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Family matters: a multi-perspective approach to the link between parenting and offspring mental health problems

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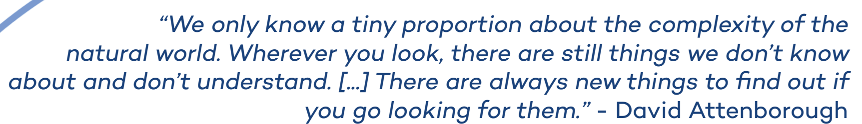
General Introduction



Investigating parenting and mental health problems: Towards a family perspective

Ninety percent of Western population grows up with at least one brother or sister (Milevsky, 2013), just as Jessica and Julian (see textbox 1) and Mia and Lily (see textbox 2). Full-biological siblings share their childhood rearing environment (e.g. the neighborhood they grow up in), their family context (e.g. parents that struggle with mental health problems or parental divorce) and at least 50% of their genes. More specifically, brothers and sisters growing up together are also likely to have similar childhood parenting experiences (Hines, Kantor, & Holt, 2006; Neiderhiser et al., 2004). Widely acknowledged theories on human development stretch that one's direct environment, including home and family and particular parenting experiences, is an important context of mental development and wellbeing (Bronfenbrenner & Morris 1998; Sameroff, 2009). Shared environmental influences and shared genetic makeup among family members determine to a large extent the increased risk of mental health problems in families of a person with a psychological disorder (Smoller, 2016). Siblings of persons with an anxiety and/or depressive disorder, for instance, are at increased risk of depressive and anxiety symptomatology as compared to unrelated controls (van Sprang et al., 2021). Yet, despite siblings' shared home environment and shared genetics, brothers and sister can also (vastly) differ in terms of mental wellbeing and similar childhood parenting experiences, as illustrated by the vignettes (textbox 1 and 2). Names have been changed to ensure anonymity of the interviewees.

The case of Jessica and Julian and the case of Mia and Lily illustrate that siblings, raised in the same environment and by the same parents, have a unique relationship with their parents during childhood and can also differ greatly in the mental health problems they may develop. In the context of the family, persons interact and influence each other through their verbal and non-verbal communication and behaviour. The family systems theory (Bowen, 1966) states that a family is more than the sum of the individual persons within that family. It defines the family as a dynamic and interacting system. One could compare the family system to a mobile of the American sculptor Alexander Calder (see Figure 1). The sculpture consists of several rods, from which objects or other rods are hanging. The objects are all attached to each other with rods and strings, so if one object moves, it makes the other objects in the mobile move as well. When translating this to the family system one could say that parental behavior has an impact on all children (whether or not it is directed at a single child). So, when something happens to one person, for instance a child gets yelled at by their father, it can affect all other family members too. Moreover, the whole system might be influenced or even defined by the overall parenting 'climate' and the behavioral norms of the family.

Textbox 1. Vignette of Jessica and Julian

Julian (40 years) lives in a village near Amsterdam with his partner and children and works as a teacher in higher education. He grew up with his father and mother and his older sister in the same village as he is currently living. Julian's sister Jessica (45 years) lives with her family in a village in the eastern part of the Netherlands and works at a child and adolescent psychiatric practice. They describe their mother and father and their relationship with their parents separately from each other. Both Julian and Jessica describe their mother as caring, overprotective and anxious.

When we ask Julian to tell us more about the relationship with his mother during childhood, he answers: "My mom was much more worried about me than about Jessica. I guess that had to do with my asthma and bronchitis. My sister had no health issues, she was healthy and stable. So, my mother was always more on top of me and less concerned about Jessica. So, they [mum and Jessica] also had less clashes than we had. Jessica's down-to-earth and rational character may have also resulted in some (emotional) distance in their relationship, I think. But yes, my health issues also contributed to a closer bond between my mother and me." Somewhat later, during adolescence, Julian became rebellious, went out partying and drinking a lot, and had many fights with his mother. It made her desperate and she slapped him sometimes. Jessica: "These fights with Julian were bad and had a negative impact on the atmosphere at home. It affected me, I withdrew, and did my own thing."

Julian and Jessica describe their father as down-to-earth, rational, but also involved with them. Yet, they had a different relationship with their father. Julian: "[...] I would say that my father and sister had a different kind of relationship than dad and me had. I think they are more alike, down-to-earth, pragmatic. I am more, emotional and extroverted. They are both a bit more introverted and rational than I am." Jessica: "I had a good relationship with my father. [...] Not that he shared a lot of his feelings, but I did feel related to my father. I did feel that I was more like my father than my mother in my youth. I understood my father better, so to speak."

Julian has suffered from anxiety symptoms since he was 20 years old. It started with uneasy feeling when in crowds and an overwhelming feeling when he was in spacious areas. If he was in the mountains, for instance or in large grasslands. Over the years he started suffering from frequent panic attacks. When he became older, he also developed more and more obsessive thoughts related to insulting God or obsessive thoughts of killing his partner when being in the same room". Julian: "These thoughts were terrible and made me feel miserable". He increasingly developed a fear to depersonalize, to lose sense of reality and to become insane. Over the years he was engaged in several types of psychotherapy, such as cognitive-behavioral therapy, Eye Movement Desensitization and Reprocessing (EMDR) and mindfulness, and also medication (anti-depressives). He still gets cognitive-behavioral therapy. [Text continues on the next page.]

His sister Jessica never had any mental health issues. When asked if she has ever suffered from mental health problems, Jessica answers: "No. I wonder sometimes what it would be like if my current and stable circumstances, family and religion, were different. I am aware that I may have a genetic predisposition to psychological problems with both parents and brother suffering…." Julian: "She [Jessica] is more down to earth than I am, it has always been that way. […] My sister comes out swinging, which is a bit exaggerated of course. But she experiences little to no difficulties on this area, which is very different to my situation. […] Sometimes I think: Gosh, I would like to be a bit more as my sister than how my situation has turned out."

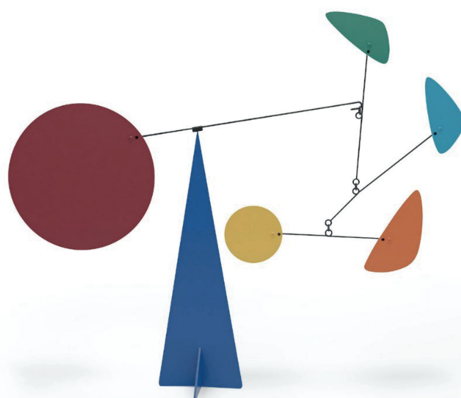


Figure 1. A mobile by Calder, here representative of the family system

This notion raises several core empirical questions: To what extent do adult siblings share similar recollections of childhood parenting experiences? And why do some siblings develop mental health problems whereas others, raised in the same family, do not? The differences in (maternal) parenting behaviour between Jessica and Julian (see textbox 1), i.e. the overprotectiveness and clashes with Julian, and between Mia and Lily, i.e. the meddling and judgements towards Lily (see textbox 2) also raises the question to what extent the parent responded to the child's characteristics or behaviours i.e., to what extent could certain child behaviour also *elicit* certain parenting behaviour?

While the increased risk of mental health problems in families is well-investigated and the importance of the family context is widely acknowledged, most empirical studies still focus on the experience of one individual per family,

often overlooking the (diverging and converging) perspectives among siblings. The questions as raised above cannot be answered from a single-person perspective. To contribute to prevention and treatment strategies of mental health disorders, we therefore aim to answer these questions (among others) in the context of the family in order to better understand the etiology, development and maintenance of common mental health problems.

Textbox 2. Vignette of Mia and Lily

Mia (age 55) lives by herself in the city center of Amsterdam. Her sister Lily (age 51) lives in a city near the coast of the Netherlands with her husband and two adolescent children. During childhood, their mother had multiple severe depressive episodes and (hypo)manic periods. She got hospitalized several times. Most of the time Mia and Lily lived with their mother. Only when their mother was hospitalized, when the girls were around the age of 7 and 12, they lived with their father for a while. After her death a couple of years ago, they delved into their turbulent childhood and discovered that they have experienced things differently.

Mia describes their mother as extravagant and charming, but also down-to-earth. To Mia's opinion, she desired approval for everything, and was a little over concerned. Lily, however, does not think of her mother as down-to-earth at all. She describes their mother as very complex and driven by fear. She thinks of her as compelling and judgmental. Mia: "Mom treated us differently. She let me free and do my own thing and with you [Lily], she was more controlling [...] she perceived you as more vulnerable." Lily: "[...] I think she saw her own vulnerabilities as a child in me and hence she wanted to protect me at all costs. That did not work out well... [...] She gave me the impression that I was not doing well, or not good enough. It made me insecure."

They both remember that their father was working most of the time. When he visited them at their mother's place, he was often napping the entire Sunday. They were happy when he came, he was fun to be around, even though they felt he didn't show much interest in them. However, Lily believes she took that more personal than Mia. Lily: "Mia was dad's pride and joy". Mia acknowledges that, she was daddy's girl and admired him. Lily defines the relationship with her father as complicated, she always felt that he was more fond of Mia. Lily: "I was always ill when I came home from dad's place. I was so stressed all the time, tiptoeing around there."

With regard to their mental wellbeing, Mia has never suffered from any mental health issues, while Lily searched professional help for anxiety and issues with her self-esteem. Lily: [...] "Actually, you [Mia] are going through life fearlessly, while I still have to deal with a feeling of unsafety. Perhaps she [mother] should have been more concerned about you than she was about me, as I was way more well-behaved and less reckless than you. [....] I had social phobia and a panic disorder as well. Ordering a drink at the bar, paying at the supermarket made me shake."

Mental health problems and the importance of the parent-offspring relationship

Mental health problems

Mental health problems are common worldwide, with anxiety and depressive disorders having the highest estimated prevalence of 3.8% and 3.4% of the global population per year respectively (Dattani et al., 2021). In the Netherlands, approximately four in ten adults have experienced a mental health disorder at some point during their life (de Graaf et al., 2012). Internalizing problems and externalizing problems are the two main categories of mental health problems (Achenbach & Edelbrock, 1978; Krueger, Caspi, Moffitt, & Silva, 1998; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015; Vollebergh et al., 2001). Internalizing problems generally include conditions such as depression, anxiety, withdrawal and (psycho)somatic complaints, whereas externalizing problems include behavorial problems, rule-breaking, aggressive and intrusive behaviors.

Most mental health conditions have their first onset in childhood or adolescence (Kessler et al., 2005; Solmi et al., 2021). Approximately 20% of children and adolescents experience mental health problems in any given year (World Health Organization, n.d.). Estimates of the lifetime prevalence of DSM-IV mental disorders in adolescents (aged 13-18 years) were highest for anxiety disorders (31.9%), followed by externalizing problems (19.1%) and depressive disorders (14.3%) and these typically co-occur (Merikangas et al., 2010). Internalizing problems during adolescence are highly associated with diagnoses of depression and anxiety later in life (e.g. Beesdo-Baum & Knappe, 2012). Adolescents who experience externalizing problems are also likely to experience poor adult wellbeing and psychopathology, such as disruptive, anxiety, mood and substance use disorders (Colman et al., 2009; Odgers et al., 2008; Reef, Diamantopoulou, Van Meurs, Verhulst, & Van Der Ende, 2010). Although internalzing and externalzing problems may resolve across development (Costello, Copeland, & Angold, 2011; Hofstra, Van Der Ende, & Verhulst, 2000), mental health problems may continue from childhood to adolescence to adulthood and even onto the next generation (Loeber et al., 2009).

The importance of the parent-offspring relationship

The home environment and family household, and parenting in particular, have been typically linked to the development and course of mental health problems (Repetti, Taylor, & Seeman, 2002). It is thus important to understand mental health problems within the family context. Previous research has shown that the quality of all family relationships (i.e. parent-offspring, marital and sibling) are associated with adolescents' well-being and problem behavior (Buist, Deković, & Gerris, 2011). It is well-established that of all family relationships the parent-offspring bond is one of the most important relationships for human mental development (e.g., Eisenberg et al., 2001; Tamis-LeMonda, Bornstein, & Baumwell, 2001). According to Bowlby's attachment theory, social interactions with childhood caregivers serve as a

blueprint for further social and cognitive development such as relationships and the perception of the self and others (Bowlby, 1969). Sensitive and caring parenting and providing a safe and stimulating rearing environment are key factors for healthy social emotional wellbeing and cognitive functioning (Ainsworth, 1979). Conversely, poor parent-offspring relationship and negative parenting practices during childhood are related to mental health issues, such as mood disorders across the lifespan (Berg-Nielsen, Vikan, & Dahl, 2002; Enns, Cox, & Clara, 2002). In this dissertation fathers, mothers and offspring siblings are investigated to shed new light on the associations between parenting and mental health problems in the family context.

Parenting dimensions

Parenting and the parent-offspring relationship is defined by multiple parenting aspects and behaviors which have been categorized into several dimensions and styles (Power, 2013). The two-dimensional approach, that characterizes parenting by parental warmth (also referred to as care and/or support) and negativity (also referred to as criticism and/or control; Rollins & Thomas, 1979) has been frequently used and proven informative in relation to mental wellbeing. Within this framework, parental warmth is typically defined by sensitive parenting behavior, including acceptance, support, protection and positive involvement towards the child. Parental negativity is defined as expressing criticism, disapproval, or dissatisfaction and restricting the child. Negativity might be expressed in *overt* parental behaviors such as physical or verbal punishment, negative control, rejective behavior towards the child and intrusiveness. In addition, parental negativity can also reflect more *covert* parenting, for instance, neglecting the child. While the two dimensions of warmth and negativity reflect and incorporate the most important parenting behaviors, they are not mutually exclusive nor exhaustive. For instance, parental (over)protection cannot be categorized as 'warm and positive', nor as 'negative' parenting. Parental protectiveness reflects the extent to which parents protect their child from potential dangers, which is benign in stressful or dangerous circumstances. Overprotection, i.e. too much caution and involvement of the parent, however, refers to unnecessary protection that may be disadvantaging children's healthy development (Barber, 1996; Ungar, 2009). In the past decade, overprotection has also been referred to 'helicopter' or 'curling' parenting (Segrin, Givertz, Swaitkowski, & Montgomery, 2015). For proper transition to adulthood, promoting the child's autonomy and independency is also needed (Padilla-Walker, Nelson, Madsen, & Barry, 2008). Appropriate autonomy-granting behavior requires parents to balance involvement and promoting autonomy. Examples of autonomy-granting parenting behaviors are to encourage the child to make own choices and decisions and to show respect for the child's opinions (Kendler, 1996; Padilla-Walker et al., 2008). In the studies presented in the current dissertation, we aimed to address

these key parenting dimensions; namely parental warmth/care, negativity/control, and overprotection and autonomy-granting behavior. The association between the parental bonding dimensions, care, overprotection and autonomy-granting behavior, and depressive and anxiety disorders in adulthood is examined in chapter 2.

Siblings' parenting experiences and the association with individuals' mental health problems

Raised in the same household and by the same parents, brothers and sister might have similar childhood parenting experiences. Studies on retrospective self-reports on the parenting dimensions, parental care, overprotection and autonomy-granting behavior in adult twins, showed agreement among siblings. Still, substantial differences among twins exist with regard to their parenting experiences as sibling correlations range from 0.11 for maternal autonomy-granting behavior (dizygotic twins) to 0.46 for paternal care (monozygotic twins; Otowa, Gardner, Kendler, & Hettema, 2013). The difference and similarity in recollections of childhood parenting experiences among non-twin siblings, as illustrated in Jessica and Julian's and Mia and Lily's cases (textbox 1 and 2), have not been investigated before. These findings are described in chapter 3.

The shared childhood rearing environment puts siblings at increased risk for similar (adverse) childhood experiences, and, resonating with Calder's mobile, individuals might also be influenced by their siblings' (parenting) experiences (Steinglass, 1987). Still, the association between siblings' childhood experiences and mental health problems in the long-term remained unclear until now. In this dissertation, we focused on two potential (and concurrent) ways in which siblings experiences might play a role in adult mental wellbeing. First, siblings' mental wellbeing is influenced by the overall or shared parenting style as reported by multiple siblings within a family (Jenkins et al., 2009), the so-called "family-wide parent-child relationship" or "parenting climate" (Oliver & Pike, 2018). Studies have demonstrated the effects of the parenting climate, next to the individual parental bond, on child and adolescent mental wellbeing (Feinberg & Hetherington, 2001; Jenkins, McGowan, & Knafo-Noam, 2016; Oliver & Pike, 2018). Second, in children, prior studies on negative parenting in siblings indicate that, next to poor parental bonding experienced by all or several children in the family, receiving more parental negativity or less parental support from their parents compared to their sibling (i.e. being the black sheep) is associated with child mental health problems (Dunn, Stocker, & Plomin, 1990; Jenkins et al., 2016; Meunier, Bisceglia, & Jenkins, 2012; Pillemer, Suitor, Pardo, & Henderson, 2010). Even though the impact of the parenting climate and 'the black sheep effect' on wellbeing have been investigated in children, less is known about adult mental health problems and specifically depression and anxiety symptomatology. The associations between siblings' childhood parental

bonding and depressive and anxiety symptom levels in adults are examined in chapter 3.

Understanding individual differences in mental health outcomes

While, on average, poor parent-child relationships are associated with increased levels of mental health problems (Marshall, Shannon, Meenagh, Mc Corry, & Mulholland, 2018), these associations might differ from person to person, even within a family (as illustrated in textbox 1 and 2). Siblings might respond differentially to negative within-family experiences in terms of mental health problems. Lily suffered from anxiety symptoms, whereas Mia never had any mental health problems despite the shared rearing environment, e.g. growing up with a mother with mental health problems (textbox 2). It can be expected that individual characteristics, e.g. temperament, or individual-specific negative life experiences, e.g. maltreatment, might explain why one person *within* the family is dealing with more severe mental health problems as compared to his/her relatives. To elucidate individual protective factors related to depressive and anxiety symptomatology, we investigated moderating effects of personality characteristics on the association between siblings' parenting experiences and these mental health problems (chapter 3).

In addition, the family as a whole may experience hardship through family-wide factors, equal for all family members, such as socioeconomic status or similar parental bonding patterns among siblings, which might contribute to differences *between* families in terms of mental wellbeing. In chapter 6 and 7, we aimed to explain these between-family differences. Specifically, in chapter 6 we aimed to test whether socioeconomic status and chaos at the home explain differences between families in the associations between parenting and child problems. In chapter 7, we aimed to explain differences in parenting and mental wellbeing during the global COVID-19 pandemic between families.

Siblings' childhood maltreatment experiences and the association with individual's mental health problems

Another closely-related, yet harsher, factor that has been associated with offspring's mental health problems is child maltreatment, which also often occurs in the family context. Active forms of childhood maltreatment entail physical, sexual and emotional child abuse. Experiences of emotional abuse are, for instance, name calling, being verbally attacked or given the feeling to be hated by a family member on a regular basis. The passive forms of childhood maltreatment are physical and emotional neglect. Emotional neglect relates for instance to the lack of basic social needs (because of parents' indifference), such as emotional support, comfort and care. Physical neglect refers to the failure to meet a child's basic physical needs, such as food, shelter and clothing. Reckless disregard of the child's safety and

health can also be referred to as physical neglect. Exposure to childhood maltreatment may set in motion changes in basic processes related to trust and safety, and threat processing, therewith having impact on mental health and social interactions across the lifespan (McLaughlin, Colich, Rodman, & Weissman, 2020). The association between childhood maltreatment and mental health problems has been well-established: Persons who report a history of maltreatment as compared to non-maltreated persons are at increased risk to develop mental health problems (Norman et al., 2012), especially depression and anxiety disorders (Infurna et al., 2016; Li, D'Arcy, & Meng, 2016; Norman et al., 2012; Spinhoven et al., 2010).

Childhood maltreatment experiences may be more or less similar among siblings, reared in the same environment, depending on the type of maltreatment. Emotional and physical maltreatment often occur in the family household (Hovens et al., 2009). Consequently, brothers and sisters are more likely to report similar maltreatment experiences as their sibling (Hines et al., 2006; Witte, Fegert, & Walper, 2018). Sexual abuse is relatively less often perpetrated by a parent compared to the other maltreatment types (Hovens et al. 2009), which makes it less likely that siblings have akin experiences. The relative scarcity of data on siblings in studies concerning childhood maltreatment (and childhood parenting experiences) and their associations with adult mental health problems may lead to an underestimation of the problem and to a lack of knowledge on factors related to within-family risk factors. Another reason to examine the link between childhood maltreatment (and childhood parenting experiences) and their associations with adult mental health problems in siblings is to better understand why some siblings develop problems and others do not.

In the current dissertation therefore both the direct association between individual experiences and (adult) depressive symptomatology and the indirect associations between one's sibling's experiences and individual's depressive symptom levels are examined in chapter 4. Knowledge on siblings' experiences of childhood maltreatment and the association with mental health problems is a novel effort and may provide relevant information for prevention and (family) interventions.

Bidirectional effects of parenting and mental health problems

While suboptimal parental bonding and negative parenting practices increase the risk of developing mental health problems (see e.g. Baumrind, 1991; Crosnoe & Cavanagh, 2010; Fletcher, Steinberg, & Williams-Wheeler, 2004), offspring's mental health problems might also *elicit* certain parenting behaviour (Cecil, Barker, Jaffee, & Viding, 2012; Oliver, 2015; Serbin, Kingdon, Ruttle, & Stack, 2015; Viding, Fontaine, Oliver, & Plomin, 2009; Wang & Kenny, 2014). Studies indicate that parenting and mental health problems are associated in a bidirectional

and transactional fashion, influencing and reinforcing one another over time (Pinquart, 2017b, 2017a; Sameroff, 2009), as also illustrated by Julian's problems and his mother's response of overprotection (see textbox 1). Less is known about associations between offspring's internalizing and externalizing psychological problems and the parent-offspring relationship. More specifically, this association has not been investigated yet from a family and lifespan perspective including siblings and both fathers and mothers. We therefore addressed cross-sectional associations between offspring (and parent) psychological problems (during the past six months) and parent-offspring interactions in a sample including offspring spanning a broad age range (7-65 years, chapter 5). Findings from this observational study can inform us on important behavioural aspects of the parent-offspring relationship in the light of mental health problems.

Yet, conclusions from these cross-sectional investigations are limited as they cannot inform us on potential causality. To elucidate the direction of effects, and potential causal relations, we also investigated longitudinal associations between harsh parental discipline and offspring emotional and behavioural problems at age 9, 12 and 16 years in chapter 6.

The unique role of fathers and mothers

Over the last decades, fathers' involvement in child care has increased substantially (Bakermans-Kranenburg, Lotz, Alyousefi-van Dijk, & IJzendoorn, 2019). Yet, most existing research has focused on the mother-child relationship and studies on fathers' parenting behavior is relatively scarce. The family systems theory (Bowen, 1966) argues that the mother-child and father-child relationship are distinct, yet related, subsystems of the family. Also, the importance of the (unique) parental role from both fathers and mothers in the child's development is widely acknowledged (Day & Padilla-Walker, 2009; Lamb & Lewis, 2013; Paquette, 2004; Restifo & Bögels, 2009). It has been found for instance, that a negative relationship with one's mother and a negative relationship with one's father are concurrently associated with adolescent depressive symptoms (e.g., Restifo & Bögels, 2009; Vazsonyi & Belliston, 2006). Since investigating maternal and paternal parenting behavior simultaneously is of importance to elucidate their potentially unique association with offspring's mental health problems, we investigated the parenting behaviors of mothers *and* fathers in chapter 2, 3, 5 and 7.

Considerations on investigating parenting and mental health problems in the family context

To better understand parenting and mental health problems in the family context and capture a comprehensive image of the associations between within-family adversities and psychopathologies, at least three strategies are important:

1. *The examination of multiple family members: siblings, fathers and mothers*

To elucidate associations between parenting and mental health problems in the family context, four family studies have been examined. Studies presented in chapter 2, 3 and 4 are based on the Netherlands Study on Depression and Anxiety (NESDA; Penninx et al., 2008). NESDA is an ongoing longitudinal cohort study designed to examine the onset, course and consequences of depressive and anxiety disorders. Reports on parental bonding with father and mother from participants of the nine-year follow-up assessment (2014-2017, N=2069) are included in our analyses for chapter 2. Second, in chapter 3 and 4 we examined data from the NESDA sibling study, including 256 probands with lifetime depressive and/or anxiety disorders and 380 of their siblings. Chapter 5 is based on the three Generation ('3G') Leiden Parenting Study on the intergenerational transmission of parenting styles, stress and emotion regulation (see also Buisman et al., 2019; Pittner et al., 2019). In a sample of 94 fathers and 125 mothers and their offspring, spanning a wide age range ($N_{offspring}$=224, 7.5-65.5 years), we examined dyadic parent-offspring interactions in an observational design. In chapter 6 harsh parental discipline and child problems are addressed in a sample of identical twins (N=5698) from the British Twin Study on Early Development (TEDS; Rimfeld et al., 2019). Lastly, parenting and mental wellbeing are studied during the COVID-19 pandemic in a sample of Dutch parents and adolescents of the 'RE-PAIR' study (Relations and Emotions in Parent-Adolescent Interaction Research; Janssen, Verkuil, van Houtum, Wever, & Elzinga, 2021).

2. *The use of multiple measures*

Most studies investigating (negative) parent-offspring interactions and mental health problems are based on parent or child self-reported quality of the parent-offspring relationship. Self-report assessments have their advantages as compared to observational techniques. For instance, self-report measures are a valid method to examine *experienced* parenting and maltreatment experiences and are relatively uncomplicated and effortless for both researcher and participant. More importantly, self-reports can provide valuable information on the (different or congruent) perspectives from multiple family members (see chapter 2, 3, 4 and 6).

In contrast to self-report, observational techniques aimed at assessing parent-offspring interactions have the advantage to rule out this self-report bias. Also, observations allow the rater to mark and rate subtle affective and behavioral aspects of parenting behavior that are presumably not captured by self-report. As such, observing parents and offspring interact with each other is a valuable addition to the self-reports (see chapter 5 for our observational study).

Moreover, parenting is a dynamical process between parents and their children and can fluctuate from time to time during the day. These fluctuations on a

micro-level cannot be observed in the lab, nor measured by a single questionnaire (Keijsers, Boele, & Bülow, 2022). To measure parenting on a daily level in the naturalistic context ecological momentary assessments (EMA) are used in our study on the impact of the COVID-19 pandemic on parenting and mental wellbeing of adolescents and their parents (chapter 7).

3. The application of adequate (complex) analytical methods

To deal with the complexity of the family-structured data and to select analytical models that best align with the research question(s) at hand, advanced statistical knowledge and skills and interdisciplinary collaborations are needed. Adequate statistical modeling of family data contributes to the specificity of the results and consequently improves the quality of the findings. Recent advances in the methodological domain have greatly facilitated statistical analyses for family studies, e.g. multilevel and random intercept models (Bouwmeester et al., 2013) as it allows to control for the nested structure of repeated measures data within persons or within families (Hox, Moerbeek, & Schoot, 2010). Multilevel modelling is used for the analyses in chapter 3, 4 and 7. Within multilevel modeling, individual-specific and family-wide associations can be disentangled. This allows to answer questions such as 'do family-wide (shared) experiences of childhood abuse and neglect contribute to elevated depressive symptom levels, in addition to the effects of individual-specific maltreatment experiences?', as discussed in chapter 4. Also, by extending the models with a random intercepts and random slopes, we can clarify whether associations differ from person to person to elucidate between person differences in terms of risk and resilience to mental health outcomes (chapter 6 and 7). To concurrently analyze the multiple associations while controlling for other effects within the family, we have used structural equation modeling (SEM) in chapter 5. In the study presented in chapter 2 we have also applied SEM as it also allows to explicitly assess measurement error and estimate latent (unobserved) variables by means of observed variables (Byrne, 2013).

In the current dissertation, the examination of multiple family members, the use of multiple measures and the application of adequate (complex) analytical models allows to investigate parenting experiences beyond the individual perspective. As such, this work aims to contribute to a better, and a more specific understanding of mental health problems in the family context.

Outline and objective

In this dissertation we aimed to answer the core questions as described at the beginning of this introduction: To what extent do adult siblings share recollections of childhood parenting experiences, and how do these experiences relate to mental wellbeing? Why do some persons develop mental health problems whereas others, raised in the same family, do not? And to what extent do child problems elicit

certain parenting behaviour? Figure 2 presents an overview of the concepts examined in this dissertation.

Section A "Recollecting Childhood" contains the examination of the psychometric properties of the Parental Bonding Instrument and two chapters on (siblings') recollections of childhood parental bonding and maltreatment experiences and the associations with anxiety and depression in adults of NESDA and their siblings. Findings are described and discussed in chapter 2, 3 and 4. Secondly, in **section B "Interacting Families"** it is examined how (con)current mental health problems of fathers, mothers and offspring relate to their levels of expressed warmth and negativity in parent-offspring communication during a dyadic behavioural interaction task. Findings from this observational study are described in chapter 5. Finally, **section C "Growing Up Together"** sheds light on the associations of parenting and adolescent mental wellbeing over time. In the study described in chapter 6 the longitudinal links have been examined between harsh parental discipline and adolescent problems at 9, 12 and 16 years. Moreover, in chapter 7 parent and adolescent positive and negative affect and parenting behavior in daily life have been investigated, comparing a two-week period before and during the COVID-19 pandemic.

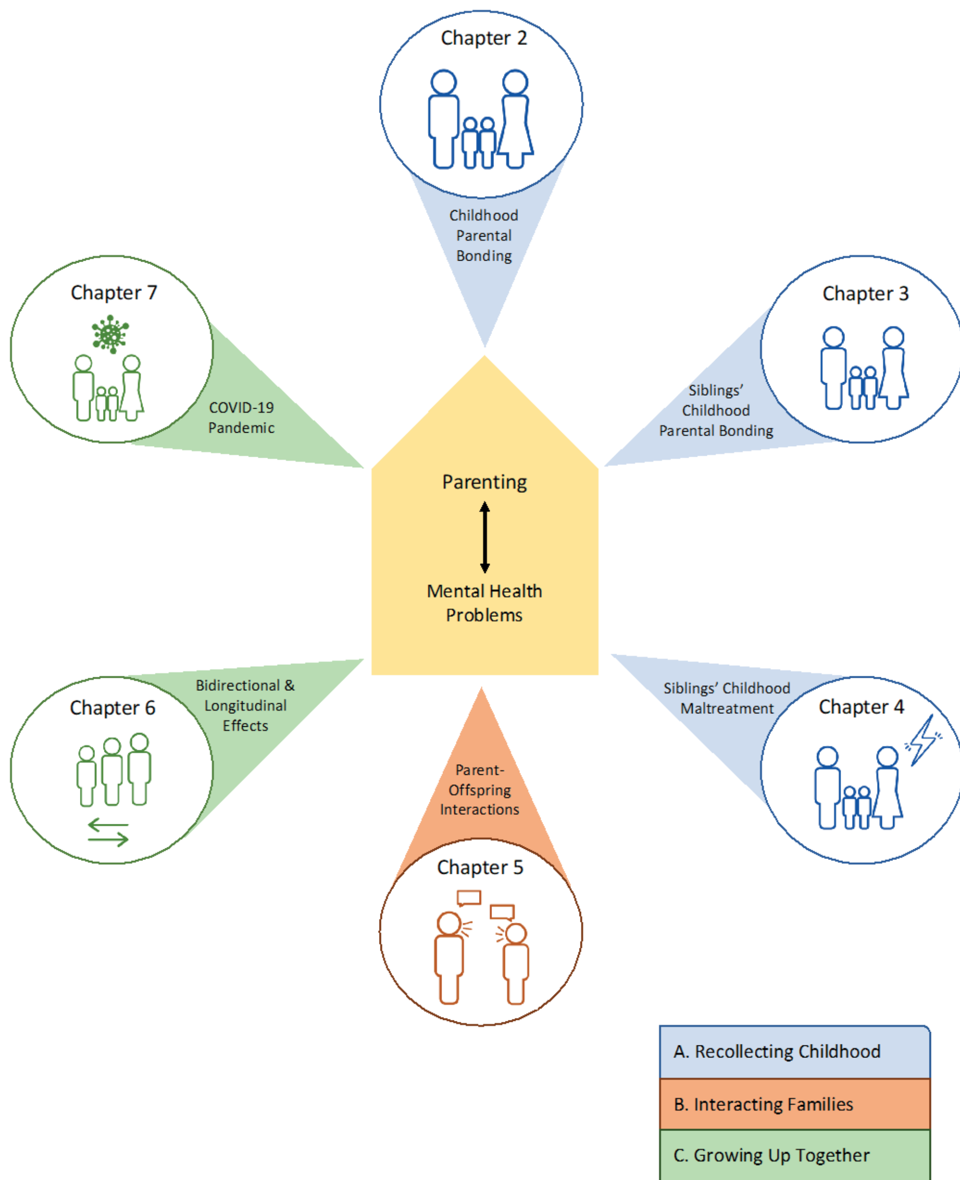


Figure 2. Graphical overview of the concepts examined in this dissertation

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