the parameter are statistically different from each other. The conclusion to these tests thus seem to be that I fail to reject that the null hypothesis that the parameters are all equal. In other words, to model gives no conclusive answer as to the whether the four different post-dissolution structure moderates the effect of family dissolution on childrens wellbeing. As argued, the number of observations in each type of family structure is rather low, and as is also evident from the confidence intervals, there is a degree of insecurity related to each parameter. For the same reason, there is also not sufficient statistical power to break up the four types of family structures into separate groups and do any meaningful further analysis.

7.3.2 Summary regarding the second hypothesis

In this section, I have carried out an analysis to test my second hypothesis, that the impact of experiencing family dissolution during childhood varies with different post-dissolution family structures. To test this hypothesis, I used four types of post-dissolution family structures, *two single parents*, *two reconstituted parents*, *reconstituted mother*, and *reconstituted father* as moderators for the effect of family dissolution and tested them in three different models (a pooled OLS model, fixed effects model and a staggered difference-in-difference model). The analysis supported the finding that children in post-dissolution family structures generally experience lower levels of well-being than their peers in intact families. However, the present analysis cannot reject that the effect of family dissolution is similar independent of the type of family structure that children find themselves in after family dissolution. In other words, I find

no evidence that post-dissolution family structure moderates the effect of family dissolution on childrens well-being, and therefore no evidence to support hypothesis two.

8 Discussion

In this study, I have argued that due to societal changes over the last centuries, families have become increasingly fluid and unstable. As a result, more and more children experience family dissolution during childhood and grow up in complex family structure with and without stepparent. This have given rise to a strong social narrative that family dissolution is harmful for children. My goal with the present analysis has thus been to examine whether this narrative can be supported empirically with new data and more advanced methodological approaches than previously. Furthermore, I set out to examine whether different post-dissolution family structures had any role to play in the impact of family dissolution on childrens well-being. In this section, I discuss my findings, methodological approach, limitations and lay out perspectives for future research and policy intervention.

8.1 Findings

My analysis points to the conclusion, that children in non-intact families does in fact experience lower levels of well-being. I measured well-being using the SDQ, which is a multidimensional measurement instrument for psychological wellbeing and daily functioning. By modelling the relationship between family dissolution and childrens well-being through a range of different statistical models, I found that even after using a staggered DID model, children who experience family dissolution still have about 0.15 standard deviation higher levels on the SDQ score, which indicate more behavioural problems and lower levels of psychological well-being. This constant effect size corresponds well with previous findings in the literature on the effects of family dissolution on different outcomes, which have usually ranged from 0.8 to 0.23 standard deviation (Amato 2000, 2010; Amato and Keith 1991). By using dynamic models, I also found that the difference between children in intact and non-intact families increased over time. Using a dynamic staggered DID model, I found an ATT estimate on 0.15 SD the first three years after family dissolution to 0.2 SD eight to twelve years after. Using other model specifications, the estimates were slightly higher. This is noteworthy, as the statical models that I have applied in

this analysis most likely rules out more selection and thus have a stronger causal claim than previous studies. This does not, however, mean that the present analysis can offer a completely causal claim on the association between family dissolution and children's well-being, as this can only be attained in a setting where family dissolution is completely randomly assigned to children. However, I argue that it is indeed a strong contribution to the discussion on this topic, which has been in demand for a long time, and compared to other models, the staggered DID models give conservative ATT estimates. The effect sizes found in this study are, just as others have previously found, still rather small. In other words, my results point to the conclusion that while we should aim to support children who experience family dissolution, family dissolution as an event in itself should not cause great panic. However, as I have argued in section three and four, family dissolution is a complex transition, which changes many aspects of a child's life, and some families are most likely better equipped to support children through that process than others. A job for future research might thus be to examine potential heterogeneity in the effect of family dissolution across different social groups to map out, which children need support to ensure their well-being. Especially since my analysis shows that a substantial part of the difference in well-being between children in intact and non-intact families stem from pre-existing differences.

In relation to my second hypothesis, I find no clear evidence that the post-dissolution family structure seems to moderate the effect described above. According to the theoretical framework presented in section four, one might expect children in family structures including stepparents to have higher levels of well-being than children in single parent families, since stepfamilies will often have more economic and parental resources than single parent families. On the other hand, stepparents can also compromise parents' focus on their children, cause conflicts, and weaken the ties between parents and children. In my analysis, children with a reconstituted father and a single mother stood out as the only structure, which was not significantly different from children in intact families. However, children with reconstituted mothers or two reconstituted parents still differed significantly from children in intact families and showed similar effect sizes to children in single parent families. Furthermore, a Walds test showed that the analysis in the present study could not reject that the effect of all four post-dissolution family structures was in fact equal. The differences in family structures could thus stem from measurement error possibly caused by few observations. The conclusion to my second hypothesis must thus be that I cannot offer any evidence that different post-dissolution family structures with or without stepparents moderate

the effect of family dissolution on childrens well-being. This suggests that stepparents cannot necessarily compensate for the loss that children experience when their original family dissolves, even though they might contribute with economic and parental resources. As I have previously shown, other studies have found that while stepparents can better childrens well-being with respect to better health and behavioral outcomes such as criminal behaviour, living in stepparent families is generally not associated with better emotional well-being (Sweeney, 2010). Focusing on the emotional aspect of stepparent formation might thus contribute to our understanding of the roles of stepparents in relation to childrens emotional well-being. In section four, I argued that strong child/stepparent ties are crucial to a harmonious family life and a supportive relationship between stepparents and children. The establishment of strong ties might therefore be a critical element for children to benefit from the potential contributions of a stepparent in the first place. Future studies should examine the emotional challenges and consequences related to the formation of stepparent/child ties more thoroughly than I have been able to in this study.

Overall, my analysis thus points to the conclusion that the post-dissolution family structure which children find themselves in after family dissolution does not seem to play any clear role in the effect of family dissolution on childrens well-being. Rather, it seems like the dissolvment of a childs original family itself is what drives the difference in well-being between children in intact and non-intact families. Future research should therefore focus on understanding how and why this event affects children, and whether particular groups of children are more vulnerable in this transition than others. Potential policy interventions should thus also focus on supporting children through the process of family dissolution rather than focussing on different post-dissolution family structures.

8.2 Methods and data

Generally, my analysis showed that the association between childrens well-being and family dissolution is partially driven by selection bias. I have shown that ruling out particularly fixed individual characteristics, but also time trends, and control variables on parents' educational attainment, labour market participation and income decreases the effect sizes substantially. Other studies which have failed to include these measures might therefore suffer from selection bias. The staggered DID models applied in this analysis rules out all confounding coming from time-invariant individual characteristics, time-variant but individual-invariant characteristics, and a number of time- and individual variant observable characteristics including parental educational

attainment, labour market participation and income levels. This of course still leaves a potential bias in the results stemming from differences between families who remains intact and families who dissolves, which both varies across children and time. An obvious example of such a confounder could be the level of conflict between parents (and stepparents) prior as well as post family dissolution, which several studies suggest is an important predictor of childrens well-being (Amato 2010; Hanson et al. 1996; Hetherington 2006). This analysis does therefore not have a completely causal claim on the association between family dissolution and childrens well-being, as this can only be attained in a setting where family dissolution is completely randomly assigned to children. However, as previously argued, it is a strong contribution. My analysis also shows the importance of different model specification on effect sizes. Depending on how I defined my control group, the dynamic effect estimates ranges from 20 to 30 percent of a standard deviation 8-12 years after family dissolution. By running different models and robustness check, I argue that I have covered an important range different possibilities concerning effect sizes, but future studies should pay thorough attention to robustness check as well.

My study holds several other limitations. First of all, an analysis of representativity showed that the study sample held an overrepresentation of children from families with high socioeconomic resources, and older ethnically Danish parents. This means that the while the findings on this study is based on an overall sample of Danish children, some groups are underrepresented. As argued in the literature, children from low SES families are more likely to experience family dissolution, and more vulnerable in terms of economic and parental resources, which are related to well-being. There might therefore be other things at stake in subgroups of the population, which this study cannot shed light on. More research is thus needed to cover potential heterogeneity.

Furthermore, the current measure of well-being, the SDQ, measures psychological well-being and daily functioning in four subscales including emotional problems, behavioural problems, hyperactivity, and peer problems. This means that the present study only examines social, psychological, and cognitive domains of well-being. However, the SDQ is a strong measure of these domains combined. As I have used the mother questionnaires, the SDQ scores are based on mothers' observations of their children. This could cause some bias, as low levels of well-being which do not manifest in externalizing behaviour are presumably more likely to escape the

attention of mothers. For example, studies show that boys are more prone to express themselves negatively by showing externalizing behaviour, while girls are more likely to turn negative behaviour inwards (Ottosen, 2018). Furthermore, parents might be reluctant to report undesirable behaviour of their children (Andersen et al. 2010), perhaps also in the light of an emotional event such as family dissolution. Optimally, studies of family dissolution from childrens wellbeing should be based on data which reflected the childrens point of view. Future studies should thus aspire to undertake this perspective.

Finally, this study concerns structural changes in childrens families. My second hypothesis, for example, examines the structure of non-intact families as defined by parental relationship status. However, my study does not take the extend of parental contact after family dissolution into account. The effect of different post-dissolution family structures in mother and father households on childrens well-being is obviously dependent on the contact between the child and each of these households. If a child has no contact to her father, the relationships status of her family is presumably irrelevant to her wellbeing, and her post family-dissolution experience might be driven by this more than the structure of her family itself. This is therefore a central limitation to my analysis. While most Danish children in non-intact families live in alternate living arrangements (Ottosen and Stage 2012), some studies indicate that different living arrangements in non-intact families moderates childrens well-being (Fallesen and Gähler 2020). Others, points to the conclusion that these differences are mainly due to selection (Augustijn 2022). Future studies should thus pay attention to the role of parent/child contact in non-intact families on childrens well-being.

9 Conclusion

In this study, I set out to examine the impact of family dissolution and different post-dissolution family structures for childrens well-being. As a result of structural societal changes, the family as a social institution has undergone great changes during the last centuries. Families have become increasingly fluid and changeable, and an increasing number of children experiences family dissolution and restructuring during childhood. These developments have given rise to a strong social narrative, that the family as a social institution is in a moral crisis, and that children are suffering from growing up in unstable families, harming their well-being. While the social sciences have supported this narrative through numerous studies, scholars have continuously

argued that more empirical knowledge is needed to determine whether the association between lower well-being of children in intact families and non-intact is in fact causal or rather driven by selection. Furthermore, we have little knowledge of the role of different post-dissolution structures with and without stepparent in this association. In this study, I have applied the concept of family structure as a heuristic tool to argue with the current literature, that changes in family structure cause changes in family resources, roles, and identity. These are key elements which facilitate childhood and affects economic, social, and psychological aspects of children's well-being. To test the effect of family dissolution and different post-dissolution family structures on children's well-being, I applied pooled OLS, fixed effects models and a variety of staggered difference-in-difference models to high-quality Danish longitudinal survey data and Danish administrative data. I found that, even when using a staggered DID model with socioeconomic control variables, family dissolution does seem to have a negative effect on children's well-being. Furthermore, the gap in well-being between children in intact and non-intact families seems to increase over time from 0.15 SD the first three years after family dissolution to 0.2 SD eight to twelve years after. While there is an effect, it is therefore small in practice. To examine the role of different post-dissolution family structures, I studied four different structures in relation to parental relationship status: 1) two single parents, 2) two reconstituted parents, 3) a reconstituted mother and single father, and 4) a reconstituted father and single mother. I find no clear evidence that the post-dissolution family structure seems to moderate the effect described above. My analysis thus points to the conclusion that while family dissolution does have a negative effect on children's well-being, it is small in practice. Furthermore, the association between family dissolution and well-being does not seem to vary across the different post-dissolution family structures that I have examined. Future studies should therefore direct their attention to how we might best support children going through family dissolution, and whether certain groups of children are particularly vulnerable in this transition. The social narrative that changing family structures is harmful for children might thus not be entirely unjustified – but in practice, the differences between children in intact and non-intact families are small once you account for different confounding variables. Paying attention to the impact of social inequality between children's families might thus be a more fruitful perspective when it comes to supporting children's well-being.

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Appendix

Section A: construction of quasi SDQ

Section A.1: SDQ Questionnaires

Table A.1: SDQ questions

For each item, please mark the box for 1) Not True, 2) Somewhat True or 3) Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or if the item seems daft! Please give your answers on the basis of the child's behavior over the last six months.

	SDQ questions
1	Considerate of other people's feelings
2	Restless, overactive, cannot stay still for long
3	Often complains of headaches, stomach-aches or sickness
4	Shares readily with other children (treats, toys, pencils etc.)
5	Often has temper tantrums or hot tempers
6	Rather solitary, tends to play alone
7	Generally obedient, usually does what adults request
8	Many worries, often seems worried
9	Helpful if someone is hurt, upset or feeling ill
10	Constantly fidgeting or squirming
11	Has at least one good friend
12	Often fights with other children or bullies them
13	Often unhappy, down-hearted or tearful
14	Generally liked by other children
15	Easily distracted, concentration wanders
16	Nervous or clingy in new situations, easily loses confidence
17	Kind to younger children
18	Often lies or cheats
19	Picked on or bullied by other children

20	Often volunteers to help others (parents, teachers, other children)
21	Thinks things out before acting
22	Steals from home, school or elsewhere
23	Gets on better with adults than with other children
24	Many fears, easily scared
25	Sees tasks through to the end, good attention span

Table A.2: comparison of quasi SDQ questions and original SDQ questions

Quasi SDQ questions	SDQ Questions
Initiates contact with other children in order to play?	Rather solitary, tends to play alone (reverse)
Decides what to play?	-
Will only join a game if he/she can decide him/herself?	-
Pushes others to get what he/she wants?	-
Takes things from others?	Shares readily with other children (treats, toys, pencils etc.) (reverse)
Starts discussions/quarrels with other children?	
Teases other children?	Kind to younger children (reverse)
Hits other children?	Often fights with other children or bullies them
Is hit by other children?	Picked on or bullied by other children
Is teased by other children?	
Cries often/regularly because of other children's harassment/bullying?	
Is a child that other children want to play with?	Generally liked by other children Has at least one good friend
Is helpful towards other children?	Helpful if someone is hurt, upset or feeling ill
Comforts other children?	Considerate of other people's feelings
Is impulsive, act without thinking?	Thinks things out before acting
Has difficulties waiting for his/her turn when playing with other children	-
Is inattentive?	Restless, overactive, cannot stay still for long
Can't sit still, rushes around, or hyperactive?	
Is easily distracted from doings?	
Is fidgety, restless, or hectic?	
Can't concentrate on anything for more than a few moments?	Constantly fidgeting or squirming

Has hysterical fits?	
Is very hot-tempered?	Often has temper tantrums or hot tempers
Doesn't care about scolding or punishment?	Generally obedient, usually does what adults request
Doesn't seem to feel bad after misbehaving?	-
Is good at occupying him/her self?	-
Is able to concentrate on listening to stories for 10-15 minutes or more	Easily distracted, concentration wanders Sees tasks through to the end, good attention span
Is able to concentrate on children's programs on TV for 10-15 minutes or more	
Is too fearful or anxious?	Many fears, easily scared
Seems sad or unhappy?	Often unhappy, down-hearted or tearful
Seems worried?	Many worries, often seems worried
Gives up easily when encountering difficulties?	-
Withdraws into him/her self?	-
Stares into thin air?	-
Seems nervous or tense?	Nervous or clingy in new situations, easily loses confidence
Is afraid of new situations?	
Lack of self-confidence or belief in own abilities	
Doesn't want to sleep alone?	-
Has difficulties getting to sleep?	-
Wakes up at night?	-
Has nightmares?	-
-	Often complains of headaches, stomach-aches or sickness
-	Often volunteers to help others (parents, teachers, other children)
-	Steals from home, school or elsewhere
-	Gets on better with adults than with other children
-	Often lies or cheats
Tries to encourage and commend other children? (excluded due to missing values)	-

Table A.3: 1999 Quasi SDQ battery 1

The questions could be answered by 1) “Not true”, 2) “Somewhat true”, 3) “Certainly true” or 8) “Don’t know”.

11.a Initiates contact to other children in order to play?
11.b Decides what to play?
11.c Will only join a game if he/she can decide him/her self?
11.d Pushes others to get what he/she wants?
11.e Takes things from others?
11.f Starts discussions/quarrels with other children?
11.g Teases other children?
11.h Hits other children?
11.i Is hit by other children?
11.j Is teased by other children?
11.k Cries often/regularly because of other children’s harassment/bullying?
11.l Is a child that other children want to play with? 25 Doesn’t get along with other children (reverse)
11.m Is helpful towards other children?
11.n Comforts other children?
11.o Tries to encourage and commend other children?

Table A.4: 1999 Quasi SDQ battery 2

The questions could be answered by 1) “Not true”, 2) “Somewhat true”, 3) “Certainly true” or 8) “Don’t know”.

12.a Is impulsive, act without thinking?
12.b Has difficulties waiting for his/her turn when playing with other children?
12.c Is inattentive?
12.d Can’t sit still, rushes around, or hyperactive?
12.e Is easily distracted from doings?
12.f Is fidgety, restless, or hectic?
12.g Can’t concentrate on anything for more that a few moments?
12.h Has hysterical fits?
12.i Is very hot-tempered?
12.j Doesn’t care about scolding or punishment?
12.k Doesn’t seem to feel bad after misbehaving?

12.l Is good at occupying him/her self?
12.m Is able to concentrate on listening to stories for 10-15 minutes or more
12.n Is able to concentrate on children's programs on TV for 10-15 minutes or more

Table A.5: 1999 Quasi SDQ battery 3

The questions could be answered by 1) "Not true", 2) "Somewhat true", 3) "Certainly true" or 8) "Don't know".

13.a Is too fearful or anxious?
13.b Seems sad or unhappy?
13.c Seems worried?
13.d Gives up easily when encountering difficulties?
13.e Withdraws into him/her self?
13.f Stares into thin air?
13.g Seems nervous or tense?
13.h Is afraid of new situations?
13.i Lack of self-confidence or belief in own abilities
13.j Doesn't want to sleep alone?
13.k Has difficulties getting to sleep?
13.i Wakes up at night?
13.m Has nightmares?

A.2 Imputation for factor analysis

To examine the non-response mechanism, missingness on one or more of the 41 items used for the exploratory factor analysis is dummy-coded and regressed on a number of covariates including mothers educational level, income, and labor market participation. Results are presented in table A.6:

Table A.6: Regression on non-response mechanism (having one or more items missing of the 41 items used for factor analysis)

	(1)
Y: having one or more item missing {yes=1, no=}	OLS
Lower secondary edu.	-0.0610** (0.0262)
Higher secondary edu.	0.0202 -0.0235 (0.0191)
Short cycle higher edu.	0.2181 -0.0706* (0.0392)
Medium cycle higher edu.	0.0723 -0.0618*** (0.0222)
Long cycle higher edu.	0.0055 -0.0461 (0.0353)
Disp. income (mother, 10.000 DKK)	0.1918 -0.0006 (0.0010)
Mother unemployed	0.5804 -0.0316* (0.0177)
Mother out of workforce	0.0749 0.0121 (0.0168)
Constant	0.4715 0.4027*** (0.0285)
Observations	0.0000 5,041
R-squared	0.0033

Robust standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

The regression model shows that two higher educational levels are associated with a 6 % lower chance of having missing on one or more of the 41 questions (p-value < 0.05) as the only of the regressors. This suggests that there might be some bias in the non-response mechanism. It is thus not entirely safe to assume that the data are missing at random.

For imputation of values for the factor analysis, I use hot deck imputation, which works with a donor/recipient set up, where a value from a record with an observed item, the donor, is passed on to a record with a missing value on that item, the recipient. One must therefore consider how to best select a donor. I will make use of Nearest neighbor imputation (NNI), where the donor is selected by finding the minimal distance to a donor on the basis of a vector of selected auxiliary variables. Chen and Shao argue that NNI may be more efficient than other hot deck methods such as mean imputation and random hot deck imputation as it makes use (multiple) of auxiliary variables to calculate a distance value between recipients and potential donors. It is thus not random but deterministic imputation, as nonresponses are imputed by deterministic values from the closest donors (Chen and Shao 2000).

NNI is carried out by use of the *k*NN function from the VIM package for R (Kowarik and Templ, 2016). The distance computation for defining the nearest neighbors is based on an extension of the Gower distance, where the distance between two observations is the weighted mean of the contributions of each variable (all auxiliary variables are weighted equally). The variables specified for imputation include all 41 items intended for the following factor analysis. Likewise, all 41 items will serve as auxiliary variables to each other along with the variable indicating mothers educational level in 1999. It is specified that the imputation should be based on the five nearest neighbors ($k=5$) from the auxiliary variables. As all variables are categorical, the default method to use the category with the most occurrences in the k values is kept. If this results in a “tie”, a category from the tied categories is randomly drawn (Kowarik and Templ 2016). All values are imputed.

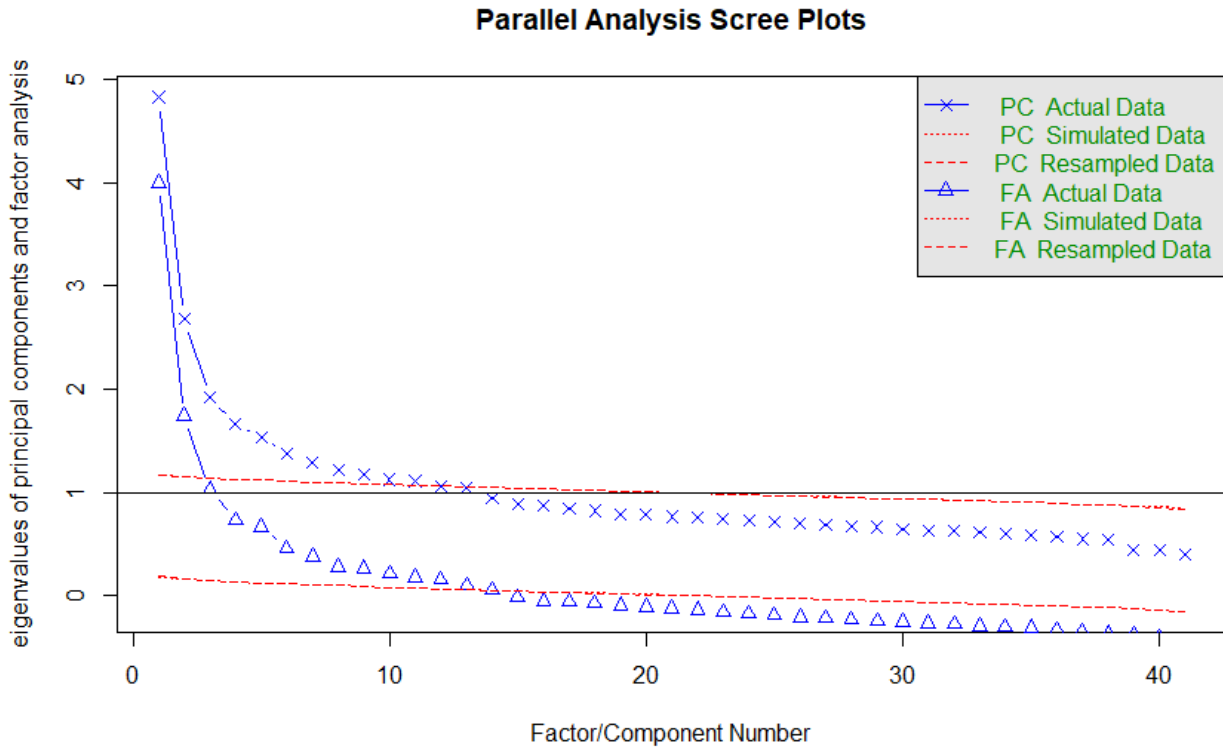
A.3 Exploratory factor analysis

As I evident from table B, the 41 questions in the survey round from 1999 share great resemblance to the 25 questions used to calculate the SDQ. Theoretically, this gives reason to believe that the 41 questions from 1999 could in fact be driven by the same latent factors as the SDQ. If this is the case, these factors might contribute to a good quasi SDQ measure. The goal of this sub-analysis is thus to examine whether these factors can be found empirically in data. The exploratory factor analysis (EFA) is exactly designed to identify common factors that explain the order and structure among measured variables (Fabrigar and Wegener 2012; Watkins 2018).

First of all, I assess whether the included variables adequately represents the domains that the factors are thought to represent using Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) test (Hansen 2017). The null-hypothesis of the Bartlett's test is that the correlation matrix contains ones on the diagonal and zeros on the off-diagonals. In other words, that it was generated by random data (Watkins 2018). Bartlett's test returns a chi-square value of 37882 with 40 degrees of freedom and a p-value < 0.000 , indicating that the matrix is in fact not suitable for factor analysis. However, as Bartlett's test is sensitive to big samples, Watkins argues that one should supplement with a Kaiser-Meyer-Olkin (KMO) test on sampling adequacy. The KMO test is the ratio of correlations and partial correlations reflecting to which extent the correlations are a function of the variance shared across all variables rather than the variance shared by particular pairs of variables (as in the Bartlett's test). KMO values range from 0.00 to 1.00 and can be computed for the total correlation matrix as well as for each measured variable. The KMO test returns an overall value of 0.82. As described by Watkins (referring to Kaiser himself), KMO values in the 80s are considered "meritorious" (Watkins 2018). The KMO test thus indicates that the correlation matrix is factorable.

The EFA is run in R using the *fa* package for EFA with Principal Axis estimation and varimax rotation. To decide on the number of factors to retain, a minimum average partials (MAP) test is run using the *EFA.dimension* MAP test (O'Connor 2022). The MAP test returns two solutions, one with three and one with four, suggesting that after 3-4 factors, the common variance has been removed and only unique variance remains. Andersen et al. (2010) retained four factors, but it is not specified on what grounds. A parallel analysis scree plot (figure A.1) suggests that there are only three factors with eigenvalues > 1 and 2 with eigenvalues greater than that obtained by random.

Figure A.1:



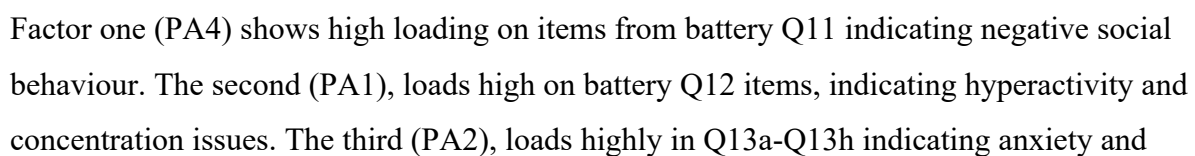
However, the number of principal components suggested by the same test is 8, although the scree plot curve seems to decrease after three to four components. Based on these findings, I examine both the three and four factor solution.

The four-factor solution show that the first factor accounts for 6% of the total variance (table A.7). This is not very impressive; however, one must keep in mind that this factor analysis is based on 41 items, which is a great deal. Including all four factors accounts for 20 percent of the total variation.

Table A.7: Variance, four factor solution

SS loadings	PA4	PA2	PA3	PA4
Proportion var	0.065	0.058	0.04	0.03
Cumulative var	0.65	0.12	0.17	0.20

Figure A.2: Factor loadings, four factor solution



passive/insecure behaviour, and finally, the fourth (PA3) loads highly in only Q11l and Q11m related to positive social behaviour.

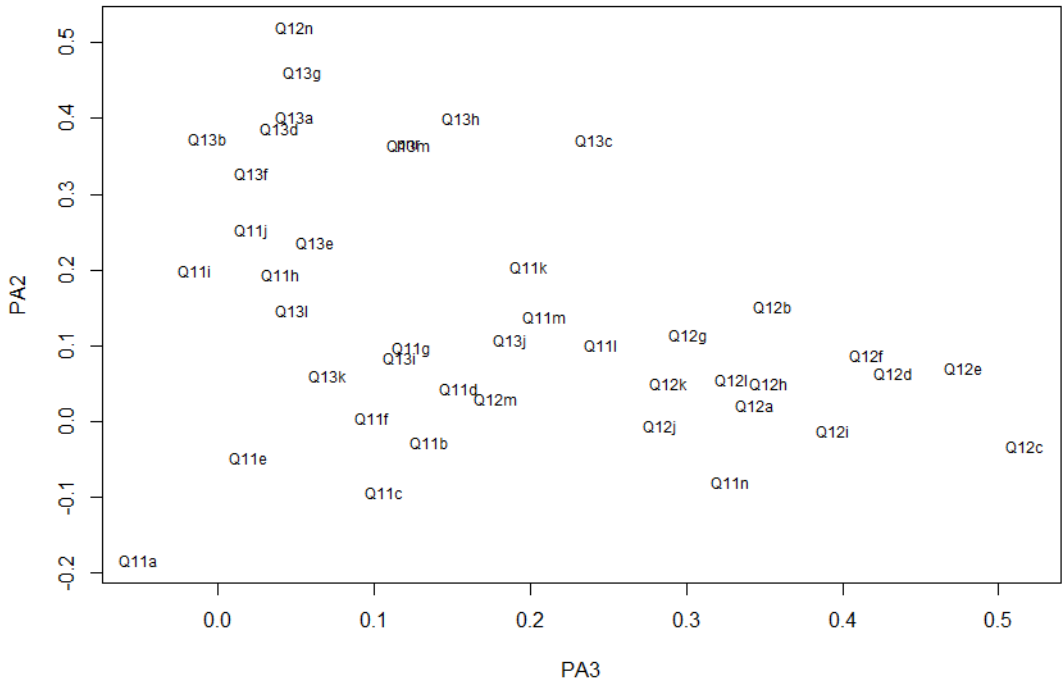
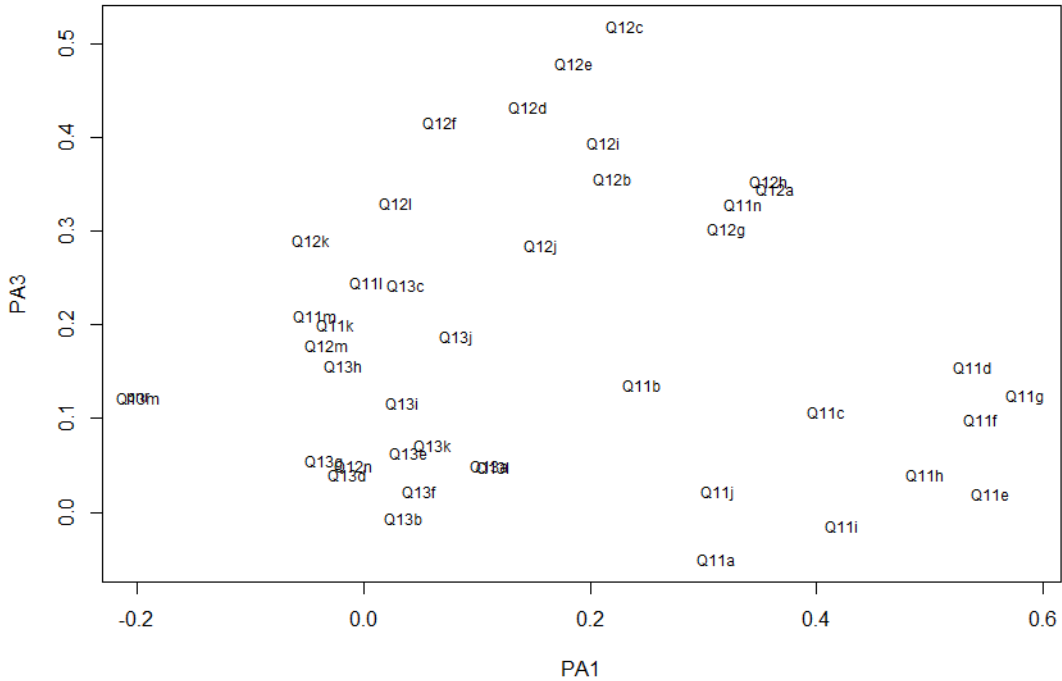
Examining the three-factor solution, the total variance explained is reduced to 17 % (see table A.8).

Table A.8: Results from factor analysis, three factor solution

	PA1	PA2	PA3
SS loadings	2,8769	2,2756	1,9033
Proportion Var	0,0702	0,0555	0,0464
Cumulative Var	0,0702	0,1257	0,1721
Proportion Explained	0,4077	0,3225	0,2697
Cumulative Proportion	0,4077	0,7303	1,0000

Looking at the factor loadings, the boundaries between battery Q11 and Q12 are less visible, as both factor one and two loads high on items from both batteries (see figure A.2). The interpretation therefore is less clear. Factor three is more clearly distinguished as it primarily loads high in loads from battery Q13.

Figure A.2: factor loadings, three factor solution



Section B: Operationalization

B.1 Family dissolution

The variable for family dissolution is constructed on the basis of the address identification variable ADRESSE_ID which is drawn from the population register BEF. This variable measures the exact address of a person down to apartment level and is thus highly precise. When drawing it from the register BEF, which is updated once a year, the variable indicates the exact address of a person by the 31st of December that specific year. The address of both parents is first drawn in all years from survey start to end (1999 to 2011) in order to determine the exact year where the address of the parents seems to differ for the first time. Afterwards, the address information is coded into the four time periods of the dataset (one for 1999, 2003, 2007 and finally 2011). The variable is stable over time, as its definition does not change within the time window of this study. The only reason why addresses might not be found across years is if addresses are physically closed or if new addresses are added (Statistics Denmark 2022a). This does not affect the intention of the treatment variable, however, as the intention of this variable is only to identify whether a child's parents live together - and if they move, whether they move together. The treatment variable takes the value of 0 as long as both parents share an address and shifts to 1 as soon as their addresses differ (it they do so in between one of the four observation periods). The treatment variable is thus a binary variable and treatment assignment is an absorbing state, as a unit treatment status takes to value of 1 from the moment treatment occurs and thereafter does not return to zero. Table B.1 shows the coding of treatment in two cases:

Table B.1: Coding of treatment variable

Individual	Observed year	Treatment variable D
1	1999	0
1	2003	1
1	2007	1
1	2011	1
2	1999	0
2	2003	0
2	2007	0
2	2011	0

For individual 1, treatment occurs between 1999 and 2003, and so the treatment variable D takes on the value of 1 for the first time in period 2003 and in the following years. For individual 2, treatment does not occur within the four observed time period, and so the treatment variable never takes the value of 1.

B.2 Post-dissolution family structures

In order to determine the post-dissolution family structure of children, I consider whether a child's parents are cohabiting with a new partner after family dissolution. From BEF, I first draw the variable `familie_id` (family ID) and `familie_type` (family type) for both mothers and fathers in all observation years (1999, 2003, 2007 and 2011). The family type variable indicates whether a person is living alone or with another adult as either married, in a registered partnership or cohabiting. The family ID is specific to each family and based on address. If the parents are living together, they share a family ID. This variable is thus helpful to indicate, whether or not the parents are in fact living at the same address. If the parents share a family ID, they are defined as cohabiting and thus an intact family (Statistics Denmark 2022a). If they do not, they are defined as non-intact, and the variable family type defines which post-dissolution family structure they are living in. If *family type* show that they are single, the parent is coded as single. If *family type* show that they are either married, in a registered partnership with another adult or cohabiting with another adult of the opposite sex, with a maximum age difference of 15 years and no familiar connections in the registers, they are defined as reconstituted with another partner

B.3 Control variables

Educational level of both parents is drawn from variable HFAUDD from the educational register UDDA. HFAUDD indicates the highest level of formal education achieved by each person in the population from BEF (Statistics Denmark 2022g). The variable holds very precise identification codes on all formal educations in Denmark. It is recoded using the standard classification by statistics Denmark categorizing educations into 12 different levels, which I recode into six categories 1) primary education, 2) general upper secondary education, 3) vocational education, 4) short-cycle higher education, 5) medium cycle higher education, and 6) long-cycle higher education (including research training) (see table I):

Table B.2: Coding of educational levels (control variable)

Original categories from DST		Used classification	
10	Primary education	10	Primary education (reference group)
15	Preparatory education		
20	General upper secondary education	20	General upper secondary education
25	Vocational education	30	Vocational education
30	Primary courses (vocational edu.)		
35	Internships and main courses (vocational edu.)		
39	Continuing Training (vocational edu.)		
40	Short-cycle higher education	40	Short-cycle higher education
50	Medium-cycle higher education	50	Medium-cycle higher education
60	Bachelor's degree		
65	Long cycle higher education	70	Long cycle higher education
70	Research training		

Source: (Statistics Denmark 2022g).

Educational level as a control variable is observed for both parents at each of the four observed years, which means that parents can advance in their education over the observed time periods.

To account for income, I use the variable PERINDKIALT_13 from the IND register. The variable measures the total yearly personal income defined as all labour market related income, public transfers, income from personal assets and other registered income which can be related to individuals in BEF (excluding the calculated rental value of own home) (Statistics Denmark, 2022g). It is chosen as it is the best measure for exactly how much money an individual earns across different income sources. As the register IND relies on information from the Taxation Authorities, any income which has been failed to be reported is not included. The income variable is made up in DKK each year and calculated to be pr. 10.000 DKK for easier interpretation of coefficients.

Finally, labour market participation is measured by three outcomes 1) having been unemployed continuously within the last three years, 2) having been out of the workforce within the last three

years, and 3) having been unemployed within the last three years. These categories are constructed on the basis of the variable SOCSTIL_KODE from the register RAS. The definition of the variable have remained constant within the time window of this study and is thus highly comparable across the observation window of this study. It measures each individual's primary connection to the labour market by ultimo November each year and is thus classified after recommendations from the International Labour Organization (Statistics Denmark 2022i). I gather the variable in each year from 1999 through 2011 for all parents in the sample. This allows me to measure whether a parent has been continuously employed, unemployed or outside of the workforce during the entire observation window rather than only looking at their labour market participation in the specific years that I observe (1999, 2003, 2007 and 2011).

Section C: Analysis of representativity

In order to examine the drop-out mechanism of the mother survey in DALSC, I use a range of covariates from 1996 (the very first survey year) on the entire study group (6.000) to predict their chances of being in the final study sample. As predictors, I use the age of both parents at birth of child, parents' origin (ethnically Danish, immigrant, descendent), highest completed educational level, disposable income, labour market participation (employed/ unemployment/ being out of the workforce) and region of residence (mother only). For about 100 individuals, I were unable to find information on parents, and these are thus not included in the analysis of representativity (nor in the final sample for the same reason). After regressing whether or not a child is in the final sample $\{1 = \text{yes}, 0 = \text{no}\}$ on these predictors, it is clear that the drop-out-mechanism is biased (see table C.1). Older mothers as well as ethnically Danish, higher educated and employed parents with higher incomes are more likely to be included in the final study sample. Furthermore, those living in the Capital Region of Denmark are underrepresented compared to the other four regions. Amongst these predictors, particularly parents educational levels are troublesome. For example, mothers with long cycle higher education are 20 percent more likely to be included in the final sample than mothers with primary school as their highest level of education in 1999. This is an important finding, which has consequences for the generalization of the findings in this study and will be discussed further in the discussion section.

Table C.1: Regression on the drop-put mechanism, analysis of representativity

Outcome: In final sample {yes=1; no=0}	(1) (OLS)
Mothers age by birth	0.0053*** (0.0020)
Fathers age by birth	0.0065 -0.0016 (0.0015)
Origin (mother) = Immigrant	0.2908 -0.0335 (0.0620)
Origin (mother) = Descendant	0.5884 0.1568 (0.1138)
Origin (father) = Immigrant	0.1685 -0.0941*** (0.0328)
Origin (father) = Descendant	0.0041 -0.0206 (0.1202)
Mothers highest completed educational level = Lower secondary	0.8641 0.1876*** (0.0225)
Mothers highest completed educational level = Higher secondary	0.0000 0.1356*** (0.0172)
Mothers highest completed educational level = Short cycle higher edu.	0.0000 0.1927*** (0.0398)
Mothers highest completed educational level = Medium cycle higher edu.	0.0000 0.1868*** (0.0227)
Mothers highest completed educational level = Long cycle higher edu.	0.0000 0.2099*** (0.0398)
Fathers highest completed educational level = Lower secondary	0.0000 0.0395 (0.0274)
Fathers highest completed educational level = Higher secondary	0.1489 0.0864*** (0.0159)
Fathers highest completed educational level = Short cycle higher edu.	0.0000 0.1353*** (0.0332)
Fathers highest completed educational level = Medium cycle higher edu.	0.0000 0.1233*** (0.0252)
Fathers highest completed educational level = Long cycle higher edu.	0.0000 0.1228***

	(0.0310)
	0.0001
Disp. income (mother, 10.000 DKK)	0.0004
	(0.0015)
	0.7733
Disp. income (father, 10.000 DKK)	0.0000***
	(0.0000)
	0.0097
Mother unemployed	-0.0593***
	(0.0222)
	0.0076
Mother out of workforce	-0.0729***
	(0.0174)
	0.0000
Father unemployed	-0.1247***
	(0.0293)
	0.0000
Father out of workforce	-0.1558***
	(0.0269)
	0.0000
Region = Northern Jutland	0.1614***
	(0.0222)
	0.0000
Region = Central Jutland	0.1451***
	(0.0175)
	0.0000
Region = Southern Denmark	0.1561***
	(0.0179)
	0.0000
Region = Zealand	0.0818***
	(0.0203)
	0.0001
Constant	0.1132**
	(0.0464)
	0.0146
Observations	5,904
R-squared	0.1052

Robust standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

Section D: Regression tables

Table D. 1: Regression table, pooled OLS (model 1)

Outcome: SDQ	(OLS) Without controls	(OLS) With controls
Family dissolution	0.2829*** (0.0386) 0.0000	0.2659*** (0.0386) 0.0000
Yearly disp. income (mother, 10.000 DKK)		-0.0032*** (0.0009) 0.0005
Unemployed within 3 years (mother)		0.0386 (0.0366) 0.2919
Out of workforce within 3 years (mother)		0.0916*** (0.0323) 0.0045
L. secondary edu (mother)		-0.1813*** (0.0620) 0.0035
Up. secondary edu (mother)		-0.0472 (0.0482) 0.3271
L. tertiary edu (mother)		-0.0265 (0.0765) 0.7290
M. tertiary edu (mother)		-0.2301*** (0.0519) 0.0000
L. tertiary edu (mother)		-0.1312* (0.0713) 0.0658
Yearly disp. income (father, 10.000 DKK)		-0.0025*** (0.0006) 0.0001
Unemployed within 3 years (father)		0.0972* (0.0539) 0.0714
Out of workforce within 3 years (father)		0.0260 (0.0522) 0.6180
L. secondary edu (father)		-0.1923*** (0.0719) 0.0075
Up. secondary edu (father)		-0.1399*** (0.0422) 0.0009
L. tertiary edu (father)		-0.1388** (0.0624) 0.0261

M. tertiary edu (father)		-0.2565*** (0.0496) 0.0000
L. tertiary edu (father)		-0.2878*** (0.0581) 0.0000
Constant	-0.0333** (0.0142) 0.0192	0.4026*** (0.0612) 0.0000
Observations	12,192	12,192
R-squared	0.0083	0.0461

Clustered standard errors in parentheses
*p<.05; **p<0.01; ***p<.001

Table D.2: Regression table, fixed effects regression (model 2)

Outcome: SDQ	(Fixed effects) With controls	(Fixed effects) Without controls
Family dissolution	0.1251*** (0.0365) 0.0006	0.1564*** (0.0376) 0.0000
Yearly disp. income (mother, 10.000 DKK)		-0.0022** (0.0010) 0.0212
Unemployed within 3 years (mother)		-0.0056 (0.0341) 0.8698
Out of workforce within 3 years (mother)		-0.0128 (0.0294) 0.6632
L. secondary edu (mother)		0.0519 (0.1085) 0.6322
Up. secondary edu (mother)		0.0466 (0.0838) 0.5786
L. tertiary edu (mother)		0.0286 (0.1447) 0.8431
M. tertiary edu (mother)		0.0862 (0.1044) 0.4093
L. tertiary edu (mother)		0.0954 (0.1359) 0.4830
Yearly disp. income (father, 10.000 DKK)		-0.0013** (0.0006)

		0.0315
Unemployed within 3 years (father)		-0.0175 (0.0515)
		0.7342
Out of workforce within 3 years (father)		0.0011 (0.0458)
		0.9816
L. secondary edu (father)		-0.0495 (0.2498)
		0.8430
Up. secondary edu (father)		-0.0117 (0.1494)
		0.9373
L. tertiary edu (father)		-0.1742 (0.2133)
		0.4141
M. tertiary edu (father)		-0.0744 (0.2229)
		0.7386
L. tertiary edu (father)		0.0145 (0.2073)
		0.9441
Constant	-0.0147*** (0.0043)	0.0775 (0.1461)
	0.0006	0.5957
Individual fixed effects	YES	YES
Observations	12,192	12,192
R-squared	0.0018	0.0038
Number of unique observations	3,048	3,048

Clustered standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

Table D.3: Regression table, staggered difference-in-difference model (model three)

Outcome: SDQ	(DID) With controls	(DID) With controls
Family dissolution	0.1460*** (0.0384) 0.0001	0.1473*** (0.0384) 0.0001
Yearly disp. income (mother, 10.000 DKK)		-0.0030** (0.0012) 0.0108
Unemployed within 3 years (mother)		-0.0018 (0.0341) 0.9579
Out of workforce within 3 years (mother)		-0.0130 (0.0296) 0.6608
L. secondary edu (mother)		0.0446 (0.1088) 0.6818
Up. secondary edu (mother)		0.0365 (0.0845) 0.6654
L. tertiary edu (mother)		0.0149 (0.1448) 0.9181
M. tertiary edu (mother)		0.0727 (0.1052) 0.4898
L. tertiary edu (mother)		0.0816 (0.1366) 0.5503
Yearly disp. income (father, 10.000 DKK)		-0.0016** (0.0007) 0.0140
Unemployed within 3 years (father)		-0.0189 (0.0516) 0.7137
Out of workforce within 3 years (father)		-0.0053 (0.0461) 0.9088
L. secondary edu (father)		-0.0561 (0.2502) 0.8227
Up. secondary edu (father)		-0.0192 (0.1496) 0.8979
L. tertiary edu (father)		-0.1839 (0.2139) 0.3901
M. tertiary edu (father)		-0.0831 (0.2234)

		0.7100
L. tertiary edu (father)		0.0035
		(0.2078)
		0.9864
Time = 2003	-0.0132	0.0086
	(0.0191)	(0.0207)
	0.4913	0.6767
Time = 2007	-0.0232	0.0236
	(0.0211)	(0.0267)
	0.2721	0.3775
Time = 2011	-0.0324	0.0321
	(0.0228)	(0.0318)
	0.1551	0.3132
Constant	-0.0000	0.1142
	(0.0134)	(0.1501)
	1.0000	0.4468
Time FE	YES	YES
Individual FE	YES	YES
Observations	12,192	12,192
R-squared	0.0021	0.0039
Number of unique observations	3,048	3,048
Clustered standard errors in parentheses		
*p<.05; **p<0.01; ***p<.001		

Table D.4: Regression table, dynamic effects (model four and five)

Outcome: SDQ	Model 4	Model 5
12-9 years before	.	-0.0675
	(.)	(0.0814)
	.	0.4065
8-5 years before	.	-0.0778
	(.)	(0.0492)
	.	0.1144
4-1 years before	0.0751	.
	(0.0482)	(.)
	0.1195	.
0-3 years after	0.1971***	0.1218***
	(0.0547)	(0.0407)
	0.0003	0.0028
4-7 years after	0.2189***	0.1431***
	(0.0666)	(0.0523)
	0.0010	0.0062
8-12 years after	0.2948***	0.2193***
	(0.0829)	(0.0722)
	0.0004	0.0024
Time = 2003	0.0056	0.0061
	(0.0208)	(0.0211)

	0.7887	0.7740
Time = 2007	0.0147	0.0151
	(0.0274)	(0.0275)
	0.5914	0.5839
Time = 2011	0.0160	0.0165
	(0.0327)	(0.0329)
	0.6240	0.6163
Yearly disp. income (mother, 10.000 DKK)	-0.0029**	-0.0029**
	(0.0012)	(0.0012)
	0.0115	0.0115
Unemployed within 3 years (mother)	-0.0008	-0.0008
	(0.0341)	(0.0341)
	0.9804	0.9815
Out of workforce within 3 years (mother)	-0.0130	-0.0130
	(0.0296)	(0.0296)
	0.6610	0.6608
L. secondary edu (mother)	0.0466	0.0464
	(0.1085)	(0.1086)
	0.6680	0.6690
Up. secondary edu (mother)	0.0325	0.0327
	(0.0842)	(0.0841)
	0.6991	0.6972
L. tertiary edu (mother)	0.0129	0.0132
	(0.1449)	(0.1448)
	0.9289	0.9275
M. tertiary edu (mother)	0.0642	0.0645
	(0.1052)	(0.1051)
	0.5414	0.5394
L. tertiary edu (mother)	0.0783	0.0785
	(0.1367)	(0.1367)
	0.5669	0.5660
Yearly disp. income (father, 10.000 DKK)	-0.0016**	-0.0016**
	(0.0007)	(0.0007)
	0.0168	0.0167
Unemployed within 3 years (father)	-0.0175	-0.0175
	(0.0515)	(0.0515)
	0.7339	0.7345
Out of workforce within 3 years (father)	-0.0045	-0.0046
	(0.0459)	(0.0459)
	0.9218	0.9196
L. secondary edu (father)	-0.0574	-0.0567
	(0.2494)	(0.2494)
	0.8181	0.8201
Up. secondary edu (father)	-0.0213	-0.0211
	(0.1481)	(0.1481)
	0.8858	0.8868
L. tertiary edu (father)	-0.1837	-0.1837
	(0.2121)	(0.2121)
	0.3865	0.3867
M. tertiary edu (father)	-0.0904	-0.0893
	(0.2230)	(0.2230)
	0.6852	0.6889
L. tertiary edu (father)	-0.0060	-0.0053

	(0.2070)	(0.2071)
	0.9767	0.9795
Constant	0.1122	0.1287
	(0.1494)	(0.1492)
	0.4527	0.3887
Observations	12,192	12,192
Number of unique observations	3,048	3,048
R-squared	0.0048	0.0048
Time FE	Yes	Yes
Individual FE	Yes	Yes

Clustered standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

Table D.5: Regression table, grouped regression (model 4)

Outcome: SDQ	Treated in 2003 SDQ score	Treated in 2007 SDQ score	Treated in 2011 SDQ score
4-1 years before		0.1079 (0.0747)	0.0561 (0.0657)
		0.1485	0.3931
0-3 years after	0.1548** (0.0712)	0.2210** (0.0867)	0.1471* (0.0759)
	0.0298	0.0109	0.0528
4-7 years after	0.1142 (0.0754)	0.2842*** (0.0924)	
	0.1296	0.0021	
8-12 years after	0.2214*** (0.0814)		
	0.0066		
Time = 2003	-0.0017 (0.0226)	0.0049 (0.0227)	0.0101 (0.0220)
	0.9403	0.8293	0.6454
Time = 2007	0.0158 (0.0288)	0.0257 (0.0289)	0.0343 (0.0285)
	0.5838	0.3746	0.2289
Time = 2011	0.0126 (0.0340)	0.0263 (0.0340)	0.0369 (0.0338)
	0.7114	0.4391	0.2750
Yearly disp. income (mother, 10.000 DKK)	-0.0029** (0.0012)	-0.0031** (0.0012)	-0.0040*** (0.0012)
	0.0204	0.0138	0.0013
Unemployed within 3 years (mother)	-0.0369 (0.0355)	-0.0086 (0.0380)	-0.0011 (0.0378)
	0.2994	0.8206	0.9767
Out of workforce within 3 years (mother)	-0.0124	-0.0021	0.0057

	(0.0320)	(0.0324)	(0.0323)
	0.6994	0.9476	0.8595
L. secondary edu (mother)	0.0111	0.0363	0.0806
	(0.1142)	(0.1251)	(0.1228)
	0.9225	0.7720	0.5120
Up. secondary edu (mother)	-0.0857	-0.0772	-0.0021
	(0.0853)	(0.0976)	(0.0945)
	0.3150	0.4287	0.9826
L. tertiary edu (mother)	-0.1392	-0.0668	-0.0454
	(0.1396)	(0.1600)	(0.1474)
	0.3186	0.6761	0.7579
M. tertiary edu (mother)	0.0504	-0.0166	0.0747
	(0.1070)	(0.1141)	(0.1121)
	0.6379	0.8844	0.5051
L. tertiary edu (mother)	0.0525	0.0252	0.1489
	(0.1371)	(0.1512)	(0.1441)
	0.7018	0.8679	0.3013
Yearly disp. income (father, 10.000 DKK)	-0.0018***	-0.0017**	-0.0019***
	(0.0007)	(0.0007)	(0.0007)
	0.0090	0.0166	0.0070
Unemployed within 3 years (father)	0.0496	-0.0359	0.0411
	(0.0586)	(0.0611)	(0.0587)
	0.3974	0.5571	0.4839
Out of workforce within 3 years (father)	-0.0328	-0.0240	-0.0178
	(0.0499)	(0.0509)	(0.0511)
	0.5117	0.6367	0.7270
L. secondary edu (father)	0.1304	-0.0143	0.0287
	(0.2465)	(0.2845)	(0.2548)
	0.5968	0.9598	0.9104
Up. secondary edu (father)	0.1380	-0.0589	-0.1178
	(0.1419)	(0.1752)	(0.1476)
	0.3310	0.7368	0.4250
L. tertiary edu (father)	-0.0132	-0.2513	-0.1735
	(0.2004)	(0.2368)	(0.2212)
	0.9474	0.2888	0.4330
M. tertiary edu (father)	0.1698	-0.1503	-0.0347
	(0.2065)	(0.2751)	(0.2102)
	0.4110	0.5849	0.8689
L. tertiary edu (father)	0.2821	0.0051	0.0652
	(0.1925)	(0.2377)	(0.1938)
	0.1429	0.9830	0.7365
Constant	0.0153	0.2075	0.1594
	(0.1410)	(0.1792)	(0.1492)
	0.9138	0.2470	0.2856
Observations	10,504	10,312	10,200
R-squared	0.0048	0.0050	0.0042
Number of unique observations	2,626	2,578	2,550
Time FE	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes

Clustered standard errors in parentheses

*p<.05; **p<0.01; ***p<.001

Table D.6: Regression table, original SDQ score (model 1, 2 and 3)

Outcome: SDQ (original)	(1) Pooled OLS	(2) Individual FE	(3) DID
Family dissolution	0.3095*** (0.0536) 0.0000	0.1402*** (0.0466) 0.0026	0.1297*** (0.0475) 0.0064
Yearly disp. income (mother, 10.000 DKK)	- 0.0041*** (0.0011) 0.0001	-0.0009 (0.0011) 0.4243	-0.0016 (0.0013) 0.2155
Unemployed within 3 years (mother)	0.1328** (0.0546) 0.0150	0.0886* (0.0494) 0.0733	0.0914* (0.0495) 0.0651
Out of workforce within 3 years (mother)	0.1285*** (0.0445) 0.0039	-0.0006 (0.0370) 0.9879	-0.0031 (0.0370) 0.9342
Secondary edu (mother)	-0.1710** (0.0764) 0.0252	-0.0291 (0.1576) 0.8534	-0.0341 (0.1575) 0.8287
Vocational edu (mother)	-0.0635 (0.0585) 0.2783	-0.0570 (0.1096) 0.6031	-0.0673 (0.1102) 0.5416
L. tertiary edu (mother)	-0.0561 (0.0866) 0.5174	-0.0890 (0.2011) 0.6581	-0.1039 (0.2008) 0.6050
M. tertiary edu (mother)	- 0.2395*** (0.0620) 0.0001	-0.0433 (0.1346) 0.7479	-0.0581 (0.1356) 0.6686
L. tertiary edu (mother)	-0.1271 (0.0824) 0.1231	-0.1850 (0.1677) 0.2701	-0.2030 (0.1690) 0.2298
Yearly disp. income (father, 10.000 DKK)	- 0.0032*** (0.0007) 0.0000	-0.0013** (0.0007) 0.0443	-0.0016** (0.0007) 0.0226
Unemployed within 3 years (father)	0.1129* (0.0640) 0.0776	-0.0009 (0.0610) 0.9889	-0.0029 (0.0612) 0.9624
Out of workforce within 3 years (father)	0.0079 (0.0650) 0.9032	-0.0172 (0.0546) 0.7523	-0.0234 (0.0550) 0.6711
Secondary edu (father)	- 0.2295*** (0.0827) 0.0056	-0.5164 (0.3685) 0.1612	-0.5173 (0.3690) 0.1611
Vocational (father)	- 0.1825*** (0.0503) 0.0003	-0.4273* (0.2357) 0.0699	-0.4351* (0.2358) 0.0651
L. tertiary edu (father)	-0.1843**	-0.5498*	-0.5567*

	(0.0725)	(0.3028)	(0.3026)
	0.0111	0.0695	0.0660
	-		
M. tertiary edu (father)	0.2720***	-0.6501*	-0.6599*
	(0.0583)	(0.3586)	(0.3589)
	0.0000	0.0699	0.0661
	-		
L. tertiary edu (father)	0.3156***	-0.6831**	-0.6950**
	(0.0671)	(0.3272)	(0.3284)
	0.0000	0.0369	0.0344
Constant	0.5256***	0.5663**	0.6068***
	(0.0761)	(0.2302)	(0.2352)
	0.0000	0.0139	0.0099
Observations	8,319	8,319	8,319
R-squared	0.0544	0.0054	0.0056
Control variables	Yes	Yes	Yes
Time FE	No	No	Yes
Individual FE	No	Yes	Yes
Number of unique observations		2,773	2,773

Clustered standard errors in parentheses
 *p<.05; **p<0.01; ***p<.001

Table D.7: Regression table, hypothesis two (model 1b, 2b and 3b)

	Model 1b (Pooled OLS)	Model 2b (Individual FE)	Model 3b (DID)
Outcome: SDQ			
Both single	0.2886*** (0.0504) 0.0000	0.1442*** (0.0458) 0.0017	0.1383*** (0.0460) 0.0027
Both reconstituted	0.3826*** (0.0895) 0.0000	0.2366*** (0.0856) 0.0057	0.2231** (0.0868) 0.0102
Mother reconstituted	0.2313*** (0.0705) 0.0010	0.2118*** (0.0691) 0.0022	0.2020*** (0.0703) 0.0041
Father reconstituted	0.1636** (0.0688) 0.0174	0.0861 (0.0594) 0.1469	0.0783 (0.0599) 0.1918
	-		
Yearly disp. income (mother, 10.000 DKK)	0.0032*** (0.0009) 0.0006	-0.0022** (0.0010) 0.0235	-0.0028** (0.0012) 0.0149
Unemployed within 3 years (mother)	0.0400 (0.0366) 0.2745	-0.0056 (0.0341) 0.8693	-0.0022 (0.0341) 0.9492
Out of workforce within 3 years (mother)	0.0921***	-0.0122	-0.0123

	(0.0323)	(0.0294)	(0.0296)
	0.0044	0.6774	0.6781
	-		
Secondary edu (mother)	0.1824***	0.0519	0.0456
	(0.0620)	(0.1086)	(0.1088)
	0.0033	0.6325	0.6752
Vocational edu (mother)	-0.0478	0.0451	0.0363
	(0.0482)	(0.0840)	(0.0846)
	0.3216	0.5914	0.6677
L. tertiary edu (mother)	-0.0255	0.0335	0.0213
	(0.0766)	(0.1445)	(0.1447)
	0.7387	0.8166	0.8830
	-		
M. tertiary edu (mother)	0.2295***	0.0862	0.0744
	(0.0519)	(0.1045)	(0.1052)
	0.0000	0.4094	0.4798
L. tertiary edu (mother)	-0.1316*	0.0939	0.0819
	(0.0712)	(0.1361)	(0.1366)
	0.0648	0.4899	0.5489
	-		
Yearly disp. income (father, 10.000 DKK)	0.0025***	-0.0013**	-0.0016**
	(0.0006)	(0.0006)	(0.0007)
	0.0001	0.0301	0.0157
Unemployed within 3 years (father)	0.0982*	-0.0170	-0.0183
	(0.0539)	(0.0514)	(0.0515)
	0.0684	0.7408	0.7228
Out of workforce within 3 years (father)	0.0262	-0.0019	-0.0073
	(0.0522)	(0.0460)	(0.0462)
	0.6163	0.9664	0.8738
	-		
Secondary edu (father)	0.1902***	-0.0461	-0.0520
	(0.0719)	(0.2494)	(0.2499)
	0.0082	0.8534	0.8352
	-		
Vocational (father)	0.1380***	-0.0150	-0.0214
	(0.0422)	(0.1492)	(0.1494)
	0.0011	0.9197	0.8860
L. tertiary edu (father)	-0.1378**	-0.1763	-0.1848
	(0.0623)	(0.2133)	(0.2140)
	0.0272	0.4087	0.3879
	-		
M. tertiary edu (father)	0.2551***	-0.0699	-0.0777
	(0.0496)	(0.2227)	(0.2233)
	0.0000	0.7538	0.7280
	-		
L. tertiary edu (father)	0.2863***	0.0150	0.0052
	(0.0581)	(0.2071)	(0.2076)
	0.0000	0.9423	0.9801
Constant	0.3986***	0.0779	0.1099
	(0.0612)	(0.1462)	(0.1500)
	0.0000	0.5941	0.4641
Observations	12,192	12,192	12,192
R-squared	0.0467	0.0042	0.0044

Time FE	No	No	Yes
Individual FE	No	Yes	Yes
Controls	Yes	Yes	Yes
Number of unique observations		3,048	3,048

Clustered standard errors in parentheses

*p<.05; **p<0.01; ***p<.001