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Family transitions and mental well-being

Longitudinal study from the age of 16 to 52

Jenna Grundström

ACADEMIC DISSERTATION
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Abstract

Over the past decades, family structures and transitions have undergone significant changes, marked by shifts in marital norms, a rise in voluntary childlessness, and postponed parenthood. However, the enduring influence of family dynamics on the life course and mental well-being remains evident. The relationship between family transitions and mental well-being has received extensive attention in research, yielding mixed results across various timeframes and outcomes. However, despite extensive interest in this field, a comprehensive understanding of the life course perspective in this context, considering how associations change across the different life stages and the complex interplay between mental well-being and family transitions, is still lacking.

Using the life course perspective, the aim of this doctoral dissertation was to examine the interplay between family transitions and mental well-being across the fertility age. More specifically, the study sought to examine: 1) the association between relationship status and mental well-being across four age stages from early adulthood to middle age (Sub-study I); 2) the trajectories of mental well-being before and after the transition to parenthood (Sub-study II); 3) the association of mental well-being in adolescence on parenthood factors (Sub-study III); and 4) the association of parenthood factors on mental well-being in middle age (Sub-study III). The present study examined both positive and negative aspects of mental well-being, covering psychological resources (self-esteem, meaningfulness) and negative symptoms (depressive symptoms).

This dissertation is based on the 'Stress, development and mental health (TAM)' follow-up study, conducted by the Finnish Institute for Health and Welfare (THL). The follow-up study began in 1983 when a total of 2194 ninth-grade students (96.7% of the target population) from Tampere answered a questionnaire. The survey has been continued since then in 1989, 1999, 2009, and 2019, when the participants were approximately 22, 32, 42, and 52 years old.

Sub-study I examined the association between relationship status and mental well-being at four different life stages. The study found that being single or divorced as opposed to married was associated with poorer mental well-being among men. Among women, the results were more fragmented and showed that dating and cohabitation might not differ from marriage in terms of mental well-being. The results were quite similar across the age stages in both genders. Sub-study II in turn examined the mental well-being trajectories before and after the transition to parenthood and observed that the increasing trajectories of self-esteem and meaningfulness before parenthood became stable or even decreased after the transition. In comparison to non-parents, parents had better mental well-being, especially among men. However, adjusting for relationship status in the analyses attenuated the effect of the transition to parenthood and the differences between parents and non-parents. Sub-study III examined the reciprocal association between parenthood factors and mental well-being. Higher self-esteem in adolescence was found to predict parenthood for men, while depressive symptoms in adolescence were linked to earlier

parenthood for women. Having children was associated with higher levels of meaningfulness among both women and men, higher self-esteem among men and less depressive symptoms among women in middle age, at the age of 52.

In conclusion, the study results highlight an association between relationship status and mental well-being, with divorced or single individuals consistently reporting poorer outcomes, particularly men, while for women, dating and cohabiting appeared to be no different than marriage in terms of mental well-being. Although the transition to parenthood might interrupt the positive development of mental well-being, in the long term, parenthood is associated with a greater sense of meaningfulness among both women and men, with less depressive symptoms among women, and with better self-esteem among men. These findings contribute to the current societal discussion on parenthood and the costs of being a parent. Applying the life course perspective, the present study was able to identify the long-term rewards of parenthood for mental well-being.

Keywords: family transitions, mental well-being, life course, parenthood, relationship status, TAM study, follow-up study, depressive symptoms, self-esteem, meaningfulness

Tiivistelmä

Viime vuosikymmeninä perherakenteet ja -siirtymät ovat kokeneet merkittäviä muutoksia, joita ovat leimanneet avioliittonormien muutokset, vapaaehtoisen lapsettomuuden lisääntyminen sekä vanhemmuuden lykkääntyminen. Perhedynamiikan vaikutus elämänkulkuun ja mielen hyvinvointiin on kuitenkin pysynyt edelleen ilmeisenä. Perhesiirtymien ja mielen hyvinvoinnin väliseen yhteyteen on kiinnitetty paljon huomiota tutkimuksissa, ja tulokset ovat olleet vaihtelevia eri aikaväleillä ja eri mittareiden osalta. Huolimatta laajasta kiinnostuksesta tätä tutkimuskenttää kohtaan, kokonaisvaltainen ymmärrys elämänkulun näkökulmasta tässä kontekstissa, huomioiden miten yhteydet muuttuvat eri elämänvaiheissa sekä mielen hyvinvoinnin ja perhesiirtymien välisen monimutkaisen vuorovaikutuksen, puuttuu kuitenkin edelleen.

Tämän väitöskirjan tavoitteena oli tutkia elämänkulun näkökulmasta perhesiirtymien ja mielen hyvinvoinnin välisiä yhteyksiä elämänkulun ajalta. Tutkimuksessa tarkasteltiin 1) parisuhdetilanteen ja mielen hyvinvoinnin välistä yhteyttä neljässä ikävaiheessa varhaisaikuisuudesta keski-ikään (osatyö I); 2) mielen hyvinvoinnin kehityskulkuja ennen vanhemmaksi tuloa sekä sen jälkeen (osatyö II); 3) nuoruuden mielen hyvinvoinnin yhteyttä vanhemmuuteen liittyviin tekijöihin keski-iässä (osatyö III); ja 4) vanhemmuuteen liittyvien tekijöiden yhteyttä mielen hyvinvointiin keski-iässä (osatyö III). Tutkimuksessa tarkasteltiin sekä mielen hyvinvoinnin positiivisia että negatiivisia puolia, jotka kattavat psykologiset voimavarat (itsetunto, merkityksellisyys) sekä oirenäkökulman (masennusoireilu).

Tutkimus perustuu Terveyden ja hyvinvoinnin laitoksella (THL) toteutettuun 'Stressi, kehitys ja mielenterveys (TAM)' – seurantatutkimukseen. Seurantatutkimus on aloitettu vuonna 1983, jolloin yhteensä 2194 tamperelaista yhdeksäsluokkalaista oppilasta (96,7 % kohdejoukosta) vastasi kyselyyn. Tutkimusta on sen jälkeen jatkettu vuosina 1989, 1999, 2009 ja 2019, osallistujien ollessa noin 22, 32, 42, ja 52-vuotiaita.

Osatyö I tarkasteli parisuhdetyypin ja mielen hyvinvoinnin välistä yhteyttä neljässä eri ikävaiheessa. Tutkimuksessa löydettiin, miten sinkkuus ja avioero olivat yhteydessä heikompaan mielen hyvinvointiin avioliittoon verrattuna. Naisilla tulokset olivat hajanaisempia ja näyttivät, miten seurustelevien ja avoliitossa olevien naisten mielen hyvinvointi ei välttämättä eroa avioliitossa olevien naisten mielen hyvinvoinnista. Tulokset olivat melko samanlaiset eri ikävaiheissa molemmilla sukupuolilla. Osatyö II puolestaan tutki mielen hyvinvoinnin kehityskulkuja ennen ja jälkeen vanhemmaksi tuloa. Tutkimuksessa havaittiin, miten itsetunnon ja merkityksellisyyden kasvava kehityskulku ennen vanhemmuutta muuttui tasaiseksi tai jopa laskevaksi vanhemmaksi tulon jälkeen. Ei-vanhempiin verrattuna vanhemmilla oli parempi mielen hyvinvointi, erityisesti miehillä. Parisuhdetyypin huomioiminen kuitenkin heikensi vanhemmaksi tulon vaikutusta sekä vanhempien ja ei-vanhempien välisiä eroja. Osatyö III tarkasteli vanhemmuustekijöiden ja mielen hyvinvoinnin kaksisuuntaisia yhteyksiä. Korkeampi itsetunto nuoruudessa ennusti vanhemmuutta miehillä, kun puolestaan masennusoireilu

nuoruudessa oli yhteydessä aikaisempaan vanhemmaksi tuloon naisilla. Lasten saaminen oli yhteydessä korkeampaan merkityksellisyyteen naisilla ja miehillä, korkeampaan itsetuntoon miehillä ja vähäisempään masennusoireiluun naisilla keski-iässä.

Yhteenvetona tutkimustulokset korostavat parisuhteen ja mielen hyvinvoinnin välistä yhteyttä. Eronneet ja sinkut raportoivat toistuvasti heikompaa mielen hyvinvointia, erityisesti miehillä, kun puolestaan naisilla seurustelu ja avoliitto eivät näyttäneet poikkeavan avioliitosta mielen hyvinvoinnin osalta. Vaikka vanhemmaksi tulo saattaa keskeyttää mielen hyvinvoinnin positiivisen kehityksen, pitkällä aikavälillä vanhemmuus on kuitenkin yhteydessä naisilla ja miehillä korkeampaan merkityksellisyyden tunteeseen, naisten vähäisempään masennusoireiluun, sekä miesten korkeampaan itsetuntoon. Nämä tulokset osallistuvat nykyiseen yhteiskunnalliseen keskusteluun vanhemmuudesta ja vanhemmuuden vaikutuksista. Elämänkulkunäkökulmaa soveltaen tässä tutkimuksessa pystyttiin tunnistamaan vanhemmuuden pitkäaikaiset hyödyt mielen hyvinvoinnin kannalta.

Avainsanat: perhesiirtymät, mielen hyvinvointi, elämänkulku, vanhemmuus, parisuhde, TAM-tutkimus, seurantatutkimus, masennusoireilu, itsetunto, merkityksellisyys

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Index

List of original publications

This thesis is based on the following publications:

I **Grundström, J.,** Konttinen, H., Berg, N., & Kiviruusu, O. (2021). Associations between relationship status and mental well-being in different life phases from young to middle adulthood. SSM – Population Health, 14. https://doi.org/10.1016/j.ssmph.2021.100774.

II **Grundström, J**., Konttinen, H., Berg, N., & Kiviruusu, O. (Submitted). Parenthood and life course trajectories of self-esteem and meaningfulness.

III **Grundström, J.**, Kiviruusu, O., Konttinen, H., & Berg, N. (2023). Reciprocal associations between parenthood and mental well-being – a prospective analysis from age 16 to 52 years. Current psychology. https://doi.org/10.1007/s12144-023-04487-3.

The publications are referred to in the text by their roman numerals.

List of abbreviations

CI	Confidence interval
DSM-V	Diagnostic and Statistical Manual of Mental Disorders
e.g.	exempli gratia
OR	Odds ratio
Ref	Reference category
S-BDI	Short version of Beck Depression Inventory
SD	Standard deviation
SES	Socioeconomic status
SOC	Sense of coherence
TAM	'Stress, development and mental health' study
THL	Finnish Institute for Health and Welfare
WHO	World Health Organization

1 Introduction

In the past decades, the structure and dynamics of families have undergone a profound transformation (Schneider & Kreyenfeld, 2021). Traditionally established pathways—such as forming a partnership, followed by cohabitation, then marriage, and subsequent parenthood—have changed, and alternative, more diverse paths have emerged (Sobotka & Berghammer, 2021). The postponement of family transitions, the choice to remain unmarried, and the increasing incidence of voluntary childlessness have become more common (Sobotka & Berghammer, 2021). These shifts in family transitions are influenced not only by the choice to remain childless but also by factors such as challenges in finding suitable partners and financial considerations, which can play an increasingly prominent role in an individual's decisions about family formation (Sorsa et al., 2023). These shifting family paradigms, which encompass a range of choices and transitions, have also raised concerns about demographic changes and the potential consequences for various societal domains (Vos, 2009).

These changes in families have also led to an evolution in the definition of family, promoting inclusivity and recognition of diverse family forms beyond the traditional nuclear family. This broader definition emphasizes emotional bonds, mutual support, and shared experiences, reflecting a shift toward more egalitarian and individualistic values (Baxter et al., 2022). Despite the expansion of the concept of family, it remains evident that family continues to play a pivotal role in our lives, regardless of how one defines it. As the starting point and primary unit of the society with which we interact, family significantly impacts our lives and overall life course.

Like all social and personal relationships, families encompass a complex interplay of rewards and strains (Thomas et al., 2017). Through the dynamics of resources and genetics, families perpetuate advantages and disadvantages across an individual's life course, shaping their experiences, opportunities, and the life course itself (Lee et al., 2022). Family transitions comprise expected or unexpected changes in family structure, roles, or relationships. These pivotal transitions can encompass various life events, such as marriage, childbirth, divorce, or remarriage.

Family transitions and structures can be seen as a part of the normal life course, recurring frequently from birth to death (Macmillan & Copher, 2005). While these transitions are common, each one reshapes the individual's role and life course, subsequently influencing different aspects of life, such as emotional, financial, physical, and social aspects (George, 1993). These effects can be associated with

changes in health and well-being in both the short and long term (Umberson et al., 2010; Williams & Umberson, 2004), although most people tend to adjust to each transition over time (Dyrdal & Lucas, 2013). From the life course perspective, one important aspect of these effects is the timing of transitions, as the consequences and impacts of the transitions can vary depending on when they occur during an individual's life course (Elder, 1998).

The association between family transitions and mental well-being has been extensively studied, revealing a complex interplay of factors. Research has shown that as a relationship status, being married is beneficial to mental well-being (Umberson et al., 2013), although this finding has been challenged over the last decades (e.g., Rapp & Stauder, 2020). Conversely, divorce has consistently been associated with poorer mental well-being (Metsä-Simola & Martikainen, 2013). For those desiring to have children, the transition to parenthood is considered one of the most significant life transitions and has been associated with both positive and negative changes in mental well-being (Asselmann et al., 2022; Chen et al., 2016). Studies examining the long-term effects of parenthood in the years after transitions have yielded inconsistent results, with some suggesting a positive impact and others indicating a negative effect (e.g., Evenson & Simon, 2005; Radó, 2020). The effects on women and men have also shown to differ, as research suggests that women are more affected by parenthood, and men are more affected by intimate relationships (Umberson et al., 2013).

Despite the extensive literature on family transitions and mental well-being, a relatively limited number of studies have adopted the life course perspective as a framework or by extending the study period to cover a comprehensive span of the life course. Most existing research has focused on short-term effects or the immediate period around the transition to parenthood (Asselmann et al., 2022). Consequently, there is a research gap regarding how these associations may change across different age stages or how mental well-being in adolescence may influence these transitions. By examining family transitions and mental well-being over the life course, the aim is to identify the specific life and age stages during which individuals and families may require support. This enables us to identify the family structures, family processes, and other factors during each family transition that can significantly impact an individual's mental well-being.

Finland and other Nordic countries are known for their comprehensive social welfare systems and family policies that prioritize gender equality and provide robust support for individuals and families across their various life stages (Eydal & Rostgaard, 2011). Such supportive environments can positively influence mental well-being. In this Finnish context, the present study aimed to deepen the understanding of the associations between different family transitions and mental well-being during the life course from young adulthood to middle age, as well as how mental well-being in adolescence is associated with family transitions. The present study focused on family transitions related to the process of establishing

one's own family. Figure 1 illustrates the main concepts of the dissertation: family transitions encompassing intimate relationship status and parenthood, and mental well-being factors. All these elements play central roles in shaping the life course.

To examine the associations between family transitions and mental well-being throughout the entire fertility period of both women and men, this dissertation used a Finnish longitudinal cohort study that followed the participants from the age of 16 to 52. Longitudinal data is essential for studies of life course perspectives (Konietzka & Kreyenfeld, 2021), as they enable the examination of how family transitions may shape mental well-being over time, capturing the complexities of these associations across different life stages.

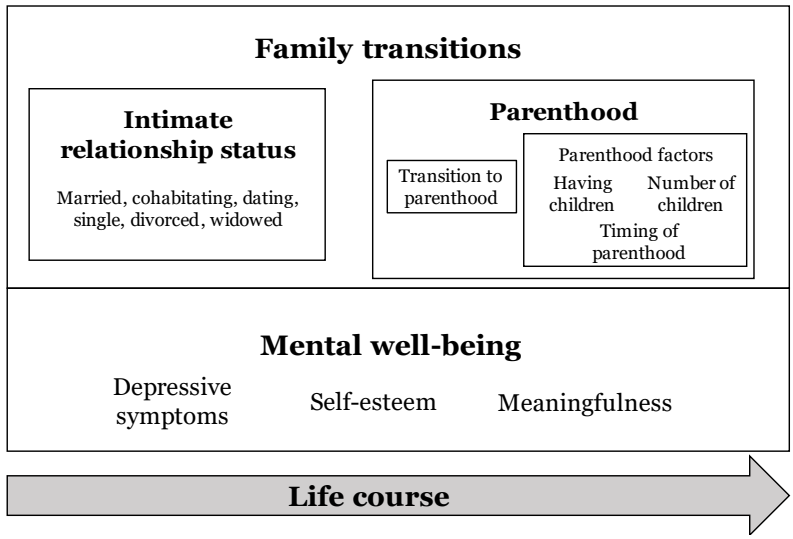

Figure 1 Main concepts of this dissertation.

2 Conceptual framework

2.1 Life course perspective

The life course perspective provides a framework for understanding the complex relationships between family transitions and mental well-being throughout a person's life course. This multidimensional perspective offers a comprehensive picture of how individuals' lives unfold across different age phases (George, 2007). This perspective views an individual's development as a lifelong, interconnected process shaped by various factors, including social, historical, and environmental contexts. It emphasizes that no life event or transition is an isolated event but an integral part of a wider life course shaped by earlier experiences and events (Elder & Johnson, 2003). It also underscores how these events and experiences not only influence each other but also have implications for future events and transitions.

The term "life course" is often used interchangeably with other terms such as life span or life cycle. Although each of these terms is part of the life course vocabulary and related to the life course, they are not synonymous and do not hold the same meaning. (Alwin, 2012.) "Life span" refers to the period of time that is studied or analyzed in a particular study. A life span study typically covers a significant portion of an individual's life, spanning across two or more life stages. (Elder & Johnson, 2003.) The term "life cycle" in turn pertains to the development or stages of individuals or populations (O'Rand & Krecker, 1990).

In the life course perspective, age plays a pivotal role as a marker of an individual's life course, representing the points in time when transitions and significant life events occur. Moreover, age is closely associated with different societal expectations and goals (Settersten, 2003b). Age-linked norms dictate what constitutes appropriate behavior, experiences, and roles, with some of these expectations further reinforced by laws and policies such as the legal marriage age (Settersten, 2003a). However, the life course perspective also recognizes the profound influence of early experiences and circumstances, future expectations, and their cumulative effects on individuals' lives (White & Klein, 2008). For example, early-life circumstances can profoundly impact various aspects of development and health, and remain associated with adult outcomes and experiences, thereby shaping an individual's overall life course (Dannefer et al., 2016).

2.1.1 Key concepts of the life course perspective

Two key concepts of the life course perspective are transitions and trajectories (Elder et al., 2003). The life course can be seen as a continuum of interconnected life stages, punctuated by transitions. Life stages, representing distinct phases in an individual's journey from birth to old age, are integral to this perspective. Transitions refer to both normative and nonnormative changes that unfold throughout an individual's life course and life stages, occurring in, for example, social roles, relationships, or contexts such as the transitions to work life, marriage, or parenthood (Elder et al., 2003; George, 1993). Although many transitions align with developmental frameworks and are considered normative, certain nonnormative transitions are deemed "turning points" (Ahrons, 1980). Turning points represent critical events or transitions that lead to radical changes in the life course, for instance, the death of a child (Settersten, 2003b).

In contrast to transitions, life course trajectories encompass enduring and dynamic patterns of stability and change that occur over a long period of time. These trajectories may include occasional periods of transitions, as well as prolonged periods of stability, which can either be isolated to specific areas or span across multiple life domains. (George, 2003.) Transitions can have longitudinal consequences for life course trajectories, as each one shapes subsequent experiences and future choices (Elder et al., 2003). The life course is seen as consisting of various interrelated trajectories, such as family trajectories or work trajectories, which mutually influence one another (Settersten, 2003b).

The life course perspective has five basic principles: timing, life-span development, linked lives, agency, and time and place (Elder, 1985).

As regards timing, the effect of transitions such as transition to parenthood can vary depending on when they occur during an individual's life course (Elder, 1998). Normative timing refers to the average or median age at which most cohort members experience these transitions. While normative timing is considered "an appropriate age for transitions" (Elder & Johnson, 2003), there is always some variation within the cohort, with some individuals experiencing "early" or "late" transitions relative to the age norms for each transition in the given culture (Settersten, 2003b). Deviations from the typical timing of cohort transitions may impact well-being, depending on whether they occur earlier, later, or not at all.

The life-span development principle emphasizes the continuous and cumulative nature of development throughout an individual's life course. Different experiences and transitions accumulate over time, possibly influencing an individual's development and behavior. Every transition or event, such as the transition to parenthood, can have enduring effects, underlining the importance of adopting a long-term perspective when trying to comprehend development and life course dynamics. (Elder et al., 2003.)

Linked lives highlight the interconnectedness of individuals' lives, where each person's life is influenced by the experiences and behaviors of others, such as their

family (George, 2003b). The principle of agency acknowledges that throughout their lives, individuals are active agents rather than passive recipients, as they themselves play an active role in making decisions that shape their life course (Black et al., 2009). The principle of time and place means that the life course is a social phenomenon shaped by social and historical contexts, and different historical events can have different consequences across different places (Elder, 1998). This principle also encompasses the notion of the cohort effect, illustrating how individuals' experiences and behaviors throughout their lives are shaped by historical events and the societal context (Elder & Johnson, 2003).

The present study focused on the relationship between family transitions and mental well-being across the life course, in which the principles of timing and life span development hold particular significance. While this dissertation emphasized these two principles in the context of family transitions, it is important to acknowledge that the other life course principles remain inherently interconnected with family transitions.

2.1.2 Family transitions during the life course

In the life course perspective, family and family transitions hold significant importance, as they encompass the changes and events that occur within families and family structures from birth to death (Macmillan & Copher, 2005). These transitions include many significant events, such as having a child/children, marriage, and divorce. While early family transitions typically occur during childhood and adolescence, such as parental marriage, parental divorce and remarriage, and the birth of siblings, the present study focuses on the family transitions associated with establishing one's own family. This includes the normative path from forming a relationship to cohabitation and marriage until the transition to parenthood, but also possible divorce or widowhood.

Like other life course transitions, family transitions place individuals in new situations and life stages. They introduce new responsibilities and roles but also require individuals to let go of previous stages. Normative transitions follow expected patterns and timelines, while nonnormative transitions deviate from these expectations, such as the unexpected loss of a child or transitions that occur outside typical timing. (Cowan, 1991.)

Forming an intimate relationship is normatively regarded as the initial transition of leaving the childhood family and creating one's own family. This transition sets the stage for future family transitions, including the transition to parenthood, as each family transition potentially leads to alternative family transitions in the future. Like all transitions in the life course, family transitions are interconnected processes that both influence and are influenced by other aspects of individuals' lives. They shape the life course trajectories, and affect overall well-being, relationships, and opportunities. (Macmillan & Copher, 2005.)

2.2 Mental well-being and the life course

Mental well-being refers to a state of overall psychological health and functioning, which encompasses various aspects of an individual's emotional well-being and personal resources. The literature uses different terms such as mental well-being, mental health, or psychological well-being to describe individuals' well-being, although they may have slightly different meanings. Traditionally, mental health has been associated with mental illness; however, the focus has shifted toward a broader perspective that also includes a positive approach, encompassing psychological resources (Ferraro & Wilkinson, 2013). This study used the concept of mental well-being to adapt the broad perspective of well-being with both positive resources and negative symptoms and examined depressive symptoms, self-esteem, and meaningfulness. This is important, as previous studies about family transitions have primarily focused on the negative elements of mental well-being, such as depression or depressive symptoms (Ferraro & Wilkinson, 2013).

The life course perspective sees mental well-being as a complex and dynamic phenomenon that is continuously influenced by various factors and transitions throughout the life course and across different ages (George, 2013). It emphasizes how mental well-being is a process that develops and has impacts throughout the life course rather than remaining unchanged (George, 2003b). Some theories and models, such as the set-point theory and the dynamic equilibrium theory, have suggested that individuals have a predetermined level of well-being that remains relatively stable throughout the life course. According to these theories, various transitions and events may temporarily impact mental well-being levels, but eventually, they return to baseline level (Headey, 2006; Headey & Wearing, 1989). However, these theories have been criticized for suggesting that the stability of well-being levels is determined by personality or by the adaptation process, disregarding the potential for long-term changes and the impact of individuals' own choices on their well-being levels (Diener et al., 2009; Headey et al., 2010).

In the life course perspective, age and aging are important for mental well-being and its trajectories (Ferraro & Wilkinson, 2013). Each life stage comes with its own expectations, roles, changes, and available resources, which can impact mental well-being. For instance, the life stages from adolescence to young adulthood often include several major life transitions and changes in a relatively short period. Thus, this period is often perceived as stressful, as it places individuals in a vulnerable position in terms of their mental well-being. (George, 2003b.)

In addition to the variations in mental well-being trajectories across the life course, it is essential to acknowledge cohort differences (George, 2013). Cohorts might experience mental well-being differently during their life course. For example, Yang (2008) found that cohorts born between 1945 and 1960 were less likely to report being very happy than earlier and later cohorts. The present study examined the mental well-being and different family transitions during the life course in one cohort born in the late 1960s. The focus was on the three aspects of

mental well-being: depressive symptoms, self-esteem, and meaningfulness, each closely related to the other. Next, the trajectories of these mental well-being factors are presented from the life course perspective.

2.2.1 Depressive symptoms

Sociological studies of mental well-being have most widely studied depression and depressive symptoms using various measurements (Ferraro & Wilkinson, 2013). Depression is a complex concept spanning from temporary changes in mood to severe disorders, such as major depressive disorder (Bruce & Raue, 2013). It is characterized by persistent sadness, mood changes, loss of interest, and a range of other emotional and physical symptoms, which can have an impact on daily functioning, relationships, and overall well-being. There have been two predominant approaches to studying depression: the clinical depression approach, in which a diagnosis of depression is based on certain criteria; and the dimensional depression approach, which offers continuous assessment, recognizing depression as a spectrum of severity. (Ingram & Siegle, 2009.) In this study, the focus is on examining depressive symptoms with self-report questionnaires.

The trajectory of depressive symptoms across the life course and different age stages has been studied extensively. Research has presented evidence of a u-shaped trajectory from young adulthood to older age, indicating that depressive symptoms tend to be high during young adulthood, at their lowest in middle age, and then increase again in older age (Mirowsky & Ross, 1992). Studies examining depressive symptoms in childhood and adolescence have demonstrated an increasing trend during these developmental periods (Dekker et al., 2007; Hankin et al., 1998), although there have been some mixed results concerning the gender differences and the levels of depression in these age groups (Angold et al., 2002; Twenge, 2002). The elevated prevalence of depressive symptoms from childhood to adolescence can be attributed to various factors, including biological and psychological changes such as hormonal changes, peer pressure, or family dynamics (Dekker et al., 2007). The period from late adolescence to young adulthood is characterized by various transitions and changes, making individuals more vulnerable to depressive symptoms. By middle age, individuals have often acquired coping mechanisms and stability in their personal lives, which may be associated with a decline in depressive symptoms. As individuals grow older, new challenges may arise that contribute to an increase in depressive symptoms, as physical, cognitive, and emotional changes, such as issues with attention or cognitive processes, occur slowly. (Mirowsky & Ross, 2009.)

Gender differences have been observed in the prevalence of depression, with women tending to have a higher prevalence than men, although sex differences decline over age (Ferraro & Wilkinson, 2013; Rosenfield & Mouzon, 2013). However, when assessing these differences, other social factors, such as social

relationships, race, and socioeconomic status (SES), can also affect these trajectories (Rosenfield & Mouzon, 2013).

2.2.2 Self-esteem

Self-esteem refers to an individual's evaluation of their worth as a person based on their subjective perception (Donnellan et al., 2011; Orth & Robins, 2014). Self-esteem also encompasses self-respect and self-acceptance (Rosenberg, 1965). Although self-esteem has been considered to be relatively stable, some studies have found that it changes notably across the different life stages as people age (Bleidorn et al., 2016; Orth et al., 2015). It has been suggested that the trajectory of self-esteem is relatively high during childhood, possibly due to the positively biased self-perception of children (Orth et al., 2018; Robins & Trzesniewski, 2005). After stabilizing during adolescence, self-esteem increases strongly until the age of 30, and continues to increase until middle age. After peaking at the age of 60, self-esteem begins to decline. (Orth et al., 2015, 2018.). The decline in self-esteem during older age may be related to the loss of social roles and changes in cognitive abilities and health (Orth et al., 2018). Despite this life course trajectory of self-esteem, different transitions and events are also associated with changes in self-esteem (Orth & Luciano, 2015).

As regards gender differences, women and men have followed rather the same self-esteem trajectory (Orth et al., 2015), but some differences have also been found. The gender gap emerges in adolescence, when men have higher self-esteem than women (Kling et al., 1999). Men have higher self-esteem throughout adolescence and adulthood, but in older age, this gap begins to narrow (Bleidorn, Arslan, et al., 2016; Kiviruusu et al., 2014), and in some studies it has even disappeared (Kling et al., 1999; Orth et al., 2010).

2.2.3 Meaningfulness

Meaningfulness (or meaning in life) is considered an important factor in mental well-being (Steger, 2009). It refers to the extent to which an individual's life holds a sense of significance and purpose. According to Steger (2009), meaningfulness can be divided into two important components: comprehension and purpose. Comprehension involves understanding the patterns and significance of events and experiences in one's life, helping individuals make sense of who they are, the world around them, and their place in it. Purpose in turn refers to long-term goals about which an individual is passionate and committed to achieving. (Steger, 2009.)

Meaningfulness is not seen as a steady or static construct, as individuals' perceptions of meaningfulness may change throughout the life course. The process of creating meaningfulness in life is believed to begin in adolescence (Fry, 1998), and individuals may experience different levels of meaningfulness at different ages.

For instance, meaningfulness seems to increase throughout life, with those in later life stages reporting the highest meaningfulness. (Steger et al., 2009.) However, different transitions and events can affect the trajectory of meaningfulness. Significant negative life changes, such as the loss of a loved one or divorce, can disrupt a person's sense of purpose and meaning, leading them to re-evaluate their goals and values. These events may lead individuals to question their beliefs about the meaning in life and their place in the world, eventually resulting in a reconfiguration of their sense of meaningfulness (Steger et al., 2006). On the other hand, positive life events can positively impact meaningfulness. Achieving personally meaningful goals can provide a sense of purpose and accomplishment, thereby affecting the level of meaningfulness (Sheldon & Kasser, 1998).

Regarding the gender differences, there has been some inconsistency within these. Inconsistencies in gender differences may be attributed to variations in societal expectations or cultural influences, and thus some studies have reported no gender differences (Brassai et al., 2011; Golovchanova et al., 2021; Steger et al., 2006) whereas others have suggested that women have higher levels of meaningfulness or meaning in life for women than men (Reker, 2005; Schnell, 2009).

2.3 Family and mental well-being

Family and mental well-being are intricately associated with the life course perspective, with family playing an important role in shaping individuals' well-being. The family unit serves as a social context that provides a foundation for social support, a sense of belonging, and emotional bonds. Conversely, family dynamics can also contribute to distress and increase the risk of mental health challenges. (Thomas et al., 2017.) This chapter presents a theoretical approach to the association between family dynamics (relationship status, transition to parenthood, and parenthood factors) and mental well-being.

2.3.1 Relationship status and mental well-being

For a long time, marriage has been associated with more positive benefits than other relationship statuses. Umberson et al. (2013) identified three key findings about family status and mental well-being, two of which are related to relationship status. The first highlights that marriage is beneficial for mental well-being, and the second emphasizes that marriage has higher benefits for the mental well-being of men than of women. These findings have received support throughout the decades in the literature on relationship status or marital status and mental well-being (e.g., Williams & Umberson, 2004).

The main theoretical explanations for the association between marriage and mental well-being are the marital resource model, the crisis model, and the

selection effect. The marital resource model posits that marriage provides benefits for mental well-being through greater economic and psychosocial resources, such as greater social support and integration (Williams et al., 2009). These resources are believed to offer longer-term benefits than other relationship statuses (LaPierre, 2009). Conversely, the crisis model suggests that the challenges and difficulties related to marital dissolution can have a more detrimental impact on mental well-being than the protective factors associated with marriage (Williams et al., 2009). However, the decline in mental well-being after marital dissolution is predicted to be temporary (Williams & Umberson, 2004). The selection effect in turn proposes that individuals with better mental well-being are more likely to enter into marriage in the first place (Mastekaasa, 1992). This implies that mental well-being can influence the likelihood of being selected into marriage rather than directly affecting mental well-being.

In the last decades, questions have arisen about the positive effect of marriage, partly due to changes in societal norms and relationship patterns. Cohabitation has become more common, the marriage rate has declined, and divorce rates have increased (Statistics of Finland, 2022; Perelli-Harris et al., 2017). These shifts in relationship dynamics have challenged the theories on the association between relationship statuses and mental well-being. Today, research suggests that the beneficial effect on mental well-being is more closely linked to being in an intimate relationship rather than a specific relationship status such as being married (e.g., Rapp & Stauder, 2020; Zella, 2017). The main explanations for the positive impact of intimate relationships are similar to those presented for marriage. Intimate relationships, whether marital or cohabiting, provide emotional, social, and economic support, all of which have a protective effect on mental well-being (Zella, 2017).

Throughout the life course, family statuses and structures, including relationship status and expectations of them, tend to change and evolve. Age-normative expectations shape these changes and can also affect individuals' mental well-being and choices about their relationship status (Wadsworth, 2016). Young adulthood often contains a period of exploration, during which individuals have more diverse experiences and potentially more partners (Arnett, 2015; Bierhoff & Schmohr, 2003). In contrast, as individuals move into middle age, their expectations often shift toward relationships, and may desire friendship and stable relationships with shared households more in this stage (Bierhoff & Schmohr, 2003). Typically, marriage rates are higher at older ages, as being single is more common at a young age and married at an older age. These changing expectations and statuses can influence an individual's mental well-being as they navigate the challenges and opportunities presented by different life stages and relationship experiences. (Rapp & Stauder, 2020.)

As highlighted by Umberson et al. (2013), marriage holds particular importance for men's mental well-being. Men often rely on marriage as a primary source of

social support, while women tend to have greater social support networks outside the relationship. This difference in reliance on marriage for social support may contribute to the observed gender differences. There have also been suggestions that gender differences may be influenced by age, as the costs and rewards over the life course may vary between men and women (LaPierre, 2009).

2.3.2 Parenthood and mental well-being

Parenthood is an important transition and life event in the life course with profound implications for mental well-being—both positive and negative. Parenthood begins from childbirth (or from adoption or from when a blended family is formed) and continues throughout the life course. Parenthood represents a broad, encompassing concept, and includes various other parenthood factors, such as the timing of parenthood and the number of children. The transition to parenthood refers to the specific transition that occurs when an individual becomes a parent for the first time and tries to adapt to this new role and responsibilities.

During the transition to parenthood, many parents experience fluctuations in their mental well-being, as this period is often characterized by a mixture of increased stress and mental well-being challenges, as well as moments of joy and rewards as parents adapt to their new role and the demands of caring for a newborn (Nomaguchi & Milkie, 2003). During this period, parents can experience sleep disturbances, hormonal changes, or financial stress, all of which can contribute to changes in mental well-being (Saxbe et al., 2018). The impact on mental well-being during the transition to parenthood is not confined to this specific period, as parents may continue to experience longitudinal changes in their mental well-being throughout their life course.

Many parents eventually adjust to these changes and the demands of parenthood, but the impact on mental well-being can vary and may be more long term for some individuals. This association can depend on various factors, but one of the most significant factors is gender and the gender roles related to parenthood, as women and men may experience different demands and expectations in this respect (Scott & Alwin, 1989). In line with traditional gender roles, women are still often seen as the primary caregivers. As a result, they may bear a greater burden of the physical and emotional demands of caring for a child, especially during the first years after the transition to parenthood (Ruppanner et al., 2019). However, the positive effects of parenthood may also be stronger for women than men, as, despite their greater burden, women may also experience greater involvement and a stronger emotional connection with the child (Metzger & Gracia, 2023).

In addition to parenthood itself, other important factors are the timing of parenthood, the number of children, and relationship status. The timing of having one's first child can have a long-lasting effect, as having a child early in life might disrupt educational and career aspirations, thereby limiting opportunities over the

life course (Kokko et al., 2009; Williams et al., 2015). Such disruptions can lead to increased financial strain and lower socioeconomic status, which in turn can negatively impact mental well-being (Koropeckyj-Cox et al., 2007). Later timing may allow individuals to enjoy the benefits of financial and career stability, emotional maturity, and a more established life foundation (Kokko et al., 2009; Myrskylä et al., 2017), but can also introduce unique challenges and considerations that influence the overall experience of raising children. The number of children in turn can influence mental well-being by intensifying the challenges and stress related to parenthood while also affecting the availability of personal resources (Kravdal et al., 2017). An intimate relationship, on the other hand, can provide support and personal resources, which can be beneficial for coping with the challenges of parenting (Cunningham & Knoester, 2007). However, intimate relationships can also add their own set of challenges and complexities to parenting.

Childlessness, whether voluntary or involuntary, can also impact mental well-being (Bures et al., 2009). For some individuals, the decision to not have children may be a conscious and fulfilling choice that aligns with their personal values and life goals. However, for others, childlessness may be the result of conditions such as infertility, health issues or social circumstances. Involuntary childlessness can be a source of significant distress for those who want to have children but are unable to conceive (Lechner et al., 2007). On the other hand, societal norms and stigmatization can also impact the mental well-being of individuals who have voluntarily chosen to remain childless (Huijts et al., 2013).

2.3.3 Selection and causation effects

From the life course perspective, the selection and causation effects are essential for understanding the intricate interplay between family transitions and mental well-being. Research has traditionally focused more on establishing causal relationships, i.e., how family factors and transitions predict mental well-being outcomes (George, 2003a), but the selection effect also significantly contributes to shaping these dynamics.

The causation effect highlights how life circumstances or transitions, such as divorce, can impact an individual's mental well-being. These transitions can act as transformative events that influence mental well-being outcomes. (Wade & Pevalin, 2004.) For example, the transition to parenthood may lead to changes in social roles or responsibilities, consequently affecting mental well-being (Cast, 2004). Conversely, the selection effect suggests that individuals with certain pre-existing characteristics are more likely to experience specific life transitions and events, such as marriage or parenthood. These pre-existing characteristics encompass a wide range of factors, including early-life experiences, genetic factors, or mental health problems. (Johnson, 1991.) For instance, poorer mental well-being in adolescence can shape an individual's life course trajectory and influence the

likelihood of experiencing subsequent family transitions, such as the transition to parenthood (Laursen & Munk-Olsen, 2010). The selection effect highlights that mental well-being is not determined solely by the occurrence of specific transitions but also by pre-existing factors that shape the life course.

When studying family and mental well-being, it is important to acknowledge the reciprocal relationship between the selection and causation effects, as this can provide insights into the complex relationships among individual characteristics, life events, and mental well-being outcomes (George, 2003a). It is essential to acknowledge that individuals with certain pre-existing characteristics may be more likely to encounter specific family transitions, and these transitions, in turn, can shape their future experiences and mental well-being.

However, studying the selection and causation effects presents several methodological considerations. Focusing solely on the causality effect may limit our ability to understand how specific pre-existing characteristics shape individuals' family transition experiences and subsequently influence their mental well-being (McLeod & Pavalko, 2008). It is often challenging to identify and accurately measure these pre-existing characteristics, which could include early-life experiences or genetic factors. Even when researchers thoroughly control for well-known confounding variables, the possibility that unobservable or unmeasured factors may contribute to selection bias remains. Additionally, obtaining longitudinal data that follows participants over an extended period is fundamental for capturing potential selection factors. However, securing such data can be a significant challenge, which may further complicate the study of the selection and causation effects. This complexity underscores the difficulty of fully disentangling the selection effect from the causation effect, emphasizing the intricate nature of these relationships.

3 Review of the literature

This literature review summarizes the existing research on the relationship between family transitions and mental well-being across the life course. The focus is on life course studies that have examined family transitions (i.e., relationship status, transition to parenthood, and parenthood factors) and their associations with mental well-being at different life stages. Despite the increase in longitudinal research, a gap remains in understanding how family transitions are associated with mental well-being throughout the life course: for example, how family transitions and structures in earlier life phases can affect later life or how mental well-being is associated with family transitions. (Zoutewelle-Terovan & Muller, 2021.) This literature review focused on the three mental well-being outcomes used in the sub-studies of the dissertation: depressive symptoms, self-esteem, and meaningfulness.

3.1 Association between relationship status and mental well-being

Previous studies have consistently indicated a positive link between marriage and better mental well-being, with married individuals, both women and men, reporting fewer depressive symptoms and higher self-esteem than those with other relationship statuses (e.g., Brase & Guy, 2004; Kim & McKenry, 2002). Although the beneficial effect of marriage has long been established (Durkheim, 1897), recent research has raised questions as to whether the positive impact on mental well-being may be attributed more to the presence of an intimate relationship rather than marriage per se (Rapp & Stauder, 2020; Zella, 2017). Moreover, studies have also suggested that the differences between mental well-being in certain relationship statuses may result from selection bias, according to which individuals with better mental well-being are more likely to enter into romantic relationships, and those with poorer mental well-being are more likely to remain single (Mastekaasa, 1992; Williams et al., 2009).

One of the challenged perspectives of previous studies has been the comparison of married and unmarried individuals. For a long time, research often grouped various unmarried people, including divorced, widowed, and cohabiting together, and compared these to married individuals (Umberson et al., 2013). The results of such studies often showed that being unmarried was associated with poorer mental

well-being than being married. However, in recent decades, researchers have recognized the importance of distinguishing between different unmarried statuses, as life situations, social support, and economic circumstances can vary significantly between cohabiting individuals and singles. When cohabitation is examined as a distinct group, the benefits of marriage are less pronounced, and sometimes the mental well-being of married and cohabiting individuals does not significantly differ (Musick & Bumpass, 2012; Rapp & Stauder, 2020). Nonetheless, some studies still suggest that marriage may have more advantages for mental well-being than cohabitation (Brase & Guy, 2004; Kim & McKenry, 2002).

Some previous studies have also included dating as a category of its own. This is an important addition, as studies have suggested that dating might have similar positive effects on mental well-being to marriage or cohabitation (Rapp & Stauder, 2020). These studies have found that individuals who are single or divorced have poorer mental well-being than those in a relationship (Dush & Amato, 2005; Rapp & Stauder, 2020). These findings indicate that, instead of a specific relationship status, it is intimate relationships that are associated with increased mental well-being.

Gender differences have been a significant aspect of research on the association between relationship status and mental well-being. Studies have shown that men benefit from marriage more than women (Umberson et al., 2013), although some studies have suggested that men benefit from only marriage and no other relationship statuses (Rapp & Stauder, 2020). Research has also found that women who divorce tend to have worse mental well-being than men in the same situation (Simon, 2002).

The association between relationship status and mental well-being may also vary over the life course, influenced by different expectations and life goals related to relationships at different age stages (Sassler, 2010). However, a limited number of studies have compared this association across different age groups (e.g., LaPierre, 2009; Marks & Lambert, 1998) or examined the role of age in these associations (e.g., Bulloch et al., 2017). For instance, Bulloch et al. (2017) conducted a cross-sectional study to examine how age modifies the association between marital status and depression from the age of 18 to an older age and found that the likelihood of experiencing depression increased with age for single and cohabitating individuals in comparison to married individuals. Conversely, for widowed, separated, and divorced individuals, the likelihood of experiencing depression decreased with age. These results suggest that the impact of relationships on mental well-being may be more pronounced in later life stages for single and cohabiting individuals who may still anticipate the experience of marriage, in contrast to divorced or widowed individuals who have already undergone the experience of marriage (Bulloch et al., 2017). Similarly, LaPierre (2009) utilized two-wave data from the National Survey of Families and Households (NSFH) to study the association between marital status and depressive symptoms over time while

examining the potential moderating effect of age on both women and men. They found no significant age differences among men, but that age did play a role among women. The differences between the depressive symptoms of cohabiting women and those of women in their first marriage increased with age, with cohabiting women experiencing more depressive symptoms. Additionally, women who had never been married reported more depressive symptoms than women in their first marriages, but only in the youngest group (age 19–39). Only remarried women in the 40–59 age group experienced more depressive symptoms than women in their first marriage. (LaPierre, 2009.) Although these studies provide valuable insights into the association between relationship status and mental well-being, more longitudinal studies are needed to gain a deeper understanding of how this association may change as individuals age. These studies have also primarily focused on depression or depressive symptoms. Positive aspects of mental well-being, such as self-esteem, remain unstudied in the context of relationship status and mental well-being during the life course.

Studies have also found that relationship quality can moderate the association between relationship status and mental well-being. Research has indicated that individuals in happy and satisfying relationships generally experience better mental well-being than those in relationships of poorer quality (Dush & Amato, 2005). Higher relationship quality can provide emotional support and companionship, which contributes to positive mental well-being. On the other hand, studies have also shown that poorer relationship quality can be associated with a likelihood of divorce. (Williams et al., 2009.) This highlights the importance of considering not only the presence or absence of a relationship but also the quality of that relationship when examining its impact on mental well-being.

3.2 Association between parenthood and mental well-being

3.2.1 The transition to parenthood

The impact of the transition to parenthood on mental well-being has been found to vary, with both positive and negative effects reported in the literature (Schytt & Hildingsson, 2011; Sipsma et al., 2016). For some parents, the transition can be joyful event, while for others, it can be a source of distress and challenges which affect their mental well-being (Nomaguchi & Milkie, 2003). The differences in the findings may be partly attributed to various study designs, including those focusing solely on postpartum mental well-being shortly after childbirth (e.g., Condon et al., 2004; Parfitt & Ayers, 2014) or those adopting a longitudinal perspective that considers mental well-being before and after the transition (e.g., Asselmann et al., 2022; Bleidorn, et al., 2016).

Indeed, most studies of the impact of the transition to parenthood have focused on "short-term longitudinal data", examining changes in mental well-being during the post-transition period (e.g., Schytt & Hildingsson, 2011; Sipsma et al., 2016). Thus, there is a gap in the understanding of the longitudinal and life course perspective of mental well-being trajectories before and after the transition to parenthood. From the life course perspective, it is also important to examine the trajectories of mental well-being before the transitions. If mental well-being before the transition is not studied, misinterpretations may arise and changes in mental well-being can be mistakenly associated with pre-existing levels rather than the actual effects of the transition (Bleidorn, et al., 2016). By considering mental well-being before parenthood, studies can better determine whether the transition to parenthood truly impacts the levels of mental well-being (Dyrdal & Lucas, 2013).

Previous research on the transition to parenthood has primarily focused on examining depressive symptoms, particularly postpartum depression (e.g., Davé et al., 2010; Woolhouse et al., 2016), with a particular emphasis on women's mental well-being (Torche & Rauf, 2021). Additionally, studies exploring the positive dimensions of mental well-being have typically used life satisfaction or relationship satisfaction as outcome measures. However, a notable gap remains in the research on the impact of the transition to parenthood on the trajectories of self-esteem and meaningfulness.

The existing literature underscores the significance of the transition to parenthood in influencing parental self-esteem. Bleidorn et al. (2016) observed an increase in self-esteem years before parenthood, followed by a decline in the year after childbirth, and a subsequent linear decrease over the following three years. Notably, this decline in self-esteem was observed in both fathers and mothers, although it did not seem be as pronounced in fathers as it was in mothers. This linear decrease in self-esteem may also be associated with postpartum depression during this period (Fontaine & Jones, 1997). Chen et al. (2016) in turn only studied the trajectory of self-esteem after the transition and found a similar decrease in self-esteem during the following years. Conversely, Van Scheppingen et al. (2018) reported a decrease in self-esteem during pregnancy, followed by an increase after childbirth until six months later, after which self-esteem started to decrease gradually until three years after childbirth. In their longer-term study, Grolleman et al. (2023) investigated the trajectories of parental self-esteem and found a similar decrease during pregnancy and infancy but an increase during toddlerhood and the preschool-age years. This increase in self-esteem during the offspring's early childhood may be because the challenges and demands of early parenthood stabilize and the child's autonomy increases during this phase (Grolleman et al., 2023).

Research on meaningfulness during the transition to parenthood is relatively scarce, but some studies have examined related constructs such as sense of coherence (SOC), of which meaningfulness is one aspect. Studies examining SOC have shed some light on the trajectory of meaningfulness during this life transition. For instance, Bäckström et al. (2018) studied SOC from pregnancy to the first six months after childbirth and observed an increase in SOC after the transition to

parenthood. Analyzing the dimensions separately, they also found a specific increase in meaningfulness after the transition. Similarly, Hildingsson (2017) studied changes in SOC from early pregnancy to one year after the transition among women, finding an increase in the first two months after childbirth, followed by a decrease one year after childbirth. A study with a longer follow-up by Ahlborg et al. (2013) found a decrease in SOC when the child was four years old, followed by an increase when the child was eight. This suggests that the first few years can be intensive, as they involve new roles and challenges, but that parents tend to adjust to these changes over time. Interestingly, fathers consistently had higher SOC than mothers in each study wave (Ahlborg et al., 2013). These findings are in line with previous results which have shown that mothers in particular may be at risk of poorer mental well-being during this period (Parfitt & Ayers, 2014).

3.2.2 Parenthood and parenthood factors

The extensive literature on parenthood and mental well-being has yielded mixed findings, with studies reporting both rewards and strain in the short and the long term. This variability in findings can be attributed to differences in study design and methodologies, ranging from cross-sectional approaches at a single timepoint (e.g., Helbig et al., 2006) to longitudinal studies following participants over their life course (e.g., Kalucza et al., 2015). The timing of the study in relation to parenthood is also crucial, potentially yielding distinct results depending on whether it was conducted shortly after becoming a parent (e.g., during the newborn or infant stages) or during the later phases of parenthood when the child/children were older (Nomaguchi, 2012; Simon & Caputo, 2019). The research has explored various dimensions of mental well-being, including depressive symptoms, anxiety, self-esteem, life satisfaction, and meaningfulness, with a predominant focus on the negative aspects of mental well-being. However, the findings have been diverse and sometimes contradictory, indicating a complex and multifaceted relationship between parenthood and mental well-being.

This dissertation focuses on the longitudinal effect of parenthood on depressive symptoms, self-esteem, and meaningfulness in middle age. Other studies that have also examined these outcomes in middle age have reported diverse findings (see Appendix 1). For example, in their cross-national panel study focusing on individuals aged 50 or older, Becker et al. (2019) observed that parents reported fewer depressive symptoms than their childless counterparts. In contrast, Bures et al. (2009) conducted a study that centered on individuals aged 51 or older and found that those without children had lower depressive symptoms, while Pudrovska (2008), using data from individuals aged 53–54 and their siblings, found that childless individuals did not generally fare worse than parents in middle age. Differences between women and men have also been inconsistent (see Appendix 1). For example, Kalucza et al. (2015) found in their cohort study that having children was associated with increased mental well-being among women but not among

men, whereas some studies have found parenthood to be associated with poorer mental well-being, but only among women (Hansen et al., 2009; Pudrovska, 2009). These different results may be influenced by the different parental roles. Mothers are often still seen as the primary caregivers, which can make the positive and negative effects of parenthood on women's mental well-being even stronger. However, some studies have indicated no gender differences or better mental well-being among fathers in the association between parenthood and mental well-being (Hank & Wagner, 2013; Nelson et al., 2013).

The mixed results regarding parenthood and mental well-being have also highlighted the importance of more detailed examination of the characteristics related to parenthood, such as its timing and the number of children. Both of these are relevant in the association between parenthood and mental well-being (Pearson et al., 2019).

As regards the timing of parenthood, studies have found that the risks of experiencing mental well-being problems are particularly elevated among those who become parents at a relatively early stage in the life course (Kravdal et al., 2017; K. Nomaguchi & Milkie, 2020). Early parenthood has been found to be associated with poorer mental well-being in later life, such as lower self-esteem (Casad et al., 2012). This association may be explained by the challenges often faced by individuals who become parents at an early age, such as limited financial resources and social support systems, which can have a negative effect on the parents' mental well-being (Barban, 2013; Johansen et al., 2020). In contrast, delaying parenthood and the birth of the first child has been associated with beneficial effects on mental well-being in the later stages of the life course (Kravdal et al., 2017; Mirowsky & Ross, 2002; Myrskylä et al., 2017). This may be due to improved financial situations, stable jobs and income, and greater resources in various domains of life. Additionally, delaying parenthood might allow individuals more time to establish their careers and personal goals, contributing to better mental well-being outcomes in the long run.

The association between the number of children and mental well-being has yielded more inconsistent findings. Some studies have found that a higher number of children is associated with depression, while others have reported that parents with a higher number of children already had poorer mental well-being at baseline (Keenan & Grundy, 2018; Pearson et al., 2019). In contrast, Kravdal et al. (2017) made different findings, showing that those who remained childless or had only one child were more likely to purchase antidepressants in late middle age than other parents. Moreover, the number of children was often associated with the timing of parenthood, as those who had children early tended to have more children than mothers who had children I normative time or who delayed motherhood in later life (Koropeckyj-Cox et al., 2007).

While numerous studies have examined the association between parenthood and mental well-being, fewer have examined the direction of these effects (Pearson

et al., 2019). Less is known about the selection effect, i.e., how mental well-being in adolescence is associated with parenthood and other parenthood factors. A Swedish cohort study by Kalucza et al. (2015) examined whether psychological symptoms at the age of 16 were associated with becoming a parent. Using a longitudinal cohort study of 1001 participants from the ages 16 to 43, Kalucza et al. (2015) observed a selection effect, but only among men. The study of Laursen & Munk-Olsen (2010) also had similar results; they found that prior psychiatric disorders were associated with a lower likelihood of becoming a parent among both women and men. A more recent Finnish study by Golovina et al. (2023) also found a similar association between depression and a lower likelihood of having children among both women and men.

Regarding other parenthood factors, such as the timing of parenthood and the number of children, the research on the selection effect is relatively limited, and only a few studies are available. Golovina et al. (2023) examined the relationship between depression, and age of having the first child, and the number of children. The study found that depression was associated with having fewer children, with educational differences influencing these associations. Regarding the timing of parenthood, the results were more complex: depression was associated with a slightly lower age of having first child, but when restricting the sample to only those who had a depression diagnosis before childbirth, depression was associated with an older age of having first child. (Golovina et al., 2023.) In contrast, a study by Bohman et al. (2010) found no association between former depression and early pregnancies or the number of children among women. Both formerly depressed women and those in the comparison group were the same age of when they had their first child, and both groups had at least one child (Bohman et al., 2010).

3.3 Research gaps

Although the existing literature is extensive and covers various research approaches, including studies conducted at different age stages and both longitudinal and cross-sectional studies of relationship status and parenthood, the research still has gaps, especially related to the life course perspective and positive mental well-being outcomes.

One significant gap in the literature lies in the predominant emphasis on the negative aspects of mental well-being, such as depression, with limited attention to positive aspects. Even when positive outcomes have been included, the focus has primarily been on a single outcome, often centering on life satisfaction. Less is known about the other positive dimensions of mental well-being, such as self-esteem and meaningfulness.

In the context of relationship status and mental well-being, prior studies have primarily focused on the benefit of being married compared to being unmarried. Although there has been a shift toward a more comprehensive perspective of

relationship status, with studies examining unmarried groups separately (e.g., cohabitation, divorced, or widowed), dating has still received much less attention (Rapp & Stauder, 2020). Another gap is in the research on how the association between mental well-being and different relationship statuses might change across different age stages.

The existing research on the transition to parenthood has often focused on short-term effects, especially in terms of negative mental well-being variables such as depression. The longitudinal studies that have examined the trajectories of mental well-being during the transition to parenthood have typically focused on the years immediately before and after the transition. As a result, the existing literature has offered limited insights into the trajectories of mental well-being across the life course, spanning from early adulthood to later life, thereby overlooking a broader context and leaving a gap in the understanding of long-term trajectories. For example, studies of the trajectory of meaningfulness during the transition to parenthood are lacking.

Gaps also remain in research on parenthood and mental well-being, particularly with respect to the life course perspective and the reciprocal association between parenthood and mental well-being. While studies have traditionally focused on examining how parenthood factors predict mental well-being outcomes, the selection effect also plays a significant role in shaping these dynamics. Studies have also highlighted the importance of examining other parenthood factors, such as the timing of parenthood and the number of children, in addition to parenthood status. More comprehensive studies are needed that consider multiple parenthood factors simultaneously to better capture the complexities of this relationship.

4 Aims of the study

The aim of this dissertation was to examine the association between family transitions and mental well-being during the life course. For this aim, three independent sub-studies were conducted, each examining the topic from a specific perspective. All the sub-studies used data from the 'Stress, Development and Mental Health (TAM)' follow-up study, which covered the life course from adolescence to middle adulthood in one cohort. In this dissertation, the focus on mental well-being encompassed both positive and negative aspects, as both positive resources, i.e., self-esteem and meaningfulness, and negative symptoms, i.e., depressive symptoms, were covered.

Sub-study I aimed to examine the association of relationship status and mental well-being at four different age stages during the life course of women and men. It also aimed to explore how relationship status (i.e., married, cohabiting, dating, single, divorced/widowed) was associated with depressive symptoms and self-esteem at the ages of 22, 32, 42, and 52. Sub-study I also examined whether the quality of a relationship moderated the associations between relationship status and mental well-being.

Sub-study II aimed to study the trajectories of mental well-being—self-esteem and meaningfulness—and the transition to parenthood. The sub-study examined whether the transition to parenthood is associated with changes in the mental well-being trajectories during the years before and after the transition to parenthood among both women and men. It also compared the mental well-being of parents and non-parents at four different timepoints.

Sub-study III aimed to examine the reciprocal associations between parenthood and mental well-being. It examined whether mental well-being in adolescence is associated with parenthood factors (selection hypothesis) and whether parenthood factors predict mental well-being in middle age (causation hypothesis). The sub-study examined depressive symptoms, self-esteem and meaningfulness using three parenthood factors: having a child/children, the timing of parenthood, and the number of children.

In summary, the research questions were:

1) How is relationship status (i.e., married, cohabitating, single, dating, divorced/widowed) associated with depressive symptoms and self-esteem at

four different age stages during the life course among women and men? (Figure 2)

2) Does relationship quality moderate the association between relationship status and mental well-being? (Figure 2)

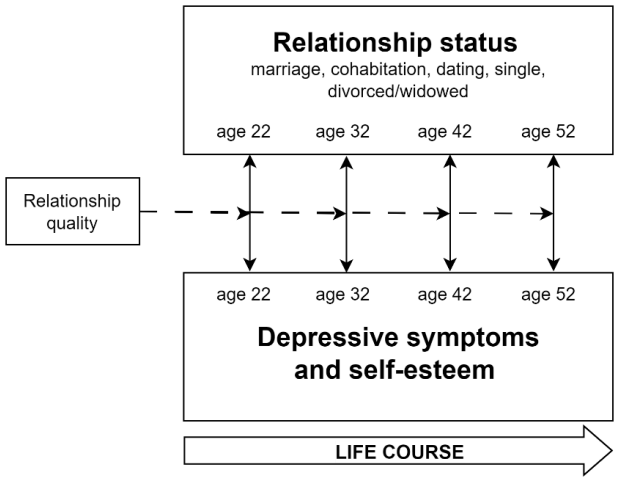

Figure 2 Research questions 1 and 2 in Sub-Study I

3) Is the transition to parenthood associated with changes in the trajectories of self-esteem and meaningfulness before and after the transition to parenthood among women and men? (Figure 3)

4) Do self-esteem and meaningfulness differ during the life course among women and men who become parents, and women and men who remain childless?

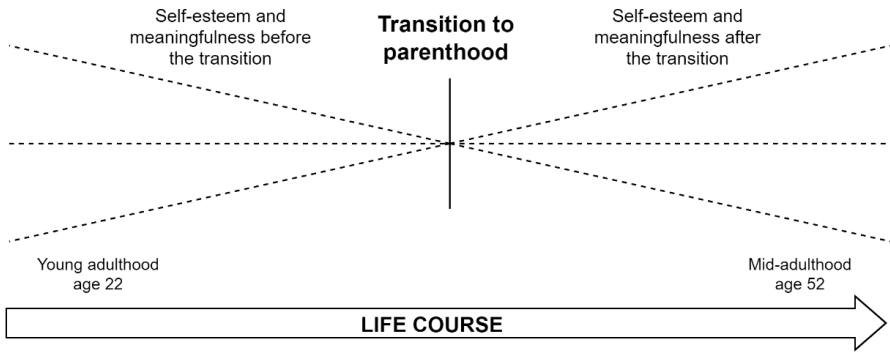

Figure 3 Research questions 3 and 4 in Sub-study II.

5) Is mental well-being (depressive symptoms, self-esteem, and meaningfulness) at the age of 16 associated with becoming a parent, the timing of parenthood, and the number of children during the life course of women and men? (Figure 4)
6) Are being a parent, the timing of parenthood, and the number of children associated with mental well-being (depressive symptoms, self-esteem, and meaningfulness) among middle-aged women and men when the selection effect is accounted for? (Figure 4)

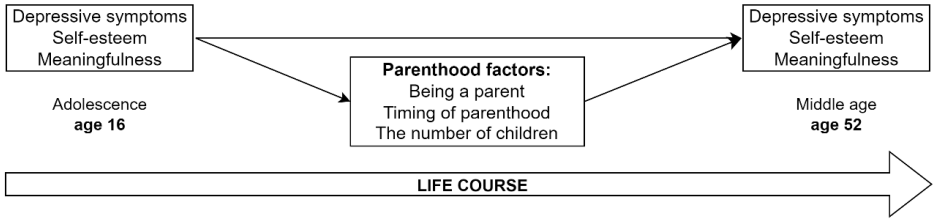

Figure 4 Research questions 5 and 6 in Sub-Study III.

5 Data and methods

5.1 Data

This dissertation is based on the 'Stress, development and mental health (TAM)' study, a longitudinal cohort study that followed its participants from the age of 16 to 52. The original target population in the TAM study included all Finnish-speaking ninth-grade pupils attending comprehensive school in Tampere in the spring of 1983. The questionnaire was completed by 2194 pupils (96.7% of the target population) during a school day in 1983. The pupils' mean age was 15.9 years, and most were born in 1967.

The first follow-up study was conducted in 1989 when the participants were approximately 22 years old (N=1656; 75.5 % of the baseline study population N=2194). After this, the participants were followed up by postal questionnaires every ten years: in 1999 (N=1471; 67.0 %), in 2009 (N=1334; 60.8 %), and in 2019 (N=1159; 52.8 %), when participants were around the ages of 32, 42, and 52. In each study wave, the researchers attempted to reach the original study population from the baseline study in 1983 (N=2194). Figure 5 presents the data collection for each data wave.

In Sub-study I, the data from when the participants were aged 22, 32, 42, and 52 were used. Those who had participated in at least one of the follow-up surveys in 1989, 1999, 2009, and 2019 were included (N=1955).

Those who had participated in the 2009 follow-up survey when they were 42 were included in Sub-study II (N=1334). This was the last study wave in which the participants' children's birth years were elicited, enabling calculation to/from the time of transition to parenthood.

Those who had participated in the 2019 follow-up questionnaire at the age of 52 were included in Sub-study III (N=1160). Data on the participants when they were aged 16 were also used. Each 2019 participant had also participated in 1983 when they were 16.

To analyze drop-out, in each sub-study the relevant variables at age 16 were compared between those included in the sub-study and those who had not participated in the specific follow-up. The comparison depended on the sub-study; in Sub-study I, the comparison was between those who participated in at least one follow-up survey between 1989 and 2019, and those who had not participated in any of the four follow-ups during the same period; in Sub-study II, the comparison

was made between those who had participated at the age of 42 and those who had not participated at this age; and in Sub-study III, the comparison was between those who had and those who had not participated in 2019. In each sub-study, male gender, and lower school performance predicted drop-out. In addition, in Sub-study II and III, parental SES and lower meaningfulness in adolescence predicted drop-out among men, and in Sub-study III parental divorce by the age of 16 predicted drop-out among women.

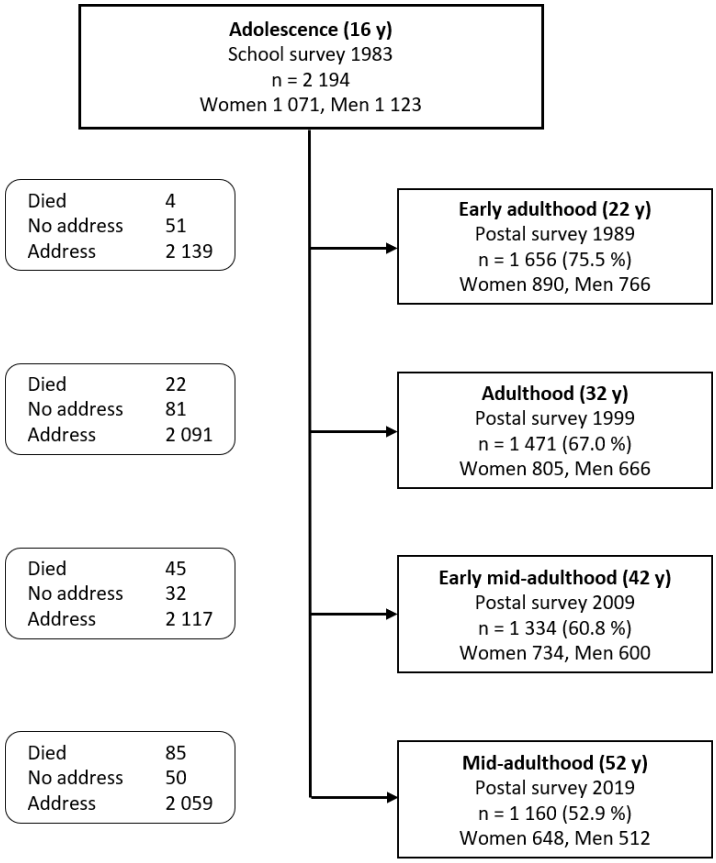

Figure 5 Data collection of TAM study from 1983 to 2019.

5.1.1 Ethical considerations

At each stage of the data collection, the study protocol was reviewed and approved by the relevant ethics committee: the Ethics Committee of Tampere University Hospital or the Institutional Review Board of the Finnish Institute for Health and Welfare.

Participation in the study was entirely voluntary and all the participants provided informed consent by answering the survey questionnaire. The participants were informed of the purposes of the study and their right to withdraw from the study at any point. The research team took measures to prevent harm to the participants, considering the potential mental, social, and financial implications. Although certain questionnaire topics, such as questions about childhood family adversities, may potentially cause mental strain for some participants, these topics nevertheless often arise naturally in daily life and do not typically lead to excessive stress for adult participants. Several measures were implemented to ensure privacy and data protection. All direct personal information has been removed from the data used in the analyses to make certain that individual participants could not be identified. The codes to direct identification information are stored separately, and only a small number of authorized persons have access to them. The study adhered to the Declaration of Helsinki (World Medical Association, 2013).

5.2 Study variables

A summary of the variables used in each sub-study can be found in Table 1.

5.2.1 Family measures

Relationship status at the ages of 22, 32, 42, and 52 was obtained by asking two questions. The first question was about marital status, which included five possible categories: unmarried, cohabiting, married, divorced, or separated, and widowed. In addition to this those who were unmarried, divorced/separated, or widowed were asked about their current dating situation. If the respondents answered that they were currently dating, the relationship status was changed to "dating". Relationship status was also cross-checked against reported living arrangements and other items indicating intimate relationships (for example, responses concerning relationship quality). Based on these, the relationship status category was changed to "cohabitation" if needed. Only a few respondents reported being widow(ers) (ranging from 0 to 12 in study waves), so they were included in the same category as the divorced, which was named "divorced/widowed". The final relationship status variable included five categories: single, dating, cohabiting, married, and divorced/widowed. In the analysis, the term "divorced/widowed" was used, but the simpler term "divorced" was used in the discussion.

Relationship quality was measured from six items ("Our relationship is warm", "We are close to each other", "Our relationship includes mutual trust", "We have many problems" (reversed), "Our relationship is cooling off" (reversed), and "We often quarrel" (reversed)) scored on a 5-point scale (1=totally disagree to 5=totally agree) (Palosaari & Aro, 1995). The relationship quality score was calculated as the

mean of these items (scale 1–5), a higher score indicating better relationship quality.

To determine whether the participants were parents, they were asked "Do you have children?" at the ages of 22, 32, and 42. When the participants were 52, it was elicited by asking "How many children do you have?". If the response was one or more, the respondent was coded as a parent. This was also verified from their responses in previous study waves. The questions "Do you have children?" or "How many children do you have?" did not specify whether these children were biological children, stepchildren, adopted children, or foster children. This response was based on the respondent's own view of having children.

The timing of parenthood was calculated from the birth year of the first child and the respondent's own year of birth. Information on the first child's birth year was obtained by asking "Do you have children?" and if the answer was "Yes", the child/children's year of birth were asked. This question about the children's birth years did not specify whether the children were biological, stepchildren, adopted children, or foster children. The year of birth of the first child was obtained by asking this question when the participants were 22, 32, and 42. The questionnaire they responded to when they were 52, contained no question about the birth years of children. The timing of parenthood was then categorized into four different categories: "At the age of 24 or younger", "At the age of 25–32", "At the age of 33 or older", and "No children". As there was no consensus on the cut-off for age in the timing of parenthood (Aasheim et al., 2013), the cut-offs for age categorization were based on the lower (≤24) and upper (≥33) quartiles.

Parenthood years were based on the timing of parenthood and were calculated for each study wave to/from the year of having one's first child. For example, if the first child was born in 2000, the parenthood years were -11 years in 1989, -1 year in 1999, +9 years in 2009, and +19 years in 2019. Parenthood years were used as a continuous variable in the primary analysis.

Respondents who had responded "no children" and had not reported their child's/children's birth years in the past study waves were classed as non-parents. To compare the mental well-being of parents and non-parents, the mean age of becoming a parent was used to calculate non-parents' parenthood years for each study wave. The mean age of becoming a parent for those who participated in 2009 when they were 42, was 29 years. Initially, different mean ages for women (28 years) and men (29 years) were applied. However, similar results emerged when the overall mean age of becoming a parent (29 years) was used. This approach of using a common mean for both was then adopted to simplify the presentation of the results. Therefore, parenthood years for non-parents were -7 years in 1989, +3 years in 1999, +13 years in 2009, and +23 years in 2019. Non-parents were compared to parents with parenthood years around these years: -9 to -5 years, 1 to 5 years, 11 to 15 years, and 21 to 25 years.

The number of children was calculated when the participants were 52 by asking "How many children do you have?". The participants were then placed into four different categories on the basis of their responses: "No children", "One child", "Two children", and "Three or more children".

5.2.2 Mental well-being

Mental well-being was examined through three variables: depressive symptoms, self-esteem, and meaningfulness. The variables used in the sub-studies differed.

Depressive symptoms were measured when the participants were 22, 32, 42, and 52, using the Finnish modified version of the short 13-item Beck Depression Inventory (S-BDI) (Beck & Beck, 1972; Raitasalo, 1995) (Sub-study I), which includes an additional positive choice of answer in each item (Raitasalo, 1995). The positive choices were combined with the neutral choices of the original measure and scored 0, thus not affecting the scoring of depression. The scale for each item in the S-BDI ranges from 0 (positive/neutral) to 3 (most severe symptom category). The sum score range for depressive symptoms is 0–39, as in the original BDI. The questions covered symptoms such as mood/sadness, self-harm, pessimism, dissatisfaction, loss of appetite, and tiredness. Cronbach's alphas ranged from 0.81 to 0.85 in the study waves.

The S-BDI was only measured from when the participants were 22 onwards. In addition to the S-BDI, a psychosomatic symptoms checklist was also used to measure depressive symptoms in the questionnaires in each study wave. This measure was based on a 17-item psychosomatic symptoms checklist that included seven items that indicate depressiveness: lack of energy, sleeping difficulties, nightmares, fatigue, irritability, loss of appetite, and nervousness/anxiety. Four of these symptoms are used as symptoms of clinical depression in the DSM-V classification of the American Psychiatric Association (2013). A maximum of two missing items was allowed when calculating the sum score of seven items. The missing items were replaced by the mean of the respondent's available items. This depressive symptom measure was used in Sub-study I when the respondents were 16 and in Sub-study III at age 16 and 52. Cronbach's alphas for reliability were 0.71 at the age of 16 and 0.81 at the age of 52.

The measure of self-esteem was used as an outcome in each sub-study (I–III). Self-esteem was assessed with seven statements that resembled those used in Rosenberg's (1965) measurement. These seven statements (assessed on a 5-point scale, 1=totally disagree to 5=totally agree) were: "I believe in myself and in my possibilities" , "I wish I was different from how I am" (reversed), "I suffer from feelings of inferiority" (reversed), "I think I have many good qualities", "I feel I lack of self-confidence" (reversed), "I am capable of doing the same as others", and "I am often dissatisfied with myself" (reversed). The self-esteem score was calculated as the mean of these seven items (scale 1–5; maximum of two missing items

allowed), and a higher score indicated better self-esteem. Cronbach's alphas ranged from 0.80 to 0.90 in the different study waves.

Meaningfulness (or meaning in life) was studied in Sub-studies II and III. The concept of meaningfulness, which refers to the significance or purpose that individuals find in their lives, was evaluated using a scale that assessed the framework aspects of this construct, i.e., the ability to find purpose in life and establish a set of life goals or meaningful perspectives. (Battista & Almond, 1973; Steger et al., 2006.) Meaningfulness was measured using five items that resembled those used e.g., in the Meaning of Life Questionnaire (Steger et al., 2006): "I have clear future plans", "I am uncertain about my future" (reversed), "I feel my life lacks purpose" (reversed), "I have a clear understanding of my goals in life" and "I am certain I will find my place in the world". Meaningfulness was calculated as the mean of these items, and a maximum of two missing items were allowed. These missing items were replaced by the mean of the respondent's available items. In Sub-study III, meaningfulness was assessed when the respondents were 16 and 52, however, when they were 16, only two items measured meaningfulness, and both were related to perceptions of one's future. For this two-item measure of meaningfulness at the age of 16, no missing items were allowed. Cronbach's alphas ranged from 0.72 at age 16 to 0.88 at age 52.

5.2.3 Control variables

Parental socioeconomic status at age 16 was initially based on their father's occupation that was inquired about using the question: "What is your father's or stepfather's profession or job? Please describe the profession or job in as much detail as possible, e.g., mechanic, principal, student". If this was not available, the mother's occupation was used. If neither parent's occupation was available, parental SES was categorized based on the parent's education. The participants were categorized into three groups according to a standardized occupational classification system: manual, lower nonmanual, and upper nonmanual (Statistics Finland, 1975).

Parental divorce was obtained at age 16 was elicited by asking: "Are your parents divorced?" (yes/no).

Basic education (from the age of 22 onwards) was based on having completed high school and was elicited by asking: "What is your basic education?". The participants were then divided into two categories: those who had completed compulsory comprehensive school and those who had completed high school.

Duration in current relationship status (study waves 22, 32, 42, and 52) was calculated for those in a relationship. It was obtained from the question "What is your current marital status? Since year…". Those who were dating were asked: 'If you are not married, cohabiting, or in a registered partnership, are you currently in a relationship?" (1) no, (2) yes, duration _ years _ months. For those who were

single and those who were divorced/widowed, the mean duration of the relationship of those in a relationship was used.

Dissolution of an intimate relationship in the last 12 months (marriage, cohabitation, or dating) was used to account for recent divorce or breakup. It was based on a question about events in life: "On each row, respond whether you have experienced the event presented during the past 12 months" and the two response options for the dissolution of an intimate relationship were "End of relationship" and "Divorce or end of cohabitation" (yes/no).

The measurement about other children, i.e., whether respondents had two or more children in each study wave was used in Sub-study II by asking: "How many children do you have altogether, including foster and adopted children?". Those who answered two or more were coded as having two or more children.

Table 1 Study variables used in sub-studies.

STUDY VARIABLES	AGE	SUB-STUDIES
Family factors		
Relationship status	22, 32, 42, 52	I, II
Relationship quality	22, 32, 42, 52	I
Being a parent	22, 32, 42, 52	I, II
	52	III
Timing of parenthood	22, 32, 42, 52	III
Parenthood years	22, 32, 42, 52	II
Number of children	52	III
Mental well-being		
Depressive symptoms, R-BDI	22, 32, 42, 52	I
Depressive symptoms, psychosomatic symptom scale	16	I
	16, 52	III
Self-esteem	16, 22, 32, 42, 52	I
	22, 32, 42, 52	II
	16, 52	III
Meaningfulness	22, 32, 42, 52	II
	16, 52	III
Covariates		
Parental SES	16	I, III
Parental divorce	16	I, III
Basic education	22, 32, 42, 52	I, II
Duration of current relationship status	22, 32, 42, 52	I
Dissolution of intimate relationship in last 12 months	22, 32, 42, 52	I
Having two or more children	22, 32, 42, 52	II
Age	22, 32, 42, 52	II

5.3 Statistical analysis

Analyses were performed using versions 26 (Sub-study I) and 27 (Sub-studies II–III) of the IBM SPSS Statistics. In each sub-study, the analyses were conducted separately for women and men.

For the descriptive statistics of the study variables, the frequencies and percentages for the categorical variables, and the means and standard deviations for the continuous variables were reported. Gender differences were tested using the chi-square test for the categorical variables and analysis of variance (ANOVA) for the continuous variables. The descriptive statistics for the study variables in Sub-studies I–III are presented in Tables 2 and 3.

Sub-study I used linear regression analysis to analyze the association between relationship status and mental well-being. The analyses were carried out separately for different ages (ages 22, 32, 42, and 52). Only cases with valid information for each variable in the given analysis were included. Depressive symptom variables (S-BDI) were transformed using natural log transformation before conducting the analyses because of the skewed variables. The linear regression analyses started with the unadjusted models, in which relationship status was the only predictor (marriage as reference category). For adjusted Model 1, the control variables when the participants were 16 (parental divorce, parental socioeconomic status, and either depressive symptoms or self-esteem, depending on the outcome) were added. In the fully adjusted model (Model 2), having children, duration of current relationship status, and dissolution of intimate relationship in the last 12 months were added to the model. Sub-study I also addressed whether relationship quality moderated the association between relationship status and mental well-being. In order to examine this, the interaction terms between relationship status and relationship quality were analyzed in the unadjusted and adjusted Model 2.

Sub-study II used spline regression in the mixed model to address whether the linear trend of mental well-being was different before and after the transition to parenthood (Perales, 2019). In the first model, separate linear slopes were estimated for the periods before and after the transition, with the baseline (knot) set to the transition point (time=0). In the second model, the differences between these slopes were estimated. No adjustments were made in the initial analyses. Age was adjusted for in Model 1, and in Model 2 included relationship status in addition to age. In the final fully adjusted model, age, relationship status, other children, and basic education were adjusted for. ANOVA was used to examine whether parents' and non-parents' mental well-being differed at four different timepoints (-9 to -5 years before the transition and at three timepoints after the transition: 1–5, 11–15, and 21–25 years). The same covariates were used as those in Research Question 1: age (Model 1), age and relationship status (Model 2), and age, relationship status, other children, and basic education (Model 3). As the detailed question on children's birth years was not included in the questionnaire when the participants were 52, those who had become parents after the age of 42 were excluded from the analyses (n=25).

In Sub-study III, logistic regression analyses were used to determine whether mental well-being at the age of 16 was associated with becoming a parent by middle age. Multinomial logistic regression analyses were performed to determine whether mental well-being at the age of 16 predicted the timing of parenthood and the number of children. Linear regression analysis was used to study whether being a parent, the timing of parenthood, or the number of children were associated with mental well-being in mid-adulthood. In these analyses, the reference categories were "becoming a parent at the age of 25–32" (timing of parenthood) and "having two children" (number of children). Model 1 was adjusted for parental divorce and parental SES. In the analysis of whether parenthood factors predicted mental well-being, the mental well-being variable when the participants were 16 (depending on the outcome) was adjusted in Model 2. Gender differences were examined in both analyses with interaction terms in the fully adjusted model, using data on both women and men in the total sample.

Table 2 Descriptive statistics for Sub-studies I and II by gender.

	Age 22			Age 32			Age 42			Age 52		
	Women	Men	p[a]	Women	Men	p[a]	Women	Men	p[a]	Women	Men	p[a]
	% (n)	% (n)		% (n)	% (n)		% (n)	% (n)		% (n)	% (n)	
Sub-study I	n=890	n=766		n=805	n=666		n=734	n=600		n=648	n=512	
Relationship status			<0.001			0.090			0.003			0.095
Married	8.9 (79)	3.4 (26)		49.4 (397)	46.5 (309)		58.0 (426)	60.2 (361)		59.7 (387)	61.7 (316)	
Cohabiting	29.8 (265)	16.7 (128)		27.6 (222)	26.4 (175)		16.9 (124)	20.0 (120)		14.4 (93)	16.4 (84)	
Dating	32.5 (289)	38.3 (293)		7.3 (59)	8.1 (54)		8.6 (63)	5.5 (33)		7.4 (48)	4.5 (23)	
Single	28.4 (253)	41.5 (318)		12.3 (99)	16.9 (112)		9.4 (69)	11.0 (66)		9.7 (63)	11.1 (57)	
Divorced/Widowed	0.4 (4)	0.1 (1)		3.2 (26)	2.1 (14)		7.1 (52)	3.3 (20)		8.8 (57)	6.3 (32)	
Depressive symptoms, mean (SD)	1.9 (3.2)	1.4 (2.8)	<0.001	2.2 (3.2)	1.7 (3.4)	0.010	2.4 (3.6)	1.8 (3.5)	0.003	3.1 (4.1)	2.2 (3.6)	<0.001
Self-esteem, mean (SD)	3.6 (0.7)	3.9 (0.7)	<0.001	3.9 (0.7)	4.1 (0.7)	<0.001	3.9 (0.8)	4.1 (0.7)	<0.001	3.9 (0.8)	4.1 (0.7)	<0.001
Relationship quality, mean (SD)	4.3 (0.7)	4.3 (0.6)	0.485	4.2 (0.8)	4.2 (0.7)	0.415	4.1 (0.8)	4.2 (0.7)	0.017	4.2 (0.8)	4.2 (0.8)	0.570
High school (yes)	54.3 (483)	43.6 (334)	<0.001	57.0 (458)	44.2 (294)	<0.001	59.9 (437)	44.4 (263)	<0.001	60.7 (392)	49.0 (250)	<0.001
Children (yes)	9.1 (81)	4.1 (31)	<0.001	62.0 (493)	53.7 (351)	0.001	77.4 (568)	74.3 (446)	0.194	81.1 (514)	80.4 (405)	0.761
Duration of current relationship status, mean (SD)	2.8 (1.6)	2.4 (1.3)	<0.001	5.7 (3.2)	4.8 (2.9)	<0.001	11.2 (6.0)	10.7 (5.6)	0.127	17.4 (8.8)	17.1 (8.4)	0.579
Dissolution of relationship in last 12 months (yes)	23.5 (209)	27.4 (209)	0.075	10.6 (85)	12.2 (81)	0.332	10.0 (73)	7.0 (42)	0.055	4.8 (31)	5.3 (27)	0.696
Sub-study II	n=663	n=492		n=647	n=476		n=734	n=600		n=581	n=409	
Parent	7.7 (51)	4.1 (20)	0.011	60.8 (386)	52.9 (245)	.009	77.4 (568)	74.3 (446)	.194	80.7 (459)	81.1 (330)	.872
Parenthood years [b]	-5.8 (5.0)	-7.5 (4.8)	<0.001	4.2 (5.0)	2.6 (4.8)	<0.001	14.2 (5.0)	12.6 (4.8)	<0.001	24.2 (5.0)	22.6 (4.8)	<0.001

Self-esteem, mean (SD)	3.6 (0.7)	3.9 (0.7)	<0.001	3.9 (0.7)	4.1 (0.7)	<0.001	3.9 (0.8)	4.2 (0.7)	<0.001	3.9 (0.8)	4.1 (0.7)	<0.001
Meaningfulness, mean (SD)	3.6 (0.8)	3.8 (0.8)	<0.001	3.9 (0.8)	4.0 (0.8)	<0.001	3.8 (0.8)	3.9 (0.8)	.002	3.8 (0.8)	3.9 (0.9)	0.010
Relationship status			<0.001			0.223			0.003			0.111
Married	9.0 (60)	4.1 (20)		51.0 (329)	49.4 (234)		58.0 (426)	60.2 (361)		61.3 (356)	66.3 (271)	
Cohabiting	28.7 (190)	16.5 (81)		25.7 (166)	24.9 (118)		16.9 (124)	20.0 (120)		14.1 (82)	14.4 (59)	
Dating	32.9 (218)	38.4 (189)		7.6 (49)	8.2 (39)		8.6 (63)	5.5 (33)		7.1 (41)	3.7 (15)	
Single	29.0 (192)	40.9 (201)		12.6 (81)	16.0 (76)		9.4 (69)	11.0 (66)		9.5 (55)	9.8 (40)	
Divorced/Widowed	0.5 (3)	0.2 (1)		3.1 (20)	1.5 (7)		7.1 (52)	3.3 (20)		8.1 (47)	5.9 (24)	
Having two or more children	0.0 (0)	0.0 (0)	-	36.8 (270)	27.8 (167)	<0.001	64.7 (475)	60.0 (360)	0.077	51.9 (381)	44.8 (269)	0.010
Completed high school	58.2 (386)	47.4 (233)	<0.001	60.2 (388)	46.9 (223)	<0.001	59.9 (437)	44.4 (263)	<0.001	62.0 (359)	51.0 (208)	<0.001

[a] Test of gender difference: chi-square test for categorical/dichotomous variables and ANOVA for continuous variables. [b] Years to or from becoming a parent among parents.

Table 3 Descriptive statistics for Sub-study III by gender.

SUB-STUDY III[a]	**Women** n=648	**Men** n=512	
	% (n)	% (n)	p[b]
Parent at age 52 (yes)	81.0 (513)	80.1 (403)	0.696
Timing of parenthood (age), mean (SD)	27.7 (4.9)	29.3 (4.8)	<0.001
<= 24	25.1 (123)	13.4 (50)	
25–32	57.0 (279)	56.7 (211)	
>= 33	17.9 (88)	29.8 (111)	
Number of children, mean (SD)	2.0 (1.5)	2.0 (1.5)	0.899
No children	19.0 (120)	19.7 (99)	
1 child	13.6 (86)	15.7 (77)	
2 children	36.8 (233)	33.2 (167)	
3 children or more	30.6 (194)	31.8 (160)	
Depressive symptoms at age 16, mean (SD)	4.5 (2.7)	3.5 (2.5)	<0.001
Depressive symptoms at age 52, mean (SD)	5.0 (3.3)	4.1 (3.2)	<0.001
Self-esteem at age 16, mean (SD)	3.5 (0.7)	3.8 (0.7)	<0.001
Self-esteem at age 52, mean (SD)	3.9 (0.8)	4.1 (0.7)	<0.001
Meaningfulness at age 16, mean (SD)	3.3 (1.0)	3.7 (0.9)	<0.001
Meaningfulness at age 52, mean (SD)	3.8 (0.8)	3.9 (0.9)	0.015
Parental SES at age 16			0.119
Manual	49.6 (318)	44.8 (228)	
Lower nonmanual	32.3 (207)	32.6 (166)	
Upper nonmanual	18.1 (116)	22.6 (115)	
Parental divorce at age 16	23.0 (148)	21.1 (107)	0.449

[a] Sub-study III included those who had participated when they were 52. [b] Test of gender difference: chi-square test for categorical/dichotomous variables and ANOVA for continuous variables.

6 Results

6.1 Associations between relationship status and mental well-being at four age stages (Sub-study I)

Sub-study I used linear regression analysis to analyze whether relationship status was associated with depressive symptoms and self-esteem at four age stages: 22, 32, 42, and 52 years. The results of the fully adjusted models are shown in Tables 4 and 5. For women aged 22, being single (compared to marriage) was associated with higher depressive symptoms (Table 4). When the participants were 32, no significant associations between relationship status and mental well-being were found among the women. Compared to marriage, dating and being single were predictors of higher depressive symptoms at age 42, whereas when they were 52, only being single was associated with higher depressive symptoms among women.

Similar to women, being single was also the only relationship status predicting depressive symptoms at age 22 among men (Table 4). When the men were 32, all other relationship statuses compared to being married were associated with depressive symptoms. When they were 42, being single or divorced was a predictor of depressive symptoms. When the men were 52, cohabitation and being divorced were significantly associated with depressive symptoms.

Table 4 Linear regression analyses of relationship status as a predictor of depressive symptoms[a] at different ages among women and men. Regression coefficients and standard errors from fully adjusted models.[b]

	Age 22		**Age 32**		**Age 42**		**Age 52**	
	Women	Men	Women	Men	Women	Men	Women	Men
	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p
Relationship status								
Married	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
Cohabiting	0.12 (0.11) 0.284	0.22 (0.18) 0.207	0.06 (0.08) 0.395	0.25 (0.08) **0.002**	0.14 (0.09) 0.110	0.08 (0.09) 0.391	0.00 (0.10) 0.986	0.27 (0.11) **0.013**
Dating	0.04 (0.11) 0.736	0.15 (0.18) 0.395	-0.02 (0.13) 0.871	0.42 (0.13) **0.001**	0.25 (0.13) **0.047**	0.09 (0.17) 0.600	0.01 (0.14) 0.971	0.24 (0.19) 0.202
Single	0.28 (0.12) **0.015**	0.39 (0.18) **0.027**	0.17 (0.11) 0.143	0.60 (0.11) **<0.001**	0.32 (0.12) **0.007**	0.28 (0.13) **0.032**	0.34 (0.13) **0.009**	0.24 (0.14) 0.093

Divorced/ Widowed [c]	-	-	0.18 (0.19) 0.348	0.62 (0.22) **0.004**	0.25 (0.13) 0.054	0.45 (0.19) **0.020**	0.13 (0.13) 0.310	0.51 (0.17) **0.002**

[a] The analysis used natural log transformed depressive symptoms variables. [b] The fully adjusted model was adjusted for parental divorce, parental SES, depressive symptoms when the participants were 16, education, having children, duration of current relationship status, and dissolution of relationship in the last 12 months. [c] Divorced/widowed participants at the age of 22 were excluded from the analyses, due to the small number of cases (<5).

In the analyses of self-esteem and relationship status, with all age stages accounted for, only one association was found among women in the fully adjusted models: Being single was associated with lower self-esteem when they were 32 (Table 5). Among the men, no statistically significant associations were found at age 22 in the fully adjusted model, but at age 32, cohabitation, dating, and being single were associated with lower self-esteem. At the ages of 42 and 52, being single or divorced/widowed were both significant predictors of lower self-esteem.

Table 5 Linear regression analyses of relationship status as a predictor of self-esteem at different ages among women and men. Regression coefficients and standard errors from fully adjusted models.[a]

	Age 22		**Age 32**		**Age 42**		**Age 52**	
	Women	Men	Women	Men	Women	Men	Women	Men
	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p	B (SE) p
Relationship status								
Married	*ref.*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*	*ref*
Cohabiting	-0.00 (0.09) 0.974	-0.05 (0.15) 0.741	-0.10 (0.06) 0.115	-0.16 (0.07) **0.024**	0.01 (0.08) 0.948	-0.02 (0.07) 0.790	0.00 (0.09) 0.983	-0.17 (0.09) 0.066
Dating	0.01 (0.09) 0.935	-0.04 (0.16) 0.803	-0.10 (0.11) 0.342	-0.24 (0.11) **0.032**	-0.08 (0.11) 0.464	-0.02 (0.14) 0.876	-0.08 (0.13) 0.518	-0.09 (0.16) 0.590
Single	-0.11 (0.09) 0.244	-0.28 (0.15) 0.073	-0.28 (0.10) **0.004**	-0.56 (0.09) **<0.001**	-0.19 (0.10) 0.073	-0.37 (0.11) **<0.001**	-0.15 (0.12) 0.185	-0.35 (0.12) **0.003**
Divorced/ Widowed [b]	-	-	-0.22 (0.16) 0.188	-0.31 (0.18) 0.092	-0.17 (0.11) 0.143	-0.38 (0.16) **0.015**	-0.19 (0.12) 0.108	-0.49 (0.14) **0.001**

[a] The fully adjusted model was adjusted for parental divorce, parental SES, depressive symptoms at the age of 16, education, having children, duration of current relationship status, and dissolution of relationship in the last 12 months. [b] Divorced/widowed participants at the age of 22 were excluded from the analyses, due to the small number of cases (<5).

To examine whether relationship quality moderated the association between relationship status and mental well-being, the interaction term between relationship status and relationship quality was analyzed among those in a relationship (married, cohabiting, dating). Only nine (out of 64) interactions with $p<0.10$ between relationship status and relationship quality were found when both unadjusted and fully adjusted models were accounted for, whereas only one significant interaction occurred between dating and relationship quality on self-esteem among men when they were 32 ($p=0.008$). The separate regression

coefficients of the relationship statuses were estimated for the outcomes in the groups with lower and higher relationship quality (split by median). The findings indicated that among the men with who had lower relationship quality when they were 22 or 32, cohabitation and dating (compared to being married) were associated with lower mental well-being. However, no similar associations were found among men with higher relationship quality.

6.2 Trajectories of self-esteem and meaningfulness before and after the transition to parenthood (Sub-study II)

Sub-study II examined whether transition to parenthood had an effect on the mental well-being trajectories of self-esteem and meaningfulness. Among women, the trajectory of self-esteem after becoming a parent differed significantly from the trajectory before the transition in the unadjusted and adjusted models (Table 6, Figure 6). Self-esteem increased significantly before the transition, and this significant increase remained after age, relationship status, other children, and basic education were adjusted for, whereas after the transition to parenthood, the trajectory of self-esteem took a stable path.

Among men, there was a significant difference between the self-esteem trajectories before and after the transition to parenthood in the unadjusted model, but in the adjusted models these differences diminished (Table 6, Figure 7). Before becoming a parent, there was a significant increase in self-esteem in the unadjusted model (0.022, $p<0.001$), but after age and relationship status had been adjusted for in Model 2, self-esteem decreased significantly after the transition to parenthood.

Table 6 Changes in self-esteem before and after transition to parenthood among women and men. Regression coefficients of time from spline regression analyses.

	Women			**Men**		
	Unadjusted	Model 2	Model 3	Unadjusted	Model 2	Model 3
	estimate	estimate	estimate	estimate	estimate	estimate
	p	p	p	p	p	p
Before transition to parenthood	0.029	0.015	0.020	0.022	-0.004	-0.003
	<0.001	**0.025**	**0.005**	**<0.001**	0.535	0.689
After transition to parenthood	0.003	-0.004	0.001	-0.001	-0.013	-0.012
	0.025	0.431	0.901	0.641	**0.011**	**0.022**
Before vs. after transition to parenthood	-0.026	-0.019	-0.019	-0.022	-0.009	-0.010
	<0.001	**<0.001**	**<0.001**	**<0.001**	0.100	0.689

Model 2: adjusted for age and relationship status; Model 3: adjusted for age, relationship status, other children, and basic education.

For meaningfulness, women's trajectories differed significantly before and after the transition in each model (Table 7, Figure 6). The trajectory of meaningfulness increased significantly before parenthood, but this positive increase stalled after becoming a parent. The adjustments had no significant effect on these results.

Among men, meaningfulness increased significantly before the transition to parenthood, but this trajectory turned into a stable path after the transition (Table 7, Figure 7). In the adjusted model, no differences were found between the trajectory of meaningfulness before the transition and after the transition, and no significant increase or decrease in meaningfulness was found before or after the transition to parenthood.

Table 7 Changes in meaningfulness before and after transition to parenthood among women and men. Regression coefficients of time from spline regression analyses.

	Women			**Men**		
	Unadjusted	Model 2	Model 3	Unadjusted	Model 2	Model 3
	estimate p	estimate p	estimate p	estimate p	estimate p	estimate p
Before transition to parenthood	0.027 **<0.001**	0.012 0.061	0.019 **0.006**	0.023 **<0.001**	0.001 0.881	0.003 0.687
After transition to parenthood	-0.001 0.493	0.000 0.944	0.006 0.235	-0.006 **0.002**	-0.008 0.149	-0.006 0.326
Before vs. after transition to parenthood	-0.029 **<0.001**	-0.013 **0.027**	-0.014 **0.029**	**-0.030** **<0.001**	-0.009 0.185	-0.009 0.202

Model 2: adjusted for age and relationship status; Model 3: adjusted for age, relationship status, two or more children (yes/no), and basic education.

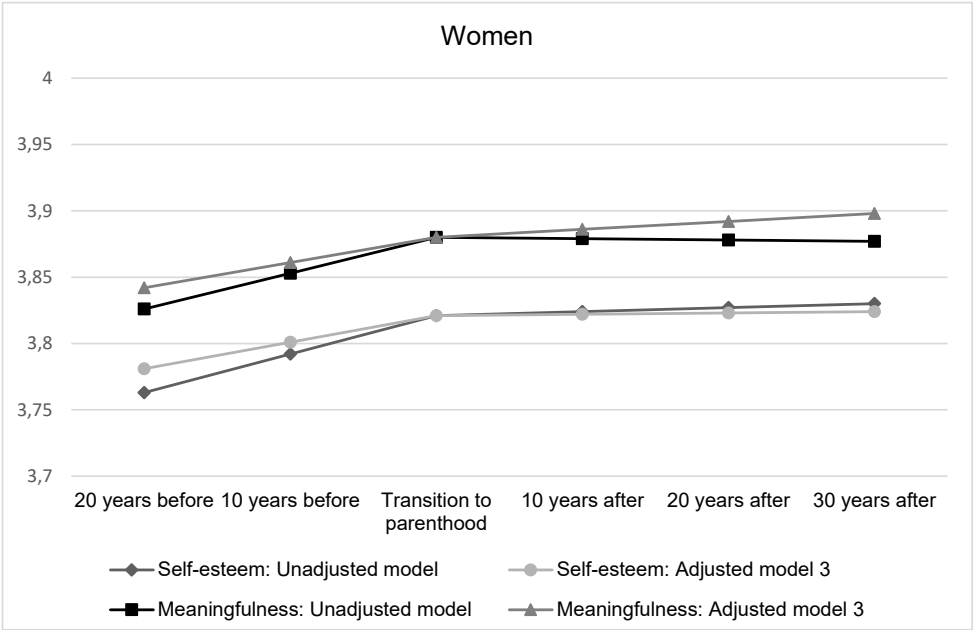

Figure 6 Changes in self-esteem and meaningfulness before and after transition to parenthood among women

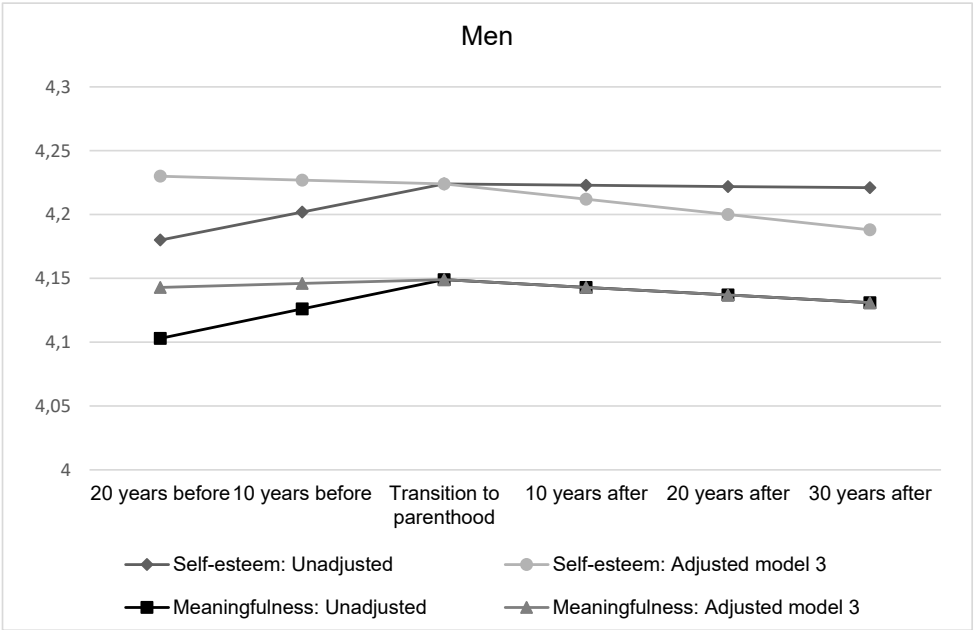

Figure 7 Changes in self-esteem and meaningfulness before and after transition to parenthood among men

6.3 Mental well-being of parents and non-parents before and after the transition to parenthood (Sub-study II)

Sub-study II assessed the differences between parents' and non-parents' self-esteem and meaningfulness at four different timepoints (one timepoint before parenthood and three timepoints after the transition). Regarding women's self-esteem, no significant differences were found between mothers' and non-mothers' self-esteem (Table 8). Among men, fathers had significantly higher self-esteem than non-fathers both before and after the transition to parenthood in the unadjusted model and in Model 1 when adjusted for age. After relationship status was adjusted for, these significant results diminished before the transition to parenthood but remained after it. When further adjustments were made for basic education and having other children, a significant association remained only 1–5 years after the transition, as fathers had higher self-esteem than non-fathers.

Mothers had significantly higher meaningfulness 1–5 years and 11–15 years after becoming a parent than non-mothers of respective ages (Table 8). However, after relationship status was adjusted for in Model 2, no significant differences were found between the groups. Fathers had a higher meaningfulness at each timepoint than non-fathers in the unadjusted model and in adjusted Model 1 when age was controlled for. After adjustment for relationship status, the only statistically significant difference between the groups was at 11–15 years after the transition, but in the fully adjusted model, after adjustment for completed high school and having other children, significant differences were found 11–15 and 21–25 years after the transition, with fathers having higher meaningfulness than non-fathers.

Table 8 Comparison of means of self-esteem and meaningfulness of parents and non-parents (0=parent and 1=non-parent) at four different timepoints in relation to transition to parenthood. Parameter estimates (B) represent difference between the means of the groups.

	Women				**Men**			
	Un-adjusted	Model 1	Model 2	Model 3	Un-adjusted	Model 1	Model 2	Model 3
	B p	B p	B p	B p	B p	B p	B p	B p
Self-esteem								
-9 to -5 years	0.00 0.961	0.06 0.506	0.11 0.236	0.13 0.146	-0.28 **<.001**	-0.22 **0.024**	-0.16 0.074	-0.13 0.153
1–5 years	-0.03 0.758	-0.04 0.643	0.14 0.168	0.13 0.227	-0.47 **<.001**	-0.46 **<.001**	-0.24 **0.037**	-0.25 **0.038**
11–15 years	0.04 0.576	0.04 0.589	0.15 0.083	0.06 0.655	-0.35 **<.001**	-0.35 **<.001**	-0.20 **0.035**	-0.11 0.412
21–25 years	0.10 0.269	0.10 0.327	0.20 0.059	0.09 0.631	-0.30 **0.002**	-0.32 **0.002**	-0.25 **0.044**	-0.36 0.075

Meaningfulness								
-9 to -5 years	-0.04	-0.03	0.07	0.11	-0.29	-0.23	-0.13	-0.09
	0.654	0.765	0.477	0.277	**0.013**	**0.026**	0.220	0.380
2–5 years	-0.24	-0.25	-0.01	0.00	-0.56	-0.55	-0.25	-0.26
	0.004	**0.002**	0.954	0.999	**<.001**	**<.001**	0.064	0.058
10–13 years	-0.17	-0.18	-0.03	-0.07	-0.51	-0.50	-0.26	-0.33
	0.030	**0.029**	0.728	0.605	**<.001**	**<.001**	**0.018**	**0.042**
22–25 years	-0.18	-0.22	-0.03	0.08	-0.41	-0.41	-0.28	-0.53
	0.068	**0.030**	0.801	0.660	**<.001**	**<.001**	0.062	**0.036**

Adjusted Model 1: age; Adjusted Model 2: age and relationship status; Adjusted Model 3: age, relationship status, two or more children (yes/no) and completed high school (yes/no).

6.4 Mental well-being in adolescence predicting parenthood (Sub-study III)

Using logistic regression analyses, we studied whether mental well-being at the age of 16 predicted parenthood by the age of 52 (Figure 8). For women, depressive symptoms at age 16 were associated with higher odds of having children, but only in the unadjusted model. For men, depressive symptoms in adolescence were a significant predictor of not having children by middle age, but this significant association disappeared after adjustment for parental divorce and SES at the age of 16. The only significant result in the adjusted models was found among men: Higher self-esteem in adolescence was associated with higher odds of becoming a parent by the age of 52. Meaningfulness at the age of 16 did not predict having children in middle age. The effect of depressive symptoms and self-esteem on parenthood differed significantly between men and women (Figure 8).

Next, using multinomial logistic regression analysis, we studied whether mental well-being in adolescence predicted the timing of parenthood (Figure 9). Among women, depressive symptoms at age 16 were associated with becoming a parent at the age of 24 or younger. Among men, lower self-esteem when they were 16 was a significant predictor of not having children at the age of 52, and this association differed significantly among women. No significant results concerning meaningfulness were found.

Lastly, we studied whether mental well-being when the participants were 16 predicted their number of children in middle age (Figure 10). Significant associations were only found among men with no children: Depressive symptoms at age 16 were associated with not having children, but when parental divorce and SES were controlled for, the significant association attenuated. Lower self-esteem at age 16 was a significant predictor of not having children by the age of 52. Both of these associations differed from those among women (Figure 10). Meaningfulness at the age of 16 was not associated with the number of children.

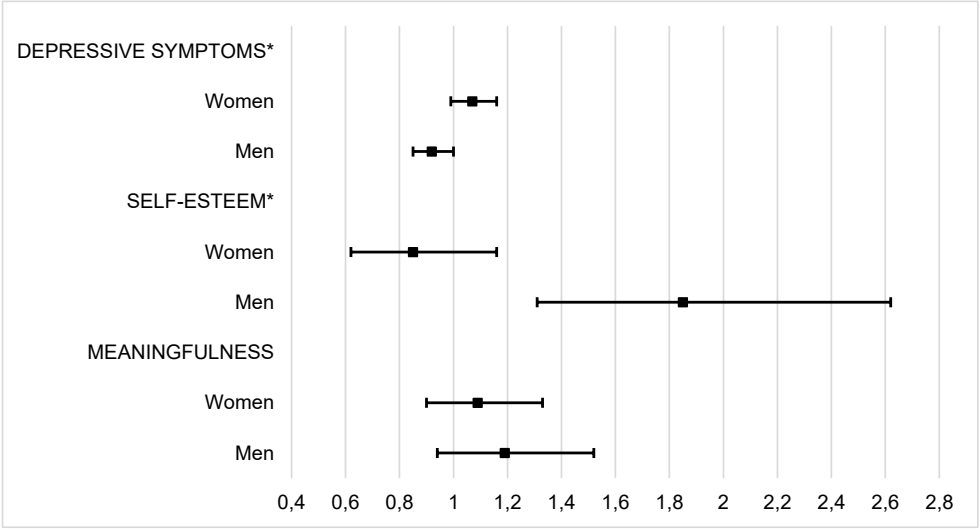

Figure 8 Logistic regression analyses of mental well-being at the age of 16 as a predictor of being a parent by the age of 52 among women and men after adjustment for parental divorce and SES at the age of 16. Results presented as odds ratios (OR) with error bars representing 95% CIs. * The results differed statistically significantly among the genders ($p<0.05$)

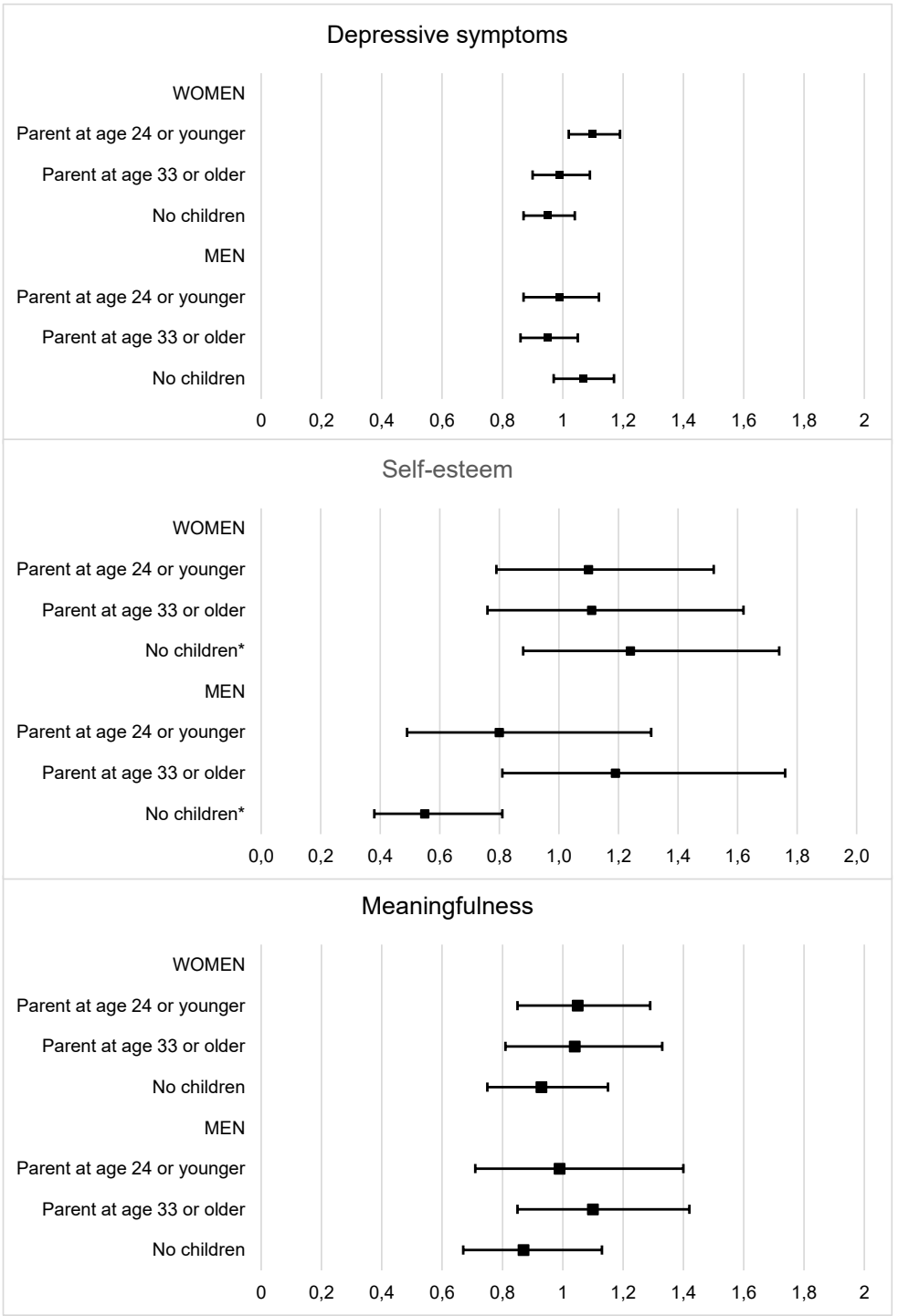

Figure 9 Multinomial logistic regression analysis of mental well-being at the age of 16 as a predictor of timing of parenthood for women and men, after adjustment for parental divorce and SES at the age of 16. Reference category=parent at the age of 25–32. Results presented as relative risk ratios (RRR) with error bars representing 95% CIs. *The results differed statistically significantly among the genders ($p<0.005$)

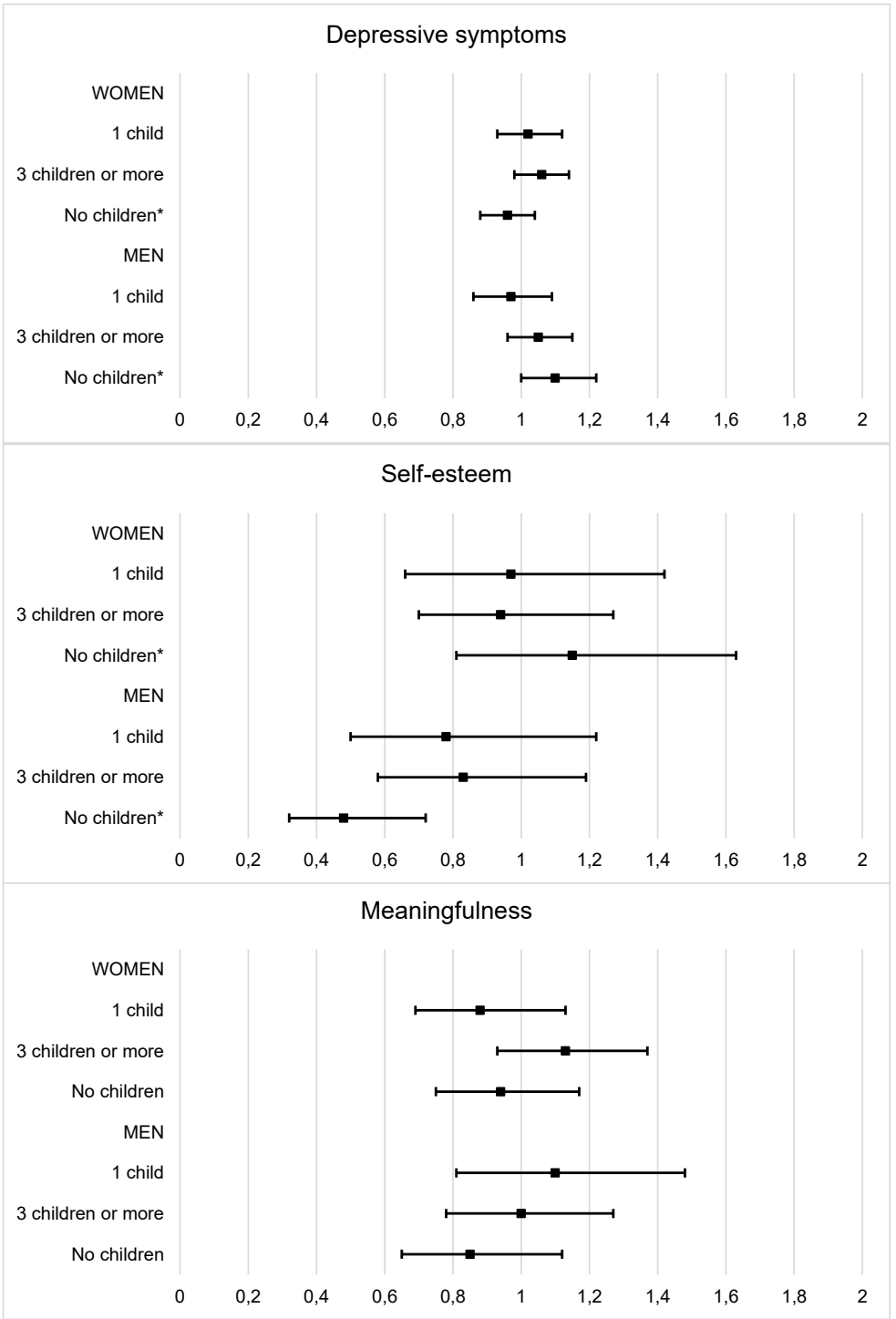

Figure 10 Multinomial logistic regression analysis of mental well-being at the age of 16 as a predictor of number of children among women and men after adjustment for parental divorce and SES at the age of 16. Reference category=having two children. Results presented as relative risk ratios (RRR) with error bars representing 95% CIs. *The results differed statistically significantly among the genders ($p < 0.005$)

6.5 Parenthood predicting mental well-being in middle age (Sub-study III)

The analyses of whether being a parent predicts mental well-being in mid-adulthood (Table 9) found that among women, parenthood was associated with less depressive symptoms at age 52 in the fully adjusted model when parental divorce, parental SES, and depressive symptoms at the age of 16 were controlled for. For men, parenthood was associated with higher self-esteem when they were 52. This association was significantly different from the corresponding result among women. Regarding meaningfulness, having children was associated with greater meaningfulness in middle age among both women and men.

Table 9 Linear regression analyses of whether being a parent predicted mental well-being at the age of 52 among women and men. Fully adjusted models.

	Women	**Men**
	Adjusted Model 2	Adjusted Model 2
Dependent variable	B (SE) p	B (SE) p
Depressive symptoms at age 52		
Non-parent	*ref.*	ref.
Parent	**-0.76 (0.33)** **0.021**	-0.37 (0.35) 0.298
R Square	0.064	0.063
Self-esteem at age 52		
Non-parent	*ref.*	*ref.*
Parent	-0.10 (0.08)* 0.220	**0.16 (0.08)*** **0.043**
R Square	0.111	0.090
Meaningfulness at age 52		
Non-parent	*ref.*	*ref.*
Parent	**0.17 (0.08)** **0.039**	**0.30 (0.10)** **0.002**
R Square	0.053	0.034

Adjusted Model 2 (fully adjusted): Adjusted for parental divorce, parental SES, and depressive symptoms/self-esteem/meaningfulness when participants were 16.

* The results differed statistically significantly among the genders ($p<0.05$)

The analysis of whether the timing of having one's first child predicted mental well-being in middle age found a significant association between having a first child at the age of 24 or younger and depressive symptoms in middle age among women in the unadjusted model. However, after adjustment for parental divorce, parental SES, and depressive symptoms when they were 16, this association attenuated (Table 10). Having no child/children was a significant predictor of depressive symptoms among women. Among men, having no children was also associated with depressive symptoms and lower self-esteem in comparison to those who had their first child when they were 25–32 in the unadjusted model. However, the significant association with depressive symptoms disappeared after adjustment for parental divorce, parental SES, and depressive symptoms at the age of 16. For both genders, having no children was associated with lower meaningfulness in middle age. For women, having their first child when they were 33 or older was a significant predictor of less meaningfulness at the age of 52.

Table 10 Linear regression analyses of whether the timing of becoming a parent predicted mental well-being at the age of 52 among women and men. Fully adjusted models.

	Women	**Men**
	Adjusted Model 2	Adjusted Model 2
Dependent variables	B (SE) p	B (SE) p
Depressive symptoms at age 52		
Parent at age 25–32	*ref.*	*ref.*
Parent at age 24 or younger	0.55 (0.35) 0.119	0.49 (0.51) 0.335
Parent at age 33 or older	0.56 (0.40) 0.158	0.42 (0.37) 0.257
No children	**0.99 (0.35)** **0.005**	0.53 (0.39) 0.167
R Square	0.069	0.066
Self-esteem at age 52		
Parent at age 25–32	*ref.*	*ref.*
Parent at age 24 or younger	-0.02 (0.08) 0.791	-0.02 (0.11) 0.866
Parent at age 33 or older	-0.11 (0.09) 0.230	-0.11 (0.08) 0.190
No children	0.07 (0.08) 0.412	**-0.20 (0.09)** **0.026**
R Square	0.107	0.093

Meaningfulness at age 52		
Parent at age 25–32	*ref.*	*ref.*
Parent at age 24 or younger	-0.06 (0.09) 0.488	0.08 (0.13) 0.544
Parent at age 33 or older	**-0.24 (0.10)** **0.016**	-0.14 (0.10) 0.176
No children	**-0.22 (0.09)** **0.012**	**-0.31 (0.10)** **0.003**
R Square	0.059	0.036

Adjusted Model 2 (fully adjusted): Adjusted for parental divorce, parental SES, and depressive symptoms/self-esteem/meaningfulness when participants were 16.

The results of the analysis of whether the number of children predicted mental well-being at the age of 52 are shown in Table 11. Among women, only one significant association was found: Women with three or more children had greater meaningfulness than those with two children. Among men, having no children was associated with lower self-esteem and meaningfulness in middle age in the unadjusted model. However, after adjustment for baseline self-esteem, the significant association between having no children and lower self-esteem in middle age became nonsignificant. There was a statistically significant difference between not having children and self-esteem among women and men.

Table 11 Linear regression analyses of whether number of children predicted well-being at the age of 52 among women and men. Fully adjusted models.

	Women	**Men**
	Adjusted Model 2	Adjusted Model 2
Dependent variables	B (SE) p	B (SE) p
Depressive symptoms at age 52		
2 children	*ref.*	*ref.*
1 child	0.27 (0.41) 0.510	0.57 (0.43) 0.185
3 children or more	-0.37 (0.31) 0.245	0.02 (0.35) 0.957
No children	0.67 (0.36) 0.066	0.48 (0.40) 0.223
R Square	0.068	0.067
Self-esteem at age 52		
2 children	*ref.*	*ref.*
1 child	-0.00 (0.10) 0.989	-0.04 (0.10) 0.709

3 children or more	0.14 (0.07) 0.058	-0.01 (0.08) 0.907
No children	0.15 (0.09)* 0.084	-0.17 (0.09)* 0.057
R Square	0.116	0.090
Meaningfulness at age 52		
2 children	*ref.*	*ref.*
1 child	-0.08 (0.10) 0.451	-0.05 (0.12) 0.679
3 children or more	**0.16 (0.08)** **0.038**	0.04 (0.09) 0.654
No children	-0.12 (0.09) 0.181	**-0.29 (0.11)** **0.007**
R Square	0.064	0.036

Adjusted Model 2 (fully adjusted): Adjusted for parental divorce, parental SES, and depressive symptoms/self-esteem/meaningfulness when participants were 16.

* The results differed statistically significantly among the genders ($p<0.05$)

7 Discussion

This dissertation examined the association between family transitions and mental well-being from age 16 to 52 from the life course perspective. The study centered on relationship status, transition to parenthood, and parenthood factors (such as being a parent, timing of parenthood, and number of children) during the life course.

First, relationship status was associated with mental well-being at different age stages, and age showed more consistency than variation in this association. Compared to being married, being single and divorced was associated with depressive symptoms and lower self-esteem throughout the life course, especially among men. Among women, no differences were found between the different relationship types (marriage, cohabitation, dating) in terms of mental well-being.

Second, the transition to parenthood was associated with changes in the trajectories of self-esteem and meaningfulness. The positive development of these trajectories altered after the transition, with noticeable changes such as slowdown, cessation, or even decline in mental well-being trajectories. However, age and relationship status appeared to contribute to these observed changes to some extent, especially among men.

Third, parents appeared to have better mental well-being than non-parents before and after the transition to parenthood, especially men. However, the differences attenuated considerably when relationship status was considered. After adjustment for relationship status, no differences were found between the mental well-being of mothers and non-mothers. Fathers had better mental well-being after the transition than non-fathers at the corresponding time, especially in terms of long-term meaningfulness.

Fourth, in line with the selection effect of mental well-being on parenthood, lower self-esteem in adolescence was associated with a lower likelihood of becoming a parent among men. Among women, the selection effect concerned depressive symptoms in adolescence predicting earlier timing of parenthood.

Fifth, parenthood was associated with a greater sense of meaningfulness in middle age for both women and men compared to non-parents. Parenthood was systematically associated with better self-esteem throughout the study among men. Regarding meaningfulness, we also found in women that having children at an older age was associated with feelings less meaningfulness, whereas having three or more children was associated with a greater sense of meaningfulness.

7.1 Relationship status and mental well-being across different age stages

During the life course, expectations and needs for a romantic relationship evolve, and different relationship statuses can have different effects on mental well-being depending on their timing. Sub-study I examined the association between relationship status and mental well-being at four different life stages, when the participants were aged between 22 and 52. Its findings revealed that in young adulthood (at the age of 22), being single as opposed to married was associated with depressive symptoms but not self-esteem among both women and men. However, no associations were found with other relationship statuses in this age group. These findings align with previous research results that have highlighted the importance of romantic relationships for mental well-being during this age stage (Simon & Barrett, 2010). It appears that having a romantic relationship is important for mental well-being, irrespective of legal status or living arrangements, which suggests that not having such romantic relationships can lead to poorer mental well-being (Fincham & Cui, 2010).

As the participants moved into their thirties, a life stage during which marriage is more common, this study found that marriage was associated with less depressive symptoms among men but found no significant associations with depressive symptoms among women. These findings are consistent with prior research results that have emphasized the positive effects of marriage on men's mental well-being (Brown et al., 2005; Rapp & Stauder, 2020). It has been suggested that marriage provides more resources to men, such as emotional support and a healthy lifestyle, therefore benefiting their mental well-being (Williams & Umberson, 2004). Another possible explanation may be related to traditional marriage norms, which can offer men greater benefits than women (Williams et al., 2009), potentially explaining why each relationship status, except for being married, was associated with depressive symptoms and lower self-esteem among men. Among women, the only observed association at this age was with being single, which was linked to lower self-esteem. This association might be influenced by individuals' own expectations as well as societal expectations regarding marriage and family formation during this phase (LaPierre, 2009). Nonetheless, it is important to note that this was the only association between relationship status and self-esteem among women throughout the study, suggesting that women's self-esteem may be more influenced by factors beyond relationship status alone.

When individuals enter their forties, they have typically encountered transitions related to marriage and parenthood, which was also evident in our study. During this life stage, we found that being single or divorced was associated with depressive symptoms among both women and men. Men who were single or divorced also reported lower self-esteem. These associations might be linked to societal expectations regarding marriage and parenthood, for example, their timing during

this phase of life. Deviating from these expectations, experiencing marital dissolution, or comparing oneself to others who are in fulfilling relationships and have a family may have a negative impact on mental well-being (LaPierre, 2009). The absence of important social support, often provided to a large extent by intimate relationships, could also contribute to these associations (Umberson et al., 1996). Middle age in turn may present challenges for forming a new romantic relationship (Bierhoff & Schmohr, 2003), emphasizing the importance of timing for relationship status.

Finally, when the participants reached their fifties, the results once again highlighted the association between not being in a relationship and poorer mental well-being among men, as being divorced was associated with higher levels of depressive symptoms and lower self-esteem, and being single was linked to poorer self-esteem. This aligns with previous studies in which divorced men have consistently reported more depressive symptoms than married men in different age groups (Jang et al., 2009). For women, at the age of 52, an association was only found between being single and more depressive symptoms, whereas other relationship statuses, including being divorced, did not differ from being married in terms of mental well-being.

Overall, being divorced or single was quite consistently associated with poorer mental well-being among men. Conversely, the association between relationship status and mental well-being among women exhibited more variability and depended on the specific mental well-being variable and the age stage. These gender differences may be influenced by factors such as social support, social expectations, and gender roles (Umberson et al., 1996; Williams et al., 2009). For example, women often report receiving more social support from sources outside of marriage, whereas men report receiving support from their spouses (Stronge et al., 2019; Umberson et al., 1996).

As highlighted in the literature review, prior studies have often combined the relationship statuses of divorced and cohabiting into one category: unmarried. Although awareness of the differences between relationship statuses has increased, most studies still place those who are dating in the same category as singles. However, in the present study revealed, in line with Rapp and Stauder (2020), that being single was consistently associated with depressive symptoms across various age stages, while dating was not associated with poorer mental well-being, with only few exceptions. These findings highlight the importance of differentiating dating as a distinct category when studying the associations between relationship statuses and mental well-being.

7.1.1 Moderating role of relationship quality

Sub-study I also examined the moderating role of relationship quality in the association between relationship status and mental well-being. Some indications

emerged suggesting that among those men who were dating or cohabiting, as opposed to married men, a higher relationship quality was a protective factor against depressive symptoms. However, it is noteworthy that overall, the study yielded relatively few significant interactions that indicated that relationship quality played a moderating role. One possible explanation for this limited number of moderating associations could be that in this follow-up data, the participants reported notably high relationship quality levels on average. Additionally, as an association has been found between poor marital quality and divorce (Williams et al., 2009), it might be that many individuals who have previously experienced poorer relationship quality might already have been divorced.

7.2 Mental well-being before and after the transition to parenthood

Throughout the life course, individuals encounter various transitions that can introduce elements of stability, change, and continuity into the trajectories of mental well-being, with the transition to parenthood being an example of such a pivotal transition. Sub-study II focused on examining the trajectories of self-esteem and meaningfulness before and after the transition to parenthood during the life course. Notably, mental well-being trajectories differed before and after the transition among both women and men, with the increasing mental well-being trajectories before the transition taking stable or decreasing paths after the transition. For women, these differences in trajectories were a robust finding, and were in line with prior research results emphasizing significant changes in women's mental well-being following the transition to parenthood (Asselmann et al., 2022). Becoming a mother entail taking on new roles and responsibilities, particularly as the primary caregiver, which may contribute to the changes in women's mental well-being as they navigate the challenges. Men's mental well-being trajectories also exhibited a similar pattern of change before and after the transition; however, after accounting for relationship status, no differences were observed in men's mental well-being trajectories before and after the transition. This finding suggests that fathers' mental well-being may be more closely associated with their relationship status, which might be more important for men's mental well-being trajectories than parenthood itself.

Of the mental well-being trajectories before the transition, both women and men had increasing self-esteem and meaningfulness during the years before the transition to parenthood. However, after relationship status was adjusted for, the increase in mental well-being before the transition continued among women but diminished among men. The increase in women's mental well-being aligns with the results of previous research that has focused on the immediate period before the transition or during pregnancy (Bleidorn et al., 2016), although the present study

extended these findings by examining a longer timeframe, which encompassed the years preceding the actual transition. Moreover, prior research has also reported an increase in self-esteem and meaningfulness from adolescence to mid-adulthood (Orth et al., 2018; Steger et al., 2009), and this may contribute to this observed trajectory. The increase in mental well-being among mothers may also be linked to their preparation for the new role of motherhood, which may foster a sense of meaning and purpose. It is possible that this transition prompts self-reflection and a reevaluation of their values and priorities as they anticipate starting their own family and having a child (Wehner et al., 2022), and this may contribute to the increase in their mental well-being. In contrast, among men, the significance of relationship status was once again highlighted, suggesting that the increase in mental well-being among men may be more associated with their relationship status rather than with impending parenthood.

After the transition to parenthood, the mental well-being trajectories followed a stable path with no significant increase or decrease in women's mental well-being over time. Although previous studies have often highlighted a short-term increase or decrease in mental well-being immediately after becoming a mother (Bleidorn et al., 2016; van Scheppingen et al., 2018), our findings suggest that the path is relatively stable in the long term. This aligns with aspects of the set-point and dynamic equilibrium theories, suggesting that individuals may experience temporary changes in mental well-being after the transition but ultimately return to a stable level after the initial period of adjustment to parenthood. In contrast, fathers' trajectory of self-esteem decreased after the transition to parenthood, suggesting a decline in their overall evaluation and perception of self-worth. This decline may be linked to having to adapt to changing social roles as caregivers and the expectations associated with fatherhood, such as the pressure of being a provider and role model while also balancing work, family, and personal life (Rayburn & Coatsworth, 2021). However, it should be noted that no differences were found between the trajectories of self-esteem before and after the transition.

7.3 Comparison of the mental well-being of parents and non-parents

Sub-study II also examined the differences between parents and non-parents at four different timepoints: one before and three after the transition to parenthood (or at a comparable age). Previous findings regarding the differences between parents and non-parents have been inconsistent and often limited to cross-sectional studies, which may not fully capture the dynamic changes that might occur after becoming a parent. Studying the mental well-being of parents and non-parents at the same time before and after the transition to parenthood (or comparable age) helps distinguish between the effects of parenthood and natural maturation processes (Bleidorn et al., 2016).

Our findings suggested that fathers had better mental well-being throughout their life course than non-fathers, whereas mothers gained a greater sense of meaningfulness after the transition to parenthood than the non-mothers at comparable ages. However, when relationship status was adjusted for, most of the differences between parents and non-parents diminished, highlighting the importance of relationship status in the association between parenthood and mental well-being. Nonetheless, some notable differences persisted among men, as fathers had better self-esteem during the years following the transition to parenthood and experienced more meaningfulness for decades after the transition. These findings suggest that, longitudinally, fathers experienced these positive feelings more than non-fathers, suggesting that fatherhood may positively contribute to a man's sense of purpose, fulfillment, and self-worth. However, combined with our finding that father's self-esteem or meaningfulness did not increase before and after becoming a parent, this might indicate some selection mechanism into parenthood, which is in line with the findings of Sub-study III.

7.4 Mental well-being during adolescence and parenthood

In the life course perspective, previous experiences can act as both risk and protective factors, potentially leading to a selection effect on different life transitions (George, 2007). Sub-study III examined the selection hypotheses, i.e., whether mental well-being in adolescence is associated with parenthood factors in middle age.

The results consistently revealed that men's low self-esteem at age 16 was associated with having no children by middle age. These findings are in line with those of a previous longitudinal study by Kalucza et al. (2015), who found similar results regarding the selection effect: Men with depression in adolescence were less likely to be a parent by middle age. Golovina et al. (2023) also found a selection effect on depression and parenthood, but among both women and men. Previous research has shown that self-esteem plays an important role in social relationships (Harris & Orth, 2020). For instance, higher levels of self-esteem are associated with a higher likelihood of forming a relationship (Luciano & Orth, 2017). Therefore, lower levels of self-esteem may be associated with difficulties initiating relationships and, therefore, limiting the opportunities to start a family and have children. This might especially have been the case among the men in this cohort, who were born in the 1960s when traditional gender roles in dating and relationship formation were still prevalent. Traditional gender roles allocate men more proactive and dominant roles in dating, such as inviting someone on a date and planning the date (Cameron & Curry, 2020; Rose & Frieze, 1989). As a result, men with lower self-esteem may have been less inclined to take on such active roles in dating, which could have hindered their ability to enter relationships and eventually become parents. On the other hand, men with better self-esteem may have exhibited more

proactive behaviors in seeking and cultivating relationships, potentially leading to their selection into parenthood (Luciano & Orth, 2017).

Among women, our findings were consistent with the results of the study of Kalucza et al. (2015) but inconsistent with the study of Golovina et al. (2023), as we found no selection effect into parenthood. However, we did find that depressive symptoms at the age of 16 were associated with a higher likelihood of having children relatively early—at the age of 24 or younger. For those experiencing depression, early parenthood might provide a sense of purpose and responsibility, which may mitigate the negative effects of depression and offer a new direction for life. Becoming a parent may provide a sense of belonging, increased responsibilities, and an opportunity to redirect focus and energy toward caring for a child (Clayborne et al., 2019). Adolescents with depressive symptoms might also exhibit impulsive behaviors (Regan et al., 2019) and have limited knowledge of contraception (Hall et al., 2013). The combination of an impulsive decision-making process and limited awareness of contraception can increase the chances of becoming a parent at a young age.

7.5 Association between parenthood and mental well-being in middle age

The study of the relationship between parenthood and mental well-being in middle age has yielded inconclusive results (Dykstra & Keizer, 2009; Kalucza et al., 2015; Koropeckyj-Cox et al., 2007). Sub-study III addressed this issue and found support for the notion that this relationship is influenced by various factors, including the specific mental well-being outcome, gender, and different aspects of parenthood. Furthermore, early-life factors such as mental well-being during adolescence can also play a role in shaping these associations.

Consistent with previous research (Nelson et al., 2013), this study found that having children was associated with experiencing more meaningfulness in middle age than not having children, among both women and men. The role of being a parent may be perceived as meaningful and purposeful, contributing to an overall meaning in life (Morse & Steger, 2019). Some may even see parenthood as a significant life goal and a calling (Coulson et al., 2012). In contrast, individuals who have wanted to but have not been able to become parents might experience reduced meaningfulness during their life course. However, as no information was available on the reasons for being childless (voluntary or involuntary) or whether having children was planned and desired, we were unable to differentiate these groups' experiences.

Among men, a consistent pattern emerged in which not having children was consistently associated with poorer self-esteem in middle age. This alignment with the selection hypothesis suggests a potential reciprocal association with parenthood and self-esteem. When the results of the selection and causation hypotheses in Sub-study III are combined, it becomes apparent that the association between parenthood and self-esteem may be bidirectional: Lower self-esteem is associated

with not forming relationships, which, in turn, is associated with not having children, and vice versa.

Among women, the results were different depending on the parenthood factors. The study found that among women, having children was associated with fewer depressive symptoms. However, a study also found that among women, having children at a relatively late age, 33 or older, was associated with feeling less meaningfulness. This negative association may be influenced by the age of the children, as prior research indicates that having younger children correlates with poorer mental well-being than having older children (Simon & Caputo, 2019). Women who become mothers at a later stage might find themselves raising younger children or teenagers by the age of 52, and encountering the demanding challenges of constant care, supervision, and physical exhaustion, which could contribute to feeling reduced meaningfulness. Having three or more children was associated with a greater sense of meaningfulness. For some mothers, having a larger family may align with their desired number of children and personal life goals (Kravdal, 2014), and achieving this goal could provide a sense of purpose and meaning in their lives.

We also observed some variation between the results of Sub-studies II and III. Sub-study III yielded a positive association between parenthood and mental well-being, emphasizing the potential benefits of parenthood for mental well-being in middle age. In contrast, Sub-study II exhibited different patterns, with no differences between mothers and non-mothers and only a few differences emerging between fathers and non-fathers. However, this difference in results may be attributed to the influence of relationship status. In Sub-study III, we were unable to study the role of relationship status due to the timing and order of all the relevant events. Conversely, in Sub-study II, relationship status was adjusted in each study wave, which led to a considerable attenuation of relevant associations. This highlights relationship status as a potential confounding variable and underscores the importance of relationship dynamics in the broader context of parenthood's impact on mental well-being.

7.6 Methodological considerations

The strength of this study was the 36-year-long longitudinal follow-up data, which covered the whole fertility period from the age of 16 to 52. At baseline, the study covered almost the entire targeted age cohort from Tampere, with a participation rate of 96.7%. While there has been some attrition in the follow-ups, the participation rates have been reasonably good considering the length of the study period.

The study maintained consistent follow-up procedures at ten-year intervals, ensuring the continuity and comparability of the data across different timepoints. This consistency enabled the examination of the same mental well-being variables in the cohort. However, the intervals between the study waves were quite long, and this limited the ability of the present study to directly assess the immediate

association between family transitions and each respondent's mental well-being. Moreover, other life course events may occur over a ten-year span, which may potentially influence mental well-being alongside family transitions. Therefore, it is important to acknowledge that the results of Sub-study II do not allow for causal inference.

Using a cohort study also presents some challenges in terms of generalizing results. This study examined a cohort born in the late 1960s, and it is important to note that the findings may not necessarily be generalized to younger or older cohorts. Family transitions, as well as the norms and expectations surrounding families, have changed over the decades. The cohort examined in this study have lived during a time when traditional family models predominated. However, childlessness was already relatively common for this cohort in Finland (Rotkirch & Miettinen, 2017), although the potential social stigmas attached to childlessness may have had different effects on mental well-being than today, as the acceptance of childlessness has grown (Merz & Liefbroer, 2012).

Another important consideration related to generalizability is that the baseline study wave was collected in Tampere in 1983, and during the 1980s and 1990s Tampere represented Finland well in terms of population structure, birth rate, family forms, and educational level (Statistics Finland, 2023). Finland, along with other Nordic countries, is known for its robust social welfare system, gender equality policies, and family-friendly initiatives that aim to support parents and promote the work–family balance (Eydal & Rostgaard, 2011). These policies include generous parental leave, affordable childcare, and accessible healthcare services. Such comprehensive support systems can positively impact individuals' experiences of the transition to parenthood and potentially contribute to higher levels of self-esteem and meaningfulness (Glass et al., 2016). However, when the findings are compared to those in other countries, such as the United States, notable differences can emerge regarding family policies. Therefore, results from these countries may differ from those of our studies. For example, Glass et al. (2016) found that the largest disadvantage of parenthood in terms of happiness was in the United States, whereas in countries with generous family policies, parents report higher happiness levels than non-parents. The negative association between childlessness and mental well-being is also believed to depend on the country in which it is studied. For example, in countries that are more accepting of childlessness, the negative effect on mental well-being is smaller for those without children. (Huijts et al., 2013.)

One limitation of the study is related to its parenting measures. When asking about children, i.e., "Do you have children?" or about the children's birth years, the survey did not specify whether the questions concerned biological children, stepchildren, or fostered, or adopted children. Therefore, each respondent has defined what they meant by children in relation to this question. Although this is perhaps not such an important question in terms of parenthood in general, it is

particularly important in terms of the timing of parenthood or parenting years, which are based on the birth year of the first child. This does not necessarily coincide with the year of becoming a parent, if the oldest child in the family is not one's biological child.

In research on the association between family transitions and mental well-being, some methodological considerations regarding the selection effect should be noted. Despite adjustment for significant factors from adolescence, such as parental SES and mental well-being at the age of 16, some unobserved or unmeasured variables might still influence the observed associations. The complex interplay of various factors that influence an individual's decisions about parenthood or other family transitions makes it challenging to fully account for all potential confounders.

7.7 Implications for future research

Future research should continue to employ longitudinal study designs to further examine the life course perspective in studies of family transitions and mental well-being. Examining the trajectories of mental well-being over the life course enables gaining valuable insights into the family factors influencing individuals' mental well-being. The importance of life course studies for understanding these mental well-being trajectories cannot be overstated, as they offer a comprehensive view of how individuals' mental well-being evolves over time in response to various family transitions and experiences.

The influence of various social identities, including gender, SES, race, and cultural background, plays a crucial role in shaping individuals' experiences and mental well-being. To gain a more comprehensive understanding of the complexities involved, future research should adopt a more diverse approach, exploring how different social factors interact with mental well-being trajectories in the context of relationship status and parenthood. Understanding the underlying mechanisms associated with family transitions and mental well-being is important. For instance, this study revealed gender differences, and future research should delve into the specific factors contributing to these differences, such as the influence of gender roles and culture.

This study focused on one Finnish cohort, but future research should also conduct comparative studies across different cohorts, countries, and cultures to gain insights into the universal and culturally specific aspects of family transitions and mental well-being. By examining variations in cohorts and cross-cultural factors, researchers can identify the influence of contextual factors such as policy environments, societal expectations, and social norms. The contextual factors in which individuals navigate relationships and parenthood may significantly affect their mental well-being.

7.8 Policy and practical implications

Using a longitudinal study design and a life course perspective, the dissertation found long-term associations between family transitions and mental well-being, yielding important implications for policy and support systems in Finland.

Given the significant impact of family transitions on mental well-being, existing family support systems, including maternal clinics and family support services, play a vital role in addressing the diverse needs and complexities that individuals encounter during these critical life stages. These mechanisms offer guidance, education, and assistance during the transition to parenthood, further fostering the well-being of parents. (Klemetti & Hakulinen-Viitanen, 2013.) The present study showed how an increasing trajectory of mental well-being turned onto a stable or even decreasing path after the transition to parenthood, highlighting the importance of focusing on pre- and postnatal mental well-being and providing appropriate support systems throughout parenthood for both women and men. Promoting preparation for parenthood by providing accessible and evidence-based resources can help parents cope with the psychological challenges that the transition to parenthood can bring.

We observed a decrease in self-esteem following the transition to parenthood among fathers. Although maternity clinics in Finland have started to focus more on men's mental health during pregnancy and after, the main focus has been on the mothers' mental health. The support and care for fathers during the transition to parenthood should be further developed. This includes targeted education and resources to address the unique challenges and needs that men face during the transition to parenthood, ultimately promoting their mental well-being and fostering healthier family dynamics. (Ministry of Social Affairs and Health, 2008.)

The study also revealed the important role of mental well-being resources, such as self-esteem, in becoming a parent. This observed selection effect, particularly among men and concerning self-esteem, underscores the long-term impact of adolescents' mental well-being on parenthood and life course trajectories. Therefore, prioritizing early intervention and support for adolescents' mental well-being is important, and the focus should be on comprehensive mental health education and accessible mental health services.

8 Conclusion

The present study comprehensively examined the relationship between family transitions and mental well-being across the life course in one Finnish cohort. Starting a family encompasses pivotal life events, such as forming relationships and becoming a parent. These family transitions were intricately associated with mental well-being with earlier experiences, and multiple factors contributing to this association. By examining both the positive aspects, such as self-esteem and meaningfulness, and the negative aspects, such as depressive symptoms, of mental well-being, this dissertation revealed results that can only be attained by taking such a holistic perspective of mental well-being.

This study showed a persistent association between relationship status and mental well-being from the age of 22 to 52. Notably, divorced or single individuals, regardless of their age stage, consistently reported poorer mental well-being than their married counterparts, with this finding being particularly pronounced among men. The findings also suggested that among women in particular, dating and cohabiting appeared to be no different than marriage in terms of mental well-being.

Further, the findings indicated a positive association between parenthood and mental well-being, where being a parent was associated with a greater sense of meaningfulness in middle age among both women and men, but also with less depressive symptoms among women and with better self-esteem among men in middle age. Although the preceding positive development in mental well-being trajectories no longer appeared positive after the transition to parenthood, in the long term, parents reported better mental well-being than non-parents. For men, the results supported both the selection hypothesis, proposing that better self-esteem in adolescence is associated with becoming a parent, and the causation hypothesis, suggesting that being a parent is associated with better self-esteem in midlife after prior self-esteem is controlled for.

This dissertation contributes to the ongoing societal discussion on parenthood and the associated challenges by emphasizing the long-term rewards of parenthood for mental well-being, for example, in terms of fostering a greater sense of meaningfulness. The study findings highlight the nuanced links between family transitions, gender, and mental well-being in the broader context of an individual's life course. Utilizing follow-up data and the life course perspective is essential for understanding the dynamic interplay between family transitions and mental well-being both longitudinally and at various stages of life. This comprehensive

understanding has important practical implications for effectively supporting individuals throughout their life course, while also highlighting the enhancement of mental well-being resources.

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Appendix 1. The literature on the association between parenthood and mental well-being in middle age.

Research	Study design	Participants	N	Country	Mental well-being factor	Results
Becker et al., 2019	Cross-sectional study design	Aged 50 or older	N=52,513	Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland	Lack of depressive symptoms (EURO-D) (also other measures, such as life satisfaction)	Having children correlated positively with a lack of depressive symptoms
Bures et al., 2009	Cross-sectional study design	Aged 51 or older	N=17,469	United States	Depressive symptoms	Variation by gender and marital status. Childless adults had the lowest predicted levels of depression
Dykstra & Keizer, 2009	Cross-sectional study design	Men aged 40–59	N=1467	Netherlands	Mental health index (also other measures such as economic well-being)	Men's partner history is key, not their parenthood status
Gibney et al., 2017	Cross-sectional study design	Aged between 55 and 75	N=15,827	Sweden, Denmark, the Netherlands, Belgium, France, Germany, Austria, Switzerland, Spain, Greece, Italy, Poland, and Czech Republic	Depressive mood (also quality of life)	Childlessness predicts less depressive mood
Hansen et al., 2009	Cross-sectional study design	Aged between 40 and 80	N=4169	Norway	Self-esteem and depression (also other outcomes,	Childless women report lower self-esteem than mothers, but no differences were found in

					such as loneliness)	depression. Parental status was unrelated to men's mental well-being
Huijts et al., 2013	Cross-sectional study design	Aged 40 or older	N=24,195	Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Latvia, the Netherlands, Norway, Poland, Portugal, Romania, the Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom	Depression	Being childless was associated with poorer well-being among men, but not women
Kalucza et al., 2015	Longitudinal study design	From age 16 to 43	N=1001	Sweden	Psychological Problems Index (PPI) including depressive symptoms, nervous symptoms, and sleep problems	Having children improved women's subsequent mental health, but not men's
Keenan & Grundy, 2018	Cross-sectional study design	Aged between 50 and 79	N=14,927	Austria, Belgium, Denmark, France, Greece, Italy, the Netherlands, Spain, Sweden, and Switzerland	Depression (also other measures such as physical health)	Childless women and men were not at higher or lower risks of depression. Number of children and early parenthood were associated with depression
Koropeckyj-Cox, 2002	Cross-sectional study design	Aged between 50 and 84	N=3135	United States	Depression (also loneliness)	Childlessness had no effect on depression among men. Among women, the parent–child relationship and attitude toward their childless status were associated with results

Koropeckyj-Cox, T., et al. 2007.	Cross-sectional study design	Women aged 51 to 61	N=5703 – 5776	United States	Depressive symptoms (also other measures such as happiness)	No differences between mothers and non-mothers
Menaghan & Cooksey, 2008	Longitudinal study	From ages 27–34 to 40	N=2354	United States	Depressive symptoms	No differences between childless women and mothers who had child prior to age of 30
Pudrovska, 2009	Longitudinal study design	From ages 53–54 to 64–65	N=5080	United States	Depressive symptoms, Purpose in life	Having at least one co-residential adult child of post-college age decreased psychological well-being among mothers but not among fathers
Pudrovska, 2008	Cross-sectional study design	Aged 53-54	N=4744	United States	Depressive symptoms	Parents did not differ from non-parents. But having minor children was associated with higher levels of depressive symptoms than having children aged over 18
Rimehaug & Wallander, 2010	Cross-sectional study design	Aged 30-49	N=24,040	Norway	Depression (also anxiety)	No statistically significant differences between parents and non-parents

The studies were selected according to the following criteria:

1. The study used one of the following outcomes: depression/depressive symptoms, self-esteem, and meaningfulness. Only the results of these outcomes are presented in the table.
2. Studies published from the 2000s onwards.
3. The study examined the mental well-being of middle-aged participants.