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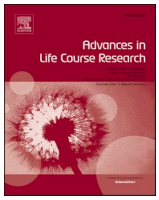

Do children's labour market experiences affect the mental health of ageing parents?

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ABSTRACT

In this study we investigate the influence of adult children's adverse labour market experiences on the mental health of their ageing parents. Taking a life course perspective, we examine the trajectory of adult children over nearly a decade following graduation from a school or university. We utilise data from Swedish registers linked to the Västerbotten Intervention Programme (VIP), a survey that provides detailed information about health outcomes in northern Sweden. We utilise sequence analysis and cluster analysis to categorise labour market trajectories of adult children. Next, we use linear regression models to examine how labour market trajectories of adult children are associated with parental mental health measured in VIP. We find that labour market trajectories indicating more persistent forms of labour market disadvantage are associated with poorer mental health among parents compared to trajectories characterised by stable employment or those involving only short periods of unemployment on the way to finding a job. We also find poorer mental health among parents with children who were born late in parents' lives, and who only started to settle down on the labour market during the period observed in our analysis. This suggests that parental uncertainty about children's economic security matters for mental health in the older generation.

1. Introduction

Labour market careers matter for the opportunities of parents to provide their children with a secure future (Barone & Schizzerotto, 2011; Brydsten & Baranowska-Rataj, 2022; Mastekaasa, 2009). However, relatively little is known about the impact of labour market experiences of adult children on parents' well-being (Albertini & Piccitto, 2023; Bister et al., 2025). This is an important research gap. Studies inspired by the "linked lives" principle emphasise that the life course transitions of adult children play an important role for parents due to altruistic, normative, and economic mechanisms (Kalmijn & De Graaf, 2012). Parents share their children's emotional states (Knoester, 2003), have expectations and hopes regarding children's socioeconomic achievements (Keijer et al., 2016) and feel the responsibility for the provision of support in case of economic needs (Manzoni & Gebel, 2023). Therefore, it can be expected that labour market experiences of adult children affect parental well-being.

The few studies that investigated the link between labour market transitions of adult children and parents' well-being found that parental life satisfaction decreases and depressive symptoms are elevated when children become unemployed. However, these associations tend to vary depending on family context. Albertini and Piccitto (2023) showed that the effects of adult children's unemployment vary by parental sex but are not moderated by children's labour market status before entering unemployment. Tosi and Grundy (2018) showed that children's unemployment plays a negative role for parental well-being when it coincides with a return to the parental home. Lee et al. (2024) further show that a financial disadvantage of adult children, combined with unemployment, is related to the pace of parents' cognitive aging, with some heterogeneity of the effects across parental gender, marital status, and educational attainment. Previous research also examined the moderating role of the macro-level context, revealing that the magnitude of the effects of children's unemployment varies according to cultural, institutional, and macroeconomic conditions (Albertini & Piccitto, 2023; Bister et al., 2025; Lao Gumà & Baranowska-Rataj, 2025; Tyagi et al., 2025). A related field of research investigated how the sum of all types of negative life events, such as divorce, injury or accident, or becoming the victim of a crime experienced by adult children, affects parental health (Barr et al., 2018; Fingerman et al., 2012; Gilligan et al., 2013; Greenfield & Marks, 2006; Milkie et al., 2008). These studies demonstrate how, generally speaking, adult children's welfare remains important to their parents. However, when a

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variety of conceptually different events in distinct offspring's life domains are summed up into a single measure, the theoretical mechanisms behind specific influences are less clear (Kalmijn & De Graaf, 2012).

This study narrows down the focus to the working life domain, where the arguments on altruistic, normative, and economic mechanisms are all relevant. At the same time, while previous studies on adult children's unemployment were restricted to yearly transitions, our conceptualisation of adult children's labour market experiences considers the whole working life trajectories. This approach builds on insights from the life course theory and from evidence about the complex nature of school-to-work transitions in contemporary societies. Modern labour markets make young people cycle between education and paid work and offer relatively little employment stability (Brzinsky-Fay, 2007; Van Winkle & Fasang, 2017). This is reflected in enrolling in study programs after gaining some work experience, and subsequently re-entering the workforce, as well as in more frequent interruptions related to unemployment. Looking holistically at labour market trajectories of young people provides more insights compared to focusing solely on adult children's employment status at a single point in time or restricting the analysis to yearly transitions. By capturing the full complexity of labour market trajectories rather than isolated events, this study contributes to a deeper understanding of how long-term patterns of labour market instability among adult children may constitute an underexplored pathway linking labour market conditions to the well-being of older generations.

The empirical evidence in this study is based on longitudinal analyses of Swedish registers linked with survey data. The registers enable constructing trajectories of school-to-work transitions of young adults. These trajectories are then linked with measures of parental mental health at age 60 derived from a survey designed in the framework of the Västerbotten Intervention Programme (VIP), administered in the northern region of Sweden (Norberg et al., 2010). Our dataset provides objective information about adult children's labour market experiences regardless of whether parents and children live together or have moved to a different region. This is a rare feature, as most large-scale panel data that link generations either rely on parental reports of children's experiences (which may result in measurement error) or provide information on adult children only if children remain in the parental household (which creates selection bias). Using sequence analysis techniques and regression models, our study extends the knowledge about the consequences of adverse experiences that cross over generations.

Inspired by the literature on gender differences in health responses to critical life events, our additional analyses are stratified by gender. Women tend to be more sensitive to the negative events in their family networks, whereas men tend to be more sensitive to the events that affect them directly (Simon, 2020). Previous studies show differences in how mothers and fathers are affected by adult children's college completion (Lee et al., 2025) or unemployment (Albertini & Piccitto, 2023; Bister et al., 2025). Based on these arguments, we can expect stronger associations with children's working lives among mothers compared to fathers.

This study is set in the context of Sweden, a country recognised for its generous welfare state, which provides citizens with relatively robust social support and financial security (Esping-Andersen, 1990). One of the key underlying features of this welfare state is an egalitarian educational system, which subsidizes participation in tertiary education programs, offers "second chance" schooling and lifelong learning options, with the goal to reduce social inequalities (Arnesen & Lisbeth, 2006). On the one hand, the state assumes a marked role in providing care and poverty alleviation, and hence, the financial and social responsibilities between parents and adult children are less pronounced compared to welfare states with stronger familial interdependencies. On the other hand, reaching economic and residential independence is viewed as a key marker of transition to adulthood in the Nordic countries (Spéder et al., 2014). Our analyses focus on parents living in the Västerbotten county, located in the northern part of Sweden. Historically, this region stood out with high levels of social and cultural capital (Larsson & Lundgren, 2011). The population of Västerbotten county has high levels of educational attainment (third highest in Sweden) and the lowest unemployment rate (Tillväxtverket, 2025). The rankings of the quality of life in Swedish municipalities, which consider public infrastructure, educational opportunities, and cultural life, as well as healthcare services, consistently place the towns in Västerbotten county at the top positions (Focus, 2025). Overall, the societal context of Sweden in general and Västerbotten county in particular integrates many factors that are protective for the mental health of older adults, which needs to be taken into account in the interpretation of the findings from this study.

Our study contributes to the literature in several ways. While the mechanisms of "downward" intergenerational transmission of (dis) advantage, i.e., from parents to children, are well-known, we focus on the "upward" transmission—a relatively underexplored area in life course research. Moreover, our investigation moves beyond static assessments of unemployment status or yearly transitions. Life course research highlights that the same event may have different meanings and consequences depending on its location in the overall life course trajectory (Aisenbrey & Anette, 2010). In this paper, we show that to understand how adult children's adverse labour market experiences are related to parental well-being, these experiences need to be placed in the context of a whole trajectory of completing education, searching for a job, and starting a working life. In this study, this goal is fulfilled using sequence analysis, a holistic approach that compares qualitatively different trajectory patterns. Our method of analysis makes it possible to distinguish whether unemployment occurs, for example, at the beginning of the school-to-work transition, after a period of stable employment, or as a repeated feature of the trajectory.

2. Theoretical perspectives

2.1. Life course perspective

Life courses are structured according to age, with social roles and activities concentrated at different life stages (Settersten, 2003). The transition to adulthood is a critical period marked by numerous role transitions, such as entry into the labour market, crucial for acquiring the resources and experiences needed for independent life as an adult (Buchmann & Kriesi, 2011). How the life course is structured extends beyond individual choices, reflecting societal context and the perceived "optimal" timing and sequence of these transitions, where transitions are intrinsically tied to societal norms regarding timing and order of life events (Aassve et al., 2013). The commonly accepted "social timetables" include graduating from education, finding a job, and continuing employment.

Life course research has long emphasised the need to move away from analysing discrete "transitions" towards taking a more holistic perspective that considers the temporal patterns of trajectories (Aisenbrey & Anette, 2010). This perspective allows for a more flexible definition of "successful" or "unsuccessful" outcomes, as the significance of certain life events can shift based on their timing, duration, and context in the life course. This motivates going beyond studying single labour market transitions by capturing the complex, often unstable trajectories that characterise young people's working lives. For example, whether or not unemployment might have long-lasting impacts on well-being depends on whether it occurs at the very start of working life, or later, between longer periods of stable employment (Voßemer et al., 2018), and it may depend on what type of job is found after transition into employment (Park et al., 2023). Moreover, prolonged or repeated unemployment can have more severe, long-lasting impacts compared to shorter spells (Daly & Delaney, 2013; Picchio & Ubaldi, 2022; Wanberg, 2012). This approach is particularly relevant when assessing how individuals' labour market experiences affect not only their life chances but also the well-being of others connected to them, such as their parents.

2.2. Linked lives

One of the key tenets of life course research is the concept of "linked lives", which emphasises the interdependence of lives, especially within families (Elder & Janet, 2009). This highlights that adult labour market trajectories unfold within a broader family context, where their achievements, struggles and transitions are embedded in shared networks of experiences. This is particularly relevant for relations between children and parents. Parenthood is a social role without any specific time boundaries, and which is likely to remain a central component of life even after children become adults. Thus, parenthood implies demands and responsibilities that continue to exert an impact on mental health. The burden on parental health is likely to be a function of transitions and experiences in the lives of adult children (Milkie et al., 2008).

Labour market experiences may have direct effects on stress processes in adults. According to the stress-process model proposed within life course research, relations between strains and mental health are determined by social statuses (Pearlin et al., 2005). Unemployment undermines self-esteem and can be perceived as a threat to one's social status (Wanberg, 2012). A lack of well-paid work may trigger negative social judgments and stigma (Macmillan & Shanahan, 2021). Moreover, out-of-order or off-time transitions related to working life not only threaten the individual sense of achievement but also the enactment of other roles and statuses among young people (Pearlin et al., 2005), such as gaining financial and residential autonomy or establishing a family (Van Wijk et al., 2022).

When adult children's labour market trajectories deviate from societal normative expectations, these experiences may reverberate beyond the individual, affecting parental mental health through multiple mechanisms. Research on stress processes highlights that the consequences of negative experiences in working life may crossover from an adult child to a parent (Bierman & Milkie, 2008; Pearlin & Bierman, 2013). Firstly, parents and their adult children relate to each other, and parents are emotionally involved in their children's lives (Greenfield & Marks, 2006; Pillemer & Suitor, 1991). This means that parents may empathise with their adult children and hence share the emotional burdens of negative experiences. Secondly, unemployment affects interactions with family members (Voßemer et al., 2024), which in extreme cases may alter the quality of intergenerational relations (Suitor et al., 2006). Second, the achievements of adult children and the quality of relations with them may be one of the most prominent dimensions of personal accomplishment available for parents in old age (Milkie et al., 2008). Thus, negative events in working lives of adult children may be interpreted as a failure to provide children with a good start in life. Parents tend to hope that their children will "grow up, establish themselves as functioning adults, and become important supports" (Mitchell, 2010). When children's labour market trajectories depart from this expectation, parental feelings of guilt may have negative consequences for parents' mental health (Greenfield & Marks, 2006). Thirdly, the financial strain associated with unemployment can increase the parents' burden, either through the necessity to support their children or the lack of support from them (Manzoni & Gebel, 2023; Tosi, 2020), although such strain might lessen in a social democratic type of welfare state.

In sum, based on the above-described theoretical arguments, we expect that having children whose labour market trajectories deviate from the commonly accepted "social timetables", i.e., graduating from education, finding a job, and continuing employment, is associated with poorer mental health for parents.

Life course perspective combined with stress process models implies that what matters is not only whether experiences of children deviate from the commonly accepted "social timetables", but also *in what way*. We expect that what matters for parental mental health is not just an adult's child's singular experience of unemployment, but also the persistence of unemployment, as well as the order vis-à-vis other experiences within the labour market career. We hypothesise that when unemployment takes the form of a job search after graduation from school and ultimately leads to well-paid jobs, parental mental health may be less negatively affected compared to when unemployment becomes a persistent or repeated experience. While the former labour market career pattern is closer to the normative expectations towards young adults, the latter may be interpreted as a pattern of disadvantage. Thus, we expect that persistent disadvantage in terms of remaining unemployed for extended periods or repeatedly moving in and out of unemployment, will carry the largest mental health penalties for parents.

3. Research design

This study uses Swedish register data linked to the Västerbotten Intervention Programme (VIP) survey available in the Linneus database (Malmberg et al., 2010). VIP was launched originally in 1984 to reduce morbidity and mortality from cardiovascular diseases and diabetes in Västerbotten County (Norberg et al., 2010), and it eventually became one of the largest contemporary population-based health screening programmes in the world (Malmberg et al., 2010). One of the key components of VIP is a comprehensive survey, with a questionnaire designed by the scientific advisory group. The Västerbotten County Council has given the primary healthcare centres the mandate and the funding to invite all inhabitants of the county to participate in the survey. Each year, all residents of the county who become 40, 50 or 60 years old are identified by the County Council administrative staff with the use of the national population register. This register is based on the individual social security numbers (*personalnummer* in Swedish) and includes the names, the addresses and the dates of birth of country inhabitants. This information is given to health care centres that, in turn, invite the survey participants for the interview. While their participation in the survey is voluntary, thanks to the societal trust towards healthcare personnel, the response rates are high compared to other surveys in Sweden and amount to approximately 66–67% (Norberg et al., 2010). The differences in social characteristics between participants and non-participants are overall small (Weinehall et al., 1998), allowing statistical inference about health outcomes among mid-life and older adults in the county. Nonparticipation in the VIP correlates weakly with lower income, marital status, and being born outside of Sweden (Norberg et al., 2010), the differences in participation rates according to these sociodemographic characteristics are at the level of 5–10%. Lower propensity of low-income, single adults born outside of the country of residence is a pattern that has also been observed in other large-scale health-related surveys in the Nordic countries (Norberg et al., 2012).

Linneus database links VIP data with register data from the Longitudinal Integrated Database for Health Insurance and Labour Market Studies (LISA). LISA register covers all individuals aged 16 years or older living in Sweden, with data on employment, incomes and social security benefits. These registers are matched with basic demographic data regarding family links and family structure from Statistics Sweden. Linkages between the VIP survey and the LISA register make it possible to identify adult children of parents who were the survey respondents in VIP.

We focus on cohorts born 1950–1955, thus, our study includes individuals who lived in Västerbotten county and reached age 60 by 2016, the last year of the observation window in the Linneus database. We examine parental well-being at age 60 because selecting measures taken at ages 40 or 50 would limit the possibility of examining working life trajectories of adult children. In cohorts born 1950–1955 in Sweden, the median first-birth age was 26.4 (Andersson et al., 2009). Young adults in Sweden typically do not start their working life before age 19 (Brydsten & Baranowska-Rataj, 2022). Thus, focusing on VIP measures taken at ages 40 or 50 would imply selecting families with children who have barely started their working lives. By focusing on age 60, we end up with a dataset where a majority of adult children of VIP respondents have already accumulated about 9 years of working experience. Note that the register data provide information about children's working lives beyond the time point when parents from cohorts 1950–1955 reached the age of 60 (see Diagram 1 in

the Online Supplement), however, using this information in our analysis of labour market sequences of adult children would mean measuring the explanatory variables *after* the outcome (i.e. parental mental health at age 60). To avoid the methodological pitfall which life course research refers to as "anticipatory analysis" (Hoem & Kreyenfeld, 2006) we group observations with children born after age 30 into a separate category in our analysis. An additional benefit of this approach is the possibility to explore how uncertainty about future developments in the working lives of adult children affects parental mental health.

Our data on VIP participants born 1950–55 with at least one child included 11,390 individuals. Based on register-based data for adult children, discarded data on 1 274 observations of children where the register-based information about incomes from any sources was missing and we created 16,938 labour market sequences covering children's ages 20–29 as well as a separate category of 4 732 sequences that were censored when parent aged 60 years (i.e. they were censored at the time of parental participation in VIP). After matching children with parents, we created 23,775 parent-child dyads. Our analyses had to exclude observations due to missing data on background variables (which were not available in register data on parental background, such as the municipality of residence at age 40, and/or missing in VIP, such as mental health outcomes). The number of missing observations in specific variables is presented in Table A2 in the Annex. As a result, depending on the mental health outcome used, our analytical sample used in regression analyses consists of 21,635–21,776 parent-child dyads.

3.1. Parental mental health

VIP includes a wide array of measures of physical and mental health and has been utilised to study health inequalities within generations. In this study, we use data from the Short Form 36 (SF-36) included in the VIP questionnaire. SF-36 was standardised in 1990 as a self-report measure of functional health and well-being and has since been used in research on life quality and mental health. It has been validated for the Swedish population (Sullivan et al., 2002). SF-36 includes the Mental Health Component, which consists of four subscales ranging from 0 to 100, with higher values corresponding to better mental health. The four subscales are: Vitality, Social Functioning, Role Emotional and Mental Health. *Vitality* assesses the level of energy and fatigue experienced by individuals. Items range from feelings of being tired or worn out all the time to experiencing a sense of full energy and vigour. This dimension measures the general energy levels and their impact on daily functioning. *Social Functioning* evaluates the extent to which physical or emotional problems interfere with social activities. It contrasts situations of extreme and frequent interference with the ability to perform regular social interactions as normal. *Role Emotional* assesses the impact of emotional problems on daily activities. It ranges from having significant problems due to emotional issues to experiencing no such problems, reflecting the emotional role limitations of the individuals. Finally, *Mental Health* encompasses feelings related to nervousness and depression, comparing states of constant nervousness and depression to feelings of being peaceful, happy, and calm all the time. It serves as an indicator of the overall mental health status of the individual. Using a whole range of outcomes instead of a single measure provides opportunities for testing a broader range of outcomes and helps avoid the investigator's discretion (VanderWeele et al., 2020). Note that because we do not condition on non-missing data in specific subscales of the Mental Health Component, and this implies that the sample size varies across regression models using these subscales.

3.2. Labour market sequences

Based on the information about income sources in Swedish registers, we construct labour market trajectories of adult children followed for nine years starting from age 20. The states are defined based on data on student allowances and student loans, income from paid work, unemployment benefits, social assistance, and sick leaves available in LISA. We omit from our analysis cases where no information about incomes from any of these sources is available (4.3% of adult children). We define the state "Student" which includes individuals who receive student allowances and student loans. Regarding employment, we differentiate between "Low-wage work" and "High-wage work". In Sweden, young people typically start working life with low wages, and then a vast majority of them move to better-paid jobs within a year (Brydsten & Baranowska-Rataj, 2022). Nevertheless, low earnings raise the risk of material deprivation (Halleröd et al., 2006) and are associated with health disadvantage (Hemström, 2005); thus we need to distinguish low-wage from better-paid employment. Previous research on low-wage employment adopted thresholds such as 60% of the national median wage (Alfonsson et al., 2023). We define "Low-wage work" (and "High-wage work") as a yearly income from employment that is less than or equal to 60% of the national median income that year (and more than 60% of median income), respectively. Note that the label "High-wage work" does not necessarily imply having an occupation that requires university-level education, as about 80 % of individuals with wages exceeding 60% of median income have occupations such as machine operators as well as sales and services assistants (Brydsten & Kalucza, 2024). The state "Unemployment" includes all individuals who are not in education or employment, and who receive unemployment benefits, social assistance, or work-training benefits from the Unemployment Office. The state "Sick leave" is based on receipts of sick leave benefits either during employment or during periods out of paid work. Note that individuals who became parents during involvement in paid work are considered employees even when they take parental leave. People who became parents while searching for a job are also eligible for parental leave and receive parental leave benefits. Therefore, depending on whether our adult children took parental leave during the year when they were employed or unemployed, we treated the spells of parental leave as a part of employment or unemployment, respectively. Detailed information on the definition of these states is provided in Table A1 in the Annex. Using the above-listed categories, we create nine-year labour market trajectories for all children. Since sequence analysis, the method used in this study, requires trajectories to be of identical length, children whose trajectories are shorter than nine years are grouped into the "*Unfinished Trajectory*" category.

In the first part of the analysis, we utilise sequence analysis, which takes complete trajectories comprised of several states as its unit of analysis. A key difference between sequence analysis and other modelling-based methods, such as panel regression models, is that it does not have any assumptions about how the data was generated (such as specific underlying distributions). Instead, sequence analysis tries to uncover patterns in data and to identify the processes that brought them about (Aisenbrey & Anette, 2010). The advantage of sequence analysis lies in comparing qualitatively different configurations of trajectories that vary in timing, ordering, duration, and recurrence of states. In this study, we applied the Optimal Matching (OM) algorithm. By comparing two sequences of two separate individuals, OM techniques can be used to calculate a quantifiable difference between the two sequences. The sequence analysis was implemented using the TraMineR package for R (Gabadinho et al., 2011). Dissimilarity between sequences is calculated using OM with substitution costs calculated by transition rates ("TRATE") and insertion/deletion costs set to 1. Note that based on the similarity of school-to-work transition of young men and women in Sweden (Brydsten & Baranowska-Rataj, 2022), we pooled the data for sequence analysis across gender.

The sequences are clustered into the labour market "types" with the help of partitioning around the medoids (PAM) clustering, using the WeightedCluster package (Studer, 2013). PAM aims to obtain the best clustering into a predefined number of k clusters, clustering around a medoid sequence (Studer, 2013). We selected the final number of clusters using cluster parametric bootstrap validation techniques (Studer, 2021), also available in WeightedCluster, using 1000 bootstraps. We use the average silhouette measure as our cluster quality indicator, which calculates the average distance of any sequence to the average distance to

sequences in the closest cluster (Kaufman & Peter, 2009), attempting to maximise within-cluster homogeneity and between-cluster heterogeneity. The results from the sequence validation models, available in Fig. A1 in the Annex, combined with visual inspections of clusters, result in a seven-cluster solution interpretability. The final number of clusters was selected by balancing quantitative cluster quality and substantive interpretability. Cluster quality indicators were used as an essential constraint, while interpretability guided the choice among empirically plausible solutions. Specifically, we considered both the bootstrap-based validation results and the average silhouette measure, but also whether the resulting cluster solution identified analytically meaningful differences in school-to-work trajectories. We also calculate the sequence complexity index of all sequences. The complexity of a sequence refers to the instability or unpredictability of the state arrangements in the sequence (Ritschard, 2023). The complexity index (Gabadinho et al., 2011) further adjusts the index to take account of the diversity of visited states. Hence, the sequence complexity taking a value between 0 and 1, reflects both instability in transitions and instability in diversity in different states visited. A on the sequence complexity index indicates 0 a sequence is made out of one distinct state with no transitions.

3.3. Multivariate analyses

We examine how adult children's labour market trajectories are associated with parental mental health using ordinary least squares (OLS) regressions with robust standard errors. We control for parents' age (in linear form), sex (distinguishing between men and women), birth cohort (with dummies for years 1951–1955), and being born outside of Sweden. Our models include parental education attainment, distinguishing between the following categories: primary school (9–10 years of schooling), upper secondary school (*gymnasium* in Swedish), or higher education (post-secondary or university-level education). We also control for parental civil status and place of residence measured at age 40, i.e., before the onset of labour market trajectories of adult children. Parental civil status distinguishes between unmarried, married (or with a registered partner), divorced (or with a separated registered partner) and widowed individuals. Note that the register-based measure that records legal marital status (marriage and registered partnerships, foremost used by homosexual couples before legalization of same sex marriage in 2009) does not allow distinguishing between unmarried individuals who were cohabiting ("sambo" in Swedish) from those who were living without a partner. Consequently, our measure should be interpreted as legal marital status rather than partnership status. Parental municipality of residence divides municipalities into rural municipalities, smaller cities, commuter municipalities, and metropolitan areas. In order to control for the baseline health of a parent, we also control for parental sick leaves (due to illness, rehabilitation or work-related injuries) at age 40. Our analyses also control for children's birth order, sex, and being born outside of Sweden. Since our analyses use four dependent variables, namely SF-36 scales: Vitality, Social Functioning, Role Emotional and Mental Health described above, to address the issue of multiple comparisons, we applied a Bonferroni correction, adjusting the significance levels accordingly.

We perform three sets of additional analyses. First, since previous research on adult children's unemployment and parental mental health suggests different effect sizes across parental sex (Albertini & Piccitto, 2023), we estimated separate regressions for mothers and fathers (see Table S2 in the Online Supplement).

Second, sequence analysis can only compare sequences of equal length and the trajectories that are shorter than the pre-defined duration are typically discarded (Liao et al., 2022). In this paper, instead of discarding shorter trajectories, we create a residual category of children born after parents reached the age of 30 (we label this group of children as *Unfinished Trajectories*). This category is included in our main analyses as a dummy control variable. Next, it is investigated more in-depth using models with endogenous treatment effects (Wooldridge, 2010, pp. 948–949). These models consist of two equations, with the risk of having a child after age 30 (i.e. the risk of having a child with *Unfinished Trajectory*) and mental health at age 60 as outcomes in the first and second equations, respectively. As an exclusion restriction for estimating models with endogenous treatment effects, we created a dummy indicating the presence of parental siblings who had a child after age 30. This choice builds on studies on social influences in childbearing (Bernardi & Scott, 2016; Dahlberg & Kolk, 2018) which shows that individual fertility is affected by siblings' childbearing. The results from this analysis are reported in Tables S3 and S4 in the Online Supplement.

Finally, we test whether our parent-child dyad estimates reflect accumulated economic disadvantages among siblings rather than the associations with a single child's experiences. Previous research reveals substantial siblings' similarity in labour market outcomes, although the correlations are weaker in Nordic countries (Grätz et al., 2021; Grätz & Kolk, 2022). If siblings' correlations are strong, the estimates based on parent-child dyads might reflect the combined effects of accumulated economic disadvantage among all siblings, rather than a mental health penalty related to negative experiences of one specific child. To address these concerns, we re-estimated the regression models based on a sample of parents (rather than parent-child dyads) using indicators of the incidence of a particular cluster type among children of the parent. The regression coefficients in these models point to the impact of the number of children who experienced a particular type of trajectory. Our results are presented in Table S5 in the Online Supplement.

4. Empirical results

4.1. Working life trajectories of young adults

The first step of our analysis consists of identifying typical labour market trajectories of adult children. By means of cluster analysis, we find seven relatively homogeneous categories of trajectories. Fig. 1 illustrates, on a year-by-year basis, the distribution of states within clusters. In the following, we describe the type of experiences that adult children within each cluster had when they entered the labour market. We start from the clusters that comprise trajectories marked by the most positive experiences, labelled as *Educational Bridge* and *High-Wage Work*, and then we move to clusters of trajectories that represent labour market vulnerability. Table A3 in the Annex provides proportions of all the clusters in the sample as well as measures of their complexity.

Educational Bridge depicts a normative life course success pattern: individuals first pursue higher education, possibly after a year of initial employment, and then transition into relatively well-paid work. In *High-Wage Work*, most individuals consistently work with high income throughout the years. Among adult children for whom we observe complete trajectories, these trajectories are rather common, as altogether, they comprise of 24% of the total sample, and they are also the most stable life course trajectories with the lowest sequence complexity measures.

Trajectories representing less positive experiences include *Persistent Disadvantage*, where young people face extended periods with frequent interruptions due to unemployment. Meanwhile, *Prolonged Job Search* features trajectories of young adults who initially become unemployed but later secure employment and high incomes. Compared to adult children in *Persistent Disadvantage,* young adults in *Prolonged Job Search* are in a better situation. While the latter find their footing on the labour market after four or about five years, a majority of individuals in the former do so only after the full nine years, if at all. *Low-Wage Entrapment* instead includes individuals predominantly in low-wage jobs, with only a modest shift towards better-paid jobs in the later years. *Prolonged Education* includes individuals enrolling in educational programmes later in their working lives. In this category, studying is often interspersed with low-wage jobs. These four clusters all have similar levels of sequence complexity, significantly higher than *High-Wage Work*, indicating more transitions and different states visited throughout the sequence. Lastly, *Long-term Sickness* includes individuals who often experience work interruptions primarily

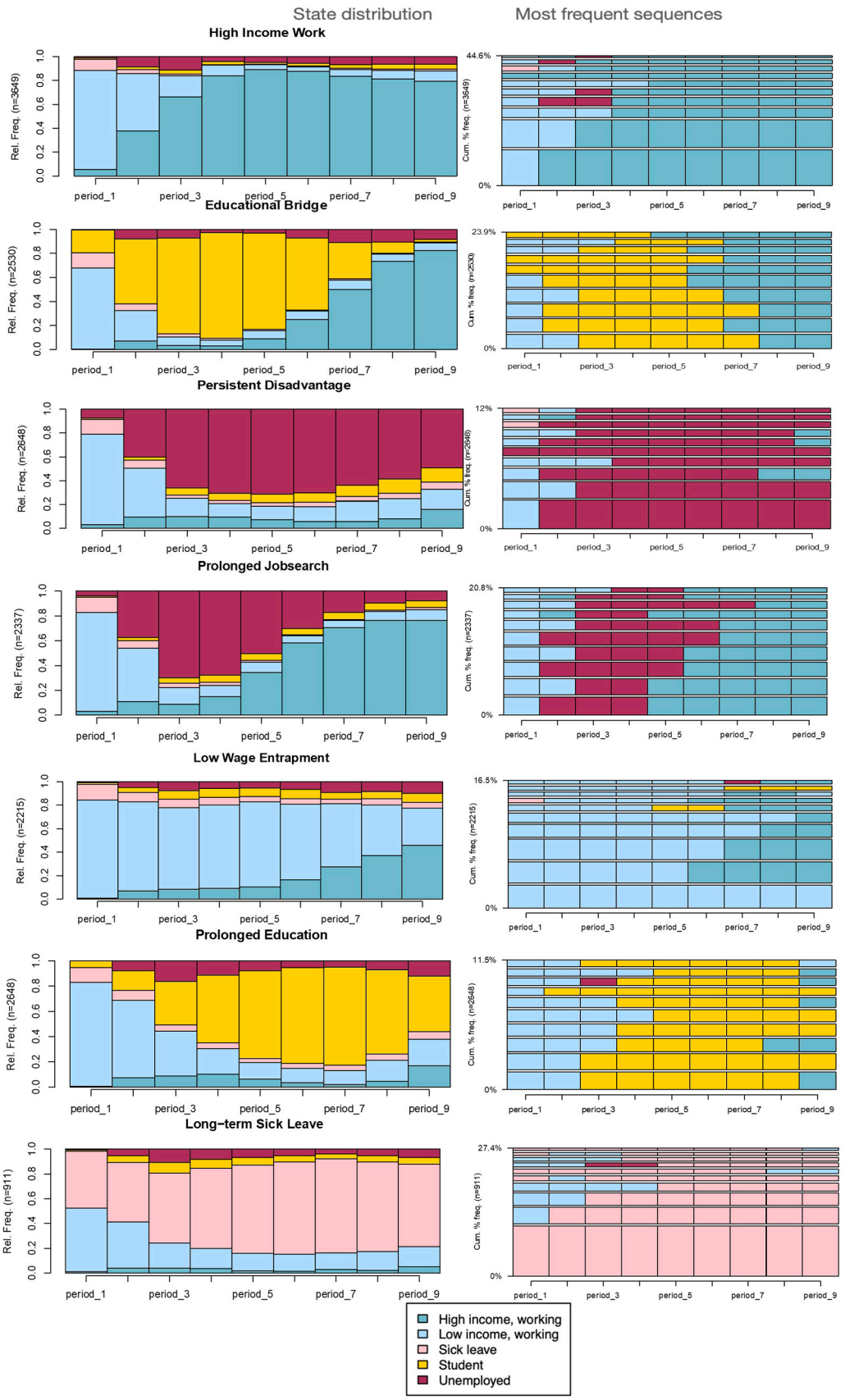

Fig. 1. Adult children's labour market trajectories – the distribution of states within clusters.

due to health-related disadvantages. Here, most time is spent on sick leave, and even when these young people are involved in paid work, they mainly find low-wage jobs. This cluster has lower sequence complexity, indicating a more stable trajectory, but under adverse circumstances.

Overall, clusters labelled as *Prolonged job search*, *Persistent disadvantage* and *Prolonged education* are the types of labour market trajectories of adult children that include periods of unemployment and we expect them to be associated with poorer mental health among parents. *Long-term sick leave* also includes trajectories marked by adverse experiences, but here the breaks from (usually low-paid) work are related to health problems, and we need to note that any negative associations with parental mental health may be driven by both labour market difficulties and health issues of adult children.

4.2. Parental mental health

In order to investigate how labour market trajectories of young adults are related to parental mental health, Fig. 2 shows the unadjusted means and 95% confidence intervals for the four SF-36 mental health subscales across the clusters distinguished above. These descriptive results suggest that, as hypothesised, adult children's *Persistent disadvantage*, *Prolonged job search*, as well as *Prolonged education* are related to poorer mental health among parents compared to *Educational bridge* or *High-wage work*. An even larger reduction in mental health is associated with having adult children who experienced *Long-term sickness*. We also find that parents whose children belong to the residual category *Unfinished trajectories* tend to have somewhat poorer mental health.

In the next step, we discuss the results from multivariate analyses, where *Educational Bridge* is chosen as the reference category, as it can be viewed to represent the normative life course "success". Table 1 presents the results from OLS regression models controlling for parental background characteristics (for full regression results, see Table S1, Online Supplement). In order to account for multiple comparisons (i.e. to lower the risk of getting false positives), we adjusted the statistical significance level to 0.002. We find no statistically significant associations between *High-wage work* and the reference category of *Educational Bridge*. As expected, we do see negative associations across the four subscales of Mental Health Component in the case of *Persistent Disadvantage* and *Long-Term Sick Leave*, and for three out of four subscales in the case of *Prolonged Education* and *Low-wage entrapment*. *Prolonged job search* is statistically significantly related to two subscales. We also find that parents, whose children belong to the residual category *Unfinished trajectories*, tend to have poorer mental health across all subscales

Looking at the strength of associations, given that all the Mental Health Component subscales range from 0 to 100, the associations presented in Table 1 are modest. *Long-Term Sick Leave*, where interruptions in paid work are generally related not only to unemployment but also to chronic or repeated health problems of the adult child, shows the strongest associations spanning from −3.14 (Mental Health) to −6.02 (Vitality). The associations between having a child who experienced *Persistent Disadvantage* span from −1.65 (Mental Health) to −4.32 (Vitality). For *Low-wage entrapment* the associations are weaker (Vitality, −2.62, Social Functioning −1.68). *Prolonged Education* is associated statistically significantly with only one subscale, namely Vitality (-2.29). Associations are similar between adult children's *Prolonged Job search* and parental Vitality (-2.39). Additionally, *Prolonged Job search* is related to poorer Social Functioning (-1.56) among parents. The associations between the residual category *Unfinished trajectories* and parental mental health range between −2.61 and 2.31 across the subscales.

We comment briefly on the associations between our control variables and parental mental health, based on the results from the regressions presented in Table S1 in the Supplementary material. Mental health among parents is related to sex and country of birth, with women as well as foreign-born parents reporting poorer mental health across all outcomes. We find no clear differences with respect to educational attainment or municipality of residence. However, we find clear disparities between parents who have a partner and those who either have no partner or have been divorced, with the latter group reporting poorer mental health. Sick leaves at age 40, which are meant to proxy prior health problems, are also related to poorer mental health. The sociodemographic characteristics of children, such as sex and parity, are not related to parental mental health; however, parents of children who were born outside of Sweden report substantially poorer mental health. We need to note that in our sample, there were only 98 observations of parents with children born abroad, and yet the estimates are statistically significant. While the small number of observations calls for interpreting the associations with care, we believe the results may capture some adverse experiences to which these children were exposed before coming to Sweden (such as traumatic events in the country of origin) or upon arrival in Sweden (such as discrimination in various spheres of life). We

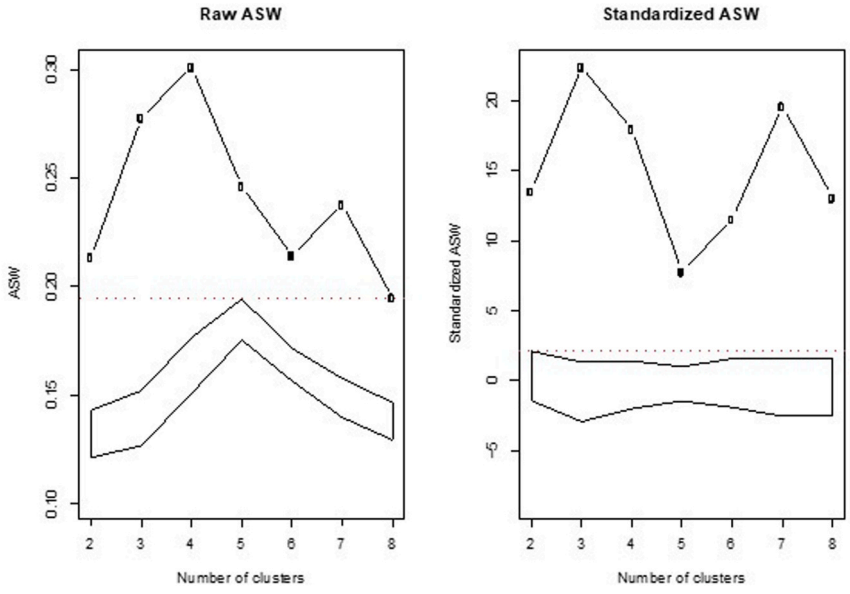

Fig. 2. Adult children's labour market trajectories and parental mental health. Mean values and 95% confidence intervals of the four mental health subscales. Notes: Swedish register data linked with VIP survey. Social functioning (SF) Mental Health (MH), Role Emotional (RE) and Vitality (VT). Note that the y-scales for health dimensions vary: MH and SF have a 6-step scale, RE and VT have an 11-step scale. Each subscale plot use distinct absolute value ranges for the y-axis.

Table 1
Labour market trajectories of adult children and parental mental health – results from OLS regressions.

SF36 Subscale	Mental Health		Vitality		Social Functioning		Role Emotional	
	b(se)	p	b(se)	p	b(se)	p	b(se)	p
Labour Market Cluster (ref. Educational bridge)								
High wage work	-0.06	0.864	-1.06	0.042	-0.91	0.033	-0.64	0.265
	(0.35)		(0.52)		(0.42)		(0.58)	
Long-term sick leave	-3.14	0.000	-6.02	0.000	-3.22	0.000	-3.44	0.001
	(0.57)		(0.83)		(0.74)		(0.99)	
Low-wage entrapment	-0.99	0.013	-2.62	0.000	-1.68	0.001	-2.06	0.002
	(0.40)		(0.59)		(0.49)		(0.65)	
Persistent disadvantage	-1.65	0.000	-4.32	0.000	-2.33	0.000	-2.82	0.000
	(0.41)		(0.59)		(0.49)		(0.68)	
Prolonged education	-0.94	0.010	-2.29	0.000	-0.65	0.137	-0.28	0.627
	(0.36)		(0.53)		(0.44)		(0.57)	
Prolonged job search	-1.11	0.006	-2.39	0.000	-1.56	0.001	-1.97	0.003
	(0.41)		(0.60)		(0.48)		(0.67)	
Unfinished trajectory	-2.13	0.000	-2.61	0.000	-2.55	0.000	-2.35	0.000
	(0.37)		(0.53)		(0.44)		(0.59)	
Constant	85.78	0.000	74.82	0.000	95.31 (0.57)	0.000	94.58 (0.82)	0.000
	(0.48)		(0.70)					
N. parent-child dyads	21,757		21,761		21,776		21,635	

Swedish register data linked with VIP survey.

need to acknowledge that we are not able to capture all these nuances in our data that focus on "measurable" experiences related to schooling and working life, and yet these children's experiences seem to be strongly associated with parental mental health.

Additional analyses examine differences in associations across parental sex (Fig. 3, for detailed results see Table S2, Online Supplement). As expected based on previous research (Albertini & Piccitto, 2023; Bister et al., 2025; Lee et al., 2024), the associations between children's labour market trajectories and parental mental health are somewhat stronger for mothers compared to fathers. However, the confidence intervals for all gender-specific estimates overlap, indicating that the differences in associations across parental genders are not statistically significant. Thus, the associations between adult children's labour market disadvantage and parental mental health are not restricted to mothers.

As discussed in Section 3, the negative associations between *Unfinished trajectories* and parental mental health may be driven by negative selection into the group of parents who had children after age 30. In additional analyses, we tested whether these associations persist after we control for selectivity using models with endogenous treatment effects. We confirmed the validity of the exclusion restriction, i.e. the presence of parental siblings who had children after reaching age 30, in a set of regression models demonstrating that the association between the exclusion restriction and

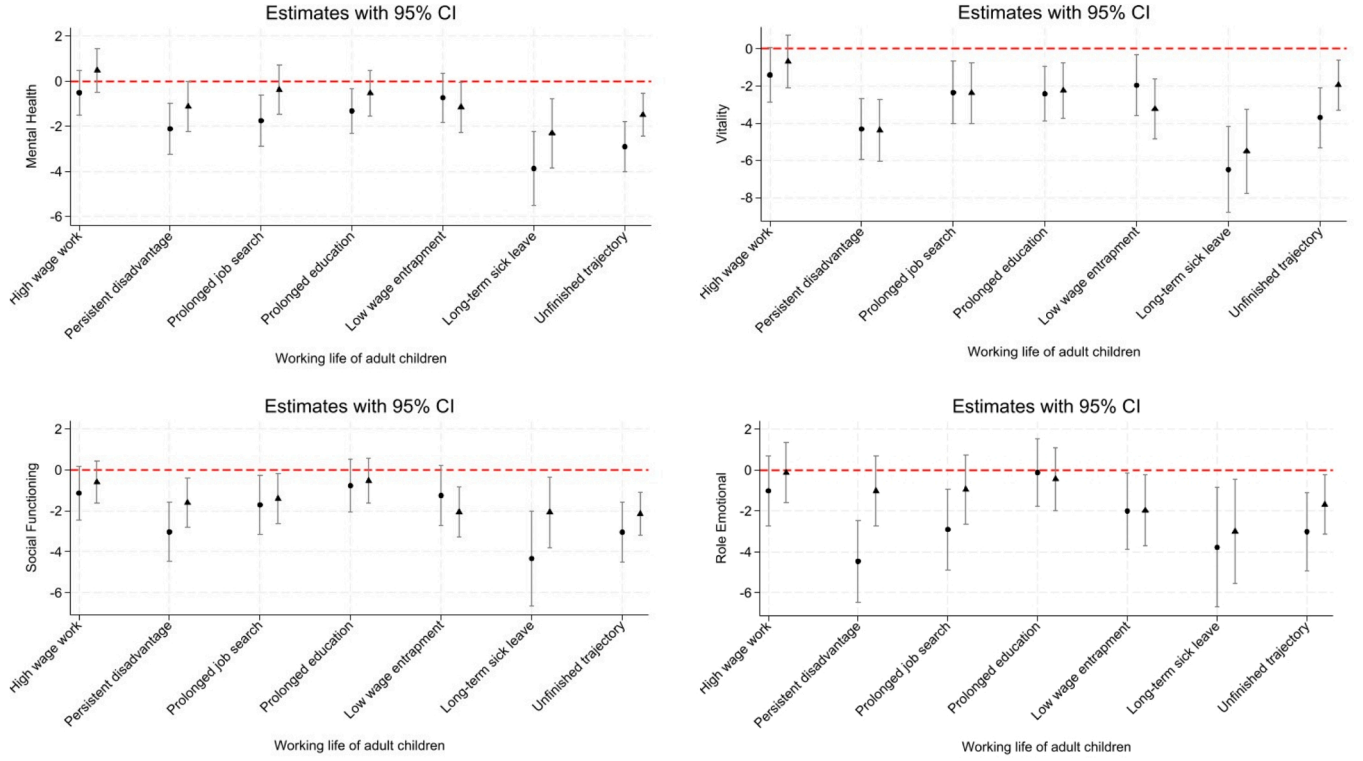

Fig. 3. Labour market trajectories of adult children and parental mental health - results from OLS regressions for mothers and fathers. Source: Swedish register data linked with VIP survey. Note: estimates for mothers marked with dots, estimates for fathers marked with triangles.

parental mental health was not statistically significant (Table S3, Online Supplement). Our exclusion restriction is also relevant, i.e. the presence of parental siblings who had a child after age 30 raises the probability of having a child with *Unfinished Trajectory* (see bottom panel in Table S4, Online Supplement). Based on models with endogenous treatment effects, after taking selectivity into account, the associations between *Unfinished Trajectory* and mental health become even stronger (they range from −5.06 to −2.97, see Table S4, Online Supplement). Our findings suggest that while there may be some positive selection into the group of parents who delayed having a child until age 30, the fact of having a child who still remains on the way to settle down on the labour market is negatively related to mental health.

We also test whether our results may represent the combined effects of accumulated economic disadvantage among siblings, rather than a mental health penalty related to negative experiences of one specific child. While our main analysis uses parent-child dyads (for studies adopting a similar approach see e.g. (Albertini & Piccitto, 2023)), sensitivity analysis reported in Table S5 in the Online Supplement shows how parental mental health is affected by increases in numbers of children experiencing a specific type of labour market trajectory, while controlling for other children's experiences. *Long-Term Sick Leave* shows again the strongest associations spanning from −1.43 (Role Emotional) to −3.29 (Vitality). The associations between having a child who experienced *Persistent Disadvantage* span from −0.36 (Mental Health) to −1.81 (Vitality). Just like in the main analysis, these two trajectories represent the strongest correlations with parental mental health. For *Low-wage entrapment* and *Prolonged Education* as well as *Prolonged job search* the associations are weaker and, in the case of some dimensions of parental mental health, not statistically significant. The associations between the residual category *Unfinished trajectories* and parental mental health range between −0.37 and 0.78 across the subscales. Overall, the main conclusions regarding the type of labour market trajectories that are associated with the deterioration of parental mental health remain the same as in the main analysis.

5. Discussion

This paper examined how labour market experiences of adult children are associated with parents' mental health. We find that most labour market trajectories of adult children include some episodes of disadvantage, be it spells of unemployment, sick leave or low-wage work. However, if such negative experiences are short-term and occur only in the early stages of working life, they do not necessarily lead to poorer parental mental health. Trajectories labelled *Educational Bridge* and *High Wage Work* do include such short spells, and yet they are not associated with poorer mental health among parents. This confirms insights from the life course literature, which emphasizes that the same event may have different consequences for well-being depending on its location in the overall life course trajectory (Aisenbrey & Fasang, 2010).

Benefiting from the flexible and explorative approach, which goes beyond a dichotomy of parents with children involved in paid work versus unemployed, our study highlights a particularly vulnerable group of families where young adults experienced a string of long-term sick leaves in their working lives. Our results show that adult children's labour market difficulties caused by health problems are strongly negatively associated with parental mental health. These findings complement recent studies revealing the burden imposed by young children's health problems on parental well-being (Balbo & Bolano, 2024; Bister et al., 2026). While studies focused on families with smaller children emphasized an additional strain related to a higher burden of care, our findings indicate a continued strain of this group of parents in later life course stages, when children reach adulthood. These spillover effects call for more efficient policy support addressing the needs of young people suffering from health disadvantage and their family members.

While labour market trajectories of young adults such as *Persistent disadvantage* and *Long-Term Sick Leave* are negatively associated with poorer parental mental health, the associations with *Prolonged Education* are relatively weaker. A potential explanation is that when adult children take a career break to improve their skills, such developments in children's lives are not associated with a substantial level of stress and worry among parents in Sweden, even when this takes place outside of the standard "timetable". These findings suggest the benefits of an egalitarian educational system in Sweden, which provides opportunities for lifelong learning. While previous research has documented the benefits of "second-chance education" for the well-being of young people, both in Sweden (Almquist & Brännström, 2018; Nordlund et al., 2015) and internationally (Inés Renta-Davids et al., 2025), our findings imply that educational policies supporting younger generations in obtaining skills ultimately improve the well-being of older generations.

Overall, the results of this study are interesting given the context of the Swedish welfare state, designed to shield individuals and families from labour market turbulences, foster financial independence of young adults from their families, and of ageing parents from their adult children. On top of this, our analyses focus on parents living in the Västerbotten county located in the northern part of Sweden, which stands out with high levels of social and cultural capital (Larsson & Lundgren, 2011) and a high quality of public services that are protective for the mental health of older adults. Despite this setting, we found that parental mental health is still associated with the labour market experiences of their adult children, and this relationship is found for both mothers and fathers. This suggests that the protective effects of the welfare state do not entirely mitigate the emotional and psychological impact on parents when their children face labour market difficulties, pointing to the relevance of the "linked lives" principle in life course research (Elder & Janet, 2009).

The limitations of this study pertain to two interrelated aspects of the composition of our sample: the "main" group of parents with children born before age 30 used in the sequence analysis as well as of the group parents with later-born children, whose sequences were too short to classify. The age at parenthood differentiates between these two sub-samples, which is important to reflect on, because the age at the arrival of a child proxies the resources to raise children and also to maintain good health later in life. Regarding the former category, we acknowledge that giving birth to a child by age 30 could be considered as "young parenthood" by contemporaneous standards. However, our study focuses on cohorts of parents born in 1950–1955, and for those cohorts, having children in their twenties was the norm rather than the exception (Andersson et al., 2009). Regarding selectivity of the latter category, we observe poorer mental health among parents with children who were born late in the parents' lives (labelled as Unfinished trajectories). Once endogeneity of "Unfinished trajectories" was taken into account, the estimated associations became stronger, indicating that the observed mental health patterns are unlikely to be attributable to unobserved characteristics among parents of later-born children and instead appear to reflect their lived experiences. Speculating about potential explanations for these results, we argue that parental uncertainty about the way that children might end up settling down economically in the future might be a risk factor for poor mental health. This speaks to research showing that the anticipation of adverse economic circumstances can lead to more distress than the occurrence of these adversities in itself, with negative consequences for the psychological well-being of family members (Inanc, 2018).

Related to the point on unobserved influences, while our study examines trajectories of adult children's working lives longitudinally, parental mental health is examined at one specific point in time, i.e. at the age of 60. Even though the set of control variables includes a broad range of factors that affect mental health in later life course stages, including measures of health before baseline, we acknowledge that our analyses do not control for all the relevant influences.

Our study offers insights for future research. While this study contributes by using sequence analysis to consider a long span of labour market trajectories among older children, this approach does not allow for more in-depth analyses of the possible interplay between siblings' working lives. Future research could develop methods to incorporate labour market trajectories of all siblings, as well as the potential

interactions between them, to provide a more complete picture of how different constellations of working lives within the family affect the health of family members. Another avenue for future research is related to European societies becoming increasingly diverse in terms of country backgrounds. A substantial proportion of youth grow up in families where norms and expectations regarding both economic achievements and relations between parents and children may differ from those among natives. At the same time, young people with an immigrant background face a high risk of poverty in childhood (Tegunimataka et al., 2026) and persistent or repeated unemployment in adulthood (Aradhya et al., 2023; Kim et al., 2025). While the associations demonstrated in this study may describe a typical Swedish family well, the effects in international families deserve more attention, possibly in connection with the potential moderating effects of parental social class and income. Speaking more broadly about demographic shifts in European societies, the importance of interrelated economic and health-related trajectories within families can also be expected because of the greater prevalence of co-surviving generations (Swartz, 2009).

CRediT authorship contribution statement

Sara Kalucza: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Anna Baranowska-Rataj:** Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

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Annex

Table A1
Definitions of labour market states.

State	Conditions
Full-time/Part-time Student	Individuals classified as full-time students, receiving at least 75% of the full yearly student loan and benefit amount for the current year. OR Individuals classified as part-time students, receiving between 46% and 74% of the full yearly student loan and benefit amount for the current year.
High income, working	Individuals having high income, as defined as a taxable income from work > 60% of the median wage for the current year – as estimated by Statistic Sweden's Labour Force Survey. OR Individuals for which parental leave benefits was the highest income, but who were classified as *High Income, Working* in the previous year
Low income, working	Individuals having low income, as defined as a taxable income from work = <60% of the median wage for the current year – as estimated by Statistic Sweden's Labour Force Survey. OR Individuals for which parental leave benefits was the highest income, but who were classified as *Low Income, Working* in the previous year
Sick leave	Individuals who had larger income from sick leave than work AND who had larger incomes from sick leave than from unemployment AND is not classified as a *Full-time/Part-time Student.*
Unemployment benefits	Individuals who any income from unemployment benefits during the year AND Is not a *Full-time student* OR on *Sick Leave* OR Individuals for which parental leave benefits was the highest income, but who were classified as *Full-time/Part-time Student* in the previous year

Table A2
Number of missing cases in VIP data.

Variable	Number of missings
SF-16 outcomes	
MH	112
VT	104
SF	85
RE	236
Parental Sex	0
Parental country background	0
Parental municipality type	1506
Parental education	160
Parental Civil Status	130
Parental Sick leave	219

Notes: Swedish register data linked with VIP survey.

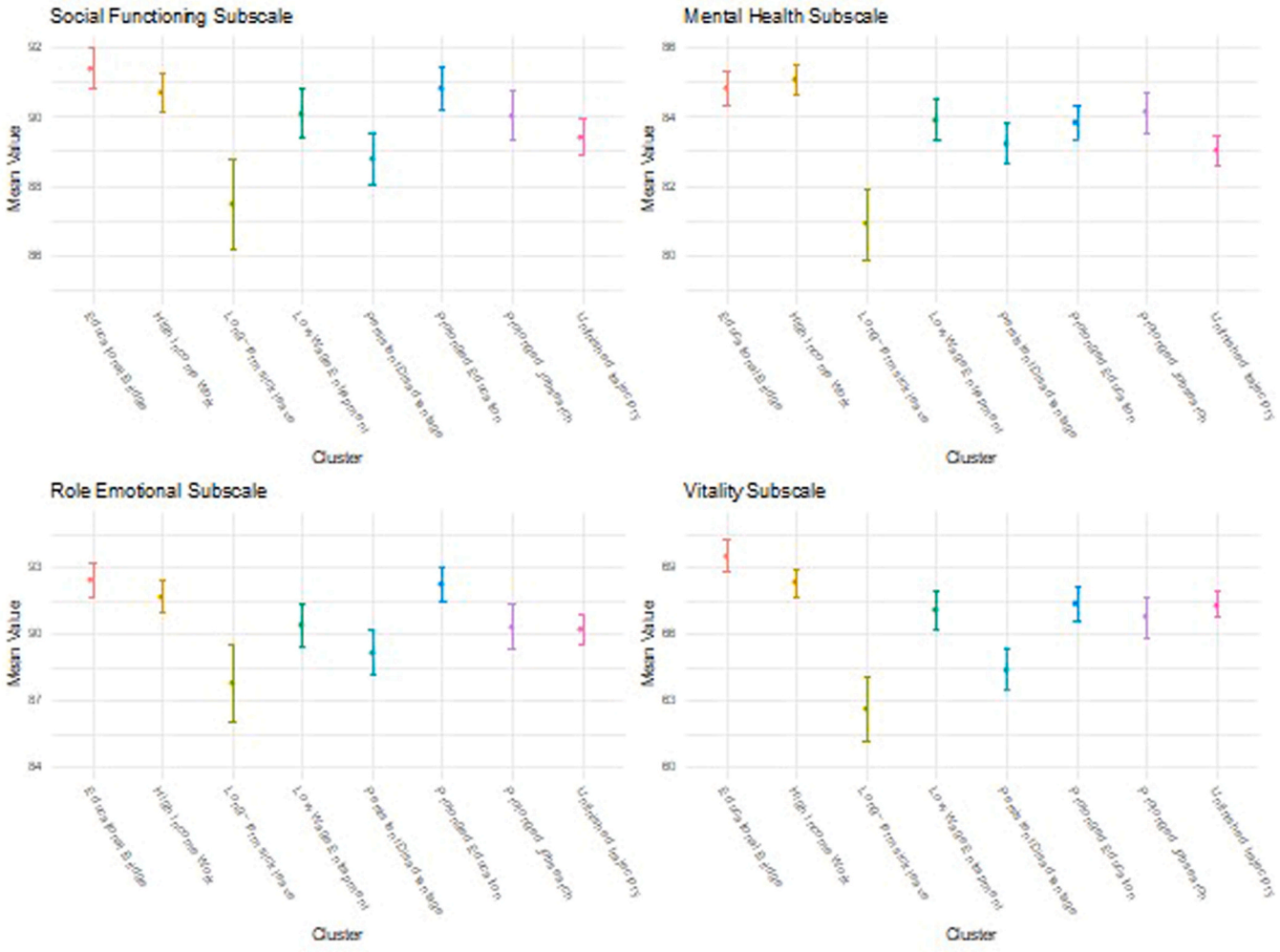

Fig. A1. Sequence Validation Results. Outcome from sequence validation run via WeightedCluster: seqnullcqi () with 1000 bootstraps, and the "combined" null model. Notes: Swedish register data linked with VIP survey.

Table A3
Sample structure.

	Labour market trajectory cluster								
	Educational bridge	High-wage work	Long-term leave	Low-wage entrapment	Persistent disadvantage	Prolonged education	Prolonged job search	Unfinished trajectory	Total
N	2811 (13.0%)	3532 (16.4%)	851 (3.9%)	2278 (10.6%)	2390 (11.1%)	2845 (13.2%)	2236 (10.4%)	4611 (21.4%)	21,554 (100.0%)
Sex of child									
Male	1110 (39.5%)	2421 (68.5%)	469 (55.1%)	945 (41.5%)	1076 (45.0%)	1239 (43.6%)	1390 (62.2%)	2319 (50.3%)	10,969 (50.9%)
Female	1701 (60.5%)	1111 (31.5%)	382 (44.9%)	1333 (58.5%)	1314 (55.0%)	1606 (56.4%)	846 (37.8%)	2292 (49.7%)	10,585 (49.1%)
Child country background									
Born in Sweden	2799 (99.6%)	3524 (99.8%)	839 (98.6%)	2265 (99.4%)	2378 (99.5%)	2826 (99.3%)	2226 (99.6%)	4599 (99.7%)	21,456 (99.5%)
Born outside of Sweden	12 (0.4%)	8 (0.2%)	12 (1.4%)	13 (0.6%)	12 (0.5%)	19 (0.7%)	10 (0.4%)	12 (0.3%)	98 (0.5%)
Birth order									
Parity 1	1422 (50.6%)	1520 (43.0%)	385 (45.2%)	1090 (47.8%)	1294 (54.1%)	1430 (50.3%)	1130 (50.5%)	776 (16.8%)	9047 (42.0%)
Parity 2	1051 (37.4%)	1418 (40.1%)	339 (39.8%)	856 (37.6%)	841 (35.2%)	1017 (35.7%)	788 (35.2%)	1475 (32.0%)	7785 (36.1%)
Parity 3	294 (10.5%)	491 (13.9%)	113 (13.3%)	276 (12.1%)	224 (9.4%)	350 (12.3%)	273 (12.2%)	1492 (32.4%)	3513 (16.3%)

(*continued on next page*)

Table A3 (*continued*)

	Labour market trajectory cluster								
	Educational bridge	High-wage work	Long-term leave	Low-wage entrapment	Persistent disadvantage	Prolonged education	Prolonged job search	Unfinished trajectory	Total
Parity 4 or more	44 (1.6%)	103 (2.9%)	14 (1.6%)	56 (2.5%)	31 (1.3%)	48 (1.7%)	45 (2.0%)	868 (18.8%)	1209 (5.6%)
Parental Sex									
Male	1318 (46.9%)	1795 (50.8%)	424 (49.8%)	1127 (49.5%)	1146 (47.9%)	1340 (47.1%)	1109 (49.6%)	2884 (62.5%)	11,143 (51.7%)
Female	1493 (53.1%)	1737 (49.2%)	427 (50.2%)	1151 (50.5%)	1244 (52.1%)	1505 (52.9%)	1127 (50.4%)	1727 (37.5%)	10,411 (48.3%)
Parental country background									
Born in Sweden	2722 (96.8%)	3442 (97.5%)	812 (95.4%)	2211 (97.1%)	2327 (97.4%)	2739 (96.3%)	2186 (97.8%)	4417 (95.8%)	20,856 (96.8%)
Born outside of Sweden	89 (3.2%)	90 (2.5%)	39 (4.6%)	67 (2.9%)	63 (2.6%)	106 (3.7%)	50 (2.2%)	194 (4.2%)	698 (3.2%)
Parental municipality type									
Larger cities/ commuter municipality	1342 (47.7%)	1833 (51.9%)	425 (49.9%)	1224 (53.7%)	760 (31.8%)	1577 (55.4%)	832 (37.2%)	2407 (52.2%)	10,400 (48.3%)
Rural municipality	530 (18.9%)	794 (22.5%)	151 (17.7%)	420 (18.4%)	599 (25.1%)	364 (12.8%)	568 (25.4%)	942 (20.4%)	4368 (20.3%)
Smaller cities/ commuter municipality	939 (33.4%)	905 (25.6%)	275 (32.3%)	634 (27.8%)	1031 (43.1%)	904 (31.8%)	836 (37.4%)	1262 (27.4%)	6786 (31.5%)
Parental education									
Primary	210 (7.5%)	547 (15.5%)	121 (14.2%)	254 (11.2%)	385 (16.1%)	160 (5.6%)	361 (16.1%)	523 (11.3%)	2561 (11.9%)
Upper Secondary	1242 (44.2%)	2092 (59.2%)	413 (48.5%)	1083 (47.5%)	1440 (60.3%)	1147 (40.3%)	1349 (60.3%)	2049 (44.4%)	10,815 (50.2%)
Higher	1359 (48.3%)	893 (25.3%)	317 (37.3%)	941 (41.3%)	565 (23.6%)	1538 (54.1%)	526 (23.5%)	2039 (44.2%)	8178 (37.9%)
Parental Civil Status									
Unmarried	277 (9.9%)	437 (12.4%)	115 (13.5%)	228 (10.0%)	290 (12.1%)	298 (10.5%)	260 (11.6%)	884 (19.2%)	2789 (12.9%)
Married/partnered	2371 (84.3%)	2862 (81.0%)	645 (75.8%)	1917 (84.2%)	1881 (78.7%)	2363 (83.1%)	1787 (79.9%)	3559 (77.2%)	17,385 (80.7%)
Divorced	155 (5.5%)	221 (6.3%)	89 (10.5%)	127 (5.6%)	209 (8.7%)	178 (6.3%)	179 (8.0%)	157 (3.4%)	1315 (6.1%)
Widowed	8 (0.3%)	12 (0.3%)	2 (0.2%)	6 (0.3%)	10 (0.4%)	6 (0.2%)	10 (0.4%)	11 (0.2%)	65 (0.3%)
Parental sick leave									
No sick leave	2411 (85.8%)	2960 (83.8%)	672 (79.0%)	1939 (85.1%)	1871 (78.3%)	2424 (85.2%)	1820 (81.4%)	4108 (89.1%)	18,205 (84.5%)
Some sick leave	400 (14.2%)	572 (16.2%)	179 (21.0%)	339 (14.9%)	519 (21.7%)	421 (14.8%)	416 (18.6%)	503 (10.9%)	3349 (15.5%)
Calendar year									
2010	582 (20.7%)	667 (18.9%)	159 (18.7%)	462 (20.3%)	554 (23.2%)	562 (19.8%)	468 (20.9%)	457 (9.9%)	3911 (18.1%)
2011	573 (20.4%)	643 (18.2%)	159 (18.7%)	442 (19.4%)	517 (21.6%)	513 (18.0%)	453 (20.3%)	578 (12.5%)	3878 (18.0%)
2012	539 (19.2%)	663 (18.8%)	145 (17.0%)	398 (17.5%)	464 (19.4%)	557 (19.6%)	425 (19.0%)	742 (16.1%)	3933 (18.2%)
2013	423 (15.0%)	559 (15.8%)	133 (15.6%)	363 (15.9%)	326 (13.6%)	486 (17.1%)	333 (14.9%)	850 (18.4%)	3473 (16.1%)
2014	411 (14.6%)	575 (16.3%)	142 (16.7%)	338 (14.8%)	317 (13.3%)	438 (15.4%)	328 (14.7%)	1026 (22.3%)	3575 (16.6%)
2015	283 (10.1%)	425 (12.0%)	113 (13.3%)	275 (12.1%)	212 (8.9%)	289 (10.2%)	229 (10.2%)	958 (20.8%)	2784 (12.9%)

Notes: Swedish register data linked with VIP survey.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.alcr.2026.100755.

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