Disentangling the (Long-Term) Effects of Fixed-Term Employment on Well-Being from a Country-Comparative and Household-Integrative Perspective

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Overview Article

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1 Motivation

Fixed-term employment contracts are employment contracts with a predetermined expiration date. Different from standard employment contracts, which do not have such termination dates, fixed-term jobs might be seen as non-standard forms of employment. While most countries within Europe have deregulated the labor market for fixed-term contract working arrangements over the past three decades, standard employment contracts – and more specifically permanent employment – have largely remained unaffected (Barbieri & Cutuli, 2016).

These partial deregulations tend to increase the substitution of permanent jobs with fixed-term jobs, since employers can easily substitute such fixed-term employees and therefore account for economically driven fluctuations (Gebel & Giesecke, 2011). The definition and historical trends suggest a particular advantage in the use of fixed-term contracts for employers, which may explain the popularity of these work arrangements. Nowadays in Germany, for example, almost every second newly created job starts with a fixed-term contract (Bossler et al., 2019).

Well-being, and more precisely, subjective well-being, refers to the evaluation of individuals regarding their lives as pleasant, desirable, and good (Diener et al., 2013; Diener et al., 2018). While there are several ideas concerning conceptualization of the latent concept well-being, this thesis refers to assumptions of the model of Becker (1991). This model divides well-being into an affective (*actual*, more short-term) and a cognitive (*habitual*, more long-term) evaluation of life, as well as into psychological and physiological components (Becker, 1991). The central manifest concept of well-being and subsequently this thesis, life satisfaction, is argued to be the consequence of cognitive psychological and physiological well-being.

Well-being is claimed to be affected by several events and phases within the life course which are evaluated against each other as well as against other individuals' experiences (Diener et al., 2018). One of the most important phases and events in life concern careers of individuals. Therefore, this thesis raises the overarching research question: *How does fixed-term employment affect well-being?* Three smaller, more specific research questions arise from this primary research question. First, *what are the short- and long-term effects of fixed-term employment for the well-being of individuals and couples?* Second, *what are the mechanisms explaining the effects of fixed-term employment on well-being?* Third and eventually, *how do these effects vary across gender and contexts, and what are explanations for (no) variations?*

Flexibilization, i.e., the partial deregulation of the labor market, has led to growing concern worldwide about job insecurity (Kalleberg, 2018), and, in particular, about the various

economic and non-economic consequences of fixed-term employment. For instance, the European Agency for Safety and Health (EU-OSHA), initiated by the European Union, shows that work-related stress, a potential consequence of fixed-term employment, and related mental health problems such as depression or anxiety represent major cost items for employers and social security systems. More specifically, the cost of work-related depression within Europe is estimated to be 617 billion € annually in 2013. This estimate is derived from the costs to employers of absenteeism and presentism, lost productivity, health care costs, and social welfare costs such as disability benefit payments (EU-OSHA, 2014). These costs highlight the importance of understanding how stress arises in the work context to prevent severe mental and other health issues.

Fixed-term jobs are one of the most obvious forms of job insecurity. Such jobs are argued to provide poor working conditions (Booth et al., 2002) because they impede economic security due to their fixed end date. The resulting economic insecurity leads to a lack of certainty and ability to plan for the future. Several future plans are also related to the individual's desire to make his or her life more pleasant and to improve his or her well-being, for example by purchasing a home or starting a family. This lack of control over one's life should increase stress and consequently decrease well-being and health (Bosmans et al., 2016). Therefore, examining the effects of fixed-term employment on well-being and health contributes to solving the puzzle of the high costs to society.

Against this background, a recent study shows that the ongoing COVID-19 pandemic furtherly poses at-work health risks for fixed-term employees in Germany (Holst et al., 2021). The study shows that fixed-term employees are more stressed by the circumstances of the pandemic than permanent workers. The results of the study thus highlight the vulnerability of fixed-term employees to volatile phases and urge a better understanding of the relationship between fixed-term employment and well-being.

With regard to the *first more specific research question* on the short- and long-term effects of fixed-term employment on well-being, two perspectives on fixed-term employment are outlined. In labor market sociology literature, these two perspectives refer to the advantages and disadvantages of fixed-term jobs, namely in terms of the *stepping stone* and the *entrapment*[1] scenario. Regarding advantages, fixed-term contracts are intended to support the labor market

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[1] Also oftentimes referred to as "dead end" (Booth et al., 2002; Pavlopoulos, 2013), which basically is referring to the same idea as entrapment or trap.

integration of the unemployed (Barbieri, 2009). Furthermore, these contracts are expected to serve as *stepping stones* towards permanent employment. These jobs can therefore be viewed by employers as a prolonged probationary period (Booth et al., 2002), which lowers hiring costs for employers and makes it easier for individuals to gain a foothold in the labor market.

Governments have therefore seen fixed-term contracts as a promising tool to improve the labor market opportunities of disadvantaged individuals, such as the involuntarily unemployed (DiPrete et al., 2006; Korpi & Levin, 2001). While unemployment reduces well-being because of the absence of a function of employment, namely income (Jahoda, 1982), fixed-term employment might increase well-being because it fulfills the manifest function of income. Following the argumentation of the *stepping stone* scenario, fixed-term employment might increase well-being in the longer run compared to remaining unemployed.

In terms of disadvantages, fixed-term jobs might be inferior compared to permanent contracts. Since these jobs are argued to be in the secondary labor market segment, which offers lower job quality with lower income and greater job insecurity, there is concern that these jobs *trap* individuals in this lower labor market segment (De Cuyper et al., 2009). The arguments put forward here are borrowed from two ideas. First, from the idea of two-tiered labor markets with a more advantageous and a more disadvantageous labor market segment (Doeringer & Piore, 1985). Second, from the idea of the Signaling Theory (Thurow, 1975), namely that fixed-term jobs send bad signals to future employers who might evaluate productivity and willingness through such fixed-term jobs (Booth et al., 2002).

Therefore, the well-being of individuals with a fixed-term employment contract might be lower compared to individuals with a permanent employment contract. In the longer term, this disadvantage for well-being might even increase. Some researchers even argue that fixed-term contracts could have similar or worse effects on well-being than unemployment because of the lack of controllability and predictability. The negative impact of fixed-term contracts on well-being compared to unemployment is because the anticipation of job loss might be more stressful than the actual unemployment status (Inanc, 2018). This assumption would contradict the idea of fixed-term employment as a *stepping stone* and take the idea of *entrapment* and consequent disadvantages to the extreme. When it comes to the potentials and drawbacks of fixed-term employment, these perspectives are usually seen as mutually exclusive rather than co-existing.

For these two perspectives, which I argue throughout this thesis coexist and are not mutually exclusive, a longer-term perspective is implied for both the independent and dependent

variables. Consequently, the dependent variable should be measured *after* a single employment status or transition has taken place (Gebel, 2010). Because employment statuses are usually part of transitions, such as from fixed-term to permanent employment (Högberg et al., 2019), and may also be part of more holistic employment trajectories, such as a *stepping stone* or an *entrapment* trajectory (Fuller & Stecy-Hildebrandt, 2015), it is important to consider more holistic trajectories and life courses (Elder, 1974). Single employment statuses only provide snapshots of careers. Therefore, a longer-term perspective must also be taken for the independent variable. For example, if a person is observed in a temporary employment relationship for one year, this observation could either imply that he or she is on the way to a permanent employment contract (*stepping stone*) or that he or she is stuck in a fixed-term employment relationship (*entrapment*).

Therefore, not only could temporary employment have short-term effects on well-being and health, but the experiences in these employment relationships could add up and affect later life outcomes – especially in the *entrapment* scenario. Thus, the costs of fixed-term employment might be even more severe than if one were to look only at single employment statuses and their effects on well-being. In particular, as noted above, it is often argued that fixed-term employment within the curriculum vitae sends a bad signal to future employers (Booth et al., 2002). This bad signal might further reduce their chances in the labor market and scar their well-being. All of these arguments support examining the longer-term effects of such jobs on well-being as well (Helbling & Kanji, 2018).

However, the insecurity and the limited plannability associated with these jobs do not only affect individuals, but according to the linked lives perspective (Elder & O'Rand, 1995), these disadvantages may also affect other members of the household, such as partners. Due to stress and anxiety, less energy and vigor, social withdrawal, and less support for the partner (Danner-Vlaardingerbroek et al., 2013), according to the spillover-crossover model (Rodríguez-Muñoz et al., 2014), these negative emotions might transfer to the partner and reduce well-being and health (Baranowska-Rataj & Strandh, 2021). Thus, the impact of temporary employment on well-being and health is not unique to the individual.

These considerations lead us to the *second more specific research question* of the thesis, namely the mechanisms explaining the effects of fixed-term employment on well-being. While the most commonly mentioned mechanisms in the literature, income and job insecurity, have already been discussed, there are also several other potential mechanisms when it comes to the impact

of fixed-term employment on well-being. Some other mechanisms are included in the Latent Deprivation Model (Jahoda, 1982) and the Vitamin Model (Warr 2017). Fixed-term employees might differ from permanent employees or the unemployed in the latent function, such as status and identity or social contacts. Warr (2017) argues that these functions, or *vitamins* in his theory, may vary between different forms of employment status, leading to different effects on well-being. More specifically, there is a continuum of functions or vitamins ranging from unemployment with the fewest functions to permanent employment with the most functions, with temporary employment in between.

At the couple level, fixed-term employment may reduce the likelihood of marriage and acquiring homeownership, and postpone the birth of children (Auer & Danzer, 2016; Baron & Rapp, 2019). These events are among the top desires of couples to increase their well-being. Similarly, the disadvantages of fixed-term employment may not be transmitted to partners, but also accumulate within couples or across other domains of life.

With respect to couples, these processes of accumulation advantages or disadvantages (Elder, 1974) refer to the idea that the related disadvantages of job insecurity and difficulty in planning can accumulate within a couple when both partners are employed on a fixed-term basis for extended periods of their careers. Couples will thus be even less able to achieve their goals as a couple if both partners face job insecurity and instability. These accumulation processes may therefore be even more detrimental to individuals and must be taken into account when examining the effects of fixed-term employment on well-being.

Disadvantages can add up not only within a household, but also across life domains. Because work and family are closely intertwined, stress from the employment domain might cross over into the family domain, further increasing stress and thus reducing well-being. More specifically, when individuals perceive job insecurity and the resulting disadvantages, plus stress in family life due to drastic events such as divorce or longer-term circumstances like single parenthood, stress can accumulate in both domains. Therefore, it is important to consider other intertwined domains when examining the effects of (fixed-term) employment on well-being or health.

Finally, regarding the *third more specific research question* on differences across genders and contexts, the effects of fixed-term employment on well-being might differ substantially across countries. These differences could be due to the fact that within different countries, different measurement methods for fixed-term employment are used (De Cuyper et al., 2008; Imhof &

Andresen, 2018). Fixed-term employment encompasses many different forms of contracts with predetermined expiry dates, such as project work, temporary agency work, casual, or seasonal employment. These forms of fixed-term employment are not only associated with different levels of job insecurity and instability, but are also differently distributed across countries. Thus, one explanation for the inconclusive findings on the effects of fixed-term employment on well-being might be the lack of comparability between these measures. This ambiguity makes further investigation of similar measures in different countries urgent to ensure comparability.

Another explanation for these ambiguous results might be differences across countries that moderate the effect at the individual level. For example, labor market policies might mitigate these effects (Voßemer et al., 2018; Karabchuk & Soboleva, 2020), as some countries have stricter regulations on fixed-term employment than others. Therefore, fixed-term employment is more or less protected and thus secure in different countries. In a similar line of reasoning, unemployment benefits might protect fixed-term employees from the fear of becoming unemployed due to the existence of a strong social security system (Voßemer et al., 2018). In addition, income inequality within a country might drive the perceived job insecurity in fixed-term jobs and moderate the effects of fixed-term employment on well-being (Täht et al., 2020). Therefore, explanations in the literature mostly refer to the moderation of (perceived) income differences between fixed-term and permanent employees and the unemployed, and thus to an individual level mechanism.

For latent country-specific factors, such as norms related to gender and household specific effects, or perceptions of belonging to society, i.e., social cohesion, there is much less research on how these macro-level factors moderate the effect of fixed-term employment on well-being. More specifically, norms might influence the importance of manifest and latent functions such as status and identity or social contacts with colleagues within the employment relationship and therefore moderate the effect on well-being. The perception of belonging to a greater level unit might substitute the importance of paid employment in enhancing well-being.

Moreover, different gender norms might determine the importance of (fixed-term) employment for well-being of individuals and partners. For example, if the gender norms in a respective country are conservative rather than egalitarian, men's (fixed-term) employment could play a more important role than women's employment (Sainsbury 1996), and consequently, in terms of well-being. Hence, accounting for macro-level latent functions and norms could advance

understanding of cross-country differences in the effect of fixed-term employment on well-being, but have been largely ignored in the previous literature.

In conclusion, the historical and research-related trends highlighted underscore the complexity and multi-faceted nature of studying the effect of fixed-term employment on well-being. Moreover, these trends motivate the main and the three more *specific research questions* of this thesis. This *cumulative thesis* raises and answers these research questions in five research articles. Table 1 provides an overview of these five research articles.

Table 1: Overview of the articles

#	Author(s)/Share	Year	Title	Journal/Status
1	Scheuring, S. / 100%	2020	The Effect of Fixed-Term Employment on Well-Being: Disentangling the Micro-Mechanisms and the Moderating Role of Social Cohesion	Published in *Social Indicators Research*, 152(1): 91–115
2	Scheuring, S. / 100%	2022	Longer-Term Dynamics of the Effects of Fixed-Term Employment Trajectories on Subjective Well-Being in Germany	1st Revise and Resubmit in *Longitudinal and Life Course Studies*
3	Scheuring, S. / 60% Voßemer, J. / 20% Baranowska-Rataj, A. / 15% Tattarini, G. / 5%	2021	Does Fixed-Term Employment Have Spillover Effects on the Well-Being of Partners? A Panel Data Analysis for East and West Germany	Published in *Journal of Happiness Studies*, 22(7): 3001–3021
4	Fauser, S. / 50% Scheuring, S. / 50%	2022	Couples' Early Career Trajectories and Later Life Housing Consequences in Germany: Investigating Cumulative Disadvantages	Published in *Advances in Life Course Research*, 51(100445)
5	Scheuring, S. / 90% Engelhardt, H. / 10%	2022	The Effect of Early and Mid-Life Work-Family Trajectories on Self-Rated Health in Older Age in West Germany and Italy: A Multichannel Sequence Analysis	1st Revise and Resubmit in *European Societies*

Notes: Own illustration.

While all five articles contribute to answering the main research question, they relate in different ways to the three more specific research questions. Articles 1, 2, 3, and 5 address the *first more specific research question* regarding short- and long-term effects of fixed-term employment on well-being for individuals (Articles 1, 2, and 5) and couples (Article 3). Articles 1, 3, and 4 refer to the *second more specific research question* and address mediators that are argued to explain the effects of fixed-term employment on (partner's) well-being. Articles 1, 3, and 5 address the *third more specific research question* about gender and contextual differences in the effects of fixed-term employment on well-being. Thus, for all three specific research questions, there are at least three corresponding articles to provide comprehensive answers.

Not only do the trends and arguments previously explained motivate these research questions, but my co-author(s) and I further address the shortcomings and findings of previous studies highlighted in this chapter and outlined in Chapter 2. More specifically, we make five specific assumptions. First, fixed-term employment statuses, transitions, and longer-term careers affect well-being and health-related outcomes. The effects depend on the definition of fixed-term employment statuses, transitions, and longer-term careers, as well as on the reference groups chosen. Second, these effects might be lasting, even worsening, or disappearing, depending on the type of career and reference group. Third, they might spill over to other family members, such as partners, and disadvantages may accumulate within couples or in intertwined life domains. Fourth, some factors such as income and related factors such as homeownership, social contacts, status, job insecurity or financial worries might explain these effects. Fifth, country-specific circumstances related to social policies and norms may moderate these effects.

What underlies all these considerations is the life course framework, which structures the following subchapters. Chapter 1.1 explains the life course framework in general, and more specifically for the effect of fixed-term employment on subjective well-being. The subsequent subchapters are structured along the dimensions and interrelationships of the dimensions within the life course framework. While Chapter 1.2 refers to first-order dependencies and thus outlines the specific research questions for Articles 1 and 2, Chapter 1.3 refers to second- and third-order dependencies and outlines the specific research questions for Articles 3 to 5.

1.1 A life course perspective on fixed-term employment and well-being

The overarching framework for this thesis is the life course perspective. While the life course perspective originated in sociology, where it was also first conceptualized (Elder, 1974, 1975), other research fields had similar ideas about a more comprehensive perspective on effects of

one variable on another, such as psychologists with the so-called "life span" perspective (Baltes et al., 1980). Originally, these ideas arose from aging research, as gerontologists wanted to understand the effects of aging, which can be argued to begin from the onset of life (Bernardi et al., 2019). Therefore, the basic idea of the life course framework refers to the study of the entire life course from birth to death.

From then on, the assumptions of the life course perspective have been applied and further developed in many other sciences, e.g., in economics with life cycle theories on economic aspects (Modigliani, 1966), in demography with cohort effects (Ryder, 1965), or even biology referring to life cycles for living organisms (Bogin & Smith, 2012). Therefore, the high relevance of the life course framework nowadays is the result of an interdisciplinary perspective on interrelated events. The framework basically addresses three dimensions, namely time, domains, and levels (Bernardi et al., 2019).

While Elder identified five principles[2] that link social change and developmental trajectories within his paradigm for the life course framework and the interconnectedness of the various pathways (Elder & O'Rand, 1995; Elder & Shanahan, 2007), there is little systematic elaboration of these principles or a consistent theoretical model that encompasses them all. Therefore, a current study sketches the life course cube (Bernardi et al., 2019), which systematically brings together the distinct principles and thus forms the basis for this thesis. The general approach is well-suited to describe the rationale of the articles, as the theory generally aims to explain subjective well-being and its development over the life course (Bernardi et al., 2019).

Figure 1 illustrates the idea of the life course cube applied to the framework of this thesis. At first glance, one can depict the aforementioned three dimensions of time on the z-axis, life domains on the x-axis, and level on the y-axis. These dimensions represent *first-order dependencies*, i.e., there are dependencies of the sub dimensions within each axis. Well-being is not represented as a (sub) dimension because it is the overarching dependent variable that is claimed to be affected by the dimensions and is therefore inherent in the life course cube. Accordingly, the effects of single (sub) dimensions on an axis on well-being are still classified as *first-order interdependencies*. I opt for three sub dimensions within the graph to keep the visualization as simple as possible and because it contains the important concepts in my thesis.

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[2] The fundamental principles are (1) the life-span development, (2) agency, (3) time and place, (4) timing, and (5) linked lives. These five principles are not furtherly defined here since they are embedded within the life course cube and are furtherly outlined throughout this chapter.

However, one could of course add even more (detailed) sub dimensions, namely $T_1, T_2, ..., T_x$, $L_1, L_2, ..., L_x$, or $D_1, D_2, ..., D_x$.

Figure 1: The life course cube applied to the general framework of this thesis
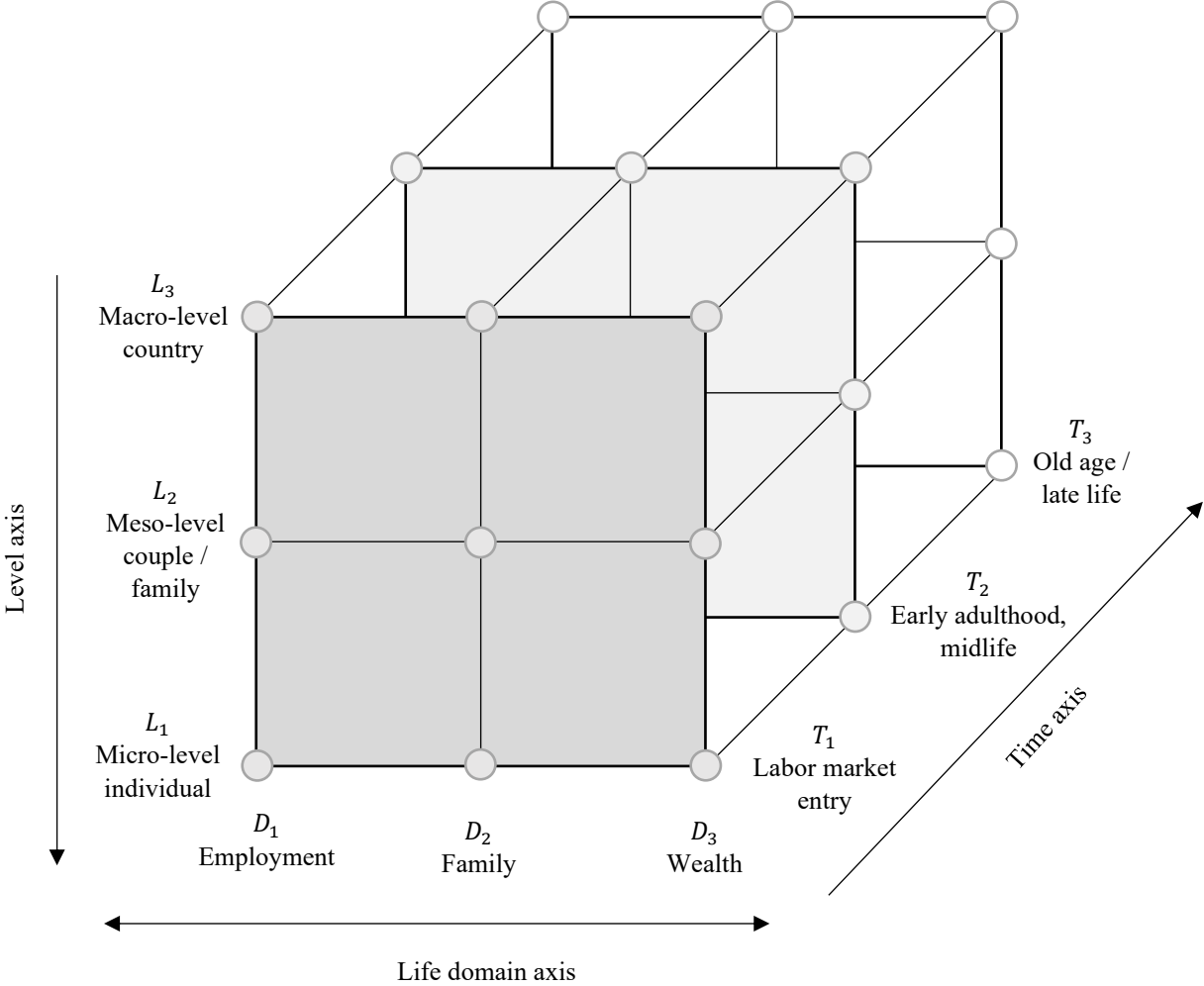
Notes: Own visualization based on Figure 1 in Bernardi et al. (2019).

First-order interdependencies. Starting from the z-axis, my thesis considers three important time points in the life course. T_1 represents the labor market entry, i.e., the time when individuals have their first school-to-work transition. Obviously, then, the model does not begin at an individual's birth, but rather later in life. Since I am interested in the effect of fixed-term employment on well-being, I argue that the school-to-work transition considered the starting

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point of career developments for the theoretical model, but of course, earlier circumstances within the life might affect the career processing. In T_2, individuals are in their early adulthood/midlife and have been in the labor market for some time. This time point, of course, dependents on when the individual entered the labor market. Finally, T_3 represents their later life/old age of individuals, and more precisely, when they are close to retirement or already retired. This point in time could also be extended to death, but this period is not relevant in the context of this thesis.

There is a unidirectional *time-related interdependence of the life course* (Bernardi et al., 2019) between the different points in time. People tend to accumulate experiences throughout their lives that have short- and long-term effects on current and later life[3]. More precisely, there should be an *accumulation of disadvantages and advantages* (Dannefer, 2003), i.e., protective or risk factors accumulate over the life course and influence well-being at different stages of life (Halfon & Hochstein, 2002). In addition, *adaption* processes to distinct situations may occur over time (Luhmann et al., 2012), so effects should vary across the life course.

Besides, there may be *turning points* within the time dimension that can cause an upwards or downwards change in the life course (Bernardi et al., 2019; Elder & Shanahan, 2007). These turning points are also associated with discontinuity in accumulation processes and might occur within the careers. For example, moving from unemployment to temporary employment and then perhaps even to permanent employment – the idea of a *stepping stone* – can be understood as a turning point. This thesis makes use of the notion of *upward* or *downward* comparisons and transitions, namely comparing fixed-term employment with permanent employment or with unemployment, referring to such turning points.

The x-axis, which is bidirectional, distinguishes between three important sub dimensions, namely employment (D_1) – my basic independent variable –, family (D_2), and wealth (D_3). These sub dimensions should interact which other, which is also referred to as *interdependence between life domains* (Bernardi et al., 2019). More specifically, I assume that individuals within each of these domains strive to improve satisfaction with their lives, i.e., their well-being in

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[3] In Figure 1, the arrow is therefore directed from T_1 to T_3 and not vice versa.

general[4]. Therefore, some goals of one life domain, e.g., career success, may conflict with other domains, such as family life, because career success may result in a lack of time for family[5].

Ultimately, the y-axis comprises three hierarchical levels. Following life course researchers from sociology, I distinguish between the micro-, meso-, and macro-levels. Beginning with L_1, the micro-level, I consider individuals here. Beyond that, I argue that individuals are nested within greater level units, such as couples or families (L_2). At the top level, I claim that individuals – nested in families or couples – are in turn nested within countries (L_3). Of course, this distinction could be further refined, but the three levels mentioned are the most important for the underlying studies.

These sub dimensions should also be interconnected, and as named by Bernardi et al. (2019), there should be a *multilevel interdependence of the life course*, which refers to the unidirectionally motivated influence of higher-level events on the life course of individuals[6]. More specifically, macro-level norms or labor market reforms, for example, affect the lives of couples and their behavior, and thus affect the smallest level of individuals. These circumstances are referred to as cross-level interactions. Another well-known interdependency is a type of the *linked lives* perspective, meaning that the life histories of couples can jointly affect the well-being of individuals (Elder, 1974).

Higher-order interdependencies. Figure 1 also shows that the dimensions on one axis and their first-order interdependencies are also interrelated with other domains on other axes, i.e., *second-order interdependencies* (Bernardi et al., 2019). The first combination might be the link between time-related and the multilevel interdependencies. Higher-level forces such as labor markets, policies, or legal regulations (Leisering, 2003) might influence life course interdependencies that relate to the time dimension (Mayer, 2004). One example, which I address in more detail in Article 3, is that there are different gender norms in distinct contexts (Bauernschuster & Rainer, 2012) that shape different expectations about gendered behavior (West & Zimmerman, 1987) and therefore may affect well-being in more or less gendered ways

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[4] That individuals strive to improve their well-being – and, in more general, that they construct their own lives through decisions as well as actions they take within the opportunities and constraints of historical events and social circumstance – is also the key idea of *agency* within Elder's basic principles.

[5] In Figure 1, the arrow is therefore directed in both directions from D_1 to D_3.

[6] In Figure 1, the arrow is therefore directed from L_3 to L_1 and not vice versa.

when individuals deviate from these norms. Such norms thus also shape the expectations towards the partner, which affects the relationship and consequently well-being.

The second combination is the link between multilevel and life domains interdependencies. The forces of policies and regulations can also change the ways in which different domains of life organize with each other. For example, if there are specific gender norms like the male breadwinner/female homemaker norm, working women might perceive a double burden as they must take on caregiving responsibilities and work at the same time (Martikainen, 1995). Therefore, such norms may also shape the work-family trajectories that affect individuals' well-being because they may lead to conflicting goals that are important for maintaining and increasing well-being – in this case spending as much time as possible on the caregiving tasks but also on work.

The final important combination is the link between time and life domains interdependencies. While there may be accumulation processes along the time dimension, these accumulation processes may spill over from one domain to another one. Alternatively, protective factors from one domain might substitute for risk factors (Diewald, 2012) in another life domain for well-being. For example, fertility in the family domain might hinder longer-term investments in career, or conversely, success in the employment domain might be a prerequisite for starting a family (Huinink & Kohli, 2014). Another example is that a successful career might be associated with the possibility to acquiring homeownership in the longer run and being a homeowner may protect against poverty in old age in the longest run.

The life course cube and the related idea of interdependencies across different dimensions motivate the research presented in the five articles. Subsections 1.2 and 1.3 explain in detail how these ideas are applied in this thesis, and the corresponding research questions are structured along the orders of interdependencies for the main research question on fixed-term employment and well-being. Therefore, Chapter 1.2 describes the first-order dependencies and how these are addressed within the papers and Chapter 1.3 the second- and third-order interdependencies that are applied in the studies of this thesis.

1.2 First-order dependencies within fixed-term employment and well-being

Articles 1 and 2 deal mainly with first-order dependencies[7] related to the effect of fixed-term employment on well-being. While Article 1 refers to multilevel interdependencies, Article 2 refers to time interdependencies. Both articles have in common that they investigate the effects from an *upward* and *downward* comparative perspective, that is, on employment statuses or careers that are expected to have either more (*upward*) or fewer (*downward*) protective factors that should contribute to an improvement (*upward*) or deterioration (*downward*) in well-being. Besides the similarities, there are differences in the types of dimensions the articles consider.

In Article 1, "*The Effect of Fixed-Term Employment on Well-Being: Disentangling the Micro-Mechanisms and the Moderating Role of Social Cohesion*", I ask three specific research questions. First, *is there heterogeneity in the effect of fixed-term employment on well-being across countries?* Second, *are there mediation effects by the manifest and latent functions suggested by Jahoda's Latent Deprivation Model on the effect of fixed-term employment on well-being?* Third, *do different degrees of social cohesion across countries moderate these effects?* More precisely, I investigate the effect of fixed-term employment compared to unemployment (*downwards* comparison) and compared to permanent employment (*upwards* comparison) on subjective well-being.

By focusing on differences between countries and the effects of country-specific variables, I address the structure of individuals (L_1) nested within countries (L_3) and how the different levels interact with each other. Thus, the article addresses the dimension of level interdependencies. While I address several mediators within daily life that could be seen as domain overlaps from work to the more mundane and private life, and therefore could indicate second-order interdependence, the arguments for these mediators blur with the work domain. For example, social contacts, a latent function in the Latent Deprivation Model (Jahoda, 1982), are often associated with colleagues (Julià et al., 2017), as are status and identity given by employment status (De Cuyper et al., 2005).

Article 2, "*Longer-Term Dynamics of the Effects of Fixed-Term Employment Trajectories on Subjective Well-Being in Germany*", looks at more holistic employment trajectories and thus

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[7] Since the effect of fixed-term employment on well-being is seen as the starting point for this dissertation and well-being is inherent in the life course cube, papers are classified as first-order dependencies papers if they focus on one dimension (e.g., multilevel or time). However, as can be seen from the explanations, the transition from first- to second-order dependencies sometimes are fluid and harder to differentiate.

considers the time dimension in Germany. The research questions are, first, *what are the effects of fixed-term employment trajectories after school-to-work transitions on subjective well-being?* Second, *how do these effects vary over time?* More precisely, I examine the role of different types of fixed-term employment trajectories, such as *stepping stone* and *entrapment* trajectories. These trajectories should dynamically affect well-being in the shorter and the longer run compared to long-term unemployment or stable and permanent careers. Therefore, the focus of the analysis is clearly on the time dimension.

This analysis is motivated by the idea of cumulative advantages or disadvantages over the life course (Dannefer, 2003). At the same time, adaptation processes may occur as people adjust to longer-term circumstances such as permanent employment or even unemployment (Luhmann et al., 2012). Therefore, this paper considers both perspectives – cumulative disadvantages or advantages and adaption processes – depending on how many turning points there are in employment trajectories. The paper takes up a short- and medium-term time perspective as it considers five-year trajectories immediately after the first school-to-work transitions (T_1) and up to eight years of well-being, so when individuals are in their mid-lives/mid careers (T_2).

While Articles 1 and 2 address first-order interdependencies to better understand the general environment of temporary employment and well-being, second- and third-order interdependencies have not yet been considered. As mentioned earlier, the different dimensions may interact with each other. These second- and third-order interdependencies are addressed in the other three articles, which span an arc to the first two articles.

1.3 Second- and third-order dependencies within fixed-term employment and well-being
Articles 3 to 5 refer to either second or even third-order dependencies. All three articles have in common that they consider the time dimension either in the form of transitions or more holistic short- or longer-term trajectories. However, all three articles deal with different interplays of the time dimension with other dimensions, i.e., different second- or even third-order dependencies.

In Article 3, "*Does Fixed-Term Employment Have Spillover Effects on the Well-Being of Partners? A Panel Data Analysis for East and West Germany*", my co-authors and I investigate three research questions. First, *does fixed-term employment have spillover effects on the well-being of partners in Germany?* Second, *do these effects differ by gender and place of socialization?* Third, *what are the explanations for these effects?* More specifically, the paper investigates how fixed-term employment transitions in T_1 or T_2, i.e., from fixed-term to

permanent employment, or from unemployment to fixed-term employment, affect partner's well-being. Therefore, the paper refers to the interplay between different life domains, namely D_1, employment, and D_2, family, namely couples.

The article also situates the spillover effects within the broader framework of gender norms and their impact on the gendered effects of fixed-term employment transitions of partners on individual well-being. Therefore, spillover effects from an individual to a partner are examined, consistent with the basic idea of linked lives (Elder, 1998). Finally, the paper considers the structure of individuals nested within household within societies, and therefore refers to the interplay with the multilevel interdependencies (Bernardi et al., 2019).

In Article 4, "*Couples' Early Career Trajectories and Later Life Housing Consequences in Germany: Investigating Cumulative Disadvantages*", my co-author and I investigate the effect of couples' employment trajectories on two distinct housing outcomes, renting and homeownership. We pose three research questions. First, *how do early career trajectories of couples affect the likelihood of being homeowners in their later life?* Second, *how do early career trajectories of couples affect the likelihood of the share of income expenditure spent on rent in the later career?* Third, *do cumulative income disadvantages mediate these effects for the two dependent variables?*

We address the interplay of several principles of the life course cube here. We focus on the interdependencies of life courses or levels, by examining the effect of couples' employment trajectories (both partners (L_1) are accounted for within the greater social unit L_2 of couples) and timing (earlier career trajectories in T_1 or T_2 on later life housing outcomes), which allows us to account for cumulative advantages or disadvantages (Dannefer, 2003). In addition, we examine these interdependencies and their spillover effects to the housing domain, which is part of the wealth of individuals (D_3). Here, we account for a temporal perspective by accounting for the probability of being a homeowner later in life and for rental outcomes. By considering cumulative income disadvantages, we dig deeper more explicitly into cumulative disadvantages regarding wealth (D_3) as explanation for the effects, and emergence of accumulation processes.

Finally, Article 5 "*The Effect of Early and Mid-Life Work-Family Trajectories on Self-Rated Health in Older Age in West Germany and Italy: A Multichannel Sequence Analysis*" examines the long-term effects of early and mid-life work-family trajectories on old age health status. Health status, or habitual physiological well-being, is a dimension of well-being as outlined in the introduction. The paper poses the research question: *How do early and mid-life gendered*

work and family trajectories affect health in later life in Germany and Italy? We account for timing interdependencies by looking at the effects of careers from the first school-to-work transitions on until midlife on the later life health status.

Therefore, our time dimension spans from early in the career, i.e., when first school-to-work transition (T_1) takes place, to mid-life (T_2), until later life (T_3), when individuals are close to or already retired. This time frame constitutes the largest time span of all three papers. Moreover, we account for cumulative disadvantages and spillover effects of different life domains – such as work (D_1) and family (D_2) – by combining these two life domains. More specifically, we apply the Life Course Health Development (LCHD) model (Halfon & Hochstein, 2002), and argue that protective factors or harmful factors can add up across the life course and form the health status in later life. We enrich this time- and domain-crossing perspective on the micro-level (L_1) with multilevel interdependencies as we consider differences between West Germany and Italy (L_3), which arguably differ in terms of their social security systems.

In summary, all five articles address the life course framework and various first-, second- and third-order independencies to receive a more holistic picture of the effects of fixed-term employment on well-being. While this context has been outlined in detail in sections 1.1 to 1.3, the articles refer to interdisciplinary research that has already provided important empirical evidence. Therefore, the next chapter locates the contributions of each article within previous literature.

2 Previous research and the contributions of this thesis

In this chapter, I review the state of the literature on the effects of fixed-term employment on well-being and provide detailed insights in the several mediation and moderation effects that I address in the papers. The chapter is structured along five important aspects of the literature and how I contribute to these. Namely, the structure refers to (1) *central findings*, (2) *underlying mechanisms*, (3) *treatment heterogeneity*, (4) *effect heterogeneity*, and (5) *methodology*.

In Chapter 2.1, I first summarize the key findings of the different studies and then discuss the inconsistencies and similarities across disciplines and papers. Second, in Chapter 2.2, I discuss in more detail the underlying mechanisms hypothesized in the literature. Third, in Chapter 2.3, I review studies of treatment heterogeneity, that is, differences in the definition of the independent variables. Fourth, in Chapter 2.4, I discuss studies on effect heterogeneity referring to either individual- or context-level variables that might moderate the effect of fixed-term employment on well-being. Fifth, in Chapter 2.5, I dispute about the differences in methodology

across studies. Each subchapter concludes with a discussion of the limitations of previous studies and the subsequent contributions of the five research articles. Eventually, Chapter 2.6 outlines the further structure of this thesis and summarizes the overall contributions.

2.1 Central findings of previous literature

There are already a bunch of studies on the effects of fixed-term employment on well-being outcomes, as well as some literature reviews (De Witte, 2010; Imhof & Andresen, 2018; De Cuyper et al., 2008; Virtanen et al., 2005). Yet, these literature reviews highlight that there is some contradictory evidence, as it is still not entirely clear whether there is a negative (Dawson et al., 2017; Green & Leeves, 2013), a positive (Gundert & Hohendanner, 2014; Gash et al., 2007), or no effect of fixed-term employment on well-being (De Cuyper & De Witte, 2006; Chambel et al., 2016). In the following, I will order the studies according to whether the results point to a positive, negative or no impact and provide initial indications of the issues that arise when comparing these studies, which are discussed in more detail in the following subsections.

First, it should be noted that most studies find a negative impact of fixed-term employment on well-being. However, most of these studies are on domain-specific life satisfaction, namely the satisfaction with work (Aletraris, 2010; Dawson et al., 2017; Green & Leeves, 2013; Kinnunen et al., 2010; Park & Kang, 2017) or with family life (Scherer, 2009). There are also some studies on health (Voßemer et al., 2018; Virtanen et al., 2005) or on some psychological outcomes such as depressive symptoms (Quesnel-Vallée et al., 2010; McGann et al., 2016). What all these studies have in common is that they apply an *upward comparative* perspective, i.e., they compare fixed-term employment with the more advantageous permanent employment contract.

Does the direction of comparison – either *upward* or *downward* – provide a sufficient explanation for the effects? To answer this question, we should turn to the studies that find positive effects. There are remarkably few studies that point to positive effects of fixed-term employment on well-being or health (Gash et al., 2007; Gundert & Hohendanner, 2014; Saloniemi et al., 2004; Gebel & Voßemer, 2014). All of these studies conclude that fixed-term employment can have positive effects on the well-being when compared to unemployment. Hence, these studies adopt a *downwards comparative* perspective, i.e., they compare fixed-term employment to a more disadvantageous employment type, namely unemployment.

Although these results give an indication of the relevance of the perspective taken by researchers whether they find that fixed-term employment has positive, negative, or no effects on well-being, it is important to also look at the studies that find no effects. Several studies find

marginal, or no effects of fixed-term employment compared to permanent employment on well-being (Green & Heywood, 2011; Kauhanen & Nätti, 2015; Gebel & Voßemer, 2014; Flint et al., 2013) or on job satisfaction characteristics (LaMontagne et al., 2014). There are also studies showing that fixed-term employment can have an equally or even stronger negative effect on well-being compared to unemployment (Burchell, 1994; Kim & dem Knesebeck, 2015). Schumann & Kuchinke (2020) find that there is no effect of fixed-term employment on objective well-being, while these jobs could affect affective, i.e., shorter-term, well-being.

In summary, a closer look at the literature shows that differences in the effects found cannot simply be explained by the direction of comparison. Several factors might be at play in such discrepancies in the results, four of which I will discuss in more detail here. First, while there are somewhat fewer studies showing that fixed-term employment has no effect on well-being than studies finding that there are well-being effects, it may be that there is just less evidence to support the zero finding due to publication bias (Gerber & Malhotra, 2008). More precisely, it might be more difficult to publish studies with zero findings compared to those with significant findings. Unfortunately, by its very nature, it is not possible to determine how large the effect of the publication bias actually is.

Second, treatment heterogeneity could play a role in producing different findings. While fixed-term employment could include different types of contracts with a limited duration, e.g., temporary agency work versus other fixed-term employment types (Imhof & Andresen, 2018; Gundert & Hohendanner, 2014), the literature only rarely distinguishes between them. It could be that some fixed-term employment types have more or less severe consequences for well-being. Mixing these types of contracts could lead to upwardly or downwardly biased effects of fixed-term employment on well-being. Treatment heterogeneity in the literature is discussed further in Chapter 2.3.

Third, another important difference across studies could be that they focus differently on effect heterogeneity. More specifically, fixed-term employment could have varying effects on distinct subgroups. Prominent examples include gender (Green & Heywood, 2011; Virtanen et al., 2002) and age (LaMontagne et al., 2014; Helbling & Kanji, 2018). In addition, differences across countries may also lead to distinct findings (Imhof & Andresen, 2018), which in aggregate may appear to be inconclusive. Thus, in a similar manner to treatment heterogeneity, looking at average effects without distinguishing effects for specific other factors might only tell part of the story. However, it should be noted that accounting for effect heterogeneity

through subgroup analysis induces differing samples, such as fixed-term versus temporary agency employees. Examining effects for these specific samples could reduce external validity if the subgroups become too specific, such as part-time temporary agency workers. Chapter 2.4 discusses in more detail how the literature handles effect heterogeneity and the results.

Finally, and fourth, differences in research design, i.e., methodological differences, can be another reason for different results (Schumann & Kuchinke, 2020). Not only the type of data, i.e., cross-sectional or panel data, and the choice of measurements can cause enormous differences, but also the resulting choice of methods and estimation strategies as well as the underlying assumptions can lead to differences in findings. In the same vein, the selection of appropriate control variables to identify the causal total effect (Bartram, 2021; Lundberg et al., 2021) is also handled very differently across studies. While many of the studies control for potential mediating variables such as income (e.g., Helbling & Kanji, 2018; Bardasi & Francesconi, 2004; Schumann & Kuchinke, 2020), they induce overcontrol bias and account rather for some kind of "direct" effect net of the mediators, which is not in fact the estimation they are interested in. Within the studies cited, there are quite remarkable differences in data types, measurements, control variables, and methods. Thus, in Chapter 2.5, I go into the details of methodological differences within the literature.

2.2 Mechanisms within previous literature

It is important to also examine the various underlying mechanisms behind the effects of fixed-term employment on well-being and whether they hold empirically. Most studies only address the mechanisms theoretically, such as income (Green & Leeves, 2013) or job insecurity, while few studies actually test mediation effects. Therefore, Chapter 2.2 reviews studies on the mechanisms that are argued to be at play in the effect of fixed-term employment on well-being and those that actually test these mechanisms.

In particular, the literature to date has made arguments about causal mechanisms comparing fixed-term employees to the unemployed on well-being (Gundert & Hohendanner, 2014; Gash et al., 2007; Bardasi & Francesconi, 2004). The arguments here are borrowed from theories in the unemployment literature such as Jahodas's Latent Deprivation Model or Warr's Vitamin Model. However, there is only one study that directly tests some of the proposed mediators, namely economic situation, social resources, and social status, for social well-being (Gundert & Hohendanner, 2014). The authors conclude that the effects of temporary agency work on social well-being cannot fully be explained by these factors.

While this article is an important contribution to a better understanding of the underlying mechanisms between fixed-term employment, and more precisely temporary agency work, and social well-being, it only tests some of the relevant mechanisms. Moreover, the authors do not opt for a unified theoretical model, but mix several arguments from different theories. Furthermore, the study uses data by the German Panel Labour Market and Social Security (PASS), which focuses on a rather selective sample of social security recipients[8] and does not consider how these mediators might differ across contexts.

Article 1 contributes to this research gap by applying the theoretical arguments of the Latent Deprivation Model to the context of comparing fixed-term employment with unemployment and fixed-term employment with unemployment in terms of well-being. The article further addresses the core idea of Warr's Vitamin Model that there might be differences between different types of employment contracts, as the Latent Deprivation Model focuses mainly on the comparison between employed and unemployed. While Gundert & Hohendanner (2014) tested mechanisms for a more specific form of subjective well-being, namely social well-being, Article 1 tests more generally for subjective well-being, namely overall life satisfaction. In addition, Article 1 tests several other mediators suggested by the Latent Deprivation Model, such as status and identity or activity, which were not tested by Gundert & Hohendanner (2014) due to data restrictions.

Article 4 further contributes to one specific mechanisms of the Latent Deprivation Model and the Vitamin Model and embeds it in a life course perspective. More precisely, Article 4 tests a subchain of the mediation effect of fixed-term employment on well-being. The article examines whether cumulative income disadvantage is an important mediator for homeownership attainment, which is argued to be an important goal for individuals and couples (Foye et al., 2018) and thus determines their well-being (Zumbro, 2014; Diaz-Serrano, 2009). Although there are numerous studies on the relationship between housing and well-being (Foye et al., 2018; Zumbro, 2014; Diaz-Serrano, 2009), and on long-term effects on well-being (Herbers & Mulder, 2017), not much is known about how couples' careers affect housing. While Article 1 considers income from a rather short-term perspective and in a more subjective way about

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[8] The PASS also includes non-social security recipients as a smaller control group. However, the representativity of this control group which includes individuals in stable and permanent careers might be less reliable compared to other more general household panels. Therefore, the effects might be biased when using the PASS.

perceptions of income, Article 4 takes a more holistic perspective about cumulative advantages and disadvantages of objective measures of income.

Another mechanism that Gundert & Hohendanner (2014) also mention in their conclusions is the reduced life-course predictability due to the job insecurity, which is more frequently mentioned in the literature compared to the manifest and latent functions (Bernhard-Oettel et al., 2005; De Witte & Näswall, 2003; De Cuyper & De Witte, 2007). Here, it is argued that due to the fact that temporary employment by definition ends, there is some uncertainty whether the job can be continued or whether the individual will find another job. Thus, in these studies, it is usually argued that there is some job uncertainty in fixed-term employment and that this may explain the negative effect on well-being compared to permanent employment (Dawson et al., 2017; Kinnunen et al., 2010). This circumstance can cause stress and severely affect the feeling of control over one's life and plannability (Bosmans et al., 2016). While these studies seem to argue in terms of mediation effects, they mostly test job insecurity as an interaction effect (De Witte & Näswall, 2003), namely that the combination of fixed-term employment and perceived job insecurity lead to even lower well-being.

Thus, there is a lack of evidence on whether perceived job insecurity is an important mediator for the effect of fixed-term employment on well-being. Article 3 contributes to this lacking evidence by testing – in a subhypothesis – whether job insecurity actually mediates the effect of fixed-term compared to permanent employment on well-being. In this study, we fit this smaller mediation effect into a larger causation chain of the effects of fixed-term employment transitions on partners' well-being. Moreover, we argue that own well-being is an important mediator of this spillover effect, which has been argued but not tested in one of the few studies on spillover effects (Inanc, 2018), and whether this effect is itself mediated by perceived job insecurity and financial worries.

2.3 Treatment heterogeneity within previous literature

In terms of treatment heterogeneity, there are mainly studies on different types of fixed-term employment such as temporary agency work (Imhof & Andresen, 2018; Gundert & Hohendanner, 2014). Several studies argue that fixed-term employment can be either a *stepping stone* to permanent employment or a dead end – or *trap* – within precarious employment, which might depend on the type of fixed-term employment (Booth et al., 2002; Givord & Wilner, 2015; Pavlopoulos, 2013; Babos, 2014). However, there are almost no studies that directly examine the *stepping stone* or *entrapment* function of fixed-term employment.

Givord & Wilner (2015), for instance, attribute the *entrapment* scenario to temporary agency work and the *stepping stone* scenario to other types of fixed-term contracts such as project work. Thus, these studies argue that fixed-term contracts bring either advantages or disadvantages and refer to certain forms of fixed-term employment. Perhaps this one-sided and incomplete perspective on treatment heterogeneity is due to the fact that studies to date have mostly viewed these scenarios as rival rather than co-existing (Fuller & Stecy-Hildebrandt, 2015).

This thesis addresses this shortcoming by applying an *upward* or *downward* comparative perspective in each article and, in particular, by more specifically examining the effects of the fixed-term employment trajectories, namely *stepping stone* or *entrapment*, on well-being in Article 2. In this article, I argue that considering holistic employment trajectories reveals treatment heterogeneity within fixed-term employment more directly than considering only employment statuses. Thus, I can directly test whether the advantages attributed to fixed-term employment as *stepping stone,* compared to the disadvantages ascribed to such contracts as *entrapment,* hold for well-being. This procedure places single fixed-term employment statuses within the larger framework of career types.

In this article, I also match the fixed-term employment trajectories with the extreme of a stable and permanent career – which is often the implicate reference group for studies that focus on employment statuses – and with the long-term unemployed. These comparison groups are, as can be seen from the explanations in Chapter 2.1, oftentimes also considered separately rather than integrative – namely the upward and downward comparison. Therefore, previous literature might have misjudged the effect of fixed-term employment on well-being without this longer-term perspective.

Another treatment heterogeneity issue is currently being addressed, particularly in the literature on the income consequences of fixed-term employment, and relates to the combination of fixed-term with part-time employment (Fuller & Stecy-Hildebrandt, 2015). On the one hand, fixed-term employment can be combined with part-time employment, which increases the financial disadvantages of these jobs. On the other hand, fixed-term part-time employment can enable work-life balance – but mainly because of the part-time component.

Therefore, there should be some heterogeneity when fixed-term jobs are either part-time or full-time. Gash et al. (2007) argue that this distinction may be particularly relevant for women. I address this effect heterogeneity in Article 5, where I distinguish between full-time and part-time fixed-term jobs for men and women. Moreover, I also differentiate between permanent

full-time and permanent part-time workers for men and women to account for heterogeneity within the control group as well.

2.4 Effect heterogeneity within previous literature

I discuss effect heterogeneity along the levels of moderating variables, from the lowest (L_1) to the highest level (L_3). Therefore, this subchapter starts with moderating variables at the micro-level, and more precisely, with gender as an important variable. There are some studies on the moderating effect of gender (Gash et al., 2007; Green & Heywood, 2011). While it is often argued that the flexibilization of the labor market and the resulting increase in fixed-term employment might help women to better balance work and life (Scherer, 2009), there is no convincing evidence of well-being gains for women. Green & Heywood (2011) show that in Great Britain, fixed-term contracts, agency work, or other flexible contracts actually have stronger negative effects on women's job satisfaction compared to permanent employment, which is inconsistent with the assumption of benefits for women.

Gash et al. (2007) show that women are less likely to benefit from fixed-term re-employment compared to men due to the double burden of paid employment and unpaid childcare. Scherer (2009) finds evidence that fixed-term employment negatively affects many women's family considerations and increases health risks for women. Thus, fixed-term employment appears to have more negative consequences regarding well-being for women than men.

This thesis enriches the two perspectives on gender with several aspects. Article 3 accounts for gendered spillover effects, i.e., the effect of employment transitions on partners' well-being, in Germany. There is a study on spillover effects in Great Britain (Inanc, 2018), which finds that the negative effects of wives' temporary employment transitions on their well-being spill over to their husbands' well-being. In addition, the study underscores theories of gender deviation by showing that the male partner's employment status has a more negative effect when the wife is permanently employed, and the husband is unemployed or fixed-term term employed. This circumstance can be viewed as a deviance of the male breadwinner / female homemaker norm.

My co-authors and I extend this idea to the German context, where we also expect the male partner's employment transitions to be more relevant for the female partner's well-being than vice versa. Moreover, we dig deeper into effect heterogeneity of these gendered effects by arguing that gender norms might differ across contexts. East and West Germany can be seen as a prime example for differing gender norms where there is the particular historical situation of

having two types of socialization systems in one country. Therefore, we enrich the perspective of gender differences with the underlying arguments on gender norms.

Another important heterogeneity at the micro-level could be variations across time (Helbling & Kanji, 2018). More specifically, it might be that the effect of fixed-term employment on well-being is long lasting or disappears over time. In this regard, Helbling & Kanji (2018) account for five-year life satisfaction trajectories when the employment contract and/or the subjectively perceived job insecurity changes using growth curve methods. Because they interact subjective with objective job insecurity, it is not entirely clear what drives the longer-term effects on life satisfaction. Moreover, they only consider single employment statuses or transitions, not for more holistic employment trajectories.

In Article 2, I take up these limitations and account for more holistic five-year employment trajectories and their effects on subjective well-being in parallel and up to three years after trajectory observation. Therefore, besides not looking only at snapshots for well-being (Helbling & Kanji, 2018), I add a longer-term perspective on the independent variable. Moreover, in the current study by Helbling & Kanji (2018), it is not clear what drives the effects, due to differences between individual employment statuses they look at and more holistic trajectories. In this respect, the findings of Article 2 are easier to classify, since they deal with specific employment trajectories such as the *stepping stone* or the *entrapment* trajectory.

At the macro-level, there are up-to-date studies mainly on moderating economic factors such as labor market policies or moderating economic factors such as gross domestic product (GDP), employment protection legislation (EPL), or income inequality (Voßemer et al., 2018; Karabchuk & Soboleva, 2020; Täht et al., 2020). More precisely, Voßemer et al. (2018) show that unemployment benefit generosity, active labor market policies (ALMP) and EPL are more relevant for the well-being of the unemployed than for fixed-term employees. Karabchuk & Soboleva (2020) show that the stricter the EPL, the greater the differences in well-being between fixed-term and permanent employees. Täht et al. (2020) find that the negative effects of less advantageous employment contracts are lower when society is perceived as equal in terms on the income distribution, both objectively and subjectively. These studies all relate to the idea of substituting the importance of (perceived) income differences between fixed-term and permanent employees, and the unemployed with macro-level features.

However, literature on cultural country characteristics has not yet been adequately addressed. Täht et al. (2020) are one of the few papers that consider perceived social inequality and thus

individuals' opinions aggregated at the macro-level. Within Article 1, I examine the moderating role of social cohesion, which is not only of increasing political interest (Schiefer & van der Noll, 2017), but also an important cultural country characteristic that has not been considered before. Such a country-level specific perception of belonging to a superior unit could, for example, replace the role of employment in defining status and identity, and the role of colleagues as important social contacts.

2.5 Methodological differences within previous literature

Cross-sectional and panel data studies almost balance each other in the literature so far. However, a more recent study argues that different methodological choices lead to different findings (Schumann & Kuchinke, 2020). Cross-sectional studies (Aletraris, 2010; De Cuyper & De Witte, 2006; Kauhanen & Nätti, 2015; McGann et al., 2016) mainly refer to simple regression models or variance analyses, which often do not control for important confounders from a causal perspective but rather include control variables that do not yield the effect of interest, leading to overcontrol bias. Thus, one argument might be that endogeneity problems will mainly bias the results of cross-sectional studies.

Panel data provide the opportunity to account for time-constant individual heterogeneity, which reduces the risk of endogeneity. However, many studies use panel data but do not account for the structure of panel data, using only pooled regression models (Dawson et al., 2017; Green & Leeves, 2013). Others estimate random-effects models (Gash et al., 2007) that only account for variance between individuals, and unlike fixed-effects models, random-effects models rely on the assumption of exogeneity with respect to time-constant individual heterogeneity. Other studies use within-estimators such as difference-in-difference propensity score matching (Gebel & Voßemer, 2014) or fixed-effects panel regression models (Flint et al., 2013; Green & Heywood, 2011; LaMontagne et al., 2014; Inanc, 2018). It becomes apparent that there is no common sense in applying methods to the effect of fixed-term employment on well-being. Rather, there are many different approaches that require different assumptions and therefore may produce different results (see also Chapter 4).

Interestingly, within-estimators tend to detect null effects more often (Gebel & Voßemer, 2014; Flint et al., 2013; De Cuyper et al., 2009; Chambel et al., 2016) than cross-sectional estimators (De Cuyper & De Witte, 2006; Kauhanen & Nätti, 2015). Therefore, the estimation strategy might indeed play a role in the findings. This thesis also contributes to the question of whether distinct estimation procedures lead to distinct findings, as it applies different methods to the

same datasets (Articles 2–4) and includes both cross-sectional estimators (Articles 1, 4, and 5), and within-estimators (Articles 2 and 3). While I apply within-designs whenever possible given the data best suited to answer my research questions, in cases where I cannot choose a within-design due to data limitations, I use cross-sectional designs with a selection of control variables supported by causal analyses.

Another important methodological difference, related to the type of data used, is that most studies focus either only on employment statuses (Aletraris, 2010; De Cuyper & De Witte, 2006; Kauhanen & Nätti, 2015; McGann et al., 2016) or on specific transitions (Gebel & Voßemer, 2014; Inanc, 2018). Although considering transitions is still better than looking at single employment statuses, which is why my co-authors and I also apply this perspective in Article 3, such transitions still represent only snapshots of more holistic employment trajectories (Fuller & Stecy-Hildebrandt, 2015).

At least to my knowledge, no study examines the effect of more holistic employment trajectories on well-being. Hence, Article 2 fills this research gap by using sequence analysis methods to uncover more holistic fixed-term employment trajectories and relate them to each other via growth curve models. Moreover, Articles 4 and 5 also take into account couples' employment trajectories or intertwined work-family trajectories.

Although most articles in literature so far do not refer to a specific direction of transitions, it is important to at least debate whether there might be asymmetric effects or, at best, to account for them through specific estimation procedures as well (Schumann & Kuchinke, 2020). More specifically, it could be that the effect of unemployment into fixed-term employment on well-being is due to different mechanisms than transitions from fixed-term employment into unemployment on well-being. In the same vein, it could matter whether individuals move from fixed-term to permanent employment or vice versa. The change from permanent to fixed-term employment could be the result of voluntary job changes or even plant closures – two quite different mechanisms.

Mixing these contrasting directions of transitions may lead to an overestimation or underestimation of the effects in fixed-effects models, as the assumption of symmetry is quite implausible here (Schumann & Kuchinke, 2020). This distinction has been implemented in very few studies. For countries such as Germany, within-job transitions from permanent employment to fixed-term employment are not legally allowed and are likely to be the result of different mechanisms, as described earlier.

However, in other countries where permanent employment is not protected in a comparable way as in Germany and which have a more liberal labor market, such as the United Kingdom, the consideration of asymmetry might be less relevant, as switching between permanent and fixed-term employment might be more likely. Therefore, the different labor market contexts of countries must be taken into account, and consideration needs to be given to which transitions are relevant or even legally permissible for each context.

This is where Article 3 steps in and considers the distinct directions of transitions in two-way fixed-effects models that relate directly to specific transitions. More precisely, only transitions from fixed-term into permanent employment or from unemployment into fixed-term employment on well-being are considered so as not to mix the differences within transitions. Thus, the definition of the independent variable is more convincing than in previous approaches because it does not confuse several mechanisms that operate within transitions.

2.6 Structure and contributions of this thesis

As stated in Chapter 1, this thesis is a cumulative dissertation consisting of this overview article and five research articles. The latter are theory-driven empirical studies of two kinds. First, there are three articles that my co-author(s) and I have already published or that are accepted for publication in international peer-reviewed journals listed in the Social Science Citation Index (SSCI), namely Articles 1, 3, and 4. Second, there are also two articles that have been submitted to such journals but are not yet published, namely Articles 2 and 5.

Because most social science journals have strict word limits, some relevant details – such as sensitivity analyses, descriptive statistics, or coefficients for the control variables – have been omitted from the articles. However, these important details can be found in the supplementary material. This supplementary material is appended to the articles in this thesis and can be found on the journals' websites for the three accepted or published articles.

This thesis addresses limitations of previous studies – as discussed throughout this chapter – and contributes to distinct aspect of the literature. Three general contributions are discussed. These contributions concern (1) the *general theoretical framework*, (2) the *encompassing perspective* on fixed-term employment and well-being, and (3) *advances in the use of state-of-the-art methods*.

First, my *general theoretical framework* starts from the idea of the life course perspective and is enriched with several interdisciplinary theories that provide further details on the proposed effects. Therefore, I develop a comprehensive theoretical model that illuminates the underlying

effect from multiple perspectives (Chapter 3). While the life course perspective contains some key assumptions, these need to be enriched and extended to the context of fixed-term employment and well-being. More specifically, I address all three dimensions of the life course cube discussed in Chapter 1.1. The derived theoretical model therefore takes a temporal perspective on how fixed-term employment is embedded in the life course and how this affects well-being in the short and longer run. I address the interdependencies of life domains by considering several mechanisms, which I also enrich with the time and the levels dimension.

The dimensions are accounted for in several ways. I investigate the effects from a household-integrative and cross-country comparative perspective. This perspective also provides some arguments about the underlying mechanisms of these levels and how they are linked to the time and domain dimension. Hence, I examine in more detail the first-, second-, and third-order interdependencies, which should provide a more holistic picture of what happens over the life course when individuals are fixed-term employed. To date, at least to my knowledge, there is no such comprehensive model that applies the life course perspective.

Second, the thesis applies an *encompassing perspective* to the effects of fixed-term employment (Chapter 3 and 4). More specifically, I not only study consequences for well-being, and more precisely life satisfaction, but I enrich this perspective with a study on self-rated health. I deem this broad perspective important because looking at only one indicator of well-being would be too simplistic and would not cover the heterogeneity of the concept. I zoom in the mechanisms of fixed-term employment on well-being by examining the material consequences of fixed-term employment in Article 4. Thus, I dig deeper into another important domain, namely wealth.

More specifically, my co-author and I examine the specific effects of couples' employment trajectories – characterized by fixed-term employment – on the likelihood of owning housing later in life and on the amount of income spent on rent. While I argue that this is part of the mediation pathway of fixed-term employment to well-being, it can also be viewed as a separate contribution to the literature on economic consequences of fixed-term employment. Within these several studies, I account for various types of treatment and effect heterogeneities. In addition, I explicitly test for mediation effects. This encompassing perspective allows for the creation of a roadmap for future research (Chapter 5), as it identifies further research gaps and how they might be tackled.

Third, the thesis contains some *advances in the use of state-of-the-art methods*. I apply distinct causal and multilevel methods (Chapter 4), but also situate them within the life course

framework. Different research questions and theoretically derived hypothesis motivate distinct choices of methods. My co-author(s) and I use various datasets on Germany and Europe that either enable cross-country comparative analysis, are panel data, or are life history data and distinct methods to examine the different interdependencies of the life course cube. More precisely, almost all articles – with the exception of Article 1 – establish a clear causal ordering. Most articles, namely Articles 2, 4, and 5, apply a longer-term perspective to careers or transitions by using sequence analysis tools, which are innovatively combined with regression analyses tools.

For example, in Article 2, I combine theoretically motivated sequence analysis tools with fixed-effects growth curve models to uncover the dynamics of well-being effects. Articles 4 and 5 relate trajectories – which either account for a couple perspective (Article 4) or work-family interdependencies (Article 5) – to housing in later life (early adulthood, Article 4) and health outcomes (later life, Article 5) using linear or binary logistic regression analyses. Articles 1 and 5 examine the interdependencies across levels by conducting different forms of multilevel analysis and relating the effect heterogeneity across countries to a specific macro-level variable (Article 1). Article 3 examines employment transitions and their effects on partners' well-being using two-way fixed-effects panel regression models. We assume asymmetric effects of transitions into and out of fixed-term employment and analyze them explicitly.

3 Theory and hypotheses

This chapter presents the theoretical framework and tested hypotheses of this thesis. In Chapter 3.1, I provide a general theoretical overview of the effects of fixed-term employment on well-being. Since the life course framework forms the foundation for this thesis, theoretical arguments are structured along these aspects. In Chapter 3.2, I discuss the several micro-level mechanisms of the general model. Chapter 3.3 debates the micro-level moderators. Chapter 3.4 gives insights into meso-level mechanisms, while Chapter 3.5 elaborates on meso-level moderators. Eventually, Chapter 3.6 explains the macro-level moderators.

3.1 A general theoretical model

Figure 2 depicts a general theoretical model of the effect of fixed-term employment on well-being. This visualization is a kind of 2D derivative of Figure 1, highlighting the life course cube. Moreover, Figure 2 presents the key concepts of this dissertation within a path diagram that shows clear directions of the effects.

Figure 2: A general path diagram
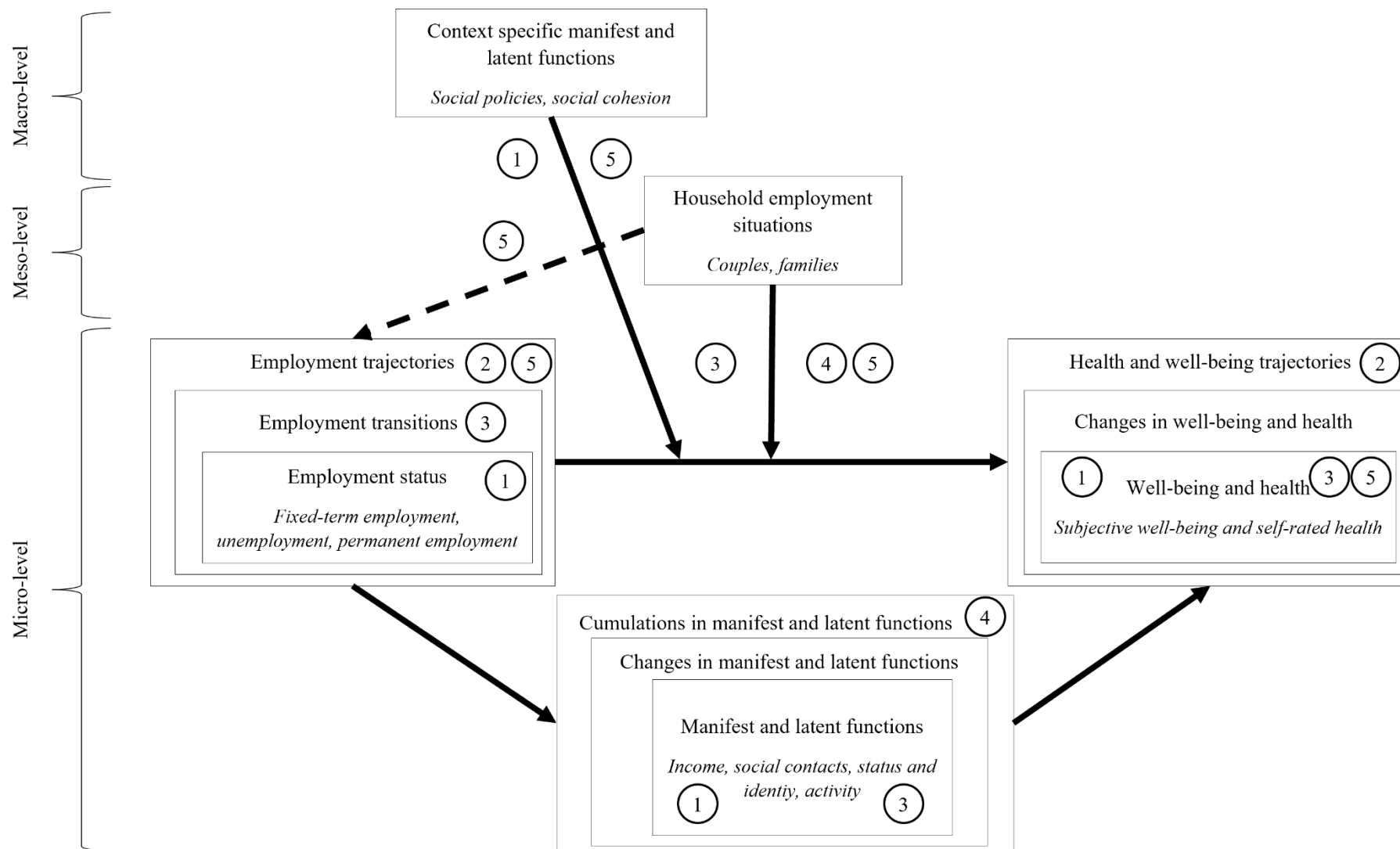
Notes: Own illustration. The solid lines represent the interrelationships that are examined, the dashed lines represent the effects that are indirectly assumed.

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Based on the dimensions of the life course cube, I account for the three important dimensions that are also visualized in Figure 2. First, on the y-axis of the figure, we see the dimension of levels, namely the micro-level (individual), the meso-level (household), and the macro-level (country). The axis is equivalent to the y-axis of the life course cube in Figure 1 (L_1, L_2, L_3).

Second, the time dimension is visualized here by the higher-level boxes, i.e., the concepts. For the independent concept, employment status, we see that the employment status is embedded in employment transitions, which in turn are embedded in careers. For the dependent variable of well-being and health, statuses are part of changes in well-being and health, and transitions themselves are part of more holistic trajectories of well-being and health.

Third, the domain dimension is visualized on the x-axis at the micro-level. Since I am mainly interested in the micro-level effects, enriched with a meso- and macro-level perspective, the mediators, some of which relate to other life domains, are also at the micro-level.

These mediators consist of manifest and latent functions such as income, social contacts, status and identity, or activity. All of these factors affect distinct domains of life to some extent, such as personal life. Again, the time dimension appears within the superior boxes of changes and accumulations. The circled numbers indicate which article addresses which arrow and concept. Therefore, the following is organized by the number of articles. Moreover, I explore the interrelationships and theoretical mechanisms in more detail below.

Article 1 examines the effects of employment status on subjective well-being, micro-level mechanisms, and the moderating role of macro-level social cohesion. In general, it argues that subjective well-being is a conscious and individually weighted assessment of one's life. In evaluating well-being, individuals refer to their past as well as to others. Thus, it is a rational assessment in which people compare their expectations regarding life (*target states*) and the perception of their fulfillment (*actual state*) (Veenhoven, 2009).

More precisely, this paper combines the idea of Jahoda's Latent Deprivation Model (Jahoda, 1982) – a sociological perspective on effects of unemployment on well-being – and the consequent idea of Warr's Vitamin Model (Warr, 2017) – a psychological perspective on the effects of employment on well-being in general – and extends these to the context of fixed-term employment. Jahoda, on the one hand, argues that unemployment has detrimental consequences for well-being because unemployed individuals lack several functions of employment, namely manifest functions – such as income – and latent functions – such as social contacts, activity,

status and identity, time structure, or overarching aims. Thus, the distinction between employment and unemployment in this theory is quite strict.

Warr, on the other hand, argues that distinct employment statuses provide distinct amounts of vitamins related to environmental features that determine an individual's well-being. In this theory, there are twelve different factors or vitamins, such as the opportunity for personal control, social contacts, availability of money, career prospects, and other factors (Warr, 2017). It is argued that the domain of employment provides these benefits. Warr furtherly claims that, just as with vitamins, under- or over-dosing can be detrimental to well-being. Unlike Jahoda's model, Warr's Vitamin Model refers to different degrees of vitamins in different types of employment relationships without a clear cut between unemployed and non-unemployed.

The two theories can be combined to explain a hierarchy in functions between fixed-term employment, permanent employment, and unemployment. I argue that fixed-term employment should provide fewer functions or vitamins compared to permanent employment. Therefore, I call the comparison of fixed-term employment to permanent employment *upward comparison*. Moreover, fixed-term employment should provide more functions or vitamins compared to unemployment. Thus, I refer to the comparison of fixed-term employment with unemployment as a *downward comparison*. Article 1 therefore presents arguments about these two perspectives and elaborates on which mechanisms should hold for which comparison. Additionally, Article 1 argues that social contacts, in particular, which are assumed to be an important micro-level mediator for both upward and downward comparisons, might be compensated if there is some kind of substitution at the macro-level, such as a general sense of belonging to society (Gallie, 2013), namely social cohesion.

The perspective of a continuum with distinct functions or vitamins in the three types of employment that have different effects on well-being is also applied in all other articles. The difference in Article 2, however, is that here I address specific employment trajectories such as *stepping stone* or *entrapment*, as these frequently appear in theoretical discussions on fixed-term employment (Booth et al., 2002; Gash et al., 2007; Gebel, 2010). Like outlined in Chapter 1, *stepping stone* trajectories tend to be associated with benefits of fixed-term employment, while *entrapment* is argued to reflect the disadvantages of fixed-term employment. Therefore, I argue that there should be a continuum of these theoretically derived employment trajectories. A stable and permanent career should be the best option, followed by the *stepping stone* career, the *entrapment* career, and, arguably most detrimental to well-being, unemployment.

In this respect, I argue not only that these trajectories should have an immediate impact on well-being, but that there should be longer-term effects that could adapt after a certain period of time (Luhmann et al., 2012). However, these trajectories could also end up in a spiral of disadvantages as envisioned by the Conversation of Resources (COR) theory (Hobfoll, 1989). Article 2 refers to more holistic employment and well-being trajectories. Therefore, Article 2 delves deeper into the temporal dimension of the life course cube, which is also visible through the superior level boxes in Figure 2.

Article 3 makes use of the same idea of a continuum of distinct employment statuses. In addition, my co-authors and I refer to the spillover-crossover model (Bakker & Demerouti, 2013), which explains why individuals' employment transitions should affect the partners' well-being. Thus, this paper refers to the life course idea that there are level interdependencies and domain interdependencies, as it is argued that individuals' moods spill over into their personal lives as a result of transitions and affect their partners' well-being. We apply Doing Gender theories (West & Zimmerman, 1987) and a macro-level perspective on gender norms (Bauernschuster & Rainer, 2012). We argue that there should be differential relevance between the gender and that these gender differences may depend on prevailing gender norms. In addition, compared to Article 1, Article 3 examines other mediators, namely perceived job insecurity and financial worries.

Article 4 extends the idea of the couple perspective to a trajectory framework. Here, my co-author and I argue that there might be accumulation processes of advantages or disadvantages within couples' employment trajectories (Dannefer, 2003; Fuller & Stecy-Hildebrandt, 2015; Aisenbrey & Fasang, 2017). While I argue in this thesis that there should be a mediating effect of housing on the effect of fixed-term employment on well-being, Article 4 only looks at the first arrow. The first arrow consists of the effects of couples' employment trajectories on homeownership and rent-to-income ratios.

However, there are already some studies that argue for and consistently find a positive effect of homeownership compared to renting on well-being (Herbers & Mulder, 2017; Foye et al., 2018; Zumbro, 2014; Diaz-Serrano, 2009). Housing can be seen as manifest function of wealth (D_3 in Figure 1) associated with income disadvantages. Therefore, this paper addresses domain-crossing effects and digs deeper into the details of the presumed mediating effect of (cumulative) income disadvantages.

Article 5 has the longest-term perspective on effects of employment trajectories on health in later life. My co-author and I augment the arguments of the life course perspective made earlier with the Life Course Health Development (LCHD) Model (Halfon & Hochstein, 2002). This model assumes that health is the result of experiences (developments) over the life course and that these experiences can come from different domains, such as family or work.

This idea is in line with what we have learned from the life course cube, namely cumulative disadvantages or advantages over time dimension. Thus, we address the long-term effects of work-family trajectories from school-to-work transitions to midlife on health outcomes in later life. In addition, my co-author and I examine gender differences due to distinct role expectations (Martikainen, 1995; Nordenmark & Strandh, 1999). We further study how these gender differences might vary across distinct countries with comparable gender norms (Blome, 2018) but different social policies and labor market systems (Barbieri, 2009).

To further explain the assumed effect heterogeneity and mechanisms of the effects, the following subchapters first outline micro-level mechanisms (Chapter 3.2), micro-level moderators (Chapter 3.3), meso-level mechanisms (Chapter 3.4), meso-level moderators (Chapter 3.5), and macro-level moderators (Chapter 3.6). Moreover, these chapters elaborate on the hypotheses and how they are derived from the arguments. Table 2 summarizes all theoretical mechanisms and hypotheses for an overview.

3.2 Micro-level mechanisms

Table 2 also summarizes the micro-level mechanisms. I account for several micro-level mechanisms motivated by Jahoda's Latent Deprivation Model and Warr's Vitamin Model to explain the relationship between fixed-term employment and well-being. Thus, I specifically outline the mechanisms in Article 1, which deals exclusively with micro-level mechanisms, and enrich them with arguments from Articles 3 and 5.

Starting with the *downward comparison*, that is, the comparison between fixed-term employment and unemployment, the assumptions are straightforward, as they correspond to the assumptions of the basic Latent Deprivation Model. More specifically, fixed-term employment should offer the manifest function of income and all latent functions (Gash et al., 2007). Individuals without jobs obviously should not have the *financial resources* that fixed-term employees have. The implication is that not only objectively lower income could be an important explanation, but also perceived financial concerns, as fixed-term workers may have.

Table 2: Overview and summary of theories and hypotheses

#	Underlying theory	Hypotheses
1	Adaption of (1) Jahoda's Latent Deprivation Model on context of fixed-term employment combined with arguments of (2) Warr's Vitamin Model, suggesting that functions / vitamins are hierarchically distributed: permanent employment > fixed-term employment > unemployment	<u>Total effects</u>: (a) Fixed-term employment vs. permanent employment on well-being (-), (b) fixed-term employment vs. unemployment on subjective well-being (+) <u>Mediation</u>: Financial resources, social contacts, status (and identity), activity <u>Heterogeneity</u>: Social cohesion (-) reduces effects
2	(1) Hobfoll's Conversion of Resources Model, downwards spiral in case of resource loss and (2) adaptation to situation	<u>Total effects</u> based on (1): (a) Stable and permanent trajectories vs. stepping stone on well-being (+), (b) stable and permanent trajectories vs. entrapment on well-being (+), (c) stepping stone vs. entrapment on well-being (/), (d) stepping stone vs. unemployment (+), and (e) entrapment vs. long-term unemployment (+) <u>Heterogeneity</u>: Time weakens (-, 2) the effect (a), time increases (+, 1) effect (b, c, d), time decreases (-, 1) effect (e)
3	(1) Spillover-Crossover Model, bad moods can crossover, i.e., spillover to partners, (2) effects should differ by gender due to Doing Gender theories, which should differ by place of socialization, (3) explanations for effects are distinct vitamins of jobs (4)	<u>Total effects</u> based on (1): (a) Unemployed to fixed-term transition affects partner's well-being (+), (b) fixed-term to permanent transition affects partner's well-being (+). <u>Heterogeneity</u> based on (2): Greater effects (+) if transition is made by male partner, greater gendered effects (+) if transition is made in West Germany <u>Mediation</u>: Own well-being, financial resources, and job insecurity
4	Income disadvantages of insecure career couples cumulate (life course perspective) and reduce likelihood of homeownership and rent to income ratio (which should decrease well-being[I])	<u>Total effects</u>: Insecurity of careers reduces likelihood of homeownership (-) and increases income spent on rent (+) <u>Mediation</u>: Cumulative income
5	Life Course Health Development Model by Halfon & Hochstein: disadvantages in careers and family lives should accumulate over the life course and affect health, which should differ by gender and by country-specific context of social benefits	<u>Total effects</u>: Early work-family trajectories with fewer protective factors reduce health status in older age (-) <u>Heterogeneity</u>: Stronger negative effect for women (-), greater negative gendered effects (-) for Italy than West Germany

Notes: Own illustration. [I] Article 4 does not explicitly state this assumption.

Fixed-term employees have several *social contacts* with colleagues, which unemployed people lack. The difference in social contacts could lead to a greater sense of well-being (Gundert & Hohendanner, 2014). In addition, fixed-term employees have a given *time structure* and steady *activity* through a daily routine. Also, these employees have *supra-individual aims* of the firm in which they are employed and a corresponding *status and identity* through their job.

All of these components are assumed to enhance well-being (Jahoda, 1982). Therefore, I assume that *fixed-term employees should have higher subjective well-being compared to the unemployed. This positive effect should be mediated by more financial resources (objective and perceived), more social contacts, more supra-individual aims, the perception of a higher status and identity, a greater level of activity, and a given time structure.*

From an *upward comparative perspective*, fixed-term employment might provide less manifest and latent functions compared to permanent employment. Some employers might view fixed-term contracts as an opportunity to introduce prolonged probationary periods. Because fixed-term employees are presumably only temporarily employed in a firm, employers may be less willing to invest in their human capital and pay accordingly high salaries (Booth et al., 2002).

As a result, fixed-term employees might receive lower *income* compared to the well-sheltered permanent employees, which consequently entail fewer financial worries. Moreover, because of their limited time in a firm, fixed-term employees might be less able to establish *social contacts* than permanent employees (Julià et al., 2017). Fixed-term employees may also be less willing to engage in trade unions, which could lead to a lack in *supra-individual aims* compared to permanent employees. In addition, fixed-term employees might feel less attached to their jobs compared to permanent employees (De Cuyper et al., 2005), leading to a lack in status and identity. Finally, and consequently, a general argument could be the perceived job insecurity that fixed-term jobs entail compared to permanent ones (De Cuyper et al., 2009).

In contrast to the *downward comparative perspective*, I argue that there are no plausible reasons to assume that fixed-term employees are less *active* or have a less strict *time structure* than permanent employees. Referring to the previous arguments, I assume that *fixed-term employees should have a lower well-being compared to permanent employees. These negative effects should be mediated by fewer financial resources (objective and perceived), social contacts, having less supra-individual aims, the perception of a lower status and identity, and perceived job insecurity.*

3.3 Micro-level moderators

The Conversation of Resources (COR) Theory (Hobfoll, 1989) suggests that the longer-term depletion of these functions, or in this theory's formulation of resources, leads to a downward spiral of stress that further reduces well-being. An opposing argument is the Set-Point Theory (Luhmann & Intelisano, 2018; Luhmann et al., 2012), which assumes that individuals become accustomed to their situation, so that after a while of initial reaction to certain events, their well-being readjusts to the set point. I argue that the COR Model gives implications for the medium-term effects of employment trajectories and for turbulent careers, whereas the Set Point Theory describes what happens in the longer run.

Thus, I hypothesize that for individuals who are on a stable and durable career trajectory, well-being increases shortly after the school-to-work transition appears, which might last for a few years and adjusts after a certain period of time. For individuals who are on the *stepping stone* trajectory, the arguments are similar but they occur somewhat later, as the transition to permanent employment occurs later. Individuals who are on the *entrapment* trajectory should not get used to their situation because of the discontinuity and volatility in their career. Although unemployment might be most detrimental at the beginning, individuals can become accustomed to their situation in the longer term.

The differences between these assumed well-being effects forms the hypotheses in Article 2. These hypotheses can also be seen in Table 2. I hypothesize that *the positive effect of a transition from education to a more advantageous employment trajectory compared with a transition into a less advantageous employment trajectory on well-being should vary over time.*

Moreover, following the arguments of cumulative advantages and disadvantages (Dannefer, 2003) as well as the argument that work and family life are closely linked (Aisenbrey & Fasang, 2017), it could be that (dis)advantages accumulate across life domains. More specifically, and referring to the idea of a continuum from the most advantageous to the most disadvantageous employment statuses, certain combinations of work and family life might lead to even greater disadvantages for well-being and health.

For instance, being married and not having children combines the protective factors of sharing financial resources (Halfon & Hochstein, 2002) while having no financial or opportunity costs of having children (Barban, 2013). On the other side of the continuum, one can argue that unemployment combined with single parenthood might pose the greatest risk factors (Barban, 2013). This risk factor might add up and negatively affect long-term health and well-being.

Therefore, *work-family trajectories with distinct combinations of protective and risk factors might differently affect health, and more precisely, more risk factors will likely result in a greater risk of a poor health status in older age*.

The effects of work-family trajectories might differ by gender. The income disadvantages and the financial risks of having children might be particularly detrimental to women because of the dual burden of two roles in work and family domain (Martikainen, 1995). Due to the marriage wage premiums men tend to receive and motherhood wage penalties, the burdens are greater for women with work-family trajectories that involve more risk factors (Killewald & Lundberg, 2017). Therefore, I hypothesize that *the effect of work-family trajectories with more risk factors for a poor health status in old age should be stronger for women than for men*.

3.4 Meso-level mechanisms

Meso-level mechanisms refer to the household perspective, which is mainly applied in Articles 3 and 4. The arguments here generally refer to the Spillover-Crossover Model (Bakker & Demerouti, 2013) and the Doing Gender Theories (West & Zimmerman, 1987). Article 3 argues that good or bad emotions due to an individual's work environment can spill over to their personal life and affect their partner's well-being or health (Sanz-Vergel & Rodríguez-Muñoz, 2013; Bakker et al., 2009). While the original Spillover-Crossover Model defines crossover effects as the transfer of well-being effects from one partner to the other and spillover effects to the transfer of feelings from one domain to another, we refer to spillover effects for both terms, as has been done in literature (Inanc, 2018).

More precisely, if a partner makes an upward transition, i.e., from unemployment to fixed-term employment or from fixed-term to permanent employment, the happiness from this transition could spill over to the partner. This transfer of well-being comes with all benefits outlined in Chapter 3.2 on micro-level mechanisms. Not only is it possible that individuals provide more support and emotional availability to their partners, but also that partners share emotions (Danner-Vlaardingerbroek et al., 2013).

Likewise, other mechanisms seem to be at play at the couple level. Many future decisions, such as getting married or deciding whether to own a home or rent instead (Baron & Rapp, 2019) are made by a couple (Blom et al., 2020). These decisions depend on secure employment positions and sufficient financial resources. Therefore, moving from fixed-term employment, with all the disadvantages described earlier, to permanent employment for one partner may increase the likelihood of being able to afford homeownership or rent (Article 4).

Furthermore, if periods of insecure employment, such as fixed-term employment, persist and both partners are in such insecure employment, it becomes even less likely for individuals to achieve these goals. In the same vein, the stable employment of one partner may outweigh the insecure career of the other partner. It is assumed that such events or periods of homeownership or affordable rent are desirable states or phases for individuals to aspire to, and therefore a higher likelihood of achieving homeownership could increase the well-being of both partners.

We thus argue that *an upward transition of one partner – either from unemployment to fixed-term employment or from fixed-term to permanent employment – should positively affect the well-being of the other partner compared to remaining in the previous employment status. These positive spillover effects are assumed to be mediated by positive changes in the own well-being and a higher likelihood of being able to achieve future goals, such as homeownership and a home affordability[9]*.

3.5 Meso-level moderators

In terms of effect heterogeneity, similar to Chapter 3.3, gender-specific ways should shape for individuals the expectations that partners have of each other (West & Zimmerman, 1987). In a traditional framework of gender norms, the male partner is expected to be the breadwinner. Being the breadwinner might therefore be seen as a sign of masculinity.

Because women are more expected to take on caregiving responsibilities, it is easier for women than men to replace unemployment with the alternative role of housewife or mother (Nordenmark & Strandh, 1999). Because of the disadvantages described in Chapter 3.3, it may also be more difficult to meet the breadwinner norm with a fixed-term job than with a permanent one. Therefore, the female partner's well-being might be more affected in the event of a change in the male partner's employment status. Given these differences in traditional gender norms, we might expect that *the positive spillover effects of an upward transition on the partner's well-being are stronger in case of upwards transitions of the male than the female partner*.

3.6 Macro-level moderators

I focus on one specific moderator, social cohesion, and some other more general but more implicit moderators, norms or social policies that moderate the effect of fixed-term employment on well-being and health at the micro-level. As argued earlier, the differences between fixed-

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[9] It should be noted that the last hypothesis related to the housing situation is only implicitly formulated in this paper and is not directly tested.

term and permanent employees, and the unemployed lie in the manifest and latent functions provided. The macro-level explanation therefore refers to replacing missing micro-level functions with country-specific factors.

Since there should be fewer social contacts for fixed-term employees than for permanent employees (Gundert & Hohendanner, 2014), but more social contacts than for the unemployed (Jahoda, 1982), the question arises how the country can replace these social contacts. If societies or countries can offer a sense of overarching affiliation to the country, the importance micro-level social contacts might be less relevant (Gallie, 2013). This societal affiliation can be subsumed under the term social cohesion and describes the perception that individuals can make social contacts outside of work. Furthermore, social cohesion describes the feeling of belonging to a higher order group, and the identification with this group (Schiefer & van der Noll, 2017).

Social cohesion could replace not only the function of social contacts, but also other latent functions such as status and identity. If individuals have social contacts, they could also be more active, have overarching aims – to maintain social cohesion – and perhaps a more specific time structure. In summary, macro-level social cohesion could substitute for the latent functions of employment because it reduces the importance of the work domain. Thus, the latent functions might *spillover* from a greater level to the individual level. I therefore hypothesize *that greater social cohesion might reduce differences in well-being between fixed-term employees and permanent employees, as well as between fixed-term employees and the unemployed*.

Regarding gendered spillover effects (see Chapter 3.5), gender norms are the result of socialization processes in distinct institutional contexts. Such norms relate to latent functions such as status and identity, and should be more entrenched and transmitted in more conservative societies (Sainsbury, 1996). Therefore, the level dimension, more specifically the country-level, should also be important in determining the gendered spillover effects.

In Germany, East Germany has rather liberal gender norms due to the legacy of the former German Democratic Republic (GDR) (Ebner et al., 2020). West Germany is usually associated with the conservative male breadwinner norm (Bauernschuster & Rainer, 2012). The importance of gender-specific upward transitions is therefore likely to be greater in West Germany than in East Germany. These arguments lead to the assumption that *positive spillover effects of upward transitions on partner's well-being should be stronger if the affected (female) partners were socialized in West Germany than in East Germany*.

Finally, social policies might be relevant for the micro-level effects, and especially for intertwined work and family life. If gender norms are comparable in different contexts, i.e., countries such as Italy and West Germany (Blome, 2018), distinct social policies could lead to differences in the effect of work-family trajectories on well-being. In addition, social policies might influence the manifest function of income. Italy, on the one hand, has a more family-centered system (Nazio & Blossfeld, 2003), in which families are expected to compensate for missing incomes from unemployment and subsequent income losses. West Germany, on the other hand, has a well-established system of unemployment insurance that shifts the financial risk of the individual in case of unemployment to the state (Picot, 2014).

Periods of insecure employment, which are poorly protected in Italy, are much longer in Italy and affect the already disadvantaged (Barbieri, 2009; Barbieri et al., 2015). Therefore, it might be particularly financially risky in Italy when disadvantages accumulate in work and family trajectories. In (West) Germany, especially vulnerable labor market entrants are better protected from these financial risks due to the strong social policy system (Scherer, 2001). Subsequently, the final hypothesis is that *gender-specific disadvantages within work-family trajectories might be more detrimental for health in older age in countries with a less state-based social policy system, such as Italy, compared to countries with a more state-based social policy system, such as West Germany.*

This extensive theoretical model, which combines various aspects of distinct theories from several research areas and expands them to the context of fixed-term employment, is one of the contributions of this thesis to previous studies. It not only combines theories from distinct disciplines such as sociology, economics, and psychology, but also places them within the larger framework of the life course perspective. This comprehensive theoretical model forms the foundation for the following explanations of research designs, findings, and discussion.

4 Research designs

This chapter describes the research designs of the five articles included in this thesis and reflects on the decisions made regarding the specific characteristics of the several research designs. The research designs include the data and samples, the definition of the independent and dependent variables used (Chapter 4.1), as well as explanations of the methods applied (Chapter 4.2). These specific choices and characteristics are associated with various strengths and weaknesses.

I address the strengths and weaknesses by discussing the differences and similarities between the five articles and comparing the applied research designs to research designs used in the

respective fields of research. I also situate the methods within the life course framework to highlight how the selected data, samples, measurements, and methods contribute to understanding the effect of fixed-term employment on well-being.

4.1 Data, samples, and measurements

Table 3 provides an overview and summary of the research designs of the five articles. This overview shows that besides the first, more descriptive article, all of the other four papers provide information on the timing of the independent and dependent variables. This timing information allows for a clear temporal order of both independent and dependent variables. Moreover, this overview reveals that the information varies in detail, as the data range from cross-sectional data (Article 1), to prospectively collected panel data (Articles 2–4), to retrospectively collected life history data (Article 5).

The remainder of Chapter 4.1 is divided into three subchapters. Chapter 4.1.1 explains the choices of datasets in light of the life course perspective, research questions, theoretically derived hypotheses, as well as alternative data sources. In Chapter 4.1.2, I emphasize the strengths and weaknesses of the selected datasets to measure fixed-term employment (careers). Chapter 4.1.3 outlines the measurement of the dependent variables and the strengths and weaknesses of these.

4.1.1 Data and samples

Article 1. The first article uses data from the 6th round (2012) of the *European Social Survey* (ESS), which provides repeated cross-sectional multi-country data (European Social Survey, 2013). The data are collected biannually via a computer-assisted personal interview (CAPI) and cover around 30 European Union and Non-European Union countries such as Israel or Russia. Respondents, who are distributed across all countries and are about 15 years of age and older, are selected by a random probability sampling procedure with a minimum target response rate of 70% (European Social Survey, 2014). Besides these high methodological standards in data collection, there are also high standards in the comparability of measurements across the countries sampled, which is important when conducting multilevel analysis.

Table 3: Overview and summary of the research designs

#	Micro-data	Sample	Independent variables	Dependent variables	Methods
1	ESS[I], 6th round, 2012	25–65 years, no self-employees and labor market inactive individuals	(a) T: Fixed-term employment, C: Permanent employment, (b) T: Fixed-term employment, C: Unemployment	Life satisfaction (Likert scale from 0 to 10)	First step of two-stage multilevel regression models, pooled linear regression models, Sobel tests, and simultaneous estimated multilevel linear regression models with random slopes
2	SOEP[II], 1994–2019, v36	First school-to-work transition, no self-employees, and obs. outside theoretically derived clusters	T: More beneficial employment trajectories (a–e) [Time: +1 to +5 years], C: Less beneficial employment trajectories (a–e) [Time: +1 to +5 years]	Life satisfaction [Time: 0 in education to +7]	Two step approach: Theoretically motivated sequence analysis and linear fixed-effects growth curve models
3	SOEP[II], 1995–2017, v34	Heterosexual couples living together, both partners 18–65 years, transition outside theoretically derived transitions	(a) T: Unemployment to fixed-term employment transitions, C: Remaining unemployed, (b) T: Fixed-term to permanent employment transitions, C: Remaining fixed-term employed	Life satisfaction [Time: beginning of control spell to end of treatment spell]	Fixed-effects linear regression models (panel data) for asymmetric effects on with clustered standard errors on the couple-level
4	SOEP[II], 1995–2018, v35	Heterosexual couples living together, 18–38 years, both partners have completed education	T: Insecure employment trajectories of couples [Time: +1 to +7 years], C: Less insecure employment trajectories of couples [Time: +1 to +7 years]	Homeownership [Time: +7 year] and income spent on rent [Time: +7 year]	Two step approach: Multichannel sequence analysis and binary logistic regression models (average marginal effects), Sobel tests
5	SHARE[III] SHARELIFE, waves 3 & 7, Germany and Italy	20 years after first school-to-work transition without gaps	C: Disadvantageous employment trajectories [Time: +1 to +20 years], C: Less disadvantageous employment trajectories [Time: +1 to +20 years]	Health status [Time: Age 50+]	Two step approach: Multichannel sequence analysis and binary logistic regression models (predicted probabilities)

Notes: Own illustration. [I] ESS: European Social Survey, [II] SOEP: Socio-Economic Panel, [III] SHARE: Survey of Health, Ageing and Retirement in Europe, T = Treatment, C = Control group.

Next to these methodological advantages of the ESS, there are three advantages with respect to the research questions. First, because the ESS includes a module on social well-being for this round, it is unique for analyzing the micro-level mediation effects of the several manifest and latent function proposed by Jahoda. While some other cross-country comparative data, such as the European Union Statistics on Income and Living Conditions (EU-SILC), include some information on fixed-term jobs, these data do not provide such detailed information on well-being and the suggested mediators, focusing instead on manifest functions such as income.

Second, the ESS provides information for a large number of countries, which allows the use of a quantitative comparative approach based on multilevel analysis methods such as a two-step estimation procedure (Bryan & Jenkins, 2016). These estimation procedures help to answer research questions related to level dependencies, as it is the case in Article 1. More specifically, I aim to uncover heterogeneity in the effects of fixed-term employment on well-being across countries and whether macro-level social cohesion could account for some of this variation.

Third, I argue that the included countries cover a wide variety of countries within Europe in terms of country size. More specifically, the largest countries such as Germany and France and some smaller Nordic countries such as Denmark or Finland are covered. In addition, a wide variety of countries is included in terms of differences in labor market regimes, e.g., the United Kingdom as a liberal labor market where there is no strict separation between fixed-term and permanent employment, and Spain as a conservative labor market with a stricter separation and high unemployment rates.

While these advantages make the ESS a well-suited data source to answer my research questions and provide a descriptive starting point for the other papers, some drawbacks remain. Three of which are explicitly discussed here. First, the ESS contains only cross-sectional information on individuals and the macro-level variable social cohesion, derived from data of the Social Cohesion Radar from the Bertelsmann foundation (Dragolov et al., 2013) and merged to the micro-level data by the ESS. As a result, the data are also only available for single years, and from a causal perspective, not all relevant control variables, such as unobserved confounders, could be fully accounted for. As described in Chapter 3, here I consider single employment statuses embedded in transitions and more holistic careers, which could not be accounted for due to the cross-sectional data design.

Second, while the data provide information on key latent and manifest functions, some functions such as supra-individual aims could not be included, and proxies only measure other functions such as activity. Although there are generally better and more concrete measures for

manifest and latent functions, such as the Access to Categories of Experience (ACE) scale[10] (Evans, 1986), these are not included in the ESS. As noted above, other important control variables such as preference for temporary employment are also not included in the ESS.

Third, the inclusion of survey data might raise questions about the reliability of the information – and consequently the data – provided by respondents. While there is little doubt about the reliability of responses for subjective well-being, as a subjective assessment of life satisfaction, it is not certain that respondents can correctly classify their employment status. In addition, there could be problems with the presence of third parties, the interviewers, or social desirability (Groves et al., 2009). These problems might raise the question of why administrative, comparison panel, or life history data with better measures were not used. Regrettably, such data do not exist – either they lack information about well-being or about the relevant mediators. Administrative data, by their nature, cannot capture subjective information such as subjective well-being or latent functions.

Within Article 1, I complement the micro-level ESS with macro-level information on country-specific social cohesion and income inequality (control variable). Social cohesion is measured by the Social Cohesion Radar from Bertelsmann Foundation and aggregates micro-level data from 2009 to 2012[11] for social relations, connectedness, and the focus on the common goods for 34 countries in the developed world (Dragolov et al., 2013). Country-specific information on income inequality come from Eurostat. Further details on these data can be found in Article 1. The sample in this article refers to 23 of 29 possible countries, as some information on social cohesion or income inequality is missing for six countries. The sample excludes individuals in education, homemakers, retirees, and the self-employed in family businesses, because the theoretical assumptions do not apply to these groups. Moreover, individuals outside the age range of 25 to 65 years are excluded to minimize education effects or anticipated retirement effects. Eventually, I obtain 18,596 individuals who are nested within 23 countries.

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[10] To measure the manifest and latent functions of Jahoda's Latent Deprivation Model, psychologists explicitly invented the ACE scale. This scale, however, like many psychological item batteries, is not included in many studies and only validated for small sample sizes, which casts doubts on the generalizability of such scales.

[11] The Social Cohesion Radar is a conglomerate of data from the ESS, the World Values Survey, the European Values Study, the Gallup World Poll, the European Quality of Life Survey, the International Social Survey Programme (part of the ESS), the International Social Justice Project, and the Eurobarometer. Moreover, it includes expert rating regarding the shadow economy in OECD countries and the index of democracy. The International Crime Victim Survey and the International Country Risk Guide from international institutes complement the rich set of data (Dragolov et al., 2013).

Articles 2–4. The proceeding three articles use data from the *Socio-Economic Panel* (SOEP), which provides prospective annual household panel data and is designed to be nationally representative of the German adult population. Almost 15,000 households and 30,000 individuals are part of this large-scale survey project (Goebel et al., 2019). Even though the first wave was conducted in 1984, the articles draw on data from 1994 to 2019. These smaller observation windows, which vary between the three articles (see Table 3), result from the fact that not all variables are included in all waves and fixed-term employment is only measured adequately from 1995 on[12].

The SOEP is well suited for the means of this thesis because it applies the life course perspective. Employment transitions and holistic careers can be examined. In particular, these panel data interview all household members who are at least 16 years old, which allows for the analysis of distinct level interdependencies within households. Moreover, the SOEP provides one of the longest-running panel data projects in different but interrelated life domains (such as housing or work), and due to its longevity, it enables the study of accumulation processes.

Because the SOEP collects retrospective and prospective data not only on individuals but also on couples and families, it is particularly well suited to the research questions in Articles 2–4. Moreover, because the SOEP has a special focus on the employment histories, it contains detailed information on employment status, employment transitions, and more holistic careers. Besides these advantages, the SOEP also offers extraordinarily detailed information on life satisfaction (Articles 2 and 3) and on housing variables (Article 4).

Because all research articles of this thesis are based on the life course framework, the arguments in favor of the SOEP also relate to the life course framework and include three main advantages. First, the panel data structure enables to depict a clear temporal order and to examine the independent and dependent variables, as well as potential mediators from a longer-term perspective (Articles 2 and 3). Therefore, these data allow us to study cumulative advantages and disadvantages within careers or family histories and the long-term effects on well-being.

Second, due to its household panel data structure, the SOEP allows to examine couples' employment transitions and careers. Since both partners are interviewed separately, employment careers can be observed in parallel (Article 4). In addition, the structure of separate interviews allows for the analysis of spillover effects, i.e., how temporary employment

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[12] For Article 2, however, since I am interested in school-to-work transitions, the first year of observation that is relevant for the trajectories is in education, which is why the observation window starts for this article in 1994.

transitions affect partners' well-being (Article 3). In this way, one can examine the intertwining of life histories for effects on well-being.

Third, because of the clear temporal order and richness of the dataset, the three articles contain sophisticated methods of causal analysis. Modern causal analysis mostly relies on panel data estimators (Angrist & Pischke, 2009), which are discussed in more detail in Chapter 4.2. Furthermore, the panel data structure allows for both transitions and trajectories to be considered, which is not only part of the life course framework. Chapter 3 also shows that most theoretical arguments are based on employment transitions or more holistic trajectories rather than just individual employment statuses.

Regarding the drawbacks of the SOEP, the criticisms of survey data in general (e.g., interviewer effects or presence of third parties) have already been outlined for the ESS and can be applied analogously to the SOEP. In addition to these drawbacks, panel data can cause problems with panel attrition, i.e., certain individuals are more likely to drop out of the data, e.g., the unemployed, which could bias the results (Siegers et al., 2020). However, the SOEP ensures high data quality and panel stability by frequently including refreshment samples and following up on individuals who have moved from their original household (Siegers et al., 2020).

While the arguments about advantages and drawbacks apply to all three articles, Table 3 shows clear differences in the application of the SOEP. The second article accounts for theoretically derived five-year employment trajectories immediately after the first school-to-work transition and ignores all trajectories that do not fit perfectly into the given theoretical trajectories. Thus, it tends to examine younger individuals between the ages 18 and 35 and considers the longevity of their effect on subjective well-being.

The rigor of excluding observations that do not fit the theoretically defined trajectories is also applied to employment transitions in the Article 3. However, unlike the research design of Article 2, Article 3 takes a couple perspective on the effect of employment transitions into and out of fixed-term employment on well-being. Article 3 includes couples aged 18 to 65 years and examines differences in well-being for two distinct transitions. As a result, the observation window for these employment transitions is much broader. Moreover, we do not focus on a specific group of individuals on employment trajectories as in Article 2, where the focus is explicitly on individuals in their early career and a clear-cut starting point of the observation, namely when the first school-to-work transition takes place.

Article 3 more specifically studies the effect of employment transitions from one (heterosexual) partner on the well-being of the other (heterosexual) partner, namely spillover effects. While Article 4 also considers a (heterosexual[13]) couple perspective, it refers to more holistic seven-year careers of both partners. Also, there is a more restrictive age restriction than in Article 3, i.e., both partners are between 18 and 38 years old and have completed their education. Therefore, Article 4 also accounts for couples who are at the beginning of their careers, but without a strict starting point like school-to-work transitions. Most obviously, Article 4 looks at another live domain, namely housing in terms of homeownership and rental prices.

Article 5. The final article is based on retrospectively collected life history data, namely the Survey of Health, Ageing and Retirement in Europe (SHARE), and more specifically on the special retrospective module the SHARELIFE, waves 3 (2008–2009), and 7 (2017) (Börsch-Supan, 2020a, 2020b). The target population consists of individuals who are 50 years and older with a fixed residence. About 140,000 individuals are sampled by individual or household probability samples (Börsch-Supan et al., 2013). As in the ESS and the SOEP, individuals are interviewed via CAPI. The SHARELIFE takes a life course perspective by retrospectively collecting data on life histories for all individuals who participated in the first two waves of the SHARE and, for wave 7, more recent refreshment samples in some countries.

My co-author and I include two countries, West Germany and Italy. Unlike previous literature, which has examined effects that represent averages across countries[14] (Engels et al., 2019), our approach of selecting only two countries allows us to theoretically account for country-specific differences and similarities in more detail. Therefore, the country-specific effects are not hidden in an average. We restrict the micro-level sample to individuals who have always lived in the respective country and who reported employment and family status for 20 consecutive years after the school-to-work transition. Therefore, as in Article 2, we have a clear-cut starting point for the sequences, but here the observation window is broader and captures middle adulthood/middle careers, which is enabled by the life history design of the SHARELIFE.

Because my co-author and I are interested in the long-term effects of work-family trajectories on health, the SHARELIFE offers several advantages over other data, three of which are worth

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[13] The focus of this thesis is always on heterosexual couples, because the arguments mostly refer to heterosexual couples only. For example, the male breadwinner/female homemaker norm can only be properly applied to the context of heterosexual couples. For homosexual couples, other mechanisms might be at play both for spillover effects and for cumulation processes.

[14] Meaning that they applied mostly multilevel analysis methods, where the effects represent averages across countries, and it is not clear whether there is effect heterogeneity across countries.

mentioning in detail. First, unlike long-term but only prospectively collected panel data such as the SOEP, the SHARELIFE is unique in that it covers the entire life from birth or infancy to retirement in various European countries. Therefore, longer-term work-family trajectories can be examined in a gender and cross-country comparative way, and in our case these trajectories span 20 years, from the first school-to-work transition on. The retrospective panel allows us not only to examine the dynamics within work-family trajectories and the interconnectedness of these two life domains, as well as cumulative advantages and disadvantages within them, but also to look at longer-term effects when people are close to or already in retirement.

Second, since one of the main focuses of the SHARE is to measure health outcomes for older individuals across several countries, the high data quality for the dependent variable, self-rated health, is carefully validated and measured at different life stages. As with the ESS, comparability of measurements is guaranteed. By comparing two specific countries, we also fulfill the important aspect of contextual situations that might moderate the gendered effects of work-family trajectories on well-being, and, in particular, on self-rated health.

Third, and related to the second advantage, because the SHARELIFE includes measures in early childhood, my co-author and I account for important pre-ceding confounding variables in a comprehensive manner. For example, the study includes information on parental background, childhood health status, or childhood deprivation, which, according to the life course framework could affect work-family trajectories and, because of their temporal interconnectedness, influence health later in life. In addition to developing a clear ordering of cause and causation, this choice of variables makes more plausible important assumptions of the methods applied, which are discussed in more detail in Chapter 4.2.

The advantages of the SHARE data are counterbalanced by some constraints. The constraints – besides the problems of survey and panel data mentioned earlier – refer to those shared by all studies based on retrospective data. The constraints refer to the issue of a recall bias, i.e., that individuals may not remember their specific health, family, or employment status when they were much younger (Havari & Mazzonna, 2011). Although the approach of an event history calendar, as used in the SHARE, has been carefully validated, the problem of recall bias cannot be fully accounted for (Schröder, 2011).

While all datasets are the most appropriate choice for the means of my research questions, these data all have in common that they are survey data. Though survey data might be well suited for our dependent variables of well-being– since individuals themselves are best able to assess their life satisfaction – they might be problematic for the life domains of work and family.

Administrative data, that is register data, do not suffer from the same problems, and might be considered a better choice for the independent variable. Although these data are fraught with other issues, such as the lack of updates and resulting deadbeats, and it is impossible to measure subjective variables like subjective well-being, a combination of both types of data could advance future research. Recent projects such as for Germany, the *Panel Labor Market and Social Security* (PASS)[15], which are applied to a cross-country comparative perspective, could therefore provide initial evidence for the idea of merging these two data sources.

4.1.2 Independent variables

The independent variables of all articles refer to employment status, more specifically, fixed-term employment. Since the five studies all relate to distinct aspects of the life course, the different independent variables used in the five articles are also discussed in light of these distinct aspects. Different independent variables also indicate distinct control groups. Further details on the measurements beyond the descriptions in this chapter can be found in each article.

My basic definition for fixed-term employment[16], to which all five articles refer, is that fixed-term employment can include all different forms of employment contracts that have a pre-determined termination date. Therefore, this definition can include fixed-term contracts with one employer, temporary agency work that includes a fixed-term job contract, and casual or seasonal work. I argue that all theoretical considerations deal with the pre-determination of the end date of the employment contract, which increases stress and reduces well-being and health.

Article 1. The first article refers to fixed-term employees, i.e., individuals who report having a job contract with a limited duration, compared to either permanent employees (*upwards comparison*) or the unemployed (*downwards comparison*). Applying these two comparisons is consistent with the idea of a continuum between the most advantageous employment situation (permanent employment) to the most disadvantageous employment situation (unemployment). Fixed-term employment arguably falls somewhere in between. This static definition of the independent variable is rather descriptive in nature, since previous or proceeding employment statuses cannot be included.

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[15] In the case of PASS, individuals are sampled individuals that are social security recipients based on register data, and the register data can accordingly be merged to the panel data. However, due to the specific group of interviewees, the generalizability of the findings might be limited.

[16] The terms fixed-term employment and temporary employment are usually used interchangeably in the literature. However, in the North American literature, the term temporary workers often refers to agency workers (Kalleberg, 2018), which is why I use the term fixed-term employment in this thesis.

Article 2. In the second article, I refer to more holistic employment trajectories, more precisely to five-year sequences that are pre-defined in the literature on fixed-term employment. Moreover, these trajectories occur immediately after the first school-to-work transition, which is an important assumption in the literature (Scherer, 2004; Gebel, 2010). The four types of trajectories consist of the *stable and permanent trajectory,* the *stepping stone* trajectory, the *entrapment trajectory*, and the *long-term unemployment trajectory*. What these may look like – e.g., different combinations of fixed-term employment and unemployment experiences in the *entrapment* trajectory – is visualized in the findings of Article 2.

Because this research article is interested in the effects of fixed-term employment careers on well-being, the fixed-term employment careers are compared to their better or worse counterpart on the continuum. For the consistency within the article, the control groups are always formed from the downwards comparative perspective. For example, the first comparison is between *stable and permanent* and *stepping stone* trajectories, the second comparison is between *stable and permanent* and *entrapment trajectories*, and so on. In the end, I obtain five distinct comparisons, omitting the comparison between *stable and permanent* and *long-term unemployment* trajectories because they do not refer to fixed-term employment trajectories. Therefore, this article considers accumulation processes within employment trajectories.

Article 3. As in the first article, my co-authors and I distinguish between unemployment, fixed-term employment, and permanent employment. The definitions of each employment status are also identical. However, in Article 3 we consider only meaningful transitions in the context of German law. More specifically, we look at transitions from unemployment to fixed-term employment and from fixed-term to permanent employment. Since we are not interested in transitions from unemployment to permanent employment, as they are not related to fixed-term employment, this analysis dropped from our main analysis. However, this comparison is part of the sensitivity analyses that can be found in the supplementary material to Article 3.

We apply a spell definition, i.e., for transitions from unemployment (fixed-term) to fixed-term (permanent) employment, treatment spells consist of all years in unemployment (fixed-term employment) before and all years in fixed-term (permanent) employment after the transition between two yearly interviews. Control spells include all years in consecutive unemployment (fixed-term employment). It should be noted that in this article, employment transitions refer only to individuals living in a relationship and living together with their partner.

Article 4. In the fourth article, the independent variable is represented by couples' employment trajectories, i.e., sequences containing information on the employment statuses of both partners

within a couple. The possible employment statuses are labor market inactivity, unemployment, self-employment, permanent employment, or fixed-term employment. These statuses are again measured on an annual basis, but this time for seven years. Sequence analysis combined with cluster analysis methods reveal four distinct clusters, namely *dual stable career couples*, *insecure and volatile couples*, *male breadwinner / female homemaker couples*, and *self-employed / interrupted permanent couples*. These clusters include couples with similar employment trajectories, which are described in more detail in Article 4. Because of the definition of the independent variable, my co-author and I can account for cumulative disadvantages and linked lives.

Article 5. In the final article, my co-author and I address work-family trajectories of individuals. Measuring such trajectories follows a similar research design as in Article 4. This study, however, examines the employment statuses in more detail (self-employment, permanent full-time employment, permanent part-time employment, fixed-term full-time employment, fixed-term part-time employment, unemployment, and labor market inactivity).

We look at interrelated life domains, namely individuals' family lives in parallel with their careers. Here, individuals can either be married and have children, be married but not have children, not be married and have children, and finally be unmarried and childless. These statuses within the work and family domain are combined and grouped using sequence and cluster analysis. For each country-gender combination, three work-family clusters emerge. These clusters depict distinct degrees of accumulations of advantages or disadvantages along the life course and between distinct life domains. The specific clusters are presented in more detail in the results section of Article 5.

In summary, this thesis applies various perspectives on the independent variable and enriches them with the life course framework. While the first article has a rather static and descriptive definition of the independent variable, subsequent articles apply a more dynamic transition perspective or even a longer-term perspective on holistic careers. The drawbacks of these measurements in relation to holistic careers might be that they group quite heterogenous individuals within one cluster. However, the criticism on static measures is that they ignore what happens before and after the actual employment status and only provide a snapshot.

4.1.3 Dependent variables

As with the independent variables, the choice of dependent variables is also supported by considerations of the life course framework. While the first three articles refer to the same cognitive measurement of subjective well-being (Veenhoven, 2009), namely life satisfaction,

the fourth article refers to a mediator and the spillover effects of other life domains, namely housing. The fifth article refers to the health status as another measure of well-being. More details besides those in this chapter on the dependent variables are provided in the articles.

Articles 1 – 3. To measure well-being, and more specifically life satisfaction, my co-authors and I use the well-known Likert scale for life satisfaction, which ranges from 0, i.e., being completely dissatisfied with one's life in general, to 10, i.e., being completely satisfied with one's life in general. Such global life satisfaction scales have been proven to be valid, reliable, and sensitive to change (Diener et al., 2013), which are important prerequisites for examining my central research questions. Furthermore, this measurement is based on the assumptions that persons themselves are capable of making the best judgements about the evaluation of their experiences (Smedt, 2013). The measurement incorporates a weighting of the individual subdomains of satisfaction without the need to survey them separately in the form of item batteries (Trauer & Mackinnon, 2001).

In life satisfaction research, the question of the influence of the evaluation of the life satisfaction on a global scale is discussed. Experiments show that contextual factors such as the weather, interview location, or sports results can influence this evaluation, which would result in obtaining only an affective rating (Schwarz, 1987). However, empirical findings with data from the SOEP suggest that the importance of these fluctuating factors is rather insignificant (Richter, 2014), which is why the use life satisfaction as a dependent variable is appropriate.

Another debate in the literature that should be mentioned is whether life satisfaction should be treated as a categorical variable or as quasi-metric measurement. The argument for treating it as a quasi-metric measurement relate to the number of categories, eleven, and the verbalized extreme points. Thus, it could be argued that the inter-unit distances are comparable and methods for metric-scaled variables could be applied. Studies show that when the quasi-metric definition and then linear regression models are chosen, the results and the conclusions drawn from them do not differ appreciably from the results of ordered logistic regression models (Ferrer-i-Carbonell & Frijters, 2004). Therefore, consistent with the literature, my co-authors and I treat life satisfaction as a quasi-metric variable in each of the three articles.

The difference between the articles is the timing and longevity of measurement. Within the first article, life satisfaction is measured in the same year as the independent variable. The second article extends the observation of life satisfaction to the time before the independent variable (in the last year of education), when the trajectories are observed, and up to three years after the trajectories are observed. Therefore, this article includes a perspective on accumulation

processes and longer-term effects. Article 3 considers the well-being before, during and after the transitions – but also linked lives, as my co-authors and I account for the partner's well-being instead of the individual well-being.

Article 4. The fourth article includes two dependent variables, namely homeownership and rent-to-income ratios. Since my co-author and I assume that housing decisions are made within couples, both dependent variables are measured at the couple level. Homeownership, as in previous literature (Arundel & Lennartz, 2020, Thomas & Mulder, 2016, Bobek et al., 2020, and Lennartz & Helbrecht, 2018), is a dichotomous variable that provides information whether couples own or rent the dwelling in which they live. All other housing types, such as dormitories, are not part of this measurement.

For the second dependent variable, which concerns couples who report living for rent, we refer to previous literature in Germany (Backhaus et al., 2015), and therefore measure the percentage of couples' total income spent on rent in euros. It is a continuous measurement, potentially ranging from 0 to 100%. The income we refer to is the share of households' total net income and includes government payments, such as housing subsidies, that is available for rent.

Both dependent variables are measured in the seventh year of the couples' employment trajectories and are thus in early adulthood. Consequently, we develop a clear temporal order of the measurements, as in Articles 2 and 3. From a life course perspective, we therefore examine cumulative disadvantages and a linked lives perspective of both partners within a couple. Within the framework of my thesis, I argue that housing is an important mediator of the effects of fixed-term employment on later-life well-being, but this is not explored in detail. This argumentation also reflects the interconnectedness of different life domains, namely employment and wealth.

Article 5. The final article includes self-rated health as a dependent variable. My co-author and I directly apply a life course perspective here, as we argue, consistent with the Life Course Health Development (LCHD) Model, that health is the result of a continuous process that develops over individuals' life courses according to risk or protective factors (Halfon & Hochstein, 2002). One popular measurement instrument includes only one question that measures self-rated[17] health, namely that the interviewer asks respondents to rate their current health status. We opt for this particular measurement, as health status has been shown to be a

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[17] In literature also referred to as "self-assessed" or "self-evaluated" health, see Fayers & Hays (2005).

valid predictor of mortality, while also capturing the multidimensionality of health[18] that relates to many life domains, as well as a trajectory perspective, so that changes along the life course are also captured (Idler & Benyamini, 1997). The measurement instrument fits the basic ideas of the life satisfaction scale and describes well-being as understood in this thesis appropriately.

There are also some drawbacks of this measurement, two of which should be mentioned. First, because it is multidimensional, it might be questionable whether health effects are due to physical or mental illness. More specific depression or health-related measurements such as cardiovascular disease or cancer would help identify which measures are directly affected. Second, responses to the health status question can be quite discrete, leading to problems with for example interviewer effects, and item nonresponse in general (Groves et al., 2009).

However, consistent with arguments of the life course framework and its adaption within the LCHD model by Halfon & Hochstein 2002, health status is measured in later life, when individuals are 50 years and older. Thus, we not only account for a clear temporal order, but we also account for cumulative disadvantages and long-lasting effects. While it would be also useful to compare these effects with life satisfaction effects, unfortunately, there is no information on life satisfaction as in the SOEP or the ESS.

4.2 Methods

This chapter sheds light on the background for the decisions on the methods used in the five articles of this thesis. Moreover, the chapter critically discusses these decisions. Since modern causal analysis and its assumptions form the background for all five articles, I first give some basic definitions and assumptions of modern causal analysis and how they are addressed in all five articles in Chapter 4.2.1. In Chapter 4.2.2, I briefly outline the idea of multilevel analysis and of how Articles 1 and 5 apply these methods to the specific data structure. Finally, in Chapter 4.2.3, I outline how the methods applied can advance our understanding of the results in terms of the life course framework.

4.2.1 Causal analysis and its application

In all five articles, the ideas of modern causal analysis form the foundation for the choice of methods and for all other specification decisions. Since the research questions are not of descriptive nature, but rather I am interested in how fixed-term employment affects well-being,

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[18] The self-rated health status includes according to Bue-Bjorner et al. (1996) the domains of medical diagnoses, physical symptoms, physical function, and mental symptoms.

I refer to methods of causal analysis (Morgan & Winship, 2014; Rubin, 1974). Therefore, I outline the key assumptions of causal analysis and how they are addressed in the several papers.

When investigating the effects of employment statuses, transitions and trajectories, the question is whether they are randomly assigned or happen by chance. Previous literature argues that personal traits such as preference for fixed-term jobs (De Witte, 2010) or education could lead individuals to be in these jobs (Gebel & Giesecke, 2011), which contradicts the idea of a random assignment. In the same vein, transitions into and out of these jobs and more holistic trajectories could also depend on such characteristics. For example, it might be that individuals with low education are more likely to be trapped in secondary segments, while higher education enables the *stepping stone* to more secure and better-sheltered employment, or vice versa.

This so-called *selection* implies that fixed-term employees, permanent employees, or others will *systematically differ* by characters different from the event. If such variables also affect the outcome, namely well-being, then comparing these groups of workers will confound the effect, namely differences in outcomes. More precisely, these observed and unobserved variables could affect the risk of – namely, *baseline bias* – and the individuals' reaction to the event or trajectories – namely, *differential treatment effect bias* (Morgan & Winship, 2014).

The potential outcomes framework (Rubin, 1974; Morgan & Winship, 2014) motivates how and when to estimate causal effects with observational data. This framework helps define causal effects and the assumptions under which these effects can be estimated. I discuss three estimators that rely on cross-sectional or longitudinal data (Best & Wolf, 2014), and explain how the methods used in the articles can be related to these estimators. I refer to the simplest example of fixed-term employment as a treatment and well-being as an outcome, but the idea can easily be transferred to the idea of careers as treatments.

Therefore, the so-called treatment expected to affect the outcome Y_{it} is considered a binary random variable, namely $D_i = \{0,1\}$, where some individuals i experience fixed-term employment ($D_i = 1$) and other individuals i do not ($D_i = 0$). Well-being, i.e., the observed outcome (Y_{it}), is measured after the treatment has happened in time point t. Two potential outcomes can be derived, representing the basic idea of the potential outcomes framework, and are identified by superscripts: first, the well-being that would have been realized in time point t in the case of a transition to fixed-term employment (Y_{it}^1), and the well-being that would have been realized in time point t in the absence of a transition to fixed-term employment (Y_{it}^0).

The causal effect of a fixed-term employment transition can be expressed by comparing the two potential outcomes (Y_{it}^1 and Y_{it}^0), the simplest of which could be a difference as in equation (1).

(1) $\Delta_i = Y_{it}^1 - Y_{it}^0$

Since it is impossible to observe an individual on both potential outcomes, which is also called the *fundamental problem of causal inference* (Holland, 1986; Rubin, 1974), average causal effects can be estimated instead for observational data. For average effects, equation (2) gives a basic specification including expected values that represent the observed differences in average well-being (Angrist & Pischke, 2009).

(2) $E[Y_{it}|D_i = 1] - E[Y_{it}|D_i = 0]$

This difference can be further split into the average treatment effect on the treated (ATT) and the selection bias, which refers to the selection problematic mentioned earlier. Therefore, equation (3) decomposes the average effects into the ATT and the selection bias.

(3) $\underbrace{E[Y_{it}|D_i = 1] - E[Y_{it}|D_i = 0]}_{Difference\ in\ well-being} = \underbrace{E[Y_{it}^1|D_i = 1] - E[Y_{it}^0|D_i = 1]}_{ATT} +$

$$\underbrace{E[Y_{it}^0|D_i = 1] - E[Y_{it}^0|D_i = 0]}_{Selection\ bias}$$

Hence, the ATT is the average causal effect of fixed-term employment transitions on those who have actually made the transition into fixed-term employment. The term captures the average between the well-being of individuals with a fixed-term employment transition ($E[Y_{it}^1|D_i = 1]$) and what would have happened had they not transitioned to fixed-term employment but remained in the initial status ($E[Y_{it}^0|D_i = 1]$), for example, in education or unemployment. Selection bias represents the difference in averages for Y_{it}^0 between those who had a transition to fixed-term employment and those who did not.

It could be that individuals who transition into fixed-term employment already have lower well-being and are therefore selected into this group. The argument here could be that employers fear costs due to absenteeism and lower productivity because of lower well-being. It may be debatable how employers can evaluate the well-being of job applicants. However, if this assumption holds, this circumstance could lead to a misestimation of the impact of fixed-term employment on well-being. Because the equations contain counterfactuals, namely $E[Y_{it}^0|D_i = 1]$, estimation procedures must be employed.

Different data types allow for different estimation strategies to estimate the unobservable counterfactual. On the one hand, there are *cross-sectional data*, which rely on the strongest assumption and are consequently usually biased due to selection in the presence of unobserved heterogeneity[19]. More specifically, they simply rely on similar observations within the dataset for potential outcomes. On the other hand, there are *longitudinal data* that allow comparisons of outcomes between before receiving and after treatment (e.g., fixed-effects or difference-in-differences (DiD) models).

Articles 1, 4 and 5 refer to cross-sectional estimation strategies because they compare only treated and untreated individuals, but condition on control variables measured before the treatment. The question arises as to which control variables should be chosen to obtain unbiased estimates for the causal effects. The literature on modern causal analysis argues that one should only condition on pre-treatment variables that are assumed to affect both the independent and dependent variable (Morgan & Winship, 2014; Elwert, 2013; Pearl, 2010).

Therefore, I condition only on variables that are assumed to meet the *backdoor criterion* (Elwert, 2013), i.e., those variables that close open backdoor paths between the independent and the dependent variables to estimate the causal effect of X on Y. To avoid overcontrol bias (Elwert, 2013), I also refrain from conditioning on variables that appear to be mediators and therefore are descendants of the treatment. However, in the articles I am specifically interested in mediation effects, namely Articles 1, 3 and 4, I condition on these variables in separate models to evaluate their mediation effects (Freese & Kevern, 2014; Lundberg et al., 2021).

While it seems easier to find confounding variables for statuses and transitions, it should be noted in Articles 4 and 5 that my co-author(s) and I refer to longer-term trajectories in a cross-sectional design. In Article 4, my co-author and I address couples' employment trajectories that are the result of a multichannel sequence analysis (Gauthier et al., 2010). We estimate basic linear and binary logistic regression models in a second step. In doing so, we control for a rich set of control variables that are assumed to affect the trajectories of both partners – that is, both variables on each individual and on the couple-level. However, we cannot include extensive control variables on the attitudes of partners, which reduces the credibility of the assumption that we have included all necessary variables that affect treatment and outcome.

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[19] Depending of course on the set of control variables that are accounted for, and the methods chosen to examine the effects. However, there is much fewer information on timing than in panel data.

In Article 5, my co-author and I apply multichannel sequence analysis and binary logistic regression analysis, and condition mainly on childhood information, such as pre-outcome measurements. In this case, because our work-family trajectories, the treatment, consist of 20 years observation windows after the first school-to-work transition and although the outcome variable is measured much later, it is still questionable whether the numerous confounding variables are sufficient to account for endogeneity.

In Article 1, I control at the micro-level for a rich set of socio-demographic variables, such as gender, education, age, social background, and migration status. At the macro-level, I control for income inequality. Further information on this special data structure is provided in Chapter 4.2.2. Article 4 includes similar information on socio-demographics measured on the couple level. Moreover, the article accounts for East or West German location of the household and the presence of children. While the variables just mentioned might also be consequences of the employment trajectories of couples, we measure these variables at the beginning of the employment trajectories to ensure that they act as confounders. We also control for the first year of observation of the career pathways. Finally, in Article 5, we additionally consider information from childhood, such as deprivation or health status in childhood, and wave, as there are older and younger cohorts.

Longitudinal data and estimators make different and more plausible assumptions about control variables that must be considered to guarantee unbiased estimates. Panel estimators are before-after estimators that do not use a specific control group to identify the counterfactual, namely $E(Y_t^0|D = 1)$, but instead account for the well-being of the treated groups in the pre-treatment period, namely $E(Y_{t-1}^0|D = 1)$. Since the comparison is within individuals, and more specifically within individuals with particular employment transitions or trajectories, these estimators indirectly account for any important observed or unobserved control variables that have a constant effect over time and that cause selection into a particular transition or trajectory. Therefore, they rule out the most important confounding variables.

Although the assumptions here are more relaxed, within estimators rely on the assumption that there is a parallel trend in the outcomes. More precisely, for example, individuals who switch from fixed-term employment to permanent employment would be assumed to have had unchanged well-being if the individual had not switched to permanent employment. In this example, this trend ignores other events or circumstance that might occur in parallel, i.e., age effects on well-being, or general meso- and macro-level trends that tend to increase well-being, such as increases in gross domestic product (GDP). These estimators therefore also ignore

anticipation effects. It could be that fixed-term employees are well aware that their contract will be converted to a permanent contract well in advance.

A better choice might be a before-after estimator that additionally uses the between-group comparison that is present in cross-sectional estimators. This estimator, which is basically a difference-in-difference estimator but is also included in fixed-effects specifications, relies on well-being trends for both the treatment and control group. The assumption here, the so-called common trends assumption (Lechner, 2010), is therefore that treated individuals would have experienced the same change if they had not been treated. While the expectation is still that there is a parallel trend in change in well-being, it is still weaker than for the within-estimator, which only accounts for within-variation. However, these estimators still do not solve the problem of anticipation effects.

Articles 2 and 3 use fixed-effects regression models with a two-way fixed-effects model specification that estimates period effects by using information about the control groups. While Article 3 relies on a longer-term spell definition for the treatment and control groups, Article 2 explicitly and innovatively relies on theoretically derived sequences[20]. Moreover, Article 2 considers fixed-effects growth curve models (Brüderl & Ludwig, 2014) to investigate the long-term effects of fixed-term employment trajectories on well-being.

Article 2 therefore innovatively combines methods of sequence analysis with growth curve modelling. Given the previously described assumption that fixed-effects models account for unobserved heterogeneity, both articles control only for age and macro-level differences besides period effects to avoid overcontrol bias. Here, the assumption of a sufficient set of confounders is better backed up by the estimation strategy and its weaker assumptions, as fixed-effects models already rule out most important confounders.

While the five articles are all interested in the causal effects of fixed-term employment (trajectories) on well-being, two of the five articles apply a cross-country comparative design. Here, my co-authors and I assume that individuals are nested within countries. As I discuss in Chapter 4.2.2, the multilevel structure relies on additional statistical assumptions on top of modern causal analysis but offers additional possibilities to enrich the analyses by studying country-level differences and the mechanism behind these differences in more detail.

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[20] While sequence analysis is usually combined with a cluster analysis to receive data-driven clusters, I opt here for the "manual" and confirmative assignment of individuals to a cluster, because theory already tells us how the clusters should look like and the usual procedure of applying cluster analysis would result in messy clusters with subjectively assigned descriptions.

4.2.2 Multilevel analysis

The methods applied in Article 1 and partly also in Article 5 refer to the special structure of having individuals nested within countries. Therefore, this subchapter outlines the basic ideas of multilevel analysis and its application in the articles. Since I use distinct approaches to tackle the multilevel structure (Bryan & Jenkins, 2016), this subchapter addresses both the simultaneously estimated models and the two-step approach.

First, the first step of the two-step approach would estimate the effects of fixed-term employment on well-being for each single country. Therefore, the estimation procedure used here is basic linear regression models run for each single country, resulting in 23 separate regression models for Article 1 and two separate regression models for Article 5. The first step is particularly useful for the basic visualization of effect heterogeneity (Bryan & Jenkins, 2016), which I am interested in Article 1 and 5. Equation (4) formalizes this first step in a general way for a linear regression model, which I specify in Article 1.

$$(4)\ y_{it} = \beta_{0j} + \beta_{1j}x_{1ij} + \beta_{2j}x_{2ij} + \cdots + \beta_{nj}x_{nij} + \epsilon_{ij}$$

We see that the effects for an individual i in a country j are estimated separately. Therefore, this model only includes micro-level (confounding) variables. This procedure is the most flexible way to estimate so-called random slopes, i.e., distinct effects for a variable for each country, rather than having average values across countries for the coefficients for all required variables (Heisig et al., 2017). Random slopes are discussed further in the part on simultaneous estimation of multilevel models. The second step is important when cross-level interactions are considered, i.e., the effect of macro-level variables on micro-level effects. Equation (5) shows this second step for an example cross-level interaction effect, where the micro-level effect β_{1j} is interacted with a macro-level z_j variable.

$$(5)\ \beta_{1j} = \theta_{0j} + \theta_{1j}z_j + E_{ij}$$

Therefore, the macro-level variable predicts the micro-level effects. However, in Article 1, I only apply the first step of the two-step approach to illustrate the effect heterogeneity across countries. To test whether the micro-level mechanisms of Jahoda's Latent Deprivation Model hold for fixed-term employment, I estimate pooled linear regression models with clustered standard errors on the country-level. These models thus represent basic regression models with averages for all the coefficients, as I assume that these mechanisms should be equally relevant across countries. Article 5 also utilizes only the first step of the two-step approach, since my

co-author and I are not directly interested in any cross-level interaction effects here, but rather in the difference between the two countries.

The simultaneous estimation procedure is applied to answer the research question whether social cohesion, a macro-level variable, moderates the effect of fixed-term employment on well-being at the micro-level. This multilevel estimation procedure – including the cross-level interaction effect – can be denoted as in equation (6) and substituted with equations (6-1) and (6-2), resulting in equation (7) (Snijders & Bosker, 2012), which is discussed in more detail following the equations.

(6) $Y_{ij} = \beta_{0j} + \beta_{1j}x_{ij} + \beta_{2j}z_j + \beta_{3ij}(x_{ij} \cdot z_j) + R_{ij}$

(6-1) $\beta_{0j} = \gamma_{00} + \gamma_{01}z_j + U_{oj}$

(6-2) $\beta_{1j} = \gamma_{10} + \gamma_{11}z_j + U_{1j}$

(7) $Y_{ij} = (\gamma_{00} + \gamma_{01}z_j + U_{0j}) + (\gamma_{10} + \gamma_{11}z_j + U_{1j})x_{ij} + R_{ij} =$

$$\gamma_{00} + \gamma_{01}z_j + \gamma_{10}x_{ij} + \gamma_{11}z_jx_{ij} + U_{0j} + U_{1j}x_{ij} + R_{ij}$$

More precisely, Y_{ij} denotes the country- and individual-specific well-being. γ_{00} denotes the intercept and γ_{10} the coefficient of fixed-term employment. As before, β_{1j} denotes the effect of fixed-term employment on well-being, β_{2j} that of social cohesion, and β_{3ij} represents the interaction term of the micro- and macro-level variable, i.e., the cross-level interaction. $U_{0j} + U_{1j}x_{ij} + R_{ij}$ denotes the random part of the effect. U_{0j} represents a country-level error and R_{ij} an individual-level error. Therefore, the micro-level effect of fixed-term employment is allowed to vary across countries, i.e., a random slope, that should be applied when accounting for cross-level interaction effects (Heisig & Schaeffer, 2019). Unlike standard linear regression models, such as pooled linear regression models described earlier, this multilevel model includes a country-level error U_{0j} that represents the effects of unobserved country-level variables.

Since this procedure usually results in an underestimation of standard errors due to the violation of the interdependence of errors assumption, I include corrected standard errors using the Satterthwaite approximation. However, Monte Carlo simulation analysis indicates that at least 25 countries should be included to obtain reliable estimates of cross-level interaction for linear regression models (Bryan & Jenkins, 2016). Due to data restrictions and because round 6 of the ESS is the most feasible data for all analyses, I end up with 23 countries, which is just under the limit. Therefore, the test statistics might still have a lower degree of accuracy.

Moreover, because social cohesion is rarely measured, I could not account for time variation at the macro-level, which would have helped to solve the issue of unobserved heterogeneity at the country-level. While I control for a macro-level indicator, there may be other important macro-level confounders, such as GDP. Unfortunately, due to data limitations, I could not include such variables, which might still bias my findings.

In summary, Article 1 makes the best use of the strengths of the two approaches, i.e., the two-step approach and simultaneous estimation procedures, to answer the several research questions. While the two-step approach – and especially the first step – is particularly useful for detecting cross-country variation, the simultaneous modelling approach allows the estimation of standard errors that are more reliable. Finally, Bayesian methods could improve inference for such small country N cases (Bryan & Jenkins, 2016), but cannot be applied appropriately because of the lack of information on prior distributions.

How do these methods of modern causal analysis and multilevel analysis help to address the life course framework outlined throughout this thesis? Chapter 4.2.3 provides insights into how the several methods applied help to advance the understanding of the life course framework and what the limits of these approaches are. Finally, the chapter ends with general remarks on methodological advances in future research.

4.2.3 The applied methods against the background of the life course framework

Since all articles of this thesis are based on the life course framework, it is fruitful to discuss how the choice of methods helps to relate to this framework. Therefore, for each of the articles, I outline how the methods applied fit within the life course perspective. Moreover, I also discuss the limitations of the methods in terms of a holistic life course perspective.

Article 1. In Article 1, I apply several multilevel methods to two distinct perspectives, namely the *upward* and *downward* comparative perspective of fixed-term employment. Multilevel analysis methods help to account for the dimension of levels, namely the nesting of individuals (L_1 in Figure 1) in countries (L_3 in Figure 1). Thus, as outlined in Chapter 1, Article 1 examines first-order dependencies across different levels of the life course. The several multilevel methods applied in this article uncover effect heterogeneity and provide some country-level explanation on this heterogeneity. Given the cross-sectional nature of the data and the corresponding estimator, I could not additionally account for the time dimension. However, the first article builds a foundation on the level differences and urges to zoom in this large country-variation by focusing on one country.

Article 2. The second article addresses several topics of the life course framework. I examine more holistic trajectories using sequence analysis, which has been proven to be an excellent tool for studying life courses (Fuller & Stecy-Hildebrandt, 2015; Bernardi et al., 2019). In contrast to the common way of applying data-driven methods, I advance the literature on employment trajectories by relying on theory to define five-year clusters after first school-to-work transitions (T_1 in Figure 1). By focusing exclusively on theory-driven clusters, this approach is particularly useful for testing theoretical assumptions about fixed-term employment as *traps* or *stepping stones* that can be viewed as turning points in the life course.

While sequence analysis methods itself are useful tools for examining the life course, their combination with fixed-effects growth curve models provides an innovative way to examine the time dimension in more detail (Brüderl et al., 2019). Using growth curve models allows me to examine not only turning points in the life course, but also cumulative disadvantages by studying whether longer-term experiences of disadvantageous employment statuses add up and amplify negative effects on well-being over time (in T_2 in Figure 1). Therefore, this study investigates the first-order interdependence of time as dimension in greater detail by combining several aspects of the life course framework. Although this study examines the longer-term effects of eight consecutive years, later life cannot be considered due to data limitations.

Article 3. While Article 1 and 2 examine first-order dependencies, the methods applied in Article 3 are useful for combining several dimensions of the life course cube. In terms of levels, my co-authors and I argue that individuals are nested in couples, which are themselves nested in contexts, and more precisely, in socialization contexts (so L_1 to L_3 in Figure 1). We account for this structure by examining spillover effects and differences between East and West Germany as interaction terms.

By utilizing fixed-effects models with a specific focus on longer-term spells, we also account for the time dimension (looking at T_1 and T_2 in Figure 1) and explicitly consider transitions out of and into fixed-term employment. By accounting for mediation effects on another life domain, i.e., partner's employment transitions (D_1 in Figure 1) on financial worries in the private life of families (D_2 in Figure 1), we also account for spillover effects from the employment of partners to other life domains. Thus, this paper combines several important aspects of the life course cube and addresses higher-order interdependencies.

Articles 4 and 5. Since the same methods are applied in Articles 4 and 5, it is valuable to discuss them together. Multichannel sequence analysis is apparently useful for examining crossover-

and spillover effects as well as cumulative advantages and disadvantages (Fuller & Stecy-Hildebrandt, 2015; Aisenbrey & Fasang, 2017). Unlike Article 2, these studies apply the data-driven version of sequence analysis. Both articles use optimal matching[21] (Studer & Ritschard, 2016) to judge the similarity of dissimilarity between multistate sequences of individuals (Article 4) or life domains (Article 5). These resulting distance matrices form the basis for cluster analysis to group similar clusters of couples or individuals.

In both articles, I use Ward's general hierarchical clustering algorithm, which maximizes the within-cluster similarities and thus homogeneity within each cluster (Ward, 1963). One problem that arises with such cluster analysis methods is that one must decide on the correct number of clusters and label them accordingly. While my co-authors and I rely on statistical methods such as the elbow method or average silhouette width and theoretical considerations, we always opt for the highest number of clusters to adequately separate the clusters and remove the greatest heterogeneity within clusters to obtain convincing labels.

For Article 4, my co-author and I explicitly refer to the idea of cumulative disadvantages (Dannefer, 2003) when using the multichannel sequence analysis approach. Here, accumulation processes become visible, if, for example, both partners remain in unemployment or disadvantageous employment statuses throughout the observation period. Thus, we consider not only within-individual accumulation of (dis)advantages over time (T_1 to T_2 in Figure 1), but also on the higher level of couples (L_2 in Figure 1), the accumulation of (dis)advantages between individuals.

We thus consider both the time and level dimensions of the life course cube and their interdependence. By studying longer-term effects using cross-sectional regression analyses on probability of being homeowners later in life (T_2 in Figure 1), we also account for domain specific interdependencies of these time- and level-specific interdependencies. Due to data restrictions, we cannot account for housing outcomes at older ages, which would be in accordance with the life course related argument that old-age poverty might be affected.

Article 5 considers in more detail the accumulation of advantages or disadvantages between the specific life domains of work (D_1 in Figure 1) and family (D_2 in Figure 1) and takes a more holistic time perspective compared to Article 4. In Article 5, a multichannel sequence analysis results in 20-year work-family trajectories of individuals after the first school-to-work transition

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[21] Other matching algorithms like the Hamming distance or the Dynamic Hamming distance algorithm would rather account for timing similarities within clusters, which is not of importance for the sake of our research questions.

(T_1 in Figure 1), and regressions on health when 50 years and older (T_3 in Figure 1). This research strategy helps to examine the effects of early life on health later in life. Therefore, this study covers the entire time span (from T_1 to T_3 in Figure 1) I deem important for my specific research questions, like illustrated in Figure 1.

By studying the interrelation of work and family life in more detail, my co-author and I account for cumulative disadvantages or advantages that might add up across life course domains, and spill over from one to the other life domain at the same time. Finally, the article compares two countries, as country is one important aspect of the level dimension. Even if it is not a sophisticated multilevel analysis approach as in Article 1, it can help to provide first insights into how important country differences might be between two countries that are very comparable in terms of gender norms but different in terms of social security systems.

In summary, while both articles apply the same methods, the differences lie in the dimensions that are covered. While Article 4 focuses on the cumulation of disadvantages or advantages within couples, Article 5 focuses on spillover effects across different life domains. However, both articles together show that such methods can be applied to uncover life courses and relate them to an outcome variable in more detail, which is still quite innovative in the social sciences.

It becomes obvious that the five articles illuminate important aspects of the life course framework and need to be considered as coherent whole in order to examine the main research question on the impact of fixed-term employment on well-being. Ultimately, however, the question remains to what the key findings are in relation to the research questions. Chapter 5 gives details on the key findings related to the three specific research questions, summarizes the contributions of these, and provides a roadmap for future research.

5 Summary and conclusions

Chapter 5 contains the summary and conclusions of all five articles in relation to the main and the three specific research questions. In Chapter 5.1, I summarize the main findings of the five articles included within this thesis regarding the three specific research questions and discuss their limitations. From this summary and discussion, I draw some general conclusions related to my overarching research question and provide a roadmap for future research in Chapter 5.2.

5.1 Key findings and discussions of the five articles

Research question 1. The first specific research question is: _What are the short- and long-term effects of fixed-term employment for the well-being of individuals and couples?_ Almost all of the articles – except Article 4 – explicitly answer this research question. In Article 1, "The

Effect of Fixed-Term Employment on Well-Being: Disentangling the Micro-Mechanisms and the Moderating Role of Social Cohesion", I find that fixed-term employees rate their well-being higher than unemployed individuals and lower than permanent employees on average across the included countries. These findings are in line with the general expectations about the short-term effects of fixed-term employment on well-being.

It is important to note that the estimates represent an average across the included countries and differ from the country-specific estimates from the other articles. However, as highlighted throughout Chapter 4, analyses on cross-sectional data with insufficient control variables might lead to biased findings. In particular, as discussed in Chapter 4.2.1, I cannot control for unobservable variables, i.e., unobserved heterogeneity, because the ESS used for the analysis does not contain panel data[22]. More specifically, I cannot account for selection into fixed-term employment, e.g., if fixed-term employment is a specific preference of individuals or if individuals are involuntarily employed on a fixed-term basis (Kauhanen & Nätti, 2015).

Article 2 addresses this issue by using panel data. The results of Article 2 "Longer-Term Dynamics of the Effects of Fixed-Term Employment Trajectories on Subjective Well-Being in Germany", show that the choice of reference group and the consideration of longer-term perspective are important to obtain a more holistic picture of the effects of fixed-term employment on well-being. More specifically, I show that when comparing presumably more secure career types to less secure career types, individuals in the more secure career types exhibit higher levels of subjective well-being only at the beginning of their careers.

However, looking at the development of the effects, the effects vanish after a few years for most of the groups compared. Yet, the positive effect of a *stepping stone*, or even an *entrapment* compared to long-term unemployment at the beginning of the career does not entirely vanish after eight years. My findings provide general support for assumptions about adaption processes (Luhmann et al., 2012; Luhmann & Intelisano, 2018) that have not yet been analyzed for this specific issue. I show that the normative definition of permanent jobs as "good jobs" and fixed-term jobs as "bad jobs" (Kalleberg, 2018)[23] does not seem to hold for Germany.

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[22] Even though the ESS collected data from 2016–2018 through the first harmonized cross-national probability-based online panel (CRONOS), which is part of the ERISS project that is funded by the Horizon 2020 project, this data was unfortunately not yet published at the time the analyses were conducted. Moreover, there is no measurement yet for social cohesion for this period.

[23] It should, however, be mentioned that Kalleberg is mostly referring to distinct forms of fixed-term employment such temporary agency work, which indeed might be more detrimental for health compared to other types of fixed-term employment.

Rather, people get used to their employment trajectory over the longer term – even if it is quite volatile. I also show that the probability of being *trapped* is higher for highly educated individuals, which also contradicts the notion that already disadvantaged individuals tend to be trapped in these jobs. The results highlight the long-term well-being benefits of fixed-term employment compared to unemployment. Regarding the comparison of fixed-term employment with permanent employment careers, the results show that fears of negative longer-term consequences of fixed-term employment on well-being are not justified for Germany.

In Article 3, "Does Fixed-Term Employment Have Spillover Effects on the Well-Being of Partners? A Panel Data Analysis for East and West Germany", my co-authors and I not only examine the spillover effects of employment transitions on the partner's well-being, but also look more closely at the effect of a transition from fixed-term to permanent employment on individual well-being as a potential mediator of spillover effects. The findings confirm and extend the insights from Article 2, namely that neither the individual's nor the partner's well-being is significantly affected by the transition from fixed-term to permanent employment. Rather, the findings again point to the importance of the fixed-term employment relative to unemployment on well-being. More specifically, we find that a transition from unemployment to fixed-term employment increases the partner's and the individual's well-being. Therefore, the results of Article 3 reemphasize the positive aspects of fixed-term employment for well-being compared to unemployment.

Finally, in Article 5, "The Effect of Early and Mid-Life Work-Family Trajectories on Self-Rated Health in Older Age in West Germany and Italy: A Multichannel Sequence Analysis", my co-author and I address the first research question from the longest-term perspective, i.e., from the beginning of the career to retirement. Although Article 5 does not specifically address fixed-term employment trajectories but considers fixed-term employment as part of insecure work-family trajectories, it confirms what can be gleaned from the other articles. In particular, work-family trajectories that continuously involve some type of employment, both standard and non-standard, have a positive effect on health in later life, compared with work-family trajectories that include long-term periods of labor market inactivity or unemployment.

Overall, all four articles highlight the benefits of fixed-term employment compared to unemployment – both in the short- and longer term, and also for partners. While Article 1 concludes that fixed-term employees report lower well-being compared to permanent employees, this finding is not confirmed by the other four studies, which use panel data on Germany. Thus, with respect to the first research question, I conclude that there is a positive

short- and long-term effect of fixed-term employment compared to unemployment on well-being in Germany that also extends to the partner's well-being. My co-authors and I find no convincing evidence for a negative well-being effect of fixed-term employment compared to permanent employment. Rather, the results support the notion that having a(ny) job is better than having no job for well-being (Gebel & Voßemer, 2014; Grün et al., 2010), and that fixed-term employment have a labor market integrative effect for otherwise unemployed individuals.

Research question 2. The second more targeted research question asks: *What are the mechanisms explaining the effects of fixed-term employment on well-being?* In the first article, I show that the Latent Deprivation Model (Jahoda, 1982) can plausibly be extended to the context of fixed-term workers. From an empirical point of view, the mechanisms are partly transferable. More specifically, income and status are important mediators for the effects, whilst physical activity and social contacts seem to play a smaller role. When all mediators are included in the model simultaneously, they explain more than two-thirds of the effects of fixed-term employment on well-being for both comparison directions. However, the explanatory power of the mediators for the *downward comparison*, namely fixed-term employment versus unemployment, is somewhat stronger. Due to data constraints, I was not able to account for all latent functions holistically, nor for treatment heterogeneity within fixed-term employment[24]. Yet, the results show that both manifest and the latent functions of Jahoda's Latent Deprivation Model are important mediators of the effect of fixed-term employment on well-being.

Article 3 examines micro-level mechanisms for the spillover effects of fixed-term employment on well-being. Changes in individual well-being are a mediator of the effect of transitions from unemployment to fixed-term employment, but not of the effect of transitions from fixed-term to permanent employment on well-being. As pointed out in the explanation of the results for research question 1, there is no individual effect of transitions from fixed-term to permanent employment on well-being, which may be the reason why there is also no effect of these transitions on the partner's well-being. The paper further examines mediators on the micro-level for individuals and shows that the often-cited potential mediators, subjectively perceived job insecurity and financial worries, are no important mediators of the effect of transitions from fixed-term to permanent employment on well-being.

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[24] Besides the information that the contract is "limited" or "unlimited", there is no further information on the type of fixed-term contract. Therefore, it is not possible to distinguish further the independent variable.

Article 4 examines in more detail the path from fixed-term employment to wealth, i.e., a manifest function of employment. In Article 4, "Couples' Early Career Trajectories and Later Life Housing Consequences in Germany: Investigating Cumulative Disadvantages", my co-author and I show that couples' career (in)security, characterized by periods of fixed-term employment, is an important predictor of the probability of homeownership and the share of income spent on rent. The paper delves even deeper in this specific mediation path by showing that the effects of couples' fixed-term employment trajectories on housing outcomes are partly mediated by cumulative income (dis)advantages.

While the first and the third paper show the importance of perceived income as a potential mediator, Article 4 breaks down the accumulation processes within (objective) income across partners (meso-level mechanism). Contrary to what we would have expected, however, cumulative income disadvantages are not the main driving mediator explaining the effects of career insecurity within couples on homeownership but are much more important for rent differentials. Nonetheless, this paper suggests the relevance of wealth-specific variables as mediators of the effect of fixed-term employment on well-being, especially in the light of the various studies showing a positive effect of homeownership on well-being (Foye et al., 2018; Zumbro, 2014; Diaz-Serrano, 2009; Herbers & Mulder, 2017).

In summary, and consistent with the literature (Gundert & Hohendanner, 2014), the papers show that theories of unemployment on well-being, namely Jahoda's Latent Deprivation Model and Warr's Vitamin Model, can be plausibly adapted to the context of the effect of fixed-term employment on well-being. In line with the findings on the first research question, since there is no important effect of fixed-term compared to permanent employment on (partner's) well-being for Germany, there are also no mediating effects of the hypothesized variables (perceived income insecurity or job insecurity). Rather, the manifest and latent functions or vitamins appear to be sufficient explanations for the cross-sectional estimates for the *upwards comparative* effects. The mediators also apply to the *downward comparative* effects from both a cross-section and partly a panel data perspective, including spillover effects.

Research question 3. The final research question is: *How do these effects vary across gender and contexts, and what are the explanations for (no) variations?* In Article 1, I find that the effects of fixed-term employment on well-being vary remarkably for both comparison groups across the included countries. This variation implies that there are notable deviations from the average across countries mentioned in the description of the results regarding the first research

question. Considering the effects of fixed-term employees compared to the unemployed on well-being, the picture is even more heterogeneous across the countries.

The article provides first results on the role of social cohesion as moderator. Results show that a higher degree of social cohesion within a country reduces the average negative effect of fixed-term compared to permanent employment on well-being across countries. However, when comparing fixed-term employees with the unemployed, social cohesion plays only a limited role in explaining differences across countries. Nevertheless, due to the small sample size of countries and the cross-sectional nature of the data, the findings might still be biased.

Regarding gender differences, the findings on the spillover effects of the transitions from unemployment to fixed-term employment on well-being are consistent with our hypotheses. When the male partner transitions from unemployment to fixed-term employment, the female partner's well-being increases. However, the male partner's well-being does increase in a comparable way when the female partner makes such an employment transition. Moreover, the gendered differences are found to be more pronounced in West Germany than in East Germany. This finding suggests that because of the still more liberal gender norms in East Germany and the more conservative norm of the male breadwinner/female homemaker in West Germany (Ebner et al., 2020), gender gaps appear to be more entrenched in West Germany.

However, looking at employment transitions from fixed-term to permanent employment, contrary to expectations and literature (Inanc, 2018), no such positive general or gendered spillover effect emerge. In fact, it seems to be irrelevant whether the male or female partner moves from fixed-term to permanent employment, the partner's well-being does not increase. We find no differences between East and West Germany. Thus, there is no conclusive evidence for our hypothesis that an upwards transition from fixed-term to permanent employment has positive (gendered) spillover effects on the partner's well-being.

Finally, in Article 5, my co-author and I examine the long-term gendered effects of interrelated life domains, namely work and family at early career, on health status later in life in two specific countries – West Germany and Italy – with similar gender norms but different social policy systems. For West German women, we find no notable health differences between the work-family clusters. For West German men, however, we find some differences in the probability of having poor health at retirement age, with insecure work-family relationships consisting of self-employment leading to a higher probability of poor health at older ages. The health disadvantages for Italian women with children and a turbulent career are remarkable compared to working mothers. There are no large health differences for Italian men. Comparing the

findings for West Germany and Italy qualitatively, we find that labor market inactive mothers in Italy are more disadvantaged in terms of long-term health.

To put it concisely, the papers show that there are significant differences in the effects of fixed-term employment on well-being across Westernized countries. The findings further suggest that there are important macro-level latent functions, such as social cohesion, that partly explain the variance of the effect. The articles also show that there may be differences in the magnitude of spillover effects of fixed-term employment on well-being within countries, namely when it comes to gender norms. Gendered spillover effects are particularly evident in regions with more conservative gender norms. In addition, Article 5 again highlights gender differences in the effects of work-family trajectories on health across countries, even with similar gender norms but different social policy systems.

5.2 Conclusions and roadmap for future research

In addition to the main findings of the articles, this thesis also offers several conclusions for the literature and for policymaking. Three major conclusions, corresponding to the three contributions in Chapter 2.5, are addressed below, which also relate to the life course framework framing this thesis and the sociopolitical debates addressed in the introduction.

First, this thesis emphasizes the importance of a *general theoretical framework* for the effect of fixed-term employment on well-being. While the life course perspective provides a sufficient starting point for many effects within social sciences, this thesis shows how it needs to be enriched with theoretical perspectives from distinct disciplines. Moreover, this thesis shows how basic ideas of the life course perspective are already embedded in various theoretical models from different research fields. The general theoretical framework developed in this thesis allows us to examine the effect of fixed-term employment on well-being from different and interrelated angles. The results confirm the proposed order of the central concepts and, to some extent, the effect they have on each other.

More specifically, the articles show that fixed-term employment (trajectories) generally affects well-being. However, this effect varies considerably across comparison groups and countries and thus depends on the context. The articles emphasize that fixed-term employment might have both advantages and disadvantages, which demonstrates that it is important to take a broader perspective and that a one-sided view falls short. Articles 2, 4, and 5 also emphasize the significance of looking at employment trajectories, not just single employment statuses or transitions, as is common in literature. The idea of looking at more holistic trajectories refers to the important time dimension in the life course framework.

The principle of linked lives is demonstrated in Article 3, which shows that fixed-term employment transitions also have an impact on the well-being of partners. The thesis further puts forward theoretically formulated mechanisms by empirically testing them for both genders. The thesis also provides evidence that theories from the unemployment literature, such as the Latent Deprivation Model, are transferable to fixed-term employment. The thesis also delves deeper into the details of these mechanisms by examining the effect of fixed-term employment on economic outcomes, such as the likelihood of homeownership and rent outcomes.

Second, the thesis demonstrates the relevance of implementing an *encompassing perspective*. Fixed-term employment affects not only well-being, but also economic outcomes, which are seen as important mechanisms for the effect, highlighting its multidimensionality and the spillover across domains. The thesis also shows the importance of considering gender differences, couple perspectives, and accordingly the underlying gender norms that appear to shape the importance of (fixed-term) employment for status and identity. Consequently, not only economic country-specific characteristics such as labor market regulations affect the effect at the individual level, but also other latent country-specific characteristics such as norms or perceptions of social cohesion.

With respect to the increasing job insecurity discussed in Chapter 1, these findings have three implications for policymakers. First, it is too short-sighted to consider only the economic consequences of fixed-term employment, as these economic factors also lead to stress and a lower well-being. As stated in Chapter 1, the costs to society associated with well-being and health are extensive. Second, the benefits of fixed-term employment – compared to unemployment – actually seem to outweigh the disadvantages for Germany. However, this positive perspective on fixed-term employment does not seem to apply to all included countries. Particular attention needs to be paid to the more insecure forms of fixed-term employment, such as temporary agency work. Third, policy makers should not only be interested in shaping labor market norms, but also in shaping perceptions of gender norms and social cohesion. The thesis provides preliminary results on how strong perceptions of social cohesion can substitute for the important manifest and latent functions that fixed-term employees may lack.

The final and third conclusion is that the various findings of this thesis highlight the importance of *advances in the use of state-of-the-art methods* of causal and multilevel analysis from a life course perspective. In this thesis, I examine the effects of fixed-term employment on well-being using a variety of datasets and methods. I show that embedding single employment statuses and transitions within the larger framework of holistic employment trajectories through the use of

(multichannel) sequence analysis is important in both data-driven, exploratory and theory-driven, confirmatory way. In this way, researcher can paint a more comprehensive picture of the effect and the underlying mechanisms of fixed-term employment on well-being.

While cross-sectional estimators might confuse the effect of fixed-term employment as either *stepping stone* or *entrapment*, the tools of sequence analysis help to disentangle the effect heterogeneity from a life course perspective. In the same vein, a theoretically grounded selection of control variables ensures that several assumptions of modern causal analysis are accounted for. In addition, I advance state-of-the-art methods by combining methods like sequence analysis tools with growth curve models to bring together distinct aspects of the life course framework. Due to the manifold methods, this thesis examines the effects of fixed-term employment on several outcomes from a more encompassing perspective.

In addition to these three main conclusions, the thesis also outlines three implications for future research. First, future researchers should extend the theoretical model to include the missing combinations of dimensions. While this thesis considers several important first-, second-, and third-order interdependencies mainly from an individual-level perspective, macro-level interdependencies over time or across domains are beyond the scope of the thesis.

We still need to better understand why there are heterogeneities in the micro-level effects of fixed-term employment on well-being and whether trends in fixed-term employment also affect well-being at the aggregated country-level. The life course cube applied to this particular research question could also be extended to other life domains that are affected by employment or extending back to childhood and forward to death. Therefore, even though the thesis is already quite extensive, some important interdependencies of the life course cube still need to be put forward to provide a more holistic picture of how employment shapes well-being.

Second, while this thesis applies an encompassing perspective on the effect of fixed-term employment on well-being, some aspects motivated by other disciplines remain underdeveloped. For example, some individuals may prefer fixed-term over permanent employment, such as individuals with high levels of education. Within the scope of this thesis, it was not possible to investigate the selection processes for fixed-term employment in more detail. Because the data to date are not detailed enough to account for treatment heterogeneity, such as between project or temporary agency work, there is a lack in the important research on such kinds of treatment heterogeneity.

Third, this thesis highlights some methodological issues. Previous literature has used many different statistical methods, most of which refer to different assumptions. Not only do they refer to distinct assumptions, but they may also lead to inconclusive findings. In the thesis, this problem is also evident when comparing the findings of cross-sectional estimators – mostly strong effects of fixed-term compared to permanent employment on well-being – with panel data estimators – mostly very weak to zero effects for the effects of fixed-term compared to permanent employment on well-being.

Because there are some unresolved issues with panel data estimation procedures, such as dealing with time-varying control variables that could act as either mediators or confounders, future methodological research will benefit from extending the ideas of modern causal analysis to mediation analysis. Advances in this methodological research will also help to better understand differences in findings. Collecting even more panel data over longer periods of time or establishing new projects on life history data that collect more detailed data on the fixed-term employment status will help to better understand the long-term effects of these types of employment contracts on well-being.

Eventually, the thesis underpins the importance of conducting interdisciplinary and international research to receive a comprehensive picture of the effects of fixed-term employment on various outcomes. While the life course framework, and more precisely the derived theoretical model, is the result of many ideas from distinct research fields, there is still too little exchanges of ideas, which leads to many scientific papers going in similar directions and consequently the potential for new ideas is not exploited. Therefore, future collaborations of distinct research fields in scientific international projects are a promising tool to better understand society – a key aim of sociology.

6 References

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Article 1

The Effect of Fixed-Term Employment on Well-Being: Disentangling the Micro-Mechanisms and the Moderating Role of Social Cohesion

Abstract

This paper examines the impact of fixed-term employment on well-being from a cross-national comparative perspective by testing (1) the effect heterogeneity across European countries, (2) to which extent Jahoda's Latent Deprivation Model provides a sufficient micro-level explanation for the underlying mechanisms and (3) whether the macro-level factor of social cohesion weakens the micro-level impacts. We investigate the effects in both an upwards (permanent employment) and a downwards (unemployment) comparative control group design. Due to the mediating role of social contacts on the micro-level, we assume social cohesion on the country-level to moderate the main effects: A high degree of societal affiliation should substitute the function of social contacts in the work environment of individuals. Using microdata from the European Social Survey (ESS) 2012 for 23 countries and applying multilevel estimation procedures, we find that there is a remarkable variation in the effects across countries. Even though in each country fixed-term employees have a lower subjective well-being compared to permanent ones, the point estimates vary from .17 to 1.19 units. When comparing fixed-term employees to unemployed individuals, the coefficients even range from -.27 to 1.25 units. More specifically, a negative effect indicates that having a fixed-term contract is worse than unemployment in some countries. Moreover, pooled linear regression models reveal that Jahoda's Latent Deprivation Model explains about three-quarters of the micro-level effect sizes for both directions. Eventually, social cohesion on the country-level diminishes the individual-level well-being differences between fixed-term employees and permanent individuals but not between fixed-term employees and the unemployed.

1 Introduction

Job insecurity has become a key characteristic of modern labor markets in the last few decades and its importance is even assumed to keep on rising (Kalleberg 2018). Fixed-term employment, i.e. jobs based on contracts with a predetermined expiry date, is one of the most visible manifestations of job insecurity. Compared to life-long employment, which used to be the standard employment relationship, fixed-term contracts can be expected to negatively affect individuals in many ways. Fixed-term employees, hereinafter also referred to as temporary employees, are limited in their plannability concerning important decisions like homeownership or family formation and consequently in the perceived controllability of their lives (Burchell 1994). Due to this uncertainty regarding future plans, a great amount of stress might arise (De Witte 1999). These issues highlight the necessity to examine the consequences of fixed-term employment on health outcomes and well-being.

Because well-being describes the quality of living within a society (Veenhoven 2008), it does not come as a surprise that there is a rich literature on the consequences of different types of fixed-term employment on well-being outcomes for several countries. These studies are summarized within various literature reviews (Virtanen et al. 2005; Cuyper et al. 2008; Imhof and Andresen 2018; Hünefeld, et al. 2019).

Since most of the studies so far assume fixed-term employment to lie on a continuum from the greatest job insecurity (unemployment) to the greatest job security (permanent employment), the majority of scholars compares fixed-term employees to one of these two extremes. We extend this idea by bridging these two research practices. This paper thus includes a comparison to permanent employment, which we refer to as *upwards comparison*, and a comparison to unemployment, which we refer to as *downwards comparison*.

What we have learned so far regarding these two perspectives is that for the downwards comparison, fixed-term employees seem to have a higher well-being (Gebel and Voßemer 2014; Gundert and Hohendanner 2014; Chambel, et al. 2016). However, even though there is an extraordinarily higher amount of studies on the upwards comparison, the findings are more than mixed (for a summary see Cuyper et al. 2008). Even though the previous explanation of the impeded plannability seems plausible, some studies find a zero or even a positive impact of fixed-term employment on well-being.

One explanation for these varying findings is the lacking comparability between studies due to different types of measurements in distinct countries (Cuyper et al. 2008; Imhof and Andresen

2018). We test this assumption by estimating the effects of fixed-term employment on well-being within single countries using a cross-national comparative dataset with harmonized measurements. This strategy enables us to compare the estimates across countries.

Related to the issue of differing effect directions and sizes, we also know little about the explanation for the connection, namely the underlying mechanisms. Previous literature mostly borrows arguments from theories on the impact of unemployment on well-being, of which one of the most prominent examples Jahoda's Latent Deprivation Model is. However, only few of these studies empirically test the assumptions of the theoretical model with regard to whether they also apply within the context of temporary employment (Gundert and Hohendanner 2014), let alone adapt the argumentation adequately. To address this shortcoming, we discuss theoretically which mechanisms of the model can or cannot be expected to be transferable to the case of fixed-term employment. Furthermore, we empirically test the most plausible mechanisms for both the upwards and downwards comparative perspective by conducting mediation analyses.

Eventually, when examining the effect heterogeneity across different countries, for policy making it is not only relevant whether there *are* differences across countries, but also *which* country-specific characteristics cause these differences. Previous literature shows that some economic macro-level factors like employment protection legislation (EPL), gross domestic product (GDP), unemployment rate, subjective and objective income inequality as well as other social policies do moderate the effects of fixed-term employment on well-being (Carr and Chung 2014; Voßemer et al. 2018; Karabchuk and Soboleva 2019; Täht et al. 2019). Nevertheless, we lack knowledge on whether besides the perceived income inequality, there are other cultural country-level characteristics explaining the variation. Referring to the adapted version of the Latent Deprivation Model, we assume that social cohesion moderates the effect of fixed-term employment on well-being. We thereby not only enlighten the role of cultural country characteristics regarding the effect of interest, but we also take on a concept with rising political interest (Schiefer and van der Noll 2017).

For answering the research questions, we utilize the European Social Survey (ESS) data from 2012 with its high standards when it comes to comparability of information between countries. We estimate regression models for each country separately, which reveals the heterogeneity in the micro-level effects across 23 countries. Concerning the mediation analyses, we estimate pooled linear regression models with country-level clustered standard errors to decompose the

total effects. Eventually, simultaneously estimated multilevel linear regression models shed light on the macro-level moderating role of social cohesion.

2 Theoretical framework

Most studies draw on the unemployment literature and especially Jahoda's Latent Deprivation Model to explain the effects of fixed-term employment on well-being. However, in the following we argue that this transfer of theoretical arguments is only partly reasonable and where it has its limits. The initial line of argumentation refers to both manifest functions (*financial resources*) and the employment-related latent functions (*social contacts*, *time structure*, *activity*, *supra-individual aims*, *status, and identity*) (Jahoda 1982).

More precisely, *financial resources* subsume the income and other public payments individuals own at their free disposal. Turning to the latent functions, *social contacts* describe the possibility of building a social network apart from the context of family, i.e. meeting colleagues, which Jahoda describes as broadening the social horizon. A given *time structure* refers to forced and internalized daily routines, which are given by distinct agreements within an employment contract like working hours. *Activity* is closely connected to the latter function, as it describes how individuals utilize their time. *Supra-individual aims* are defined by goals individuals share with a greater level unit: e.g. a firm aims to maximize its profits, which should be common ground for the individual employees. Eventually, *status and identity* refer to the internalized wish of individuals to describe and classify themselves within a given hierarchy. The deprivation of these previously described functions is said to cause stress, which as a result lowers the well-being.

In particular, subjective well-being describes the conscious assessment of one's own life, which consists of individually weighted evaluation criteria. Individuals refer to both their past as well as to other individuals for the weighting procedure. It is a rational assessment in which people compare their expectations regarding life (*target state*) and perception of their fulfillment (*actual state*) (Veenhoven 2010). Due to the societal institutionalization, paid employment is understood as being a desirable state for the previously described evaluation process (Boland and Griffin 2016). Combined with Jahoda's idea of employment fulfilling several functions, not having a job leads to an imbalance of expectations and perceptions regarding the fulfillment of life goals. Therefore, the well-being should decline.

Various scholars refer to this theory when explaining the impact of fixed-term employment compared to permanent employment on well-being (Scherer 2009; Gash et al. 2007; Gundert

and Hohendanner 2014; Selenko et al. 2017). We augment the idea of utilizing this theory by a more fine-graded discussion of the various mechanisms with regard to both the upwards and downwards comparison. One possibility is to assume fixed-term employment to be similar to unemployment, which would imply that fixed-term employees lack all of the previously mentioned functions of employment. Besides this assumption being very strict, since the original theory comprises a severe division of employment and unemployment without referring to the quality of jobs, we doubt that it is possible to adapt the theory one-to-one.

We rather suggest similar to Warr's Vitamin Model (Warr 2017), that some of the functions might be less fulfilled due to the job insecurity fixed-term employment on average should include compared to permanent employment. Thus, we assume that within temporary jobs, there are also some of the functions present, but the manifestations differ on average both from unemployment and permanent employment. This additionally adds strength for combining arguments in explaining the effect of fixed-term employment compared to both permanent employment (*upwards*) and unemployment (*downwards*), which enables a more comprehensive picture of the effect.

2.1 Upwards comparison

Regarding the upwards comparative perspective, fixed-term employment should on average offer less of the manifest and the latent functions than permanent employment. First, temporary jobs might be seen as a prolonged probationary period by the employers. This perspective might make employers less willing to pay a high *income* or invest in the human capital of the temporary compared to permanent employees. For the latter, the firing costs might increase, which might furtherly boost the utility of investing in their human capital (Booth et al. 2002).

Moreover, permanent employment offers on average *social contacts* to colleagues, which due to the permanency should be more likely to be stable and consequently also more reliable. For fixed-term employees it might be less likely to establish contacts, as oftentimes not only their employment contract, but also the time with their colleagues is limited (Julià et al. 2017).

Associated with that, temporary employees might feel less like belonging to a team or the firm itself, i.e. a greater unit or community. Accordingly, temporary employees might be less likely to have *supra-individual aims,* such as participating in a union. Not participating in unions might also be due to the fear that the employer is not willing to renew the contract when joining such organizations (ILO 2016).

The last important difference is the possibility to build a *status and identity* connected to the job. Fixed-term employees might be less attached to their jobs compared to permanent employees (Cuyper et al. 2005). Because fixed-term employees on average should experience greater job insecurity and might be more easily replaced (Selenko et al. 2017), fixed-term workers might be less likely to identify with their employment and may therefore be more difficult to draw status from it.

For the remaining latent functions of the original model one can barely find reasonable arguments to account within this framework. Both temporary and permanent employees should benefit from a given *time structure* in their daily lives. They also need to fulfill the employment contract, i.e. work for a predefined number of hours. Both types of employees need to be *active* due to that. Thus, we can neither deduce a mediating impact of *time structure* nor *activity*.

Summarizing the previous thoughts, we believe *income*, *social contacts*, *supra-individual aims* and *status and identity* to matter for explaining the effect of temporary employment in the upwards comparative perspective on well-being. Therefore, we expect:

Hypothesis 1.1: *On average, fixed-term employees should have a lower subjective well-being than permanent employees.*

Hypothesis 1.2: *This negative impact should be explained by (a) fewer financial resources, (b) fewer social contacts, (c) having less supra-individual aims and (d) perceiving a lower status (and identity).*

2.2 Downwards comparison

Concerning the comparison with unemployment, a temporary job should offer both the manifest function of income and all the latent functions (Gash et al. 2007). As the key difference between permanent and temporary employment is the predetermination of the end of the job contract (Chambel et al. 2016), we suspect a similar line of argumentation like in the original theory. Besides that, empirical evidence shows that becoming unemployed is on average as harmful for temporary as for permanent employees (Gebel and Voßemer 2014), which suggests that fixed-term jobs might fulfill the functions in an equal way.

Regarding the theoretical argumentation, having no job rather than being in a fixed-term employment should on average decrease *financial resources, since* the individuals do not receive any payments from an employer. Temporary employees might at least make some *social contacts* within their job, which might be missing when being unemployed. The presence of

social contacts might increase the well-being of fixed-term employed compared to unemployed individuals (Gundert and Hohendanner 2014). Likewise, compared to unemployed individuals, fixed-term employees usually are integrated within firm structures, which might allow them to develop adherence to some *supra-individual aims*. Because individuals define themselves by their employment status and the prestige that comes along with it, fixed-term employees might interpret their *status and identity* as being (temporarily) part of the firm. Unemployed individuals lack this definition. Since most fixed-term employees have specific agreements within their employment contracts, they should be regularly active, whilst unemployed people lack this steady activity.

This deficiency goes hand in hand with an absenteeism of a given *time structure*: unemployed individuals might lack the feeling of having a structure in their daily life since e.g. there is no necessity to get up on time and go to work. The lack of these functions for the unemployed explains why being fixed-term employment results in a greater well-being:

Hypothesis 2.1: *On average, fixed-term employees are expected to have a greater subjective well-being than unemployed individuals.*

Hypothesis 2.2*: This positive impact should be explained by having (a) more financial resources, (b) more social contacts, (c) more supra-individual aims, (d) perceiving to have a higher status (and identity), (e) a greater level of activity and (f) a given time structure.*

2.3 Social cohesion as moderator

Since one of the explanations for the effects in both the upwards and downwards comparison refers to the social contacts individuals have, we assume that societies can offer buffering structures for the negative (positive) impacts. These structures within societies might substitute the latent function of building up social networks within the workplace environment of individuals.

We argue that having social contacts and frequently being with them should be a socially desirable state, which on average increases the well-being of individuals. If within societies there is the perception of an overarching affiliation, then the importance of social contacts within the job might be less relevant for individuals (Gallie 2014). This affiliation, namely social cohesion, describes the feeling regarding the possibility to make contacts independent of the work environment and the perception of belonging to a group at a higher level (e.g. country or societies) and identifying with it (Schiefer and van der Noll 2017).

Moreover, a high degree of social cohesion in countries might substitute the function of social contacts in the work environment of individuals. When there is a strong feeling of affiliation and identification within a society, the focus might shift from the important function of paid employment to the societal structure on a higher level offering it. Thus, if there is the feeling of belonging to the society rather than identifying only via employment, the fewer social contacts might matter for the individuals. Accordingly, the individuals might rather identify with the greater social unit than only their employment status.

Hypothesis 3: *On average, a greater social cohesion within a society should diminish the negative impact of fixed-term employment compared to permanent employment on subjective well-being.*

The same should be true for the positive impact of fixed-term employment compared to being unemployed. Thus, the unemployed can rely on their shared identity within the society rather than their identification via job status or the networks of colleagues.

Hypothesis 4: *On average, a greater social cohesion should reduce the positive impact of fixed-term employment compared to unemployment on well-being.*

3 Research design

3.1 Data and sample definition

We use the 6th round of the European Social Survey (ESS) from 2012 (European Social Survey 2013), which is a cross-sectional multi-country survey. The data is collected every two years via computer-assisted personal interviews (CAPI). The interviewees are sampled by a random probability sampling procedure and include a minimum target response rate of 70 % (European Social Survey 2014). Besides the high methodological standards for data collection, the ESS has high standards in comparability of measurements across European countries. It includes information on both EU and Non-EU countries. For this specific round, the questionnaire includes a module on social well-being, which permits testing the important mediating variables (e.g. social contacts, income perceptions or status in society). As 54,673 individuals were interviewed within 29 different countries, it allows to account for the structure of individuals being nested within countries.

Our sample refers to 23 of the 29 possible countries, as there is missing information on important macro-level variables for Albania, Israel, Iceland, Russia, Ukraine, and Kosovo. However, we think that the sample covers the variety of countries within Europe, as it comprises

both some of the largest countries (e.g. Germany and France) as well as very different ones when it comes to labor market regimes (e.g. United Kingdom representing a liberal labor market and Spain having a conservative labor market).

At the micro-level, we exclude individuals in education as well as homemakers, retirees and self-employees or employees of family businesses. These groups in general do not have an employment contract in the sense of owning a written and signed agreement between an employee and an employer on a paid job. We furtherly restrict the age of the individuals to range from 25 to 65 years. This sample restriction is intended to minimize the impact of previous education and training or anticipatory effects of retirement. All countries together entail 18,596 individuals for our sample. The frequencies of interviewed people within those countries range from 347 (Italy) to 1316 (Germany).

3.2 Operationalization

3.2.1 Independent variables

The measurement of fixed-term employment in the upwards comparative design refers to the question on the type of working contract (unlimited, limited, no contract) for the current job. Unlimited is understood as a permanent employment without a predetermined expiry date. Limited equals a fixed-term job and having no contract is excluded.

Regarding the downwards comparative dimension, for unemployed individuals we refer to the definition of the International Labor Organization (ILO). Thus, the control group are individuals, who mainly were actively searching for a job during the last seven days. Consequently, we compare fixed-term employees with those being unemployed.

3.2.2 Dependent variable

Since we assume well-being to be an evaluation of the expectations and perceptions regarding the own life, we use the cognitive measurement on the life satisfaction on a scale from 0 ("extremely dissatisfied") to 10 ("extremely satisfied").

3.2.3 Mediators

For our mediation analyses, we use a subjective measurement of the perceived *financial resources*. The variable consists of four options, namely (1) living comfortably on present income, (2) coping on it, (3) finding it difficult or (4) very difficult on present income. *Social contacts* are measured by asking how often the interviewees meet with friends, relatives or colleagues (seven categories of frequency: never, less than once a month, several times a month,

once a week, several times a week, every day). *Status (and identity)* is operationalized by the perceived location in society. Interviewees place themselves on a "social ladder" from bottom to top of the society (eleven categories). *Activity* is equalized with how many days individuals have been physically active continuously for 20 minutes or longer during the last seven days. The answering categories range from no to seven days.

Even though it is not possible to test all of the latent functions (a measure or a proxy for *time structure* or *identity* are missing), testing the possible ones gives first hints of whether they explain some parts of the effect.

3.2.4 Moderator

The macro-level variable social cohesion, which we understand as describing the feeling of belonging to a greater unit, namely the country, is characterized by positive relationships between members and groups within the societies and the perception of solidarity and helpfulness. Social cohesion is measured via the so-called Social Cohesion Radar from the Bertelsmann Foundation (Dragolov et al. 2013). This index aggregates data on the micro-level from 2009 to 2012 for social relations, connectedness, and the focus on the common goods.

3.2.5 Control variables

At the micro-level, we control for gender, education (International Standard Classification of Education (ISCED), condensed in three categories), age and age squared, social background (highest educational level of both parents, ISCED), and migration status (being citizen of the country). These variables are assumed to influence both the individuals' employment status, namely being fixed-term employed, as well as individuals' subjective well-being and have been proven to be relevant confounders (Silla et al. 2009; Kiersztyn 2016; Cortès-Franch et al. 2018). For instance, lower education of an individual might make it more likely to become fixed-term than to permanent employed and less likely to become fixed-term than unemployed. Also, lower education might reduce the subjective well-being (Kiersztyn 2016).

At the macro-level, we control for income inequality. We assume that inequality in the distribution of income within a country affects both the social cohesion on the macro-level and well-being on the micro-level. More precisely, a greater level of social inequality, e.g. regarding income distribution, on average boosts the feeling of social division and consequently lowers the social cohesion. Besides that, inequality might lower the subjective well-being of individuals. We utilize a measurement of Eurostat on the inequality of income distribution in

2012 (Eurostat 2019). More specifically, the measurement entails the ratio of the equalized disposable income received by the top quintile earners to that of the lowest quintile.

It might be also interesting to account for the micro-level variables aggregated on the macro-level, such as the proportion of migrants, women or lower educated within countries. However, it is more difficult to imagine how for instance the share of migrants might affect both the individual employment status and the well-being of individuals. For these reasons and more specifically to not induce overcontrol bias, we do only introduce theoretically based variables, which might affect both the independent and dependent variable, namely are confounders (Elwert and Winship 2014).

3.3 Methods

Since we assume individuals to be nested within countries and want to account for variables on both micro- and macro-level, we utilize linear multilevel models (two-level models). Because we have three distinct research questions, we fit the estimation procedures to the specific needs. First, to reveal heterogeneity in the micro-level effect sizes across countries, we estimate separate linear regression models for the respective 23 countries. This equals the first step of a two-step estimation procedure and enables a visualization of micro-level effect variation (Franzese 2005; Bryan and Jenkins 2016). Secondly, for testing the mediation impact of the micro-level functions, we use usual pooled linear regression models with clustered standard errors on the country-level. Eventually, for testing the cross-level interaction effect of social cohesion on the micro-level impact of fixed-term employment, we utilize a simultaneous estimation procedure and specify random slope models (Hox et al. 2018).

The following explanations first address the micro-level estimation procedures (first and second research question). Afterwards it concludes on the procedure for the macro-level estimation, more specifically the cross-level interaction (third research question).

3.3.1 Micro-level estimation

For answering the first research question, we are interested in the heterogeneity of the effects of Hypothesis 1.1 and 2.1 across countries. Thus, we want to allow for the most possible flexibility when it comes to model specification. Therefore, the estimation refers to the following equation:

$$[1] \quad swb_{ij} = \beta_{0j} + \beta_{1j} \cdot ftc_{ij} + \beta_{2j} \cdot gender_{ij} + \cdots + \beta_{7j} \cdot migration_{ij} + \epsilon_{ij},$$

where β_{1j} denotes both the upwardly and downwardly comparative effect of fixed-term employment (ftc) on subjective well-being (swb). This means that we calculate the basic models for two different samples. The first sample includes individuals being either fixed-term or permanently employed, where β_{1j} refers to the effect of the upwards comparison. The second sample refers to fixed-term compared to unemployed individuals, where β_{1j} respectively denotes the downwardly comparative effect. Index i refers to individuals and j to the countries, in which the individuals are nested. β_{2j} to β_{7j} denote the estimates of the micro-level control variables.

Accordingly, we fit in both cases, i.e. in the upwardly and downwardly comparative models, an ordinary least square linear regression model for each of the 23 countries. It is obvious that we are able to have the most flexible specification for the micro-level independent variables, as all of the effects are allowed to vary between the countries. This procedure is similar to allowing for all random effects (Heisig et al. 2017). More specifically, we include variable slopes for every independent variable and model effect variation across countries (Jusko and Shively 2005).

For the second research question, more precisely Hypothesis 1.2 and 2.2, we want to know whether on average the functions of Jahoda's Latent Deprivation Model can on average explain the relationship. Thus, we specify pooled linear regression models:

$$[2] \; swb_i = \theta_1 \cdot ftc_i + \theta_2 \cdot gender_i + \cdots + \theta_7 \cdot migration_i + \epsilon_i,$$

where we account for the two-level structure by calculating clustered standard errors on the country-level. The idea of mediation analysis (Freese and Kevern 2013) includes the decomposition of the total effect, which is denoted as θ_1.

Secondly, we add to [2] the mediating variables, i.e. the manifest and latent functions:

$$[3a] \; swb_i = \Theta_1 \cdot ftc_i + \Theta_2 \cdot gender_i + \cdots + \Theta_7 \cdot migration_i + \Theta_8 \cdot$$
$$social \; contacts_i + \Theta_9 \cdot income_i + \Theta_{10} \cdot status + \epsilon_i,$$

where $\Theta_8, \Theta_9, \Theta_{10}$ represent the estimates for each single function, i.e. the assumed mediators. Thus, for the upwards comparative effects there are three distinct models (social contacts, income, and status).

$$[3b] \; swb_i = \Theta_1 \cdot ftc_i + \Theta_2 \cdot gender_i + \cdots + \Theta_7 \cdot migration_i + \Theta_8 \cdot$$
$$social \; contacts_i + \Theta_9 \cdot income_i + \Theta_{10} \cdot status + \Theta_{11} \cdot activity + \epsilon_i,$$

For the downwards comparison, there are four possible equations (social contacts, income, status, and activity). Θ_1 equals the direct effect, i.e. accounting for the mediating effects of the functions.

The difference between the total and the direct effect

$$[4]\ \theta_1 - \Theta_1 = \Delta$$

reveals the third important effect size, the indirect effect. It describes the reduction caused by the mediating variable. If the effects are mediated by the variables, Θ_1 should disappear or at least decrease in both effect size and statistical relevance compared to θ_1.

As the Latent Deprivation Model assumes all functions to simultaneously explain the effect of unemployment on well-being, we add to the three (four) models for the upwards (downwards) comparative effects another one. This last model includes all mediators.

Following the guidelines of up-to-date research (Mustillo et al. 2018), we utilize the *KHB* command in Stata by Kohler and Karlson (2010) and report total, direct and indirect effects. The ado calculates a test on the statistical significance of Δ.

3.3.2 Macro-level estimation

In order to test Hypothesis 3 and 4, namely the moderation of social cohesion (macro-level) on the micro-level effects, we apply a simultaneous estimation approach for the hierarchical linear models. Since we assume the effects of fixed-term employment on well-being to vary across countries, we specify random slope models:

$$[5]\ swb_{ij} = \beta_{0j} + \beta_{1j} \cdot FTC_{ij} + \beta_2 \cdot gender_{ij} + \cdots + \beta_7 \cdot migration_{ij} + \beta_8$$
$$\cdot income\_inequality_j + \epsilon_{ij}$$

The model includes a random intercept and a random slope for fixed-term employment. Additionally to the micro-level confounders, we now also include the macro-level confounder of income inequality. In fact, compared to the estimation for the heterogeneity for the micro-level effects, we now average across the countries (fixed effects) and let only the micro-level impact for fixed-term employment vary (β_{1j}) across the macro-level unit (random effects). However, we again calculate the effects for two differing subsamples, namely the upwards and downwards comparative effect.

We fit the models by the 'mixed' command in Stata, using the restricted maximum likelihood (REML) estimator and estimate all variances and covariances distinctly. We test the statistical

relevance of the included random slope using a likelihood ratio test. For the cross-level interaction, we specify the model:

$$[6]\ swb_{ij} = \beta_{0j} + \beta_{1j} \cdot FTC_{ij} + \beta_2 \cdot social\_cohesion_j + \beta_3 \cdot \left(FTC_{ij} \cdot social\_cohesion_j\right) +$$

$$\beta_4 \cdot gender_{ij} + \cdots + \beta_9 \cdot migration_{ij} + \beta_{10} \cdot income\_inequality_j + \epsilon_{ij}$$

The model now includes the macro-level variable on social cohesion, which is interacted with the micro-level effect of fixed-term employment. Accordingly, the equation is fitted for both the upwards (Hypothesis 3) and the downwards comparative effects (Hypothesis 4).

4 Results

4.1 Descriptive findings

Table 1 shows unweighted univariate descriptive statistics for our key micro- and marco-level variables averaged over all individuals ($n = 18,596$) and countries ($N = 23$). Regarding the key independent variable, 16 % of the individuals are fixed-term employed, 79 % are permanently employed and 5 % are unemployed. Over all countries, the interviewees report on average 6.91 points on the life satisfaction scale ranging from 0 ("extremely dissatisfied") to 10 ("extremely satisfied"). The standard deviation, however, is 2.26 units, indicating a high variation either across individuals and/or countries.

Table 1: Univariate descriptive statistics for both micro-level and macro-level variables

	Mean	S.D.	Min	Max
Micro-level variabels				
Employment status				
unemployed	.05			
fixed-term employed	.16			
permanent employed	.79			
Subjective well-being	6.91	2.26	0	10
Feeling about income				
living comfortably	.28			
coping	.45			
difficult	.19			
very difficult	.08			
Social contacts (Ref.: *never*)				
never	.01			
less than once a month	.08			
once a month	.11			
several times a month	.22			
once a week	.19			
several times a week	.26			
every day	.13			
Activity	4.82	2.34	0	7
Status	5.72	1.73	0	10
Education				
low education	.17			
middle education	.53			
high education	.30			
Social background				
low background	.40			
middle background	.44			
high background	.16			
Gender				
male	.46			
female	.54			
Age	44.19	10.62	25	65
Migration status				
no migrant	.95			
migrant	.05			
n	*18,596*			
Macro-level variables				
Social cohesion	.00	.70	-.97	1.32
Income inequality	4.53	.92	3.2	6.5
N	*23*			

Sources: Own calculations using the European Social Survey, round 6 (2012).

Concerning the macro-level characteristics, the index for social cohesion varies for the 23 countries of interest from -.97 for Bulgaria to 1.32 in Denmark with an average of zero and a standard deviation of .70 units. Regarding the ratio for the income inequality, the average is 4.53 with a standard deviation of .92 units. According to the index, Spain has the highest income inequality with a ratio of 6.5 and Norway the lowest, i.e. 3.2.

4.2 Hypothesis 1.1

Figure 1 shows the results regarding the first hypothesis for each country separately and ordered by effect sizes. To repeat, Hypothesis 1.1 states that fixed-term compared to permanent employment should reduce the perceived well-being of the individuals. The results are unambiguous concerning the effect direction. The coefficient plot shows that in all countries, the impact of fixed-term compared to permanent employment is estimated to be negative, holding constant the control variables. However, the effect sizes do seem to vary noticeably.

One example for the interpretation of the coefficient for France (FR) is: On average, being temporarily rather than permanently employed ceteris paribus decreases the life satisfaction by 1.19 units. The effect is statistically significant, as the confidence interval does not include zero. Moreover, it is the strongest negative impact size compared to the other countries. For Belgium (BE) we find the smallest negative effect. Having a temporary compared to a permanent job in Belgium on average decreases the well-being by only .17 units. The estimate is statistically insignificant. Moreover, for six additional countries, namely Ireland, Estonia, Norway, Switzerland, Slovenia, and Cyprus we do not find statistically significant effects. Nevertheless, the direction of the effects fits the expectations.

The range between the point estimates is 1.02 units, indicating a great variation in the effect sizes across countries. It is also noticeable that some of the countries with a rather liberal labor market (Great Britain, Netherlands) have a smaller effect while, the conservative ones (e.g. Spain, Italy, Germany, France) are among those countries with the greatest effect sizes.

Yet, regarding both effect directions and sizes in general for all the 23 countries, we find support for the upwards comparative effect. Moreover, the results suggest effect heterogeneity across countries.

Figure 1: Coefficients plot for the micro-level effect of fixed-term employment compared to permanent employment on subjective well-being for each country

Notes: Coefficients from linear regression models fitted for each country separately (dependent variable: well-being, scale-points). Statistical significances are represented by 95% confidence intervals.

Models include micro-level control variables (education, social background, gender, age, migration).

Table 1 provides information on included variables.

Sources: Own calculations using the European Social Survey, round 6 (2012).

4.3 Hypothesis 2.1

Figure 2 shows the results for the downwards perspective. The hypothesis states that fixed-term employees should have a greater subjective well-being compared to unemployed individuals. The findings suggest a more ambiguous picture compared to the upwards comparative effects. Holding the important confounders constant, for 18 of the 23 countries there are coefficients in the direction of expectation, whilst for five this is not the case.

Figure 2: Coefficients plot for the micro-level effects of fixed-term employment compared to unemployment on subjective well-being for each country

Notes: Coefficients from linear regression models fitted for each country separately (dependent variable: well-being, scale-points). Statistical significances are represented by 95% confidence intervals.

Models include micro-level control variables (education, social background, gender, age, migration).

Table 1 provides information on included variables.

Sources: Own calculations using the European Social Survey, round 6 (2012).

For Norway (NO) – the largest impact size – being temporarily employed compared to being unemployed on average and statistically significantly increases the subjective well-being ceteris paribus by 1.25 units. The smallest negative effect size appears for Denmark (DK), where, on average and holding the confounders constant, jobs with a fixed duration compared to unemployment even decrease the life satisfaction by .27 units. This estimate is statistically insignificant as well as it is for Poland, Italy, Slovenia, and Portugal. Moreover, the range for the magnitude of the coefficients is 1.52 units, which again points to a great variation in the effect sizes across countries.

It is interesting to note that for some countries, which have a point estimate very close to zero, it does not seem to matter whether individuals are fixed-term employed or unemployed. This result points towards the argument from the literature, suggesting that this kind of job insecurity might feel as harmful as unemployment (Inanc 2018). However, for the large majority of the countries, to wit 18 countries, the effect is estimated to be positive.

When looking at the direction and significance of the effects, for five countries the data support the hypothesis. These findings indicate that temporary employees have a greater well-being compared to unemployed individuals. Nevertheless, for most of the countries, where the direction of the impact fits the expectation, we do not obtain a statistically significant estimate.

4.4 Hypothesis 1.2

To explain the effect of fixed-term employment on well-being, we suggested that some of the functions of the Latent Deprivation Model should matter. This assumption is tested by conducting mediation analyses, for which the results are shown in Table 2. Like previously explained, we consider three different estimates: the total effect (M1), the direct and the indirect effect (both included in M2–M5). Concerning Hypothesis 1.2, we assume that the effect size from M1 decreases in M2–M5 and that this decline (Δ) is statistically significant.

On average, we find that fixed-term employees are – holding the confounding variables constant – .833 units less satisfied with their lives compared to permanent employees. This is also what we expected in the basic Hypothesis 1.1 and thus also holds across countries. It is statistically significant as $t = -11.75$.

Adding the mediating variable for social contacts, the impact only slightly decreases to -.817 units. The point estimate is still statistically significant as $t = -7.49$. Thus, the coefficient from M1 only slightly decreases in M2 and this decline $\Delta = -.016$ is not statistically significant ($z = -1.46$). This leads us to reject the hypothesis on social contacts being a mechanism for the comparison of fixed-term to permanent employees.

Another latent function, which we suggest mediating the impact is the status. Adding this mediator in M3, the total effect declines in both empirical size and statistical relevance to a direct effect of -.508 units ($t = -6.45$). The indirect effect of -.325 units – about 39 % in relative terms – is statistically significant ($z = -9.49$). Thus, we find support for status to explain some part of the effect of fixed-term employment on well-being.

Table 2: Pooled linear regression models with mediation analyses for the effect of fixed-term employment compared to permanent employment

	M1	M2	M3	M4	M5
Dependent variable:	θ	Θ	Θ	Θ	Θ
Subjective well-being	(t-value)	(t-value)	(t-value)	(t-value)	(t-value)
Fixed-term employment	-.833***	-.817***	-.508***	-.335***	-.255***
	(-11.75)	(-7.49)	(-6.45)	(-4.08)	(-3.80)
Δ_i, **mechanism**		-.016	-.325***	-.498***	-.579***
(z-value)		(-1.46)	(-9.49)	(-10.83)	(-13.04)
Social contacts (*Ref.*: never)					
< Than once a month		.756***			.520***
		(4.21)			(3.69)
Once a month		1.576***			.839***
		(6.24)			(4.43)
Several times a month		1.957***			1.031***
		(7.03)			(5.79)
Once a week		2.136***			1.151***
		(7.66)			(6.47)
Several times a week		2.268***			1.173***
		(7.79)			(6.70)
Every day		2.243***			1.256***
		(6.15)			(6.50)
Status			.570***		.388***
			(12.19)		(15.42)
Feeling about income (*Ref.*: very difficult)					
Living comfortably				3.655***	2.545***
				(12.93)	(13.99)
Coping				2.698***	1.928***
				(11.51)	(12.33)
Difficult				1.400***	.963***
				(10.78)	(10.90)
n	17,624	17,624	17,624	17,624	17,624
N	23	23	23	23	23
BIC	77,374	76,587	73,743	73,534	71,487

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Coefficients from linear regression models averaging over all countries with cluster-robust standard errors for the macro-level (dependent variable: well-being, scale-points). Micro-level control variables included (education, social background, gender, age, migration). Table 1 provides information on included variables.
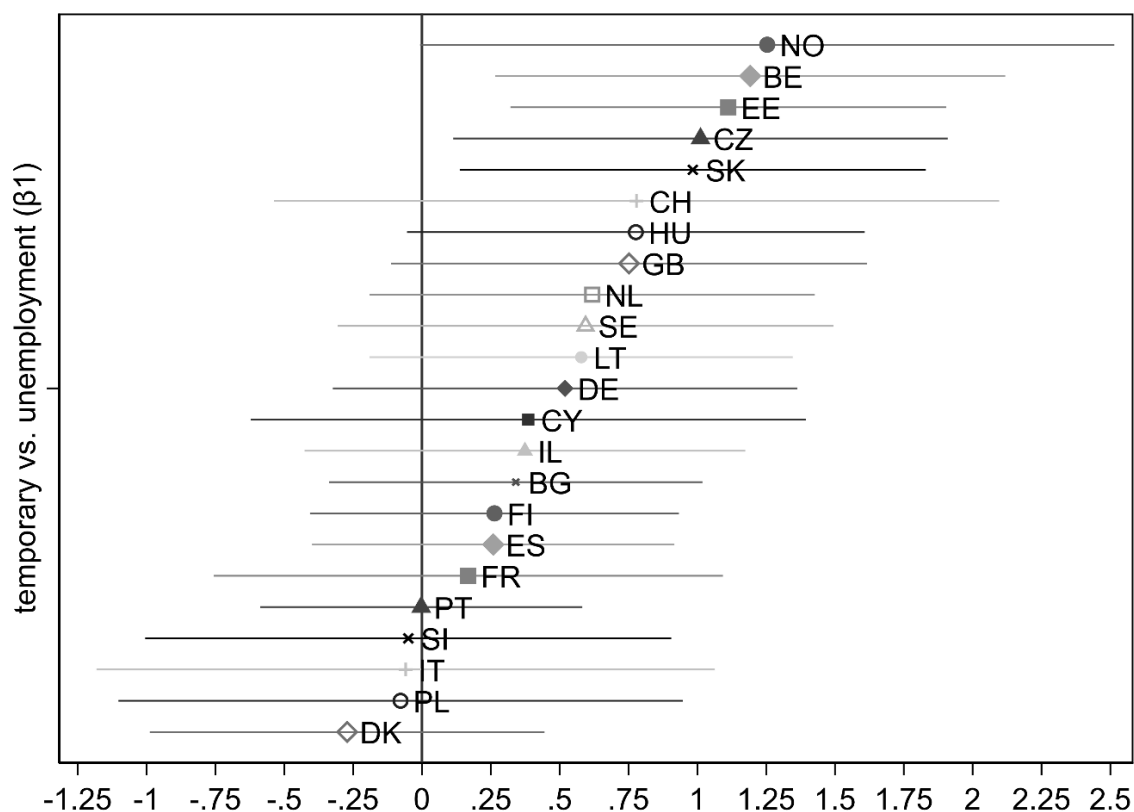
Sources: Own calculations using the European Social Survey, round 6 (2012).

The greatest decline, however, can be observed for adding the manifest function of the income (M4): the total effect reduces to the direct effect of -.335 units, that is to say a 60 % (Δ = -.498, z = -10.83) decline in the size of the point estimate. Thus, the data support the importance of worries about income to be one explanation for the negative impact.

Adding all mechanisms simultaneously (M5) decreases the total effect of -.833 units to a much smaller point estimate of -.255 units (t = -3.80), which is still statistically significant. The decline of .579 units proves statistical significance (z = -13.04) and indicates in relative terms a 70 % weakening.

Whereas the results show that adding the mediating variables notably decreases the main correlates, still there remains a -.255 unit effect size, which we cannot explain. This finding might refer to the fact that we were restricted in the choice of mediators by the data source. Nevertheless, the results give first hints for utilizing the Latent Deprivation Model when explaining the main effects. It is a reasonable theoretical approach to explain the association between fixed-term employment compared to permanent employment and well-being.

4.5 Hypothesis 2.2

With the results of the previous analyses in mind, we now return to the downwards comparative effects. Table 3 reveals the results on the mediation analyses. Even though we could not find support for every single country for a positive connection to exist, on average (M1) it turns out to be statistically significant and in the direction of expectation (β = .581, t = 5.75). Thus, ceteris paribus individuals who are temporarily employed rather than not having a job, report on average a .581 unit higher life satisfaction. Within the framework of the Latent Deprivation Model, we suggest social contacts, status, income, activity, time structure and supra-individual aims to explain this positive correlate.

However, when it comes to social contacts, adding the variable to the model (M2) again does not notably decrease the positive impact: the point estimate decreases to .560 units (t = 4.48), which implies a statistically insignificant net difference of Δ = .021 (z = 1.09). Thus, we do not find support for social contacts to mediate the downwards comparative effects.

Regarding the status, the analyses (M3) reveal its important role as a mediator: the indirect effect of Δ = .134 is statistically significant with z = 3.18.

Table 3: Pooled linear regression models with mediation analyses for the effect of fixed-term employment compared to unemployment

	M1	M2	M3	M4	M5	M6
Dependent variable:	θ	Θ	Θ	Θ	Θ	Θ
Subjective well-being	(t-value)	(t-value)	(t-value)	(t-value)	(t-value)	(t-value)
Fixed-term employment	.581***	.560***	.447***	.085	.582***	.129
	(5.75)	(4.48)	(3.93)	(.75)	(4.49)	(1.18)
Δ_i, mechanism		.021	.134***	.496***	-.001	.452***
(z-value)		(1.09)	(3.18)	(8.20)	(-.43)	(7.76)
Social contacts (*Ref.*: never)						
< Than once a month		.817***				.678*
		(2.66)				(2.02)
Once a month		1.533***				.883*
		(3.57)				(2.04)
Several times a month		1.935***				1.183***
		(5.30)				(3.12)
Once a week		2.062***				1.197***
		(5.98)				(3.40)
Several times a week		2.312***				1.455***
		(6.21)				(3.89)
Every day		2.070***				1.432***
		(5.63)				(3.93)
Status			.564***			.407***
			(11.91)			(14.63)
Feeling about income (*Ref.*: very difficult)						
living comfortably				3.414***		2.365***
				(12.09)		(12.79)
Coping				2.453***		1.751***
				(9.70)		(11.77)
Difficult				1.236***		.820***
				(6.80)		(5.88)
Activity					-.021	-.019
					(-.71)	(-.81)
n	3,862	3,862	3,862	3,862	3,862	3,862
N	23	23	23	23	23	23
BIC	18,078	17,981	17,328	17,357	18,086	16,929

Notes: *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.
Coefficients from linear regression models averaging over all countries with cluster-robust standard errors for the macro-level (dependent variable: well-being, scale-points).
Micro-level control variables included (education, social background, gender, age, migration).
Table 1 provides information on included variables.
Sources: Own calculations using the European Social Survey, round 6 (2012).

Similar to the results for the upwards comparison, the perceived financial situation is the most important explanation for the total effect. Incorporating it (M4) decreases the point estimate by

85 % and the t-value to .75. Thus, the effect even becomes statistically insignificant when accounting for the financial resources.

Different from the previous models, we now also include activity (M5). We find that this does neither cause a change in the initial effect size nor in its statistical significance ($\Delta = -.001$, $z = -.43$). Owing to this, we need to reject the hypothesis of activity being a mediator.

When we add all mechanisms simultaneously (M5), the total effect of $\theta = .581$ ($t = 5.75$) can be decomposed into a direct effect of $\Theta = .129$ ($t = 1.18$) and an indirect effect of $\Delta = .452$ units ($z = 7.76$). In relative terms this means that 78 % of the initial total effect can be explained by the added mediating variables. Vis-à-vis 22 % remain unexplained. This unexplained share of the effect might be due to lacking the possibility to test for the mediating impact *time structure* and *supra-individual aims*. However, the findings pinpoint to the mediating role of both the manifest as well as the latent functions.

Comparing the results of Hypothesis 1.2 and 2.2, it is interesting that the explanatory power of the mediating variables seems to be very similar in magnitude. This finding also strengthens the interest in the results of the following analyses regarding social cohesion as a country-level moderator, which we assume to substitute the micro-level mechanisms. Table 4 includes the estimates for the cross-level interaction effects.

4.6 Hypothesis 3

First, we again return to the well-being effects comparing fixed-term to permanent employment. Now we are interested in whether an increasing level of social cohesion on the macro-level reduces the negative impact. More specifically, this assumption refers to the difference between temporarily and permanently employed individuals in their well-being on the micro-level.

The coefficient on intra-class correlation (ICC) of the empty model (not shown) indicates that about 17 % of the variance in life satisfaction of fixed-term and permanent employed individuals is observed at the country-level. This indicates a substantial variation across welfare states. The likelihood ratio test on the random slope indicates that it is reasonable to include a random slope for the micro-level independent variable of fixed-term employment ($X^2 = 28.20, p < 0.01$).

Table 4: Random slope linear regression models for the cross-level interaction effects of social cohesion

	Hypothesis 3		Hypothesis 4	
	M1	M2	M1	M2
Dependent variable: Subjective well-being	β *(t-value)*	β *(t-value)*	β *(t-value)*	β *(t-value)*
Fixed-term employment	-0.69*** (-11.24)	-0.69*** (-12.13)	0.47*** (4.98)	0.48*** (4.81)
Social cohesion		0.95*** (5.46)		1.05*** (4.16)
Interaction term		0.19* (2.22)		0.02 (0.13)
Control variables	✓	✓	✓	✓
Constant	9.56*** (11.26)	8.44*** (12.64)	10.37*** (9.47)	8.47*** (9.26)
Random-effects coefficients	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
Variance (FTC)	.045 (.025)	.032 (.021)	.022 (.051)	.033 (.060)
Variance (Constant)	.600 (.189)	.247 (.081)	.983 (.344)	.438 (.181)
Covariance (FTC, Constant)	.068 (.054)	.011 (.031)	-.142 (.111)	-.097 (.088)
Variance (Residual)	3.902 (.042)	3.902 (.042)	5.272 (.121)	5.271 (.121)
n (N)	17,624 (23)	17,624 (23)	3,862 (23)	3,862 (23)
BIC	74,329	74,331	17,612	17,613
ICC	.13	.06	.16	.08

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Coefficients from simultaneous estimation procedure for multilevel linear regression models (dependent variable: well-being, scale-points). Micro-level control variables included (education, social background, gender, age and age squared, migration). Macro-level control variable included (income inequality).
REML estimation, *t*-statistics estimated by generalized Satterthwaite approximation.
Table 1 provides information about included variables.
Sources: Own calculations using the European Social Survey, round 6 (2012).

M1 includes the random slope specification. The model reveals that, controlling for all important micro- and macro-level confounding variables, on average fixed-term employment

decreases the subjective well-being of individuals by .69 units, when comparing them to permanent employees. Therefore, we again find support for Hypothesis 1.1.

The interaction term is added in M2 and equals .19 units. This indicates that a one unit increase in social cohesion ceteris paribus decreases the negative well-being effect of fixed-term compared to permanent employment by .19 units. Hence, the greater the social cohesion in a country is, the smaller the well-being difference between fixed-term and permanent employees. The direction of the moderating term is in line with our theoretical assumptions and the test statistics ($t = 2.22$) backs up the importance of social cohesion as macro-level moderator.

Figure 3: Conditional effects plot for the cross-level interaction of the macro-level social cohesion on the upwards comparative micro-level effects

Figure 3 visualizes the cross-level interaction. It includes the linear predictions for both fixed-term and permanent employees regarding their well-being for specific values of social cohesion. For instance, for countries with a social cohesion of -1 unit, the prediction for the subjective well-being of fixed-term employees is 5.29 units. For permanent employees living in those countries, the models predict a 6.17 unit well-being. The difference equals the impact, i.e. fixed-term employees have a .88 unit lower subjective well-being compared to permanent employees in countries with a very low social cohesion. For countries in which the social cohesion is high, i.e. 1 unit, the effect is -.60 (7.47 – 8.07). Thus, the greater the social cohesion is, the smaller the well-being difference between fixed-term and permanent employees.

Eventually, we find support for social cohesion on the macro-level to diminish the negative impact of fixed-term employment compared to permanent employment on subjective well-being.

4.7 Hypothesis 4

For the well-being effects regarding fixed-term employed compared to unemployed individuals, the theory also assumes social cohesion to diminish the impact by substituting the role of social contacts. More precisely, Hypothesis 4 suggests a greater social cohesion to balance out the differences between fixed-term employed and unemployed individuals, such that they should turn into a zero correlate.

The coefficient on intra class correlation (ICC) of the empty model (not shown) indicates that about 16 % of the variance in life satisfaction of fixed-term employed and unemployed individuals is observed at the country-level. Again, this suggests a high heterogeneity across welfare states. The likelihood ratio test on the random slope indicates that there is no statistically significant improvement when including a random effect for the micro-level independent variable of fixed-term employment compared to a model without it ($X^2 = 0.69, p = 0.70$). However, since we theoretically assume the downwardly comparative effect to vary across countries, which the results of Hypothesis 2.1 also indicated, we include a random slope anyway.

The simultaneous estimation procedure reveals that, ceteris paribus, fixed-term employees have a .47 greater subjective well-being compared to unemployed individuals (M1). This effect is statistically significant ($t = 4.98$). Thus, the results also support Hypothesis 1.2. Specifically, the effect of the upwards comparison seems to be stronger compared to the downwards comparatively effects. This is in line with the findings for Hypothesis 1.1 and 1.2, where we fitted regression models for each country separately.

Adding the cross-level interaction effect in M2, results in an interaction term of .02, which is statistically insignificant ($t = 0.13$). In greater detail, this means that one unit increase in social cohesion increases the positive effect by .02 units. Specifically, the direction is in opposite to what we expected, but is also very close to zero. Thus, there is no support for the moderating effect of social cohesion on the well-being effect of fixed-term employment compared to unemployment.

Figure 4: Conditional effects plot for the cross-level interaction of the macro-level social cohesion on the downwards comparative micro-level effects

Figure 4 shows that the linear prediction lines for the subjective well-being for fixed-term employees and unemployed individuals dependent on social cohesion almost run parallel. When there is very low social cohesion, i.e. -1 unit, the effect of fixed-term employment compared to unemployment is .45 units (5.26 – 4.81). When there is a high level of social cohesion, i.e. 1 unit, the impact is .49 units (7.41 – 6.92). Moreover, the 95% confidence intervals overlap, which means that the differences are not statistically significant.

Therefore, we cannot find support for the hypothesis that social cohesion moderates the effect of fixed-term employment compared to unemployment on subjective well-being.

5 Conclusion

This paper extends the previous literature on the effect of fixed-term employment on well-being and the role of country characteristics as moderators. In greater detail, it addresses three research questions: the first one refers to whether the effect of fixed-term employment on well-being varies across European countries. Moreover, it wants to clarify whether it is reasonable to utilize Jahoda's Latent Deprivation Model to explain the connection between fixed-term employment and well-being. Eventually, it raises the question of whether social cohesion can explain cross-country differences in the effects.

Drawing on the country-comparative and harmonized ESS data of round 6 (2012) on 18,596 individuals from 23 different European countries, the results show that the effect sizes of fixed-term employment both compared to permanent and to unemployment differ remarkably across countries. Even though on average there is a negative (positive) impact of fixed-term employment compared to permanent employment (unemployment), for some countries the employment status seems to be more important for well-being than for others. Adapting the Latent Deprivation Model to the fixed-term employment framework, we find mediating effects for some of the functions, namely income and status. Moreover, social cohesion on the country-level indeed buffers the well-being effects when comparing fixed-term to permanent employees, but not for the comparison of fixed-term to unemployed individuals.

Specifically, literature reviews raised the question about the role regarding heterogeneity of the effect of fixed-term compared to permanent employment on well-being across countries to explain mixed findings (Cuyper et al. 2008; Imhof and Andresen 2018). We add on that by utilizing harmonized cross-country comparative data to estimate regression models for each country and find that the magnitude of the coefficients differs remarkably between the countries. This indicates that when conducting single country studies, one should be careful in referring to previous findings from different countries as fixed-term employment seems to impact well-being differently.

In contrast to the few studies on the effect of fixed-term employment compared to unemployment on well-being, we could not exclusively find evidence for the assumption of any job being better than not having a job (Gebel and Voßemer 2014; Gundert and Hohendanner 2014; Chambel et al. 2016). In fact, the variation between countries was even greater for comparing temporary workers to unemployed individuals than to permanent employees. Even if in most of the countries fixed-term employees were better off than their unemployed

counterparts, in some countries the difference was either very small and statistically insignificant, almost zero or even the opposite direction. The latter is in line with the argumentation of fixed-term employment to be similar stressful as being unemployed. Thus, the findings point out that more studies in the respective countries should be carried out for this kind of comparison.

Moreover, we extend the literature on the plausibility to use the Latent Deprivation Model (Gundert and Hohendanner 2014) to explain the effect by not only adapting the arguments to the framework of fixed-term employment but also empirically testing it. We show that the initial mechanisms are partly transferable. Status and income are indeed explanations for the effect, whilst for social contacts and physical activity we could not find any mediating impact. Interestingly, the mediation effects were similarly strong for both directions of comparison, i.e. permanent employment, and unemployment.

Lastly, we extend the knowledge regarding the moderating role of country-level characteristics, which so far mainly consists of objective factors regarding social policies or economic measures (Carr and Chung 2014; Voßemer et al. 2018; Karabchuk and Soboleva 2019). We add on the current research on cultural country-level moderators (Täht et al. 2019) by assuming social cohesion to substitute the function of social contacts and status within work environment. This moderation effect occurs to be existent for the upwards comparative perspective rather than for the downwards one. These findings shift the focus from explaining country differences with mainly economic factors to also broadening the focus to societal ones.

Nevertheless, there are also some shortcomings of the analyses. Firstly, due to data restrictions we cannot account for the heterogeneity within temporary jobs, meaning that the job quality and perceived security might be different for working within a project with a fixed end than jobs in the public sector. Moreover, we did not separate between short- and long-term unemployment. Thus, even though we follow the standards of the literature regarding the measurements, we could still mix up effects for those types of (un)employment.

In the same manner, future research might want to include measurements like a sophisticated index for both the latent and manifest functions such as the "access to categories of experience" (ACE) scales from Evans (1986). Like previously indicated, we were limited in the choice for the functions, although our chosen measurements are very close to the initial ideas of the functions. However, we recommend testing the hypotheses using other and/or additional variables to have some sensitivity analyses.

Eventually, even though we controlled for the most important micro- and macro-level confounders, we cannot account for unobservable variables. One argument regarding selection into fixed-term jobs are different preferences of individuals, i.e. being voluntarily or involuntarily fixed-term employed (Kauhanen and Nätti 2015). We could not test for these. Thus, future research should repeat the (mediation) analyses using more recent panel data for distinct countries to ensure that there is no bias caused by unobserved heterogeneity.

Yet, this article provides proof for the necessity to specify more flexible models when it comes to country-comparative analyses on the effect of fixed-term employment on well-being. Moreover, the article offers empirical evidence for utilizing theory from another field of study, namely the unemployment research. Finally, this paper promotes the debate on the role of cultural characteristics, namely social cohesion, which should also be considered in labor market policy making. In this respect, one avenue for future research could be to examine the moderating role also of other related aggregated indicators at the macro-level, such as proportions of migrants or distribution of education within countries.

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Article 2

Longer-Term Dynamics of the Effects of Fixed-Term Employment Trajectories on Subjective Well-Being in Germany

Abstract

Due to the flexibilization of labor markets over the past three decades, a debate has emerged on the potential advantages and disadvantages of fixed-term contracts for individual well-being. Whereas previous studies on the effect of fixed-term employment on well-being mainly focus on single transitions and immediate effects, this paper examines immediate and longer-term consequences of fixed-term employment trajectories on subjective well-being. Utilizing the German Socio-Economic Panel (SOEP) from 1994 to 2019 on labor market entrants, we apply sequence analysis methods to define five-year employment sequences based on theoretical considerations. The *stable and permanent trajectory* characterizes the standard employment career that begins in and remains in permanent employment. The *stepping stone* trajectory includes individuals who start in temporary employment and then move to permanent employment. The *entrapment trajectory* includes individuals who start in fixed-term employment and remain in it or even become unemployed. The *long-term unemployment trajectory* includes individuals who are unemployed for five consecutive years. We combine the results of the sequence analysis with fixed-effects growth curve models to examine outcome dynamics in parallel with the development of trajectories and up to three years later. Our results show that fixed-term employment trajectories, both *stepping stone* and *entrapment* trajectory, generate a significantly higher well-being than long-term unemployment. Comparing individuals on fixed-term employment trajectories to individuals on *stable and permanent* trajectories, the former experience slight well-being disadvantages initially. However, almost all effects vanish after some years. Our findings highlight the importance of the choice of a reference group and the long-term perspective.

1 Introduction

Due to the erosion of the standard employment relationship and the subsequent flexibilization of the labor markets, fixed-term employment nowadays contributes a key characteristic to modern labor markets in Europe. This trend is argued to furtherly boost social inequality (Kalleberg 2018). The high incidence of fixed-term employment is especially visible in Germany, where nearly every second employment relationship starts with a fixed-term contract (Hohendanner 2019). Fixed-term employment relationships are characterized by a predetermined expiry date, which leaves it up to the employer to continue the employment relationship. Therefore, these jobs have been argued to increase perceived insecurity and decrease plannability of important life decisions for individuals (Julià et al. 2017).

Due to these subjectively perceived consequences, one of the most frequently analyzed outcomes for fixed-term employment is subjective well-being (for a review see De Witte 2010). Yet, it is also the outcome with the most puzzling findings (Imhof and Andresen 2018; Cuyper et al. 2008; Virtanen et al. 2005), because it is still not clear whether there is a negative (Dawson, Veliziotis and Hopkins 2017), a positive (Gash, Mertens and Gordo 2007), or no effect of fixed-term employment on subjective well-being (Chambel, Lopes and Batista 2016; Cuyper and De Witte 2006).

Distinct reference groups might cause differing findings. Previous literature overemphasizes the disadvantages of these jobs, thus majorly comparing fixed-term to permanent jobs (Cuyper, Notelaers and Witte 2009; Scherer 2009; Sora et al. 2018). Some studies also account for the perspective on advantages and compare fixed-term jobs to unemployment (Gash, Mertens and Gordo 2007; Gundert and Hohendanner 2014; Inanc 2018). Only few studies combine these perspectives for single employment statuses or transitions (Gebel and Voßemer 2014; Scheuring et al. 2021, Scheuring 2020). For more holistic employment trajectories, there are mainly studies on economic consequences of fixed-term jobs (Fuller and Stecy-Hildebrandt 2015).

Whilst recent studies attribute these differences to differing data types and resulting estimation strategies (Schumann and Kuchinke 2020), a related explanation might lie in the two distinct theoretical perspectives, namely '*stepping stone*' and '*entrapment*', and their dynamic nature (Helbling 2017). These perspectives are referring to advantages and disadvantages of holistic fixed-term employment career patterns. The advantages relate to fixed-term employment functioning as a *stepping stone* from unemployment into labor market activity and enabling the transition into permanent employment relationships. The disadvantages refer to fixed-term

employment as an *entrapment* within inferior sectors of the labor market including repeated fixed-term jobs and periods of unemployment, which is argued to be worse than a stable and permanent employment career, i.e., the standard career (Kalleberg, Reskin and Hudson 2000).

We take up the discussion of combining perspectives on both advantages and disadvantages of fixed-term employment and transfer them to the well-being literature. We seek to make three contributions to the literature. First, we combine both perspectives, *stepping stone* and *entrapment*, since these perspectives are not contradictory, but rather coexistent, which is also suggested by current literature (Fuller and Stecy-Hildebrandt 2015). Thus, we can account for both costs and chances of fixed-term employment simultaneously to receive a more holistic picture on the effect of fixed-term employment on well-being. Moreover, we enrich them with the extremes of *stable and permanent* and *long-term unemployment* trajectories, which are implicitly assumed to be the control groups within the two fixed-term employment scenarios.

Second, we examine the effects of holistic employment trajectories on well-being rather than only focusing on static employment statuses or single employment transitions. Statuses or transitions represent snapshots of holistic careers. For instance, observing an individual for one time point in permanent employment does not necessarily indicate a stable *career*, since this single status can be followed by job changes or even periods of unemployment. Vis-à-vis observing individuals in fixed-term employment for one year does not mean that the *career* is insecure or of low quality because they might be on verge for a permanent job position. Therefore, it may be that previous literature has strongly underestimated both negative and positive consequences of fixed-term employment on well-being.

We use sequence analysis tools, which current literature ascribe as more holistic approaches to depict important phases within life courses (Brüderl, Kratz and Bauer 2019). Previous literature is just starting to utilize sequence analysis to receive distinct patterns of employment trajectories (Fuller and Stecy-Hildebrandt 2015). Different from this literature, which refers to data-driven clustering of employment trajectories, we build the employment trajectories based on theoretical arguments. Data-driven cluster methods tend to result in quite heterogenous and messy clusters, assigning individuals with complex careers to the most similar other careers of individuals. Therefore, the interpretation and labelling of these clusters is oftentimes not straightforward. Thus, our greedier[1] cluster solution exclusively refers to individuals on

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[1] Since our procedure drops cases that cannot be classified, more missing observations are generated.

stepping stone, *entrapment, long-term unemployment* or *stable and permanent careers* after their first school-to-work transition takes place and does not mix up heterogenous trajectories.

Third, we apply a longer-term perspective by not only looking at the direct consequence of these patterns on well-being, but also examining how these effects evolve over time. Due to possible cumulation or adaption processes, the effect might or might not greatly vary across time. However, previous studies have neglected the longer-term perspective. The only study on dynamics focuses on life satisfaction trajectories (Helbling and Kanji 2018) but refers to single employment statuses only rather than more sophisticated employment trajectories. We innovatively combine two current approaches of life course research to examine dynamic and longer-term effects by estimating fixed-effects growth curve models based on the results of the preceding sequence analysis to depict the dynamics in the effects of the employment trajectories on subjective well-being (Brüderl, Kratz and Bauer 2019). Thus, we focus on the longer-term effects for groups, namely labor market entrants, which have been suggested to be particularly affected by these distinct trajectory patterns (Gebel and Giesecke 2016).

In summary, we examine two research questions: What are the effects of fixed-term employment trajectories, namely *stepping stone*, *entrapment* and also in relation to *long-term unemployment* and *stable permanent* career, on subjective well-being? Moreover, how do these effects vary over time? To answer these questions, we use data from the German Socio-Economic Panel (SOEP) from 1994 to 2019 and apply the previously described two-step approach of generating career trajectories using sequence analysis methods and fixed-effects growth curve models to examine the immediate and longer-term effects.

2 Theory and hypotheses

2.1 Employment trajectories and their hierarchy

For the early labor market career four employment trajectories can be proposed, which correspond to theoretical argumentations. First, the trajectory, which is often described as standard employment relationship (Kalleberg, Reskin and Hudson 2000), is characterized by typically one single job contract with one employer, without a fixed expiry date, and usually continues during the whole career. It can be best described as a *stable and permanent trajectory*, since when people transit on the labor market in these jobs, they also remain in these jobs.

Second, there is also the possibility of starting labor market activity after school-to-work transitions in a fixed-term contract first and receiving afterwards a permanent employment contract. The so-called *stepping stone* trajectory assumes that employers utilize fixed-term jobs

as prolonged probationary periods, which work as a screening device and enable individuals to enter the primary, advantageous labor market (Gebel 2010; Booth, Francesconi and Frank 2002; Cuyper, Notelaers and Witte 2009). Therefore, individuals start within inferior jobs with a fixed expiry date, but after a while they receive permanent positions. This scenario describes the positive aspects of fixed-term employment.

Third, some trajectories do not lead to favorable positions, but rather trap individuals within disadvantageous labor market segments. The *entrapment* trajectory is characterized by starting in fixed-term employment and remaining in these jobs, or even becoming unemployed for some periods. Therefore, the *entrapment* scenario ascribes fixed-term employment lasting wage penalties, repeated insecure employment and the risk of becoming unemployed (Gebel 2010; Booth, Francesconi and Frank 2002; Cuyper, Notelaers and Witte 2009). This scenario represents the negative aspects of an employment trajectory including fixed-term employment.

Fourth, it is also possible that individuals enter the labor market but are unemployed from the beginning on. It might be that when their search for a job remains unsuccessful, they stay in unemployment for several years. *Long-term unemployment* offers no income for longer periods. It might be more difficult for these individuals to even enter the labor market (Gangl 2006).

The four employment trajectories represent a continuum from the most advantageous trajectory to the most disadvantageous one. More specifically, the *stable and permanent* trajectory offers the most security and advantages due to its continuity and the stable income, followed by the *stepping stone* career, where initial disadvantageous fixed-term jobs help to access permanent job positions. Since individuals in *entrapment* trajectories are stuck in these inferior jobs or even become unemployed, this trajectory is assumed to be worse compared to the *stepping stone* career. Eventually, *long-term unemployment* does not offer income and might lead to scarring effects in the career (Gangl 2006), which is why we assume it to be the most disadvantageous trajectory. The following chapters regarding theoretical arguments for the comparisons are structured along this order. For the sake of simplicity, we only refer to *downwards* comparisons, i.e., comparing more advantageous careers with less advantageous ones. For the four single trajectories of labor market entrants we expect distinct well-being developments, which are the foundation for the argumentations regarding the comparisons of trajectory. Therefore, we first theoretically outline the well-being trends for the single employment trajectories before digging into the details regarding the comparisons.

2.2 Dynamics in subjective well-being within the four employment trajectories

Since individuals on the *stable and permanent employment* trajectory have a secure income, and as a result also planning security, their well-being should be rising in the beginning of the career. Because individuals on this track do not experience changes in their careers, there might be adaption processes. Therefore, the positive well-being trend should flatten over time and set at a positive well-being level (Luhmann et al. 2012; Luhmann and Intelisano 2018).

For individuals on the *stepping stone* trajectory, we expect a low subjective well-being in the beginning of the career as a results of starting in fixed-term employment. After the transition to permanent employment, there should be a strong positive effect. For the same reasons like for *stable and permanent employment* trajectories, we assume that there might be an adaption effect after some time being permanently employed. The adaption should appear later in the career when compared to the most stable career pattern.

Individuals on the *entrapment* career trajectory should start with a low subjective well-being due to their fixed-term job. Since they remain in fixed-term employment or even become unemployed, they might perceive their career development as insecure and unpredictable. This high perceived insecurity and accordingly the low plannability should lead to a deterioration in subjective well-being over time. We do not expect adaption effects here, since their situation is volatile, which makes it harder to adapt to this depletion of resources with a resulting downwards spiral in well-being (Hobfoll 1989).

Longer-term unemployed individuals start with the lowest well-being, since they are lacking all the important functions of employment such as income, social contacts to colleagues, a status and identity or an activity with the corresponding time structure (Jahoda 1982). Because there is a depletion in these functions, there should be a negative trend in the well-being development for these career trajectory types. After some time of experiencing this deprivation, *long-term unemployed* individuals might adapt to the situation. Thus, the negative trend should level off after a longer period (Luhmann et al. 2012), but on a lower level compared to individuals on the *entrapment* trajectory.

2.3 Shorter- and longer-term effects of employment trajectories on subjective well-being

Based on the previously described assumptions, several employment trajectories can be compared when it comes to their shorter- and longer-term effects on well-being. To be more consistent, we compare the more advantageous employment trajectories to the more disadvantageous trajectories and only focus on comparisons with fixed-term employment trajectories.

2.3.1 Stable and permanent compared to stepping stone trajectories

Individuals on *stable and permanent* trajectories can accumulate income advantages over time and due to the ensured continued employment relationship, they can plan their lives accordingly (Julià et al. 2017). Individuals on the *stepping stone* trajectory are first fixed-term employed and might perceive some job insecurity in the beginning of their trajectories. Also, permanent jobs might exceed fixed-term jobs in several latent functions, such as stable social contacts or status and identity. These lacks in manifest (income) and latent functions (social contacts or status) are assumed to increase stress and subsequently reduce well-being (Jahoda 1982; Warr 2017; Scheuring 2020). Therefore, we assume that individuals on the *stable and permanent* trajectories should be better off compared to individuals on the *stepping stone* path in the beginning of their employment trajectories, since they do not face the disadvantages of fixed-term employment.

H1a: *Individuals on stable and permanent trajectories compared to stepping stone trajectories should have a higher subjective well-being in the beginning of the trajectory.*

Regarding the dynamic, one could assume that there are scarring effects of the initial fixed-term employment, when referring to the argumentation that "losses loom larger than gains" (Kahneman and Tverky 1979). However, since individuals on the *stepping stone* pathway make the transition to permanent employment, they might catch up with the individuals on the *stable and permanent* career (Fuller and Stecy-Hildebrandt 2014). Another argument supporting these vanishing impacts are the faster adaption of individuals on the stable and permanent trajectories to the benefits of their favorable job position and at the same time a stronger increase in the well-being of individuals on the *stepping stone* pathway. This assumption would indicate that there are no scarring effects of the insecurity from the initial fixed-term employment.

H1b: *The positive effect of stable and permanent trajectories compared to the stepping stone trajectory on subjective well-being should vanish over time.*

2.3.2 Stable and permanent compared to entrapment trajectories

With the same argumentation as for the comparison to *stepping stone* trajectories, individuals on the *entrapment* pathway should be worse of in the beginning of their trajectories when compared to individuals on *stable and permanent* trajectories. They have inferior jobs, which point to a lower degree in plannability and perhaps also income disadvantages.

H2a: *Individuals on stable and permanent trajectories compared to entrapment trajectories should have a higher subjective well-being in the beginning of the trajectory.*

The difference when compared to the assumptions from hypotheses 1a and 1b lies in the assumed dynamic of this effect. Since entrapped individuals remain in fixed-term employment or even become unemployed, the effect of *stable and permanent* trajectory on well-being should even increase over time. One might assume a downward spiral of the stress due to highly volatile employment trajectories, which offer less resources or functions (Hobfoll 1989). We also assume this positively rising effect since the advantages like stable income or increased plannability should accumulate over time and level off after some time when compared to disadvantages of the *entrapment* pattern.

H2b: *The positive effect of stable and permanent trajectories compared to the entrapment trajectory on subjective well-being should increase over time*.

2.3.3 Stepping stone compared to entrapment trajectories

Individuals on the *stepping stone* and the *entrapment* trajectory have in common that their trajectories start within fixed-term employment with the previously described disadvantages. Thus, due to sharing the same employment status, their initial subjective well-being should be similar.

H3a: *Individuals on stepping stone trajectories compared to entrapment trajectories should have a comparable subjective well-being in the beginning of the trajectory.*

Over time, the *stepping stone* trajectory should exceed the *entrapment* trajectory, since on the *stepping stone* trajectory the individuals transit to permanent employment. While individuals on the *entrapment* trajectory are stuck in fixed-term jobs and unemployment, which furtherly deplete their well-being due to the loss of resources (Hobfoll 1989), individuals on the *stepping stone* trajectory gain more and more advantages and security due to the positive effect of helping them to enter permanent employment, which, however, level off after a while.

H3b: *A positive effect of stepping stone trajectories compared to the entrapment trajectory on subjective well-being should emerge and afterwards increase over time*.

2.3.4 Stepping stone compared to long-term unemployment trajectories

Some authors argue that fixed-term employment is as detrimental as unemployment (Burchell 1994; Inanc 2018). Therefore, one could assume that the individuals on the *stepping stone* and the *long-term unemployment* trajectory should initially not differ in their well-being. Nevertheless, most scholars argues that fixed-term employment is better than unemployment, since it offers the manifest function of income and other latent functions like social contacts (Gundert and Hohendanner 2014; Gash, Mertens and Gordo 2007; Scheuring 2020). In the same

line, we assume that individuals on the *stepping stone* trajectory should be better off in the beginning of their employment trajectory when compared to *long-term unemployment.*

H4a: *Individuals on stepping stone trajectories compared to long-term unemployment trajectories should have a higher subjective well-being in the beginning of the trajectory.*

Because individuals on the *stepping stone* trajectory transit to permanent employment with its income and job security advantages, the positive effect should increase over time. Again, for the *long-term unemployed* individuals, there should be a strong depletion of resources (Hobfoll 1989), which furtherly increases the differences over time. More specifically, the positive initial effects for individuals on the *stepping stone* trajectory should even increase in the subsequent years when compared to *long-term unemployment* and level off after a while due to adaption effects on both trajectories.

H4b: *The positive effect of stepping stone trajectories compared to the long-term unemployment trajectory on subjective well-being should increase over time and level off after a while*.

2.3.5 Entrapment compared to long-term unemployment trajectories

With the same argumentation as for *stepping stone*, again some researchers argue that in the beginning of the trajectory, entrapped individuals should have a similar well-being like unemployed individuals (Inanc 2018; Burchell 1994). Nevertheless, we are again more convinced of the argument that fixed-term employment offers more manifest and latent functions compared to unemployment (Gundert and Hohendanner 2014; Scheuring 2020). Thus, we assume that individuals on the *entrapment* trajectory should have a higher subjective well-being in the beginning of the career compared to individuals on the *long-term unemployment* trajectory.

H5a: *Individuals on entrapment trajectories compared to long-term unemployment trajectories should have a higher subjective well-being in the beginning of the trajectory.*

Because individuals on the *entrapment* trajectory might think in the beginning that they can make the transition to permanent employment, repeated fixed-term employment and unemployment accompanied by perceived insecurity might cause frustration. While long-term unemployed individuals might adapt to the situation, the frustration of *entrapped* individuals might even increase due to fluctuating employment situations. Thus, it might be that the initial positive effect on well-being declines over time. One might also argue that having a job is better than having constantly no job. We, however, assume that the perceived insecurity due to the

fluctuation is more burdensome than longer-term unemployment, which after a while one might get used to. Thus, we assume that the positive effect of the beginning should decrease over time.

H5b: *The positive effect of entrapment trajectories compared to the long-term unemployment trajectory on subjective well-being should decrease over time.*

3 Methods

3.1 Data and sample

We use data from the Socio-Economic Panel (SOEP). The SOEP is an annual, nationally representative household panel survey of the German adult population. Nearly 15,000 households and 30,000 individuals constantly participate in this survey (Goebel et al. 2019). With respect to our analyses, the SOEP has various advantages. It offers detailed annual data on activity status, type of contract, and well-being, which enable us to analyze longer-term employment trajectories as well as longer-term well-being outcomes. Since the SOEP is one of the longest running household panel surveys including also young adults from 18 years of age on, we can study effects of specific employment trajectories within points in peoples' trajectories such as first transitions from education to labor market.

We restrict the initial sample of v36 from the SOEP (Liebig et al. 2019) (individuals $N = 96,822$, person-years $n = 688,960$) to observation from 1994 onwards, since the employment status was not measured detailed enough for the means of our analyses beforehand. Our sample reduces to $N = 88,007$ and $n = 556,465$, respectively. We furtherly restrict the sample to people who make the first transition from education into the labor market and where we observe individuals for five consecutive years onwards. Our sample size furtherly reduces to $N = 1,387$ and $n = 11,379$. To form meaningful clusters, we exclude all observations with missing values on the employment statuses or being at least one year in self-employment within these five years, since these employees are not part of the theoretically derived cluster.

We also exclude individuals which do not fit into the theoretically derived trajectories. The sample also includes individuals until three years after the sequence ends to depict both the dynamic of the well-being within the sequence and afterwards. This procedure allows us to examine longer-term impacts within their later life. We furtherly restrict the age to 18 to 35 years old individuals at the year of labor market entrance to ensure to only measure first time labor market entrants. Therefore, in the last year of observation in well-being, individuals are between 25 to 43 years old. These sample restrictions result in $N = 652$ and $n = 5,328$.

3.2 Methods

To estimate the effect of the specific employment patterns on the immediate and longer-term subjective well-being, we conduct a two-step approach. First, we create the employment trajectories by using a theory-guided sequence analysis-based approach. Second, we estimate fixed-effects growth curve models to analyze longer-term consequences of different trajectory patterns on subjective well-being.

3.2.1 Sequence analysis

Sequence analysis is a method to produce so-called sequences, which consist of different consecutive states over some time periods. In our case, the different states comprise distinct employment statues, which are measured annually and represent summarized employment trajectories. Figure 1 includes a visualization of one exemplary employment sequence.

Figure 1: Visualization for an exemplary sequence for *stepping stone trajectory*

Time point	t_0	t_1	t_2	t_3	t_4	t_5
Employment status	ED	FTC	PC	PC	PC	PC

Note: ED = education, FTC = fixed-term contract, PC = permanent contract, t in years.

A person is in education (ED) in t_0 and starts in a fixed-term contract (FTC) in the next year (t_1). In the third year, the individual receives a permanent contract (PC) and remains in this status (t_2, t_3, t_4, t_5). Theory tells us that this person is on a typical *stepping stone* trajectory.

Current research is defining trajectories in a data-driven and explorative way by applying cluster analysis on all sequences of individuals to receive distinct patterns of employment trajectories (Fuller and Stecy-Hildebrandt 2015). This procedure with various algorithms and cluster approaches to choose, however, might cause the assignment of individuals into wrong clusters, e.g., the exemplary and fictive person from Figure 1 into an *"entrapment"* cluster. Also, researchers need to label the clusters appropriately. Since the cluster solutions strongly depend on the choice of algorithms and cluster analysis method, the clusters are less robust.

Because theory already gives us the specific employment trajectories and their definition, we generate them accordingly in a confirmatory way by both utilizing the results from both theoretical assumptions and previous explorative sequence analysis on employment trajectories. This manual definition, which is applied in the description of Figure 1, avoids misclassification of single individuals but comes at the costs of lower number of cases.

More specifically, we delete observations, which do not perfectly fit in the descriptions of the theoretically derived clusters. For instance, an observation starting in permanent employment and becoming fixed-term employed some years later cannot be properly classified within our approach and is therefore excluded from our analysis. Data-driven approaches would force this observation into the "most suitable" cluster. Since our definition for a sequence is to be in education in year zero and being in the next five years active on the labor market for the first time, one individual represents one sequence.

3.2.2 Fixed-effects growth curve models

For the second step of the analysis, we estimate fixed-effects growth curve models to depict the dynamics of the effects (Brüderl, Kratz and Bauer 2019; Brüderl and Ludwig 2015). By utilizing fixed-effects regression, we can account for unobserved time invariant control variables such as risk aversion or other personality traits, which might affect both the selection into a specific trajectory as well as the well-being development. We fit linear regression models since life satisfaction is best understood as a quasi-metric variable. Results with ordered logit models have been proven to give similar results compared to linear regression models (Ferrer-i-Carbonell and Frijters 2004). We estimate five distinct models with distinct definitions of the treatment variable as stated in the hypotheses. Formula 1 represents the basic estimation strategy for the single comparisons.

$$(1) \qquad y_{it} = \alpha + \theta G_i + \beta T_{it} + \delta(G_i \cdot T_{it}) + \lambda X_{it} + \alpha_i + \epsilon_{it}$$

y_{it} represents the subjective well-being of an individual i in time point t. α denotes the constant. θ is the effect of the comparison of distinct groups, namely employment trajectories, with each other (G_i). β is the effect of time in sequence (T_{it}), and the multiplication gives the estimates for the distinct time points with year zero, so the last year observed in education, as reference category. We interact the time-invariant variable for the employment trajectories G_i with time in sequences T_{it}, which gives within estimators, i.e., fixed-effects regression models. The combined term $\delta(G_i \cdot T_{it})$ represents the modelling of growth. X_{it} denotes a vector of confounding variables (including year fixed-effects). a_i designates the sequence specific fixed-effect and ϵ_{it} the idiosyncratic error. Standard errors are clustered on the individual level to receive correct test statistics. The construction of sequences and the timing of the independent and dependent variable are visualized in Figure 2.

Figure 2: Visualization of employment trajectories and timing of measurements

Measurement of *Y*: subjective well-being for all years

	t_0	t_1	t_2	t_3	t_4	t_5	$t_{6,7,8}$
Stable and permanent	ED	PC	PC	PC	PC	PC	…
Stepping stone	ED	FTC	PC	PC	PC	PC	…
			FTC	PC	PC		…
			FTC	FTC	PC		
			FTC	FTC	FT		
Entrapment	ED	FTC	FTC | UE	FTC | UE	FTC | UE	FTC | UE	…
Long-term unemployment	ED	UE	UE	UE	UE	UE	…

Notes: ED = education, PC = permanent contract, FTC = fixed-term contract, UE = unemployment, t in years, | = or.

3.3 Measures

3.3.1 Independent variable

To capture the employment trajectories, we build theoretically driven patterns by creating sequences. Therefore, we observe five consecutive years after people are in education (t_0) and make the transition to labor market activity for the first time (t_1) and measure the distinct employment statuses ($t_1, t_2, \ldots, t_5$). The employment statuses, or states, include permanent employment, unemployment, and fixed-term employment. Theoretically, we assume four different patterns, which are visualized in Figure 2.

First, the *stable and permanent* pattern includes individuals, who start on labor market within a permanent job (t_1) and continued in this contract within the first five years (t_2, t_3, t_4, t_5). Second, the *stepping stone* trajectory entails individuals who start their trajectories in fixed-term employment (t_1, potentially also t_2, t_3, t_4), make the transition into permanent employment afterwards (t_2, potentially also t_3, t_4, t_5), and remain in the permanent job. Third, the *entrapment* trajectory includes labor market entrants who start in fixed-term employment (t_1) and remain in these jobs or even become unemployed in the upcoming years (t_2, t_3, t_4, t_5). Eventually, the *long-term unemployment* pattern includes people, who start and remain in unemployment ($t_1, t_2, \ldots, t_5$). We combine these definitions within five treatment variables. For example, for the first comparison of *stable and permanent career* individuals to *stepping stone career* individuals, we create a variable which is 1 for all "treated" individuals, so all individuals on the *stable and permanent career* trajectory and 0 for the "control" group, namely all individuals on the *stepping stone* pathway.

3.3.2 Dependent variable

Our outcome is life satisfaction, which captures the cognitive component of subjective well-being (Veenhoven 2009) and is measured before (t_0), during the observation period of the trajectories, and up to the eighth year after the transition into activity ($t_1, t_6, \ldots, t_8$). Individuals are asked how satisfied they are with life nowadays, all things considered, with answers ranging from 0 "completely dissatisfied" to 10 "completely satisfied" on an eleven-point scale. Global life satisfaction scales have been shown to be valid, reliable, and sensitive to change, making them well-suited for our longer-term analyses (Diener, Inglehart and Tay 2013).

3.3.3 Control variables

We control for the year of observation and for age in two categories, namely 0 = 18 to 24 years as early career workers and 1 = 25 to 40 years as prime age workers according to the definition

of the Organization for Economic Co-operation and Development (OECD 2017), and for year-specific fixed-effects to account for period and age specific effects.

4 Results

4.1 Descriptive results

Cluster description. Figure 3 reveals the four clusters we theoretically derived, namely the *stable and permanent trajectory*, the *stepping stone*, the *entrapment* and the *long-term unemployment* cluster and their corresponding sample sizes.

Figure 3: The four employment trajectories
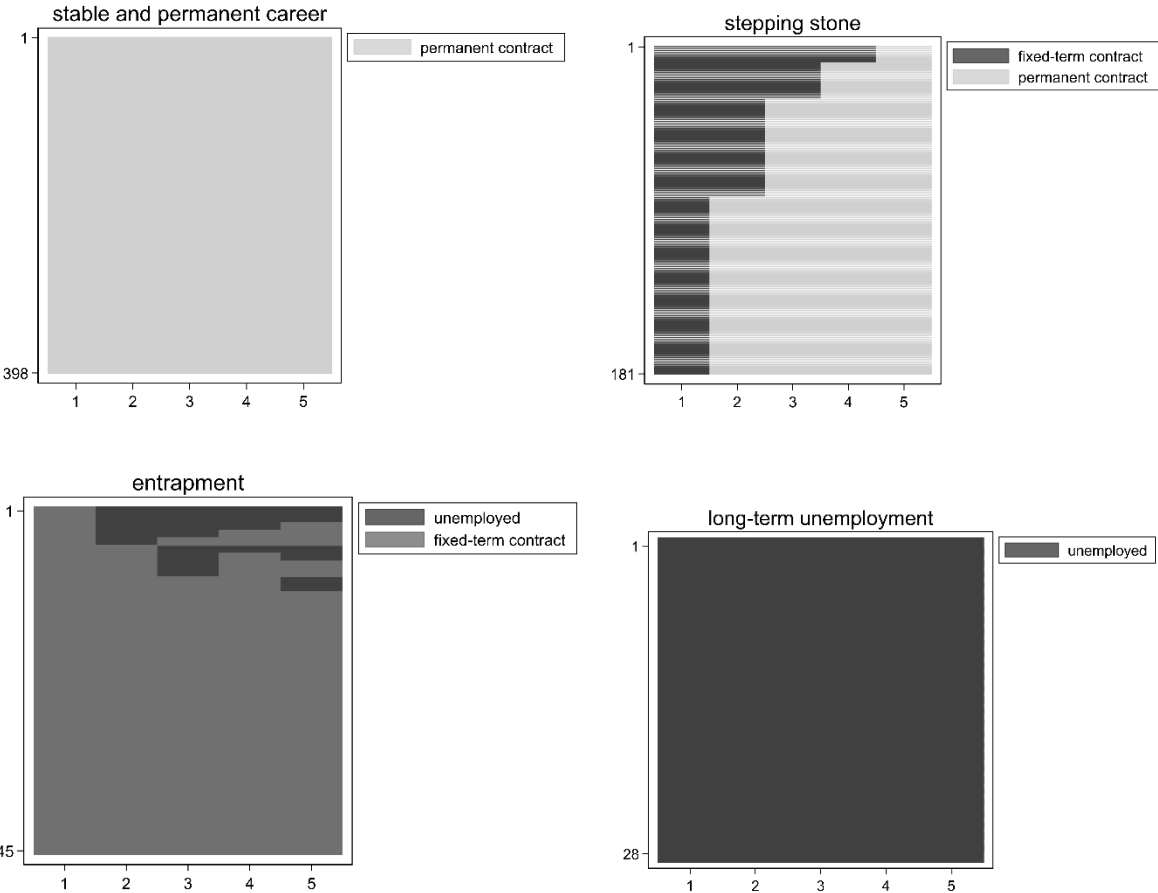
Note: Socio-Economic Panel, version 36, 1994–2019. N = 652.

The first cluster, the *stable and permanent trajectory* cluster, contains the most observations with 61%, namely 398 observations. The *stepping stone* cluster includes 27% of the observations and in absolute terms 181 observations. The *entrapment* cluster comprises the 45 observations or 7% of all observations and builds the second smallest cluster. The remaining

28 observations represent the *long-term unemployment* cluster (5%), which represents the smallest cluster.

General description. Individuals have on average a 7.32 units life satisfaction with a standard deviation of 1.52 units. The minimum age is 18 and the maximum age is 40 years, whilst the respondents are on average 28 years old with a standard deviation of approximately 5 years. The majority belongs to the prime age worker group (71%), while 29 % of the observations are early career workers.

Distribution of variables within clusters. Table 1 reveals the distribution of the control variables age and year. Additionally, we show the distribution of education within the single clusters.

Table 1: Distribution of variables within clusters

	Stable and permanent	Stepping stone	Entrapment	Long-term unemployment
Age				
Min	18	18	19	18
Max	40	40	40	40
Mean	28	27	30	27
S.D.	5	4	5	4
Year				
Min	1994	1994	1995	1996
Max	2019	2019	2019	2019
Mean	2007	2009	2009	2010
S.D.	6	6	6	5
Education				
Low	14%	22%	11%	53%
Medium	57%	52%	26%	35%
High	29%	26%	63%	12%
N	398	181	45	28
n	3,264	1,470	366	235

Note: Socio-Economic Panel, version 36, 1994–2019. Education is measured by Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) groups. Low education = general elementary and basic vocational education, medium education = intermediate general, intermediate vocational, general maturity, and vocational maturity, high education = lower or higher tertiary.

Even though the literature argues that the *stepping stone* function of fixed-term employment might especially concern younger people and *entrapment* especially older people (Cutuli and

Guetto 2013), we do not find support for a systematic difference in the age distribution. For the *stepping stone* individuals we see an average of 27 years and for entrapped individuals an average of 30 years. *Stable and permanent* individuals and observations in the *long-term unemployment* cluster are also not much different from the previous clusters with averages of 28 and 27 years. Therefore, there are no remarkable differences in the age distributions. Age should not drive our findings.

One might argue that *entrapment* could disproportionally often take place shortly before, in the years of, and after the Great Recession, which is argued to cause a destabilization of the labor market, compared to other clusters. When looking at the year in which the interview takes place, we see that the distributions are almost identical except for *stable and permanent* careers, where the average is 2007 instead of 2009 or 2010. Thus, while we find that the fixed-term employment clusters and *long-term unemployment* is part of a more recent trend, we descriptively do not find indications of the financial crisis to drive the cluster allocation.

For education, we see that for *stable and permanent* and *stepping stone* trajectories, the distribution is almost identical. *Entrapment* is dominated by highly educated individuals and *long-term unemployment* by lower educated individuals.

4.2 Dynamics in subjective well-being within the four employment trajectories

In Figure 4, we see the effects of the single employment trajectories on well-being. In this model, the employment trajectories are treated as time variant variable, where zero equals the year in education and the other categories the several trajectories. It does not account for control variables for a first glance at the simple effects.

Figure 4: Dynamics in subjective well-being within the four employment trajectories
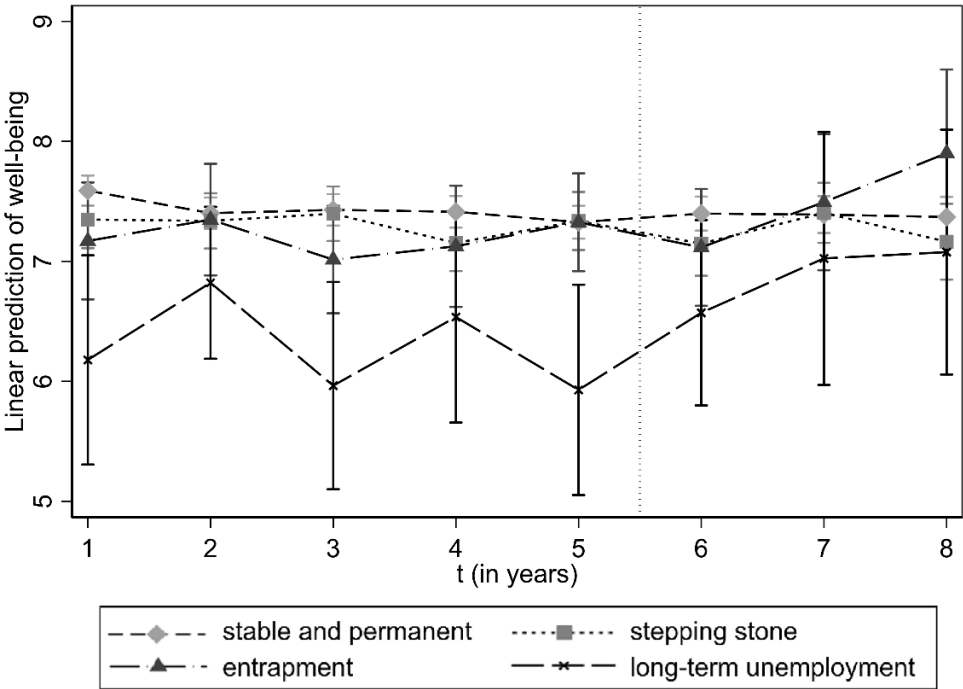
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

In line with what we expected, we see a hierarchy in the several career types, with stable and permanent employment having the highest predicted value for well-being and long-term unemployment the lowest one in the first year. We also see that there are no huge differences across time between *stable and permanent* careers and *stepping stone* careers, while *entrapment* has somewhat lower predictive subjective well-being values. Interestingly, within the last few years, the predicted values for subjective well-being align and in the last year, entrapped individuals are even better off than the other trajectories.

4.3 Shorter- and longer-term effects of employment trajectories on subjective well-being

4.3.1 Stable and permanent compared to stepping stone trajectories

Figure 5 provides answers to our hypotheses H1a and H1b by presenting the parallel and longer-term effects of *stable and permanent* trajectories compared to *stepping stone* trajectories on well-being. We assume that *stable and permanent* trajectories should have an immediate positive effect on the well-being, which should vanish over time.

Figure 5: Effect of stable and permanent compared to stepping stone trajectories on subjective well-being
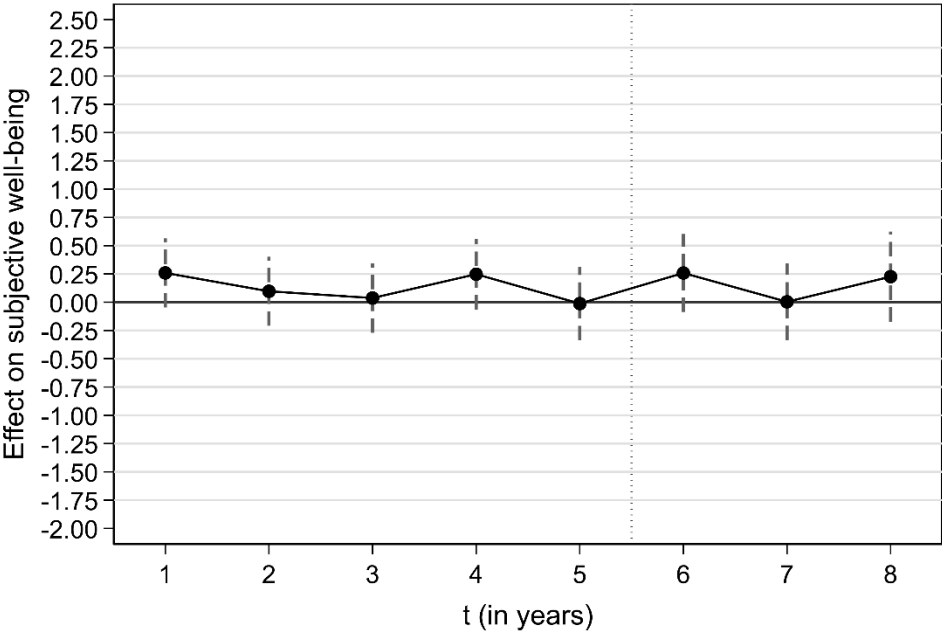
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

When compared to *stepping stone trajectory* individuals, *stable and permanent trajectory* individuals are in the beginning only slightly better off. More specifically, in the first year after entering the labor market, permanent employees on the *stable and permanent* path have on average a .26 units higher subjective well-being compared to individuals on the *stepping stone* pathway in fixed-term employment. This statistically insignificant positive effect disappears in the two upcoming years and appears again in the fourth year with a .26 units effect on well-being. In general, the effect fluctuates around zero, which indicates that in the longer run, the positive effect of *stable and permanent trajectories* disappears.

The positive immediate effect is in line with hypothesis H1a, that there should be an immediate positive impact of *stable and permanent trajectories* when compared to the *stepping stone pattern*. However, it is very small and statistically insignificant. The effect vanishes on average over a longer amount of time, which is in line with H1b.

4.3.2 Stable and permanent compared to entrapment trajectories

Figure 6 entails the results for hypotheses H2a and H2b by presenting the parallel and longer-term effects of *stable and permanent* trajectories compared to *entrapment* trajectories on subjective well-being. We assume that *stable and permanent* trajectory should have immediate positive consequences on the well-being, which should even increase over time.

Figure 6: Effect of stable and permanent compared to entrapment trajectories on subjective well-being
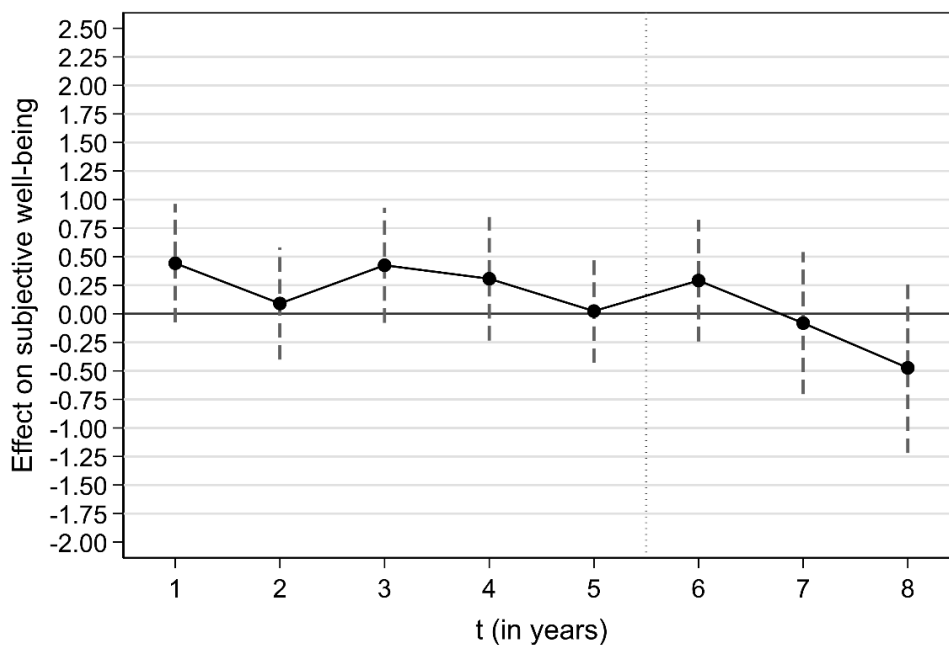
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

Within the first year in the sequences, *stable and permanent* career individuals have a .44 units higher well-being when compared to individuals on the *entrapment* trajectory, which is statistically insignificant. This positive effect disappears in the upcoming second year and appears again in the third and fourth year, where we see a slight increase. However, we see no monotonous increase in the well-being for people on the *stable and permanent career* trajectory compared to entrapped individuals. Interestingly, the effect even becomes negative in the seventh and eight year, so that individuals on the *stable and permanent* career are even worse off compared to people on the *entrapment* trajectory.

Therefore, we find support for H2a, that there is an immediate positive effect of *stable and permanent* career patterns when compared to *entrapment* career patterns. However, with respect to H2b, we do not find evidence for a positive effect to occur in the upcoming years, so it does also not increase. Thus, we need to reject the hypothesis. People on the *stable and permanent* career pattern do not seem to have benefits in terms of their well-being in the longer run when compared to people on the *entrapment* trajectory.

4.3.3 Stepping stone compared to entrapment trajectories

Figure 7 entails the results for hypotheses H3a and H3b, where we assume that there should be an immediate zero effect of individuals on the *stepping stone* trajectory when compared to entrapped individuals (H3a). Furthermore, there should be an emerging positive effect for the *stepping stone* individuals compared to *entrapment* individuals in the upcoming years, which should even increase (H3b).

Figure 7: Effect of stepping stone compared to entrapment trajectories on subjective well-being
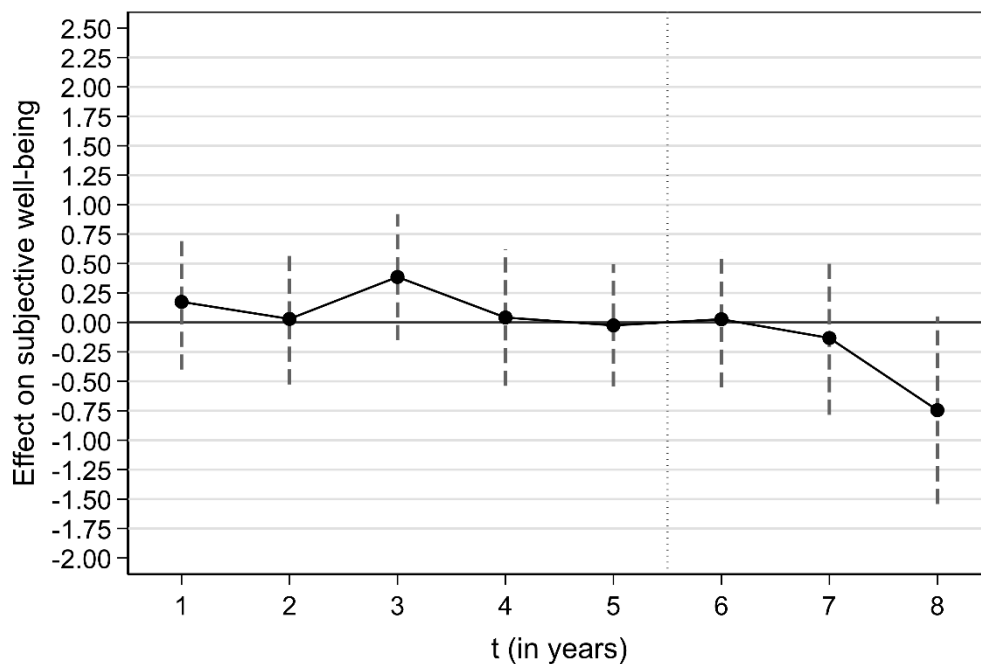
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

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The immediate effect of the *stepping stone* trajectory compared to the *entrapment* trajectory is positive with an initial advantage of .17 units. This effect, however, is statistically insignificant, which indicates that we cannot statistically ensure that the effect is indeed positive. The dynamic of this effect is not straightforward since it increases until the third year (peak in .39 units, statistically significant), afterwards declines, even vanishes, and turns negative in the later career. The well-being trajectory looks similar to the comparison between *stable and permanent* and *stepping stone* trajectories, which hints for adaption process once people are permanently employed.

In summary, we do not find support for H3a, that there is no huge difference in the first year when comparing *stepping stone* to *entrapped* individuals. *Stepping stone* individuals seem to be better off when compared to *entrapped* individuals. The effect disappears again in the later life (H3b). Thus, the data on hand does not support a continuous increase in well-being of *stepping stone* individuals.

4.3.4 Stepping stone compared to long-term unemployment

Figure 8 entails the results for hypotheses H4a and H4b where we compare *stepping stone* to *long-term unemployed* individuals and assume an immediate slightly positive effect (H4a), which should even increase over time, but level off eventually (H4b).

Figure 8: Effect of stepping stone compared to long-term unemployment on subjective well-being
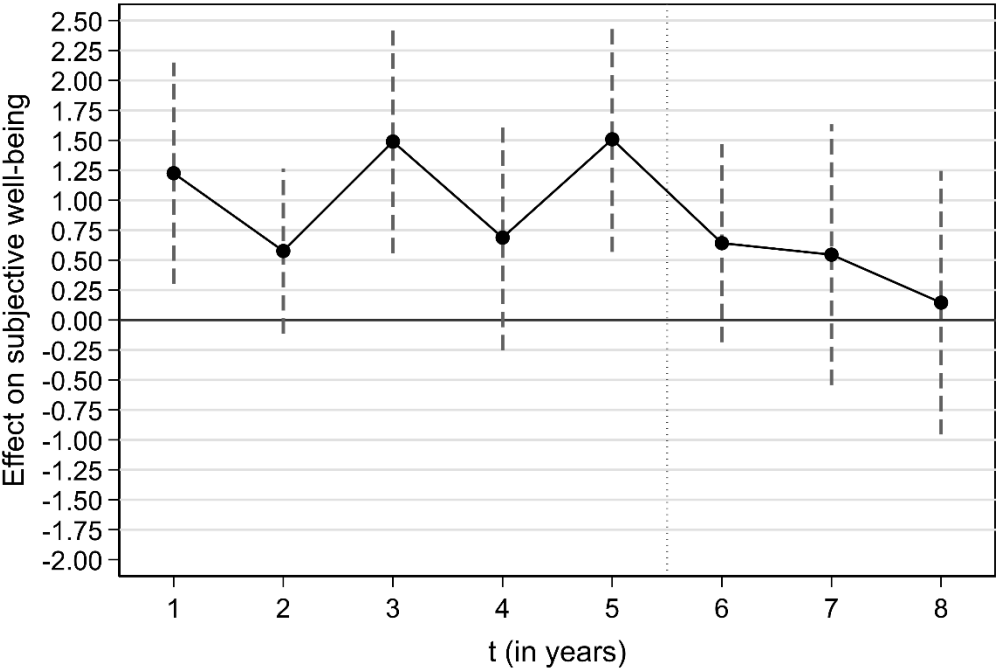
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

There is an immediate positive effect of being on the *stepping stone* trajectory rather than on the *longer-term unemployment* trajectory. More specifically, the initial well-being advantage for individuals on the *stepping stone* trajectory is on average 1.22 units, which is statistically signficant. This effect, however, fluctuates over time and peaks at the fifth year in a 1.51 units greater well-being when compared to individuals on the *long-term unemployment* trajectory. However, after this peak, the well-being difference decreases drastically over time and level off in the last year at .14 units. Thus, there is an increase in the dynamics of well-being, which is followed by an adaption process.

In the context of our hypotheses, we find strong support for H4a. Individuals on the *stepping stone* trajectory are better off with respect to the well-being when compared to *longer-term unemployed* individuals. Also, there is an intial positive trend of the effect dynamic, which, however, after a while levels off, which supports H4b.

4.3.5 Entrapment compared to long-term unemployment trajectories

Figure 9 entails the results for our last hypotheses H5a and H5b, where we assume that entrapped individuals should initially be better off when compared to long-term unemployed individuals (H5a) and that this positive effect might decrease over time (H5b).

Figure 9: Effect of entrapment compared to long-term unemployment trajectories on subjective well-being
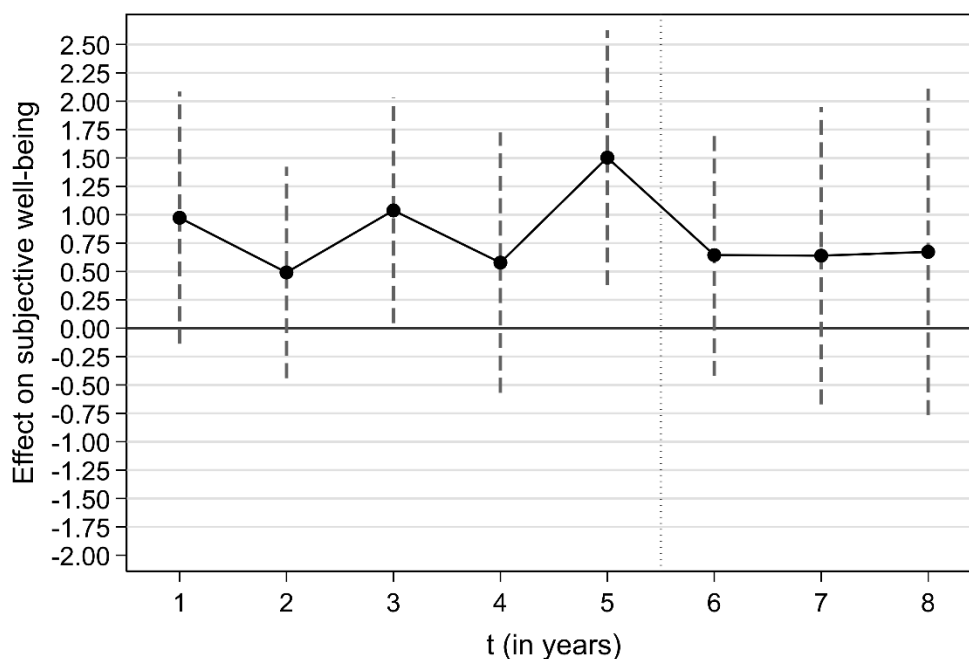
Note: Socio-Economic Panel, version 36, 1994–2019. Controlling for age and period effects. Standard errors are clustered on the individual level.

In the first year, the entrapped individuals are much better off in their well-being compared to the long-term unemployed individuals. The initial well-being advantage of .97 units is barely statistically significant. The difference peaks in the fifth year at a 1.50 difference but decreases afterwards and levels of at around 0.64 units. Even though there are some positive peaks within the dynamic, there is a trend of a decrease in the effect size within the last few years. Seemingly there is an adaption process which occurs after a while.

Therefore, we find support for H5a, that there is a positive immediate effect of the *entrapment* cluster when compared to *long-term unemployment*. Also, in line with our assumptions within

H5b, this effect does decrease over time, even though not continuously and linear. The effect does also not completely vanish over time.

5 Discussion

In line with previous literature on transitions or statuses, we find the strongest immediate positive effects when *long-term unemployment* is the comparison group (Gebel and Voßemer 2014; Gundert and Hohendanner 2014; Gash, Mertens and Gordo 2007). We can also show, consistent with the assumption of previous authors that fixed-term employment might be as detrimental (Chambel, Lopes and Batista 2016) but not worse than unemployment (Burchell 1994) in the longer run. There are positive effects of fixed-term employment when it acts as a *stepping stone*, which mainly represents the advantages of fixed-term employment, and some positive effects when it represents an *entrapment*, which embodies the disadvantages, thus for both positive and negative aspects of fixed-term employment.

When comparing *stable and permanent* trajectories to the *stepping stone* and the *entrapment* trajectory, there are no significant advantages of the standard career pattern. More specifically, people on the standard career trajectory have even a slightly lower subjective well-being in some periods. Therefore, these results do not hint for long-term well-being disadvantages for individuals on fixed-term employment trajectories, even for the trajectory referring to the costs of fixed-term employment there are no huge costs. Moreover, we show that the normative description of permanent jobs as "good jobs" and fixed-term jobs as "bad job" (Kalleberg 2018) does not seem to hold for Germany.

Our findings in general back up assumptions regarding adaption processes (Luhmann et al. 2012; Luhmann and Intelisano 2018). However, we add to the literature by showing that the theoretical assumption of adaption processes of single transitions can be expanded to the context of more holistic trajectories. We show that the longer people are within one employment status, the more easily they can adapt to it, and so can their well-being.

Despite the present study's strength and contributions, some limitations remain. Due to the precise definition of the trajectories and the resulting small sample sizes, we could not account for heterogeneity within the clusters. More precisely, it would be interesting to also include information on the job quality. For instance, it might be possible that within the *entrapment* cluster, there are mostly well-paid jobs and highly qualified individuals, which we can also partly show in the descriptive statistics. For these individuals it might not be too difficult to find a new job.

Moreover, we could not account for the couple perspective. Because most individuals live within one household and share resources, negative emotions of one partner due to being entrapped might spillover to the other partner, thus buffering the effect of their own employment trajectory (Scheuring et al. 2021). It would be interesting to also account for mediators in this longer-term design. For instance, individuals on the entrapment career pattern might be less likely to own a home, which might be the reason for their lower well-being. These shortcomings are avenues for research on the effects of fixed-term employment on well-being.

Altogether this article offers first insights into longer-term effects of employment trajectories on the well-being. The paper's findings emphasize that in Germany the type of contract within careers seems to be less relevant than having a job at all when it comes to the impact of trajectories on longer-term well-being (Scheuring et al. 2021), and that individuals adapt dynamically to their situations.

Our findings might raise the question of whether these results are mainly driven by contextual factors, for instance that fixed-term jobs are good quality jobs in Germany, or if individuals do not care that much about the type of employment within their career as suggested by the literature (De Witte 2010). Thus, the paper opens the floor for examining these effects from a country comparative perspective as well as to investigate its underlying mechanisms.

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7 Appendix

Table S1: Results of fixed-effects growth curve models of employment trajectories on subjective well-being

	(1) Stable and permanent vs. stepping stone	(2) Stable and permanent vs. entrapment	(3) Stepping stone vs. entrapment	(4) Stepping stone vs. long-term unemployed	(5) Entrapment vs. long-term unemployed
	β (t-value)	β (t-value)	β (t-value)	β (t-value)	β (t-value)
Interaction: trajectory and year in sequence					
Trajectory * year 1	0.26*	0.44*	0.17	1.23***	0.97*
	(1.66)	(1.68)	(0.60)	(2.61)	(1.75)
Trajectory * year 2	0.10	0.09	0.03	0.58	0.49
	(0.62)	(0.36)	(0.11)	(1.65)	(1.05)
Trajectory * year 3	0.04	0.42*	0.39	1.49***	1.04**
	(0.24)	(1.66)	(1.42)	(3.15)	(2.08)
Trajectory * year 4	0.25	0.31	0.04	0.69	0.58
	(1.55)	(1.11)	(0.14)	(1.44)	(1.00)
Trajectory * year 5	-0.01	0.02	-0.02	1.51***	1.50***
	(-0.07)	(0.10)	(-0.09)	(3.16)	(2.67)
Trajectory * year 6	0.26	0.29	0.03	0.64	0.64
	(1.47)	(1.07)	(0.09)	(1.53)	(1.21)
Trajectory * year 7	0.00	-0.08	-0.13	0.55	0.64
	(0.02)	(-0.26)	(-0.40)	(0.99)	(0.97)
Trajectory * year 8	0.23	-0.47	-0.75*	0.15	0.67
	(1.11)	(-1.25)	(-1.84)	(0.26)	(0.93)
Year in sequence (Ref.: *year zero, education*)					
Year 1	0.13	-0.06	-0.02	-1.07**	-0.96**
	(1.01)	(-0.22)	(-0.09)	(-2.39)	(-2.00)
Year 2	0.12	0.12	0.12	-0.43	-0.25
	(0.88)	(0.49)	(0.46)	(-1.30)	(-0.68)
Year 3	0.19	-0.19	-0.20	-1.31***	-1.08**
	(1.41)	(-0.77)	(-0.82)	(-2.89)	(-2.23)
Year 4	-0.05	-0.09	-0.12	-0.77	-0.56
	(-0.37)	(-0.33)	(-0.46)	(-1.61)	(-1.00)
Year 5	0.12	0.11	0.10	-1.42***	-1.25**
	(0.86)	(0.50)	(0.42)	(-3.00)	(-2.18)
Year 6	-0.06	-0.06	-0.16	-0.75*	-0.65
	(-0.37)	(-0.22)	(-0.58)	(-1.79)	(-1.18)
Year 7	0.20	0.32	0.27	-0.40	-0.29
	(1.32)	(1.04)	(0.86)	(-0.72)	(-0.41)
Year 8	-0.04	0.69*	0.62	-0.28	-0.05
	(-0.22)	(1.86)	(1.65)	(-0.50)	(-0.06)
Age (Ref.: *young workers*)					
prime age workers	-0.02	-0.04	0.12	0.04	0.07
	(-0.26)	(-0.49)	(1.12)	(0.30)	(0.22)
Constant	7.26***	7.30***	7.10***	7.06***	6.63***
	(82.95)	(71.99)	(43.86)	(41.92)	(13.01)
n	4727	3627	1832	1701	601
N	570	434	226	209	73

Note: Socio-Economic Panel, version 36, 1994–2019. All models include period effects. Main effect for the variable on trajectories is omitted because the variable is time invariant. The standard errors are clustered at the individual level.

Article 3

Does Fixed-Term Employment Have Spillover Effects on the Well-Being of Partners? A Panel Data Analysis for East and West Germany.

Abstract

This paper answers three research questions: What is the impact of fixed-term employment on the well-being of partners? How do these spillover effects differ by gender, and do gender differences depend on socialization in East or West Germany? Do individual well-being, perceived job insecurity, and financial worries mediate the spillover effects? We use longitudinal data from the Socio-Economic Panel (SOEP), 1995–2017, and a sample of heterosexual couples living together, to estimate fixed-effects panel regression models. In contrast to previous studies, we consider asymmetric effects of entering and leaving fixed-term contracts by focusing on transitions from unemployment into fixed-term and fixed-term into permanent jobs. Confirming previous research on spillover effects of unemployment, we find that fixed-term re-employment increases partners' well-being and that these effects are larger in case of re-employment by men and partners' socialization in West Germany. We also show that transitions from fixed-term to permanent jobs do not substantially increase the well-being of partners with little differences by gender and place of socialization. While the spillover effect of re-employment is mediated by changes in the well-being of the individual re-entering the labor market, changes in job insecurity and financial worries due to transitions from fixed-term to permanent jobs are too small to produce meaningful effects on well-being. Although fixed-term contracts have been referred to as a new source of inequality, our results show that they cause little difference in the well-being of individuals and their partners and that finding a job matters more than the type of contract.

1 Introduction

Employment is a key determinant of well-being, and more specifically, life satisfaction (Luhmann et al., 2012), i.e., the balance between individual expectations regarding life and the fulfillment of these expectations (Veenhoven 2009). The flexibilization of labor markets over the last three decades led to growing concerns about job insecurity (Kalleberg 2018), and, in particular, the potential negative effects of fixed-term contracts for well-being (De Witte, Pienaar and De Cuyper 2016). In response to employers' demands for flexibility, governments deregulated employment protection and promoted the use of fixed-term jobs. These jobs are characterized by a predetermined expiry date, which leaves it up to employers to decide whether to continue the employment relationship. In Germany, about 40 percent of newly created jobs start with a fixed-term contract (Bossler et al. 2019), which underlines the importance of understanding their impact on the well-being of individuals and their partners.

On the one hand, fixed-term contracts are hoped to support the labor market integration of the unemployed (Barbieri 2009) and intended to serve as a stepping stone towards permanent employment. Since unemployment has detrimental and long-lasting consequences for the well-being of individuals (Wanberg 2012; Mousteri, Daly and Delaney 2018), governments have seen fixed-term contracts as a promising tool for improving the labor market prospects of disadvantaged groups (Korpi, Levin and Henrik 2001; DiPrete et al. 2006) and subsequently their well-being.

On the other hand, it is also assumed that fixed-term contracts are in many ways inferior to permanent contracts. The concern is that they go along with chronic job insecurity and that workers are trapped in the secondary labor market segment, which offers lower job quality (De Cuyper, Notelaers and Witte 2009). Therefore, fixed-term employees experience a lack of certainty and plannability regarding their future, which worsens their well-being. Some even argue that these jobs have similar or worse consequences than unemployment, because the anticipation of a job loss is more stressful than the actual joblessness itself (Inanc 2018).

Given these two perspectives, a rich literature on the consequences of fixed-term contracts on well-being developed (for an overview see Imhof and Andresen 2018; De Cuyper et al. 2008; Virtanen et al. 2005). Previous research often compares fixed-term with permanent contracts and refers to the entrapment scenario by emphasizing the fears associated with these jobs. In line with this view, a large share of cross-sectional studies reports negative effects (for overview see De Cuyper et al. 2008). Some longitudinal studies also point at a disadvantage among temporary workers (Dawson et al., 2017; Graaf-Zijl, 2012). Other longitudinal studies reveal an ambiguous picture, with some finding substantial positive effects of permanent over fixed-term employment

(e.g., Gash, Mertens, and Gordo 2007), while others report only minor differences (Gebel and Voßemer 2014).

Despite the desired integrational function (stepping stone scenario), few studies compare fixed-term contracts to unemployment. Although most of these studies find that fixed-term jobs are preferable to unemployment (Gundert and Hohendanner 2014; Gash, Mertens and Gordo 2007), some theoretically assume and empirically find no differences in well-being (Chambel, Lopes and Batista 2016). Other studies show that insecure employment has even more negative effects than unemployment (Burchell 1994; Kim and von dem Knesebeck 2015).

Scholars have started to consider that job insecurity may affect not only employees with fixed-term contracts, but also their partners. Employment contracts may affect decisions made jointly by the couple. For example, fixed-term employment of one partner can postpone childbirth, decrease the likelihood of marriage, and the chance of home ownership (Baron and Rapp 2019; Auer and Danzer 2016). However, despite this research on couples, almost no studies have investigated so-called spillover effects, that is the impact of fixed-term employment of one person on the well-being of their partner. This lack of studies is surprising, as such spillover effects have been previously found for unemployment and job losses (Marcus 2013; Nikolova and Ayhan 2019). The only exception is Inanc (2018), who shows that in the United Kingdom (UK) the negative impact of fixed-term compared to permanent contracts on well-being extends to the partner and is of similar size to the spillover effect of unemployment. The lack of research on spillover effects of fixed-term jobs on family members is an important issue, as its costs or benefits might be seriously misjudged if the focus is on the directly affected individuals only.

The main goal of this paper is to extend research on the spillover effects of fixed-term employment on the well-being of partners. We seek to make three contributions to the literature. First, our main contribution to research on the well-being consequences of fixed-term contracts is the analysis of spillover effects in the German context, thereby extending the only previous study on this topic for the UK (Inanc 2018). Germany is particularly interesting, since its labor market is regulated with a rather strict separation between the primary, advantageous segment with mostly permanent and securely employed individuals and the secondary, disadvantageous segment, including lower quality jobs with e.g., fixed-term contracts (for a detailed discussion of the German labor market see Gundert and Hohendanner 2014). Thus, the effects might be even more detrimental than for the UK, a country with a flexible labor market.

Second, as Inanc (2018) highlights the heterogeneity in spillover effects by gender, an additional contribution is to investigate how women and men react differently to fixed-term employment of their partner. The German context offers a unique opportunity in this respect. While East and

West Germany share both labor market and family policies, they still differ in terms of gender norms and roles, which even affect the cohorts born after reunification (Ebner, Kühhirt and Lersch 2020; Bauernschuster and Rainer 2012). We consider how gender differences in the spillover effects depend on partners' place of socialization in either East or West Germany to improve our current understanding of the conditions under which gender differences in spillover effects emerge. The place of socialization provides information about gender role attitudes, which are passed on in the primary socialization from parents to children and should differ between East and West Germany. Whereas previous studies on the effects of fixed-term employment on well-being already found important differences by countries (Täht et al. 2020; Karabchuk and Soboleva 2020), no studies so far have examined the relevance of the place of socialization with respect to spillover effects.

Third, we shed light on the plausibility of the theoretical explanations put forward for spillover effects. We empirically test whether changes in the individual well-being, perceived job insecurity, and financial worries resulting from labor market transitions transmit to the partners' well-being. While these mediators are derived from theoretical models and have been suggested as relevant (Silla et al. 2009), they have not yet been empirically tested in the context of spillover effects.

To answer the research questions, we use longitudinal data from the German Socio-Economic Panel (SOEP), 1995–2017, and apply fixed-effects panel regression models. To bridge the two opposing perspectives, which emphasize the benefits and costs of fixed-term jobs, we compare fixed-term jobs to both unemployment and permanent jobs. We focus on transitions from unemployment to fixed-term and fixed-term to permanent employment. These specific transitions are most closely related to the debates that motivate our study, that is fixed-term contracts as a means of labor market integration for the unemployed and its potential role as a stepping stone.

2 Theory and hypotheses

The benefits of stable employment for individual well-being can be understood from Warr's vitamin model (Warr 2017). This theory explains how environmental factors determine the well-being of individuals. The vitamins refer to twelve distinct factors, which include the opportunity for personal control, social contact, availability of money or career outlook and other factors. Different domains of life, such as work or family, provide these benefits. In analogy to vitamins, these factors and their components are in over- or under-dosage expected to be harmful for well-being.

When referring to the work context, distinct job situations offer different amounts of vitamins. In line with previous studies (Gebel and Voßemer 2014; Scherer 2009), we assume a continuum

from unemployment, which offers the least vitamins, to permanent employment, which offers the most vitamins, with fixed-term contracts somewhere in between the extremes. Compared to permanent employment, fixed-term employment offers poorer working conditions (Booth, Francesconi and Frank 2002) and less economic security, which negatively affects the controllability and planability of life (Bosmans et al. 2016; Lazarus and Folkman 1984). Hence, these jobs differently affect the vitamin balance of individuals and consequently their well-being.

But how do these effects then transfer to the partner? The spillover-crossover model can shed light on this question (Bakker and Demerouti 2013; Rodríguez-Muñoz et al. 2014). This model distinguishes intra-individual spillover effects, i.e., bad mood at work transmits to home, from inter-individual crossover effects, i.e., bad mood of an individual transmits to closely related individuals, such as the partner. In line with many other researchers, we use the term 'spillover' to cover both intra- and inter-individual effects (Inanc 2018; Marcus 2013; Nikolova and Ayhan 2019) that lead to a transmission of effects from one partner to the other.

2.1 The spillover effects of fixed-term employment on subjective well-being

The work-related sphere of life may affect the way that individuals feel and behave. Previous research documents consequences such as concentration difficulties, elevated irritability, stress, and anxiety, having less energy and vigor, social withdrawal and less support towards the partner (Danner-Vlaardingerbroek et al. 2013; Jiang and Lavaysse 2018; Mantler et al. 2005; Repetti and Wang 2017). When individual well-being declines, the resulting emotional reactions and behaviors can be a strain on closely related people, such as partners, which can in turn deteriorate their well-being (Rook, Dooley and Catalano 1991; Bakker, Westman and van Hetty Emmerik 2009). Apart from being exposed to behavioral changes and a lack of emotional availability and support from the persons, partners may experience a deterioration in well-being due to empathy, i.e., sharing the emotional states and well-being of the persons.

There are also alternative mechanisms that may drive the effects that can occur at the partnership level. Some mechanisms relate to the need of couples to plan their life decisions together, considering the employment situations of both partners (Blom, Verbakel and Kraaykamp 2020). Perceived job insecurities and financial worries might prevent shared future planning regarding home ownership or childbearing (Blossfeld et al. 2005; Baron & Rapp 2019). Referring back to the vitamin model (Warr 2017), when individuals gain vitamins through re-entering the work environment or by a transition from fixed-term to permanent jobs, these can be utilized to satisfy shared goals of partners.

Following these arguments, the scale of employment situations related amounts of vitamins, ranging from unemployment, through fixed-term contracts, to permanent employment, is

associated not only with individual well-being, but also with the well-being of partners. The transition to more secure positions is linked to a gain in vitamins. Thus, if an individual makes a transition from unemployment to fixed-term employment, the positive feelings about regaining financial resources and other functions of work might go beyond this individual and extend to the partner. Moreover, such 'upward' transitions enable couples to fulfil shared goals, which affect both partners' well-being.

H1a. *A transition from unemployment into fixed-term employment as compared to remaining unemployed positively affects the well-being of one's partner.*

H1b. *A transition from fixed-term into permanent employment as compared to remaining in fixed-term employment positively affects the well-being of one's partner.*

2.2 Gender differences and how they vary by place of socialization

According to the doing gender theory (West and Zimmermann 1987), individuals expect that their partners behave in gender-specific ways that shape the division of labor in couples. More specifically, men are supposed to be the breadwinners and women the homemakers. Gainful employment, which enables men to satisfy the material needs of a household, is understood as a signal of masculinity. Unemployment represents a deviation from gender-specific behavior for men, but not for women. Women can substitute employment by engaging in their alternative and socially acceptable role as housewives, which can protect their well-being (Nordenmark and Strandh 1999).

Fixed-term employment exceeds unemployment for the associated vitamins, as it enables men to fulfill their normative obligations by providing material resources to the household. When compared to permanent employment, fixed-term employment can, however, also be seen as a deviation from masculinity. Due to the lower job quality, there is a lower likelihood to be able to provide the family with a stable income (Inanc 2018). Therefore, when the male partner makes an 'upward' transition regarding the employment status, this enables the breadwinner norm to be met and thus satisfies the expectations of the female partner. This expectation does not apply to similar transitions of women and their male partners' well-being, since, according to doing gender theories, it is not the key role of women to earn a living.

H2a. *The positive spillover effects of a transition from unemployment into fixed-term employment as compared to remaining unemployed on the well-being of the partners will be stronger for female than for male partners' well-being.*

H2b. *The positive spillover effects of a transition from fixed-term employment into permanent employment as compared to remaining in fixed-term employment on the well-being of the partners will be stronger for female than for male partners' well-being.*

What doing gender exactly means is determined by contexts such as socialization in East or West Germany. The roles described above are more firmly entrenched and transferred in primary socialization in conservative societies (Sainsbury 1996). Germany has the special situation of two contexts with different gender role attitudes within one country. The legacy of the GDR can still be seen today (Ebner, Kühhirt and Lersch 2020). The meaning of doing gender and the importance of gender should therefore depend on the socialization in East or West Germany. In the GDR, a dual-earner model with a strong labor force participation of women shaped individuals' gender norms towards an egalitarian model. Primary socialization in the family and secondary socialization in the school promoted equal gender roles. West Germany, on the other side, with its traditional gender roles, was and is a standard example of the male-breadwinner model (Bauernschuster and Rainer 2012).

For women who have been socialized in West Germany, a suboptimal employment position of the male partner should reflect a stronger deviation from the gender-specific behavior of being the breadwinner than for women socialized in East Germany. By contrast, since gender roles have been more equal in East Germany, it should not be relevant what gender the individual who experiences the 'upward' transition is. The effects should be equally beneficial to the partner. In conclusion, gendered spillover effects should be more relevant for the partners' well-being in case of socialization in West than in East Germany.

H3a. *The more positive spillover effect of a transition from unemployment into fixed-term employment as compared to remaining unemployed on the well-being of female than male partners will be stronger for affected partners who have been socialized in West than in East Germany.*

H3b. *The more positive spillover effect of a transition from fixed-term into permanent employment as compared to remaining in fixed-term employment on the well-being of female than male partners will be stronger for affected partners who have been socialized in West than in East Germany.*

2.3 Factors mediating the spillover effects

A few studies have argued that fixed-term employment is equally or even more harmful than unemployment regarding well-being (Burchell 1994; Inanc 2018). Most research, however, assumes the opposite. Fixed-term employment compared to unemployment offers vitamins like financial resources, social contacts as well as social standing (Gash, Mertens and Gordo 2007),

which should improve the well-being of individuals. By comparison, permanent contracts offer greater job security and as previous studies show a higher income (Booth, Francesconi and Frank 2002). As a result, compared to fixed-term employment, permanent employment offers more vitamins, which enhance the job satisfaction, and consequently the well-being of individuals.

These improvements due to 'upward' transitions do not only occur within the working domain, but also transfer to the family life, which boosts the relationship quality (Blom, Verbakel and Kraaykamp 2020). The corresponding employment transitions reduce the pressure and stress caused by insecurity and reduced planability of the previous employment status. If individuals are less distressed and have a higher well-being, this also transmits to the well-being of their partners (Westman 2016).

H4a. *The positive spillover effect of a transition from unemployment into fixed-term employment as compared to remaining unemployed on the well-being of the partner will be partly mediated by changes in the well-being of the individual who experiences the transition.*

H4b. *The positive spillover effect of a transition from fixed-term into permanent employment as compared to remaining in fixed-term employment on the well-being of the partner will be partly mediated by changes in the well-being of the individual who experiences the transitions.*

Finally, while an individual under-dosage of all vitamins of the unemployed should explain positive spillover effects for transitions into fixed-term employment, the difference in the vitamins provided by fixed-term compared to permanent jobs is not so clear. In terms of income differentials, fixed-term jobs might be considered by employers as a prolonged probationary period (Booth, Francesconi and Frank 2002). Fixed-term employees may therefore receive a lower salary than permanent employees, which leads to more financial worries. Financial worries make it more difficult for couples to achieve common goals. If fixed-term employees make the transition to permanent employment, the financial difficulties should decrease. In addition, as fixed-term jobs expire, workers may perceive job insecurity, which decreases as they make the transition into permanent employment. Therefore, the 'upward' employment transition reduces stress and negative emotions and thus increases well-being (Warr 2017). This well-being boost might accordingly transmit to the partner through empathy.

H5. *The positive effect of a transition from fixed-term into permanent employment as compared to remaining in fixed-term employment on the well-being of the individual who experiences the transition will be partly mediated by changes in job insecurity and financial worries.*

3 Methods

3.1 Data and sample

We use data from the Socio-Economic Panel (SOEP), which began in 1984 (Liebig et al. 2019). The SOEP is an annual household panel survey designed to be nationally representative of the German adult population. Nearly 15,000 households and 30,000 individuals participate (Goebel et al. 2019). For our analyses, the SOEP has three main advantages. First, it offers detailed annual data on activity status, type of contract, and well-being. Second, we have independent information from both partners, as each adult household member is interviewed separately. Third, the SOEP is one of the longest running household panel surveys, which allows us to study the spillover effects of specific employment transitions. More specifically, we can relate changes in the well-being of partners to changes in the activity status and type of contract of individuals.

For the analyses, we select an initial sample of cohabiting and married heterosexual couples living together, where both partners participate in the personal interview. We only use waves from 1995 or later, as information on the type of contract for the previous years is incomplete. To focus on the working age population, we restrict our sample to couples where both partners are between 18 and 65 years old. As we want to investigate the spillover effects of fixed-term employment in comparison to both unemployment and permanent employment, our analyses focus on two specific transitions: (1) from unemployment to fixed-term and (2) from fixed-term to permanent employment.

These transitions directly relate to the debates that motivate our study. We focus on the role of fixed-term contracts as a means of labor market integration for the unemployed and as a stepping stone from fixed-term to permanent jobs. This study design reduces ambiguities that are associated with the reverse transition from permanent to fixed-term jobs. Within one job, transitions from permanent to fixed-term jobs are prohibited by German labor law. Thus, these transitions will always be associated with a change of jobs, which potentially includes an additional period of non-employment. As a result, it is difficult to assess which changes are responsible for effects on the well-being of partners (i.e., contract status or intermediate non-employment).

Our study design regarding the focus on specific employment transitions allows a relaxation of the assumption of symmetric effects. Symmetry in effects is an implicit assumption in standard specifications of fixed-effects models (Allison 2019). We assume asymmetry, because it is theoretically argued that "losses loom larger than gains" (Kahneman and Tversky 1979; Hobfoll 1988). In addition, a recent study on the effects of fixed-term contracts on individuals' well-being shows that transitions from fixed-term to permanent employment and vice versa have effects of different magnitude (Schumann and Kuchinke 2020). Thus, the study points to an asymmetry of

effects. While fixed-effects panel analyses in previous studies (Inanc 2018) implicitly assume symmetric effects (Allison 2019), our focus on specific transitions makes no assumptions in this regard.

We further restrict our sample to couples where at least one partner is at risk of experiencing a transition of interest between two yearly interviews t and $t + 1$. This includes couples where at least one partner makes the transition from either unemployment to fixed-term or fixed-term to permanent employment (treatment spells). The definition also includes couples where at least one partner continuously remains in the original activity status and contract type (control spells). The latter couples provide information on how the well-being of the partner would have changed in the absence of a transition from either unemployment to fixed-term or fixed-term to permanent employment (Brüderl and Ludwig 2015).

We finally exclude couples with missing values on the variables of interest and restrict the sample to couples observed at least twice. For the analyses of transitions from unemployment to fixed-term employment, this leaves us with 2,373 couples and 9,531 couple-years, while for transitions from fixed-term to permanent employment we have data on 2,990 couples and 16,418 couple-years. In these samples, we observe 536 and 560 transitions from unemployment to fixed-term employment and 1,409 and 1,567 transitions from fixed-term to permanent employment by men and women, respectively.

3.2 Measures

3.2.1 Dependent variable

Our outcome is the life satisfaction of the partner, which primarily captures the cognitive component of subjective well-being (Veenhoven 2009). Partners are asked how satisfied they are with life, all things considered, with answers ranging from 0 "completely dissatisfied" to 10 "completely satisfied" on an 11-point scale. Global life satisfaction scales have been shown to be valid, reliable, and sensitive to change, making them well-suited for our analyses (Diener, Inglehart and Tay 2013).

3.2.2 Independent variables

Our independent variable employment status combines information on activity status and type of contract to distinguish registered unemployment, fixed-term, and permanent employment. Fixed-term employment encompasses all different forms of employment that have a pre-defined date of contract termination. This definition can include fixed-term contracts with one employer, temporary agency work on a fixed-term contract as well as casual or seasonal work.

We construct treatment and control spells for our transitions of interest. For transitions from unemployment to fixed-term employment, the treatment spells consist of all years in consecutive

unemployment before and all years in consecutive fixed-term employment after the transition between two yearly interviews t and $t + 1$. The control spells consist of all years in consecutive unemployment. Spells are censored if individuals are observed in any other than the mentioned employment statuses (e.g., permanent employment), information is missing, or the couple separates. Analogous definitions apply for transitions from fixed-term to permanent jobs, but here the control spells refer to continuous fixed-term employment.

Our analyses exclude any years in self-employment or inactivity of the individual experiencing the transition, but partners can take any employment status. We cannot rule out that individuals switch jobs between interviews or that they have an intermediate short period of unemployment. It might be that our control group includes some persons in more insecure employment situations. Therefore, the effects of a transition from a fixed-term to a permanent contract might be overestimated.

3.2.3 Moderators

To examine whether spillover effects differ by gender as well as whether gender differences vary by place of socialization, we measure individuals' gender (1=female, 0=male), as identified by the interviewer and partners' place of socialization (1=East Germany, 0=West Germany). The latter is indicated by the place of residence of the partner in 1989 shortly before the reunification of Germany. The variable is intended to capture the effects of primary and secondary socialization in the GDR. These stages of socialization are assumed to have lasting effects on individuals gender roles even until today (Carter, 2014). As movements between East and West Germany were quite rare before the fall of the wall, this information is the best available measure for the place where people were socialized. For the few partners born after 1989, we use information on the place of residence at the time of their first participation in the SOEP. While it is possible that current place of residence and the associated gender norms also affect well-being, our argumentation refers to the place of socialization. Since regional movements are – despite substantial mobility from East to West Germany – still quite rare in our data, a detailed investigation that disentangles the effects of place of socialization and current residence is beyond the scope of our study.

3.2.4 Confounders

As we are interested in estimating the total effects of the respective employment transitions on the well-being of partners, we only adjust for time-varying variables that are assumed to affect individuals' probability to experience the transition as well as partners' life satisfaction. We do not control for variables that might be affected by the transitions to avoid overcontrol bias (Elwert and Winship 2014). This restriction excludes variables that are known to affect well-being, such as having children, but for which the direction of the relation to the independent variable of interest

is not clear. We adjust for partners' age (squared) and year dummy variables to take account of confounding due to ageing effects and common time trends. We also control for the unemployment rate of the federal state where the couple lives (Statistik der Bundesagentur für Arbeit 2018). Poor regional labor market conditions likely decrease the probability of transitions from unemployment to fixed-term employment. In times of economic contraction, employers will be less willing to convert fixed-term into permanent contracts. High levels of unemployment have furthermore been shown to have an independent effect on individuals' well-being (Clark, Knabe and Rätzel 2010).

3.2.5 Mediators

We consider individuals' own well-being, their perceived job insecurity, and financial worries to partly mediate the effects of the transitions of interest on the well-being of partners. The well-being of individuals is measured by their life satisfaction on a scale from 0 to 10 (identical to the dependent variable). Perceived job insecurity and financial worries are measured by questions about how concerned individuals are about their job security and economic situation. For both variables we distinguish between those who are (1=) "very" or "somewhat concerned" and those who are (0=) "not concerned at all".

3.3 Fixed-effects models

To estimate the spillover effects of fixed-term employment on the well-being of partners, we apply fixed-effects panel regression models to our two samples. The first sample concerns transitions from unemployment to fixed-term and the second from fixed-term to permanent employment. Our main specification for both samples is

$$(1) \qquad y_{it} = \alpha T_{it} + \beta T_{it} F_i + \gamma X_{it} + \delta X_{it} F_i + \theta F_i + \mu_i + \epsilon_{it}$$

where y_{it} indicates the life satisfaction of the partner of individual i in year t. T_{it} is a dummy variable for individual i who experience the transition of interest. F_i is a dummy variable for being female. X_{it} is a vector of confounding variables (including year fixed-effects). μ_i is a spell-specific fixed effect. ϵ_{it} is the idiosyncratic error term. To give an example, for transitions from unemployment into fixed-term employment, $T_{it} = 0$ in the years before the transition, in which i is unemployed, and $T_{it} = 1$ in the years after i becomes and remains fixed-term employed. The spell-specific fixed effect μ_i is fixed within a specific treatment or control spell as well as couple. Thus, repeated spells within a couple or in different relationships are treated as separate observations. To consider that observations are nested in individuals and couples, standard errors are clustered at the highest level, that is, the couple level. As fixed-effects models only use variation within couples over time, the effects of any time-constant individual, partner, or couple characteristics are accounted for (Brüderl and Ludwig 2015). The coefficient α describes the

spillover effect of transitions by men, while the combination of $\alpha + \beta$ gives the spillover effect of transitions by women. The interaction coefficient β estimates the difference in the spillover effects. The test statistic of β can be used to check whether gender differences in the effects of interest are statistically significant.

While our main specification (1) allows to estimate the spillover effects separately for men and women (H1a to H2b), in some models we also include interaction terms with a dummy variable E_i, which indicates that individual i's partner was socialized in East instead of West Germany. Adding this dummy enables to examine how gender differences depend on the place of socialization (H3a, b). These models allow all coefficients to vary by gender, partner's place of socialization, and their combination.

Moreover, we investigate the mediating role of individual i's own well-being (H4a, b), by estimating a model that adds their life satisfaction to our main specification (1). By comparing the total (main specification) and direct (main specification and mediator) spillover effects, we can learn how much of the former is mediated by changes in individuals' own well-being. To get a deeper understanding of how changes in the life satisfaction of the individual (the mediating variable) are themselves mediated (H5), we consider a model akin to specification (1), but where all variables refer to individual i. This model is estimated once excluding and once including the mediating variables job insecurity and financial worries. Thus, we can examine whether any effects on the well-being of the affected individual are mediated by a reduction in their perceived job insecurity and financial worries. These variables represent the main theoretical channels suggested in the literature.

4 Results

4.1 The spillover effects and how gender differences vary by place of socialization

Figure 1 provides the results for hypotheses H1a to H3b. It shows the spillover effects of transitions from unemployment to fixed-term (top panel a) and fixed-term to permanent employment (bottom panel b) on partners' well-being. Furthermore, it reveals how the spillover effects differ by gender as well as how these gender differences themselves depend on partners' socialization in East and West Germany. The coefficients and test statistics of the fixed-effects models used to calculate the shown conditional effects, including those of the control variables, can be found in Table S1 of Online Resource 1 (OR 1).

Figure 1: Spillover effects of fixed-term employment on the well-being of partners and gender differences by place of socialization
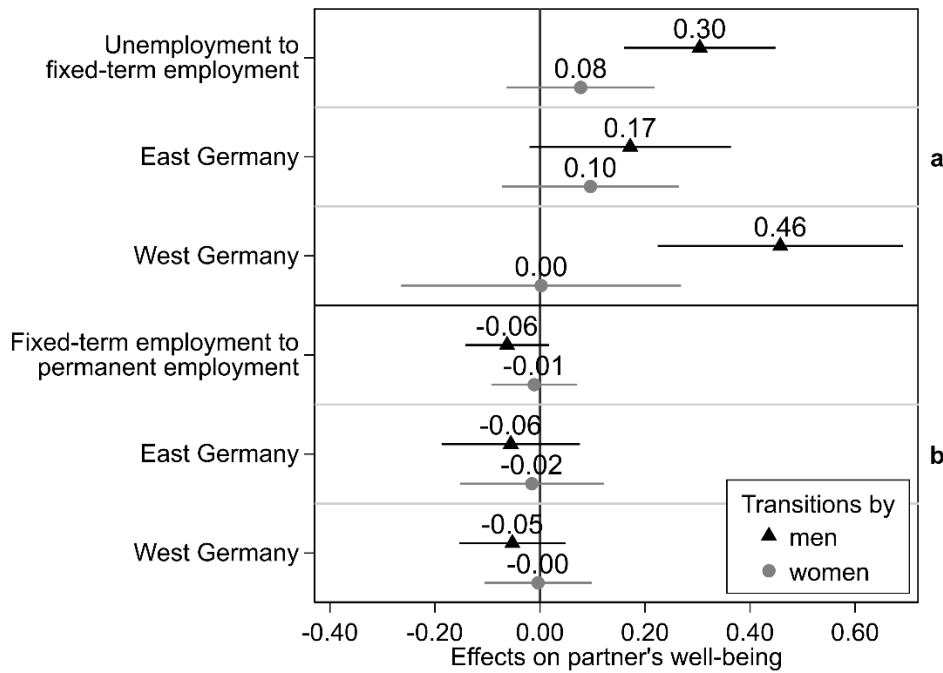
Note: Socio-Economic Panel, version 34, 1995–2017. The top panel (a) shows the effects of transitions from unemployment to fixed-term employment and the bottom panel (b) of transitions from fixed-term to permanent employment.

To empirically test H1a and H1b, we consider the first rows of the top (a) and bottom (b) panels of Figure 1. These rows represent the spillover effects on partners' well-being depending on whether men or women experience the transition. In line with hypothesis H1a, we overall find that a transition from unemployment into fixed-term employment increases partners' well-being. The respective coefficients are positive for transitions of both men and women. At odds with hypothesis H1b, there is no such positive spillover effect for transitions from fixed-term to permanent employment. The coefficients are close to zero and even slightly negative.

Figure 1 shows the importance of gender when considering transitions from unemployment to fixed-term employment (panel a). If the male partner becomes re-employed in a fixed-term job, women experience a substantial increase in their well-being of .30 units. In contrast, if female partners take up fixed-term re-employment, male partners' well-being is less strongly positively affected. The gender difference in the effects is not only statistically significant, but also substantially important. The effect of male partners' transitions on female partners' well-being is almost four times larger than the effect of female partners' transition on male partners' well-being. Taken together, these results support H2a, suggesting that women benefit more from their male partners' transition from unemployment into fixed-term re-employment than vice versa. For

transitions from fixed-term to permanent employment (panel b), we see very similar effects of either female or male partners' employment transitions on men's and women's well-being. These findings contradict hypothesis H2b. The negative signs of these effects are inconsistent with the idea that transitions from fixed-term into permanent jobs improve partners' well-being.

Our results are at odds with the only previous study for the UK (Inanc 2018). This study finds that fixed-term as compared to permanent contracts have negative spillover effects on partners' well-being and that these differ by gender. Our findings on fixed-term re-employment are, however, consistent with studies that show that re-entering the labor market in these jobs has a positive effect on well-being (Gebel and Voßemer 2014; Gundert and Hohendanner 2014). Our findings are also in line with research on spillover effects of job losses and unemployment (Marcus 2013; Nikolova and Ayhan 2019).

However, spillover effects, and particularly gender differences in these, may depend on the place of socialization, as such contexts shape the prevailing gender norms. The second and third row of the top (a) and bottom (b) panels show the effects of each transition separately by gender and the partners' socialization in East or West Germany. We see a strong difference in the gendered effects for transitions from unemployment into fixed-term employment (a). For socialization in both East and West Germany, fixed-term re-employment by men seems to be more important for the female partner's well-being than vice versa. Nevertheless, for partners socialized in West Germany, the gender gap in the spillover effect is much larger, namely .46 units, whilst for socialization in East Germany it is only .07 units. The respective difference of .39 units in the gendered spillover effects by place of socialization is statistically significant. Overall, the results provide strong support for hypothesis H3a.

The picture is again less clear when it comes to gender differences in the spillover effects of transitions from fixed-term to permanent employment and their dependence on the place of socialization (b). When women make this transition, the well-being of male partners socialized in East Germany does not change much. Employment transitions by men slightly reduce the well-being of their female partners socialized in East Germany. There are no noteworthy differences in the effects for partners socialized in East and West Germany. All these effects are statistically insignificant, and their directions are contrary to our expectations. The interaction of the place of socialization is statistically insignificant and very close to zero. Overall, we find little evidence that the transitions from fixed-term to permanent employment have any positive effects on partners' well-being or that these effects vary by gender or its combination with place of socialization.

4.2 Factors mediating the spillover effects

To further test to what extent the spillover effects of fixed-term employment are mediated by changes in the directly affected individuals' well-being (H4a and H4b), we estimate the main specification once without and once with controlling for this variable. The results are illustrated in Figure 2, with the respective coefficients of the fixed-effects models being presented in Table S2 of OR 1.

Figure 2: Spillover effects of fixed-term employment on the well-being of partners by gender and the mediating role of the well-being of individuals
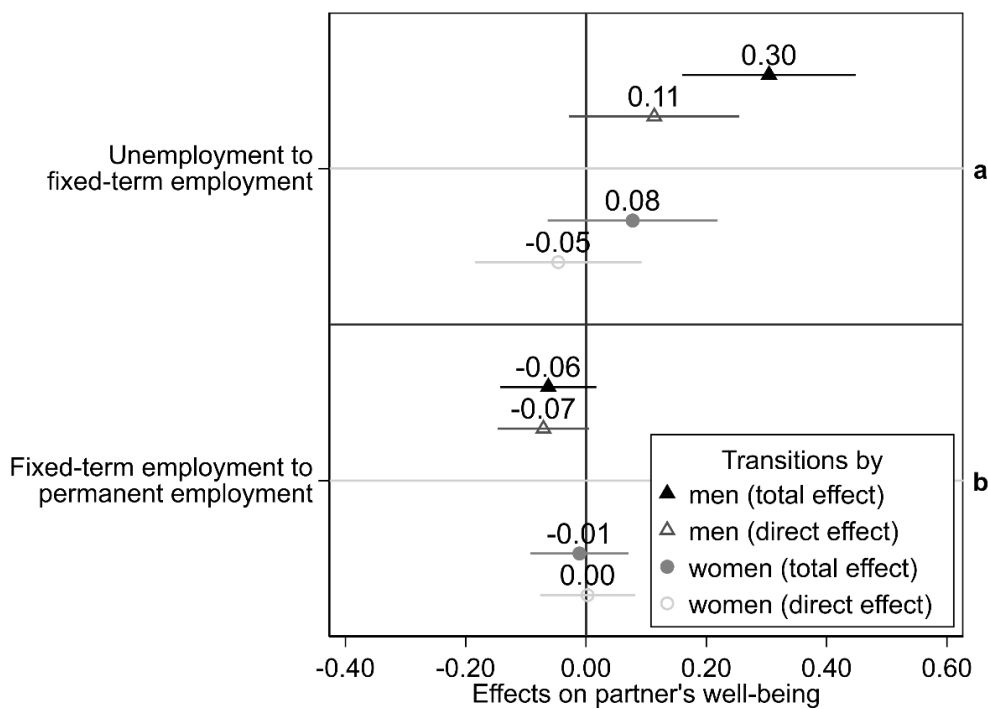
Note: Socio-Economic Panel, version 34, 1995–2017. The top panel (a) shows the effects of transitions from unemployment to fixed-term employment and the bottom panel (b) of transitions from fixed-term to permanent employment.

The first coefficients in each row represent the total spillover effects estimated based on our main specification. These coefficients correspond to those reported in Figure 1. Directly below each total spillover effect is the respective direct spillover effect, i.e., the effect of the employment transition after controlling for the mediating variable individuals' own well-being. The indirect effect equals the difference between the total and the direct effect.

When accounting for men's own subjective well-being in the spillover effect of unemployment to fixed-term employment transitions on female partners' well-being (panel a), the total effect of .30

units can be split up into a direct effect of .11 units and an indirect effect of .19 units (.30-.11=.19). The effect reduces by almost two-thirds, so that men's own well-being mediates a large share of the spillover effect on their female partner's well-being. The weaker total effect of women's transition from unemployment into fixed-term employment on the partner's well-being even becomes negative (direct effect of -.05 units) when accounting for their own subjective well-being. This finding suggests a mediation of the spillover effects for transitions from unemployment into fixed-term employment. Accordingly, the indirect effect equals .13 units (.08-(-0.05)=.13).

The lower panel (b) refers to the transition from fixed-term into permanent employment. Controlling for the own subjective well-being does not substantially change the coefficients. The total and direct spillover effects are almost identical in case of both men's and women's transitions. Consequently, the indirect effects are very close to zero. Therefore, the small negative spillover effects of fixed-term to permanent employment transitions on the partners' well-being are not mediated by the own well-being.

Why is this case? One explanation for this finding may be that transitions from fixed-term to permanent employment not only have no spillover effects on the partners, but also do not alter the well-being of the directly affected individuals. Another explanation might be that improvements in the well-being of the individual itself are not transmitted to the partner. If there are no improvements in the well-being of the individual, it also becomes important to understand if this is due to the theoretically suggested mediating factors of reduced job insecurity and financial worries not coming into play.

Therefore, in a final step we estimate the effects of transitions from fixed-term to permanent employment on own well-being and examine whether these are mediated by changes in job insecurity and financial worries. Figure 3 shows the total effects for men and women as well as the direct effects after controlling for individual perceived job insecurity and financial worries. The coefficients of the corresponding fixed-effects models are reported in Table S3 of OR 1.

Figure 3: Effects of fixed-term employment on the well-being of individuals by gender and the mediating role of individuals' perceived job insecurity and financial worries
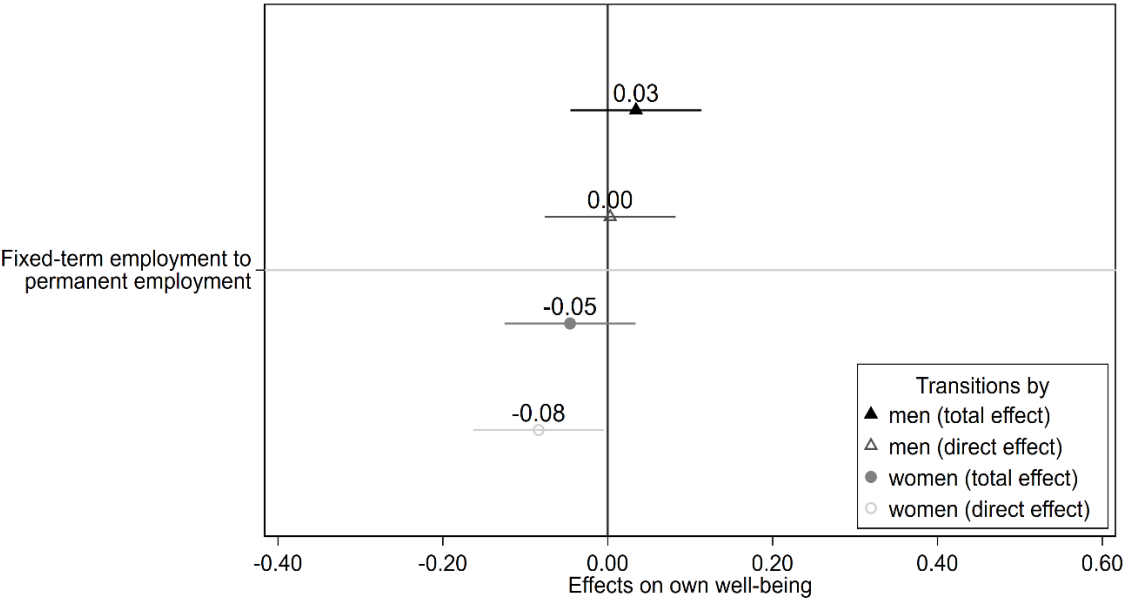
Note: Socio-Economic Panel, version 34, 1995–2017. Only effects of transitions from fixed-term to permanent employment.

The coefficients in the upper row suggest that for men, transitions from fixed-term into permanent jobs increase their well-being by .03 units. As expected, this total effect is positive, but very small and statistically insignificant. This finding suggests that the absence of spillover effects can be explained by the fact that we only find negligible positive effects on the individuals themselves. To see whether the theoretical models referring to reduced job insecurity and financial worries are relevant, we estimate the direct effects by controlling for these factors. These factors seem to mediate the total positive effect, since the direct effect equals zero. While this finding supports the theoretically assumed mechanisms, overall reduced job insecurity and financial worries together with other changes lead to only slight improvements in men's well-being.

In line with the previous findings on spillover effects, transitions from fixed-term to permanent employment slightly decrease women's own well-being (total effect of -.05). Accounting for job insecurity and financial worries increases this negative impact further by .03 units (indirect effect) to -.08 units (direct effect). The fact that the direct effect is more negative than the total effect is, however, in line with the theoretical explanations, which expect a positive indirect effect via reduced job insecurity and financial worries. In other words, by controlling for job insecurity and financial worries, we take out these positive indirect effects, such that the direct effect is more negative than the total effect.

In line with previous findings, we show that fixed-term employment as compared to permanent employment only slightly affects the well-being of individuals (Schumann and Kuchinke 2020; De Witte 2010; Gebel and Voßemer 2014). However, we do not find consistent effects across genders. If at all, transitions from fixed-term to permanent jobs seem to slightly decrease the well-being of women, while they only marginally increase the well-being of men.

4.3 Robustness checks

To further contextualize our findings regarding the spillover effects of transitions from unemployment to fixed-term and fixed-term to permanent employment, we examine the spillover effects of transitions from unemployment to permanent employment. We use our basic model specification including gendered spillover effects (OR 1, Table S4). We find that the spillover effects of transitions into permanent employment are only slightly larger (.35 units for transitions by men, .07 units for the transitions by women) than the effects of transitions from unemployment to fixed-term employment (.30 units for employment transitions by men, .07 units for respective transitions by women). Thus, for re-employment, the type of contract does not seem to matter much in terms of the spillover effects on well-being.

We also check the robustness of our results with respect to the age range of 18–65 years. We estimate our basic models only for individuals and partners who are between 20 and 45 years old (OR 1, Table S5). The effect sizes for the smaller age range do not differ significantly from our main analyses. Thus, our conclusions remain unchanged.

To examine possible heterogeneity within fixed-term employment, we use additional information on temporary agency work, that has been available in the SOEP since 2001. We distinguish between fixed-term temporary agency workers (TAW) and other fixed-term employees (NTAW). We estimate our basic model specification (OR 1, Table S6). For men, the positive spillover effect for transitions from unemployment to fixed-term employment is somewhat weaker for TAW (.23 units) than for NTAW (.31 units), while for women the effects are quite similar (.14 units for TAW, .10 units for NTAW). For transitions from fixed-term to permanent employment, there is a positive effect for transitions from TAW by men (.42 units) and women (.39 units), and a negative effect for transitions from NTAW by men (-.14 units) and women (-.06 units). While this indicates heterogeneity within fixed-term employment, these latter results are based on a very small number of observations in TAW. Consequently, the estimated effects are highly uncertain. In addition to this uncertainty, these results do not change our finding that, on average, there is no spillover effect for transitions from fixed-term to permanent employment.

5 Discussion

In this study, we extend the knowledge on how fixed-term employment affects well-being by addressing three research questions. First, are there spillover effects of fixed-term contracts on the well-being of partners? Second, do gendered spillover effects depend on socialization in East or West Germany? Third, are these spillover effects mediated by individual subjective well-being, job insecurity and financial worries? Using long-run panel data on couples from Germany, we analyze transitions from unemployment into fixed-term employment and from fixed-term into permanent employment. In this way, we look at the different perspectives on fixed-term employment by highlighting either their advantages or disadvantages.

We combine theoretical arguments from the vitamin model (Warr 2017) with the spillover-crossover model (Bakker and Demerouti 2013) to derive hypotheses about how fixed-term jobs may affect the well-being of partners. We estimate fixed-effects panel regression models, which reveal positive spillover effects of fixed-term re-employment as compared to remaining unemployed. These spillover effects are to a considerable extent mediated by individuals' own well-being. Our findings are consistent with arguments of the spillover-crossover model regarding the spillover of work into family life and with previous studies, which show that the negative effects of unemployment and job losses extend to partners (Marcus 2013; Nikolova and Ayhan 2019). The results reaffirm research, which suggests that fixed-term re-employment improves well-being over remaining unemployed (Gebel and Voßemer 2014).

We find that the positive spillover effects on partners' well-being are larger for transitions by men on women's well-being than for transitions by women on men's well-being. This difference is more pronounced for those who have been socialized in West as compared to East Germany. The findings support the idea that processes of doing gender are shaped by the place of socialization (Bauernschuster and Rainer 2012), and that the legacy of the GDR with respect to gender norms can still be seen (Ebner et al. 2020). Our findings are consistent with the vitamin model, which suggests that fixed-term employment offers more positive functions than unemployment. At the same time, the results are at odds with the idea that fixed-term employment has negative effects on the well-being of individuals similar to those of unemployment (Burchell 1994; Kim and von dem Knesebeck 2015). The results also contradict the findings of a recent study on spillover effects suggesting "that temporary work is at least as detrimental as unemployment for spouses' subjective well-being" (Inanc 2018, p. 1).

In contrast to the only previous study on spillover effects of fixed-term employment for the UK (Inanc 2018), we do not find that fixed-term jobs have any substantial negative effects on partners in comparison to permanent jobs for Germany. When analyzing transitions from fixed-term to

permanent employment, we find little or no spillover effects of fixed-term employment and little differences by gender and place of socialization. We show that the absence of positive spillover effects of permanent employment can be explained by the fact that these transitions do not strongly affect the well-being of those individuals who experience the transitions. For women, we even find small negative effects of transitions into permanent employment. While we further reveal that the theoretical mechanisms of more vitamins via reduced job insecurity and financial worries are found to hold, these channels are not important enough to produce strong effects on individuals' own, let alone their partners' well-being.

Our findings are in line with previous research on Germany, which shows that re-employment matters more for well-being than the type of contract (Grün, Hauser and Rhein 2010; Gebel and Voßemer 2014). Considering the findings of Inanc for the UK (2018), our findings might be considered surprising. She expects the negative spillover effects and their gendered patterns to be stronger in labor markets that are more segmented, and in contexts where male-breadwinner norms are more strongly entrenched. This description arguably applies to West Germany. We show that these arguments matter when comparing the gendered spillover effects of fixed-term employment as compared to unemployment for partners socialized in East and West Germany. However, further cross-national comparative research is needed to reconcile the diverging results regarding the spillover effects of fixed-term as compared to permanent employment.

Despite the present study's strengths, some limitations remain. Even though the study focuses on specific transitions to consider asymmetric effects (Schumann and Kuchinke 2020), it does not extensively consider the heterogeneity within fixed-term employment (trajectories). While our robustness checks for fixed-term temporary agency workers indicate some differences, we face the same problem as previous studies, in that we cannot fully account for heterogeneity within fixed-term employment (Imhof and Andresen 2018).

Although we follow workers for all years in fixed-term employment before and after a specific transition, it might be that the negative effects of fixed-term employment only emerge if workers repeatedly experience such transitions and remain trapped in insecure jobs. This assumption can be analyzed by studying employment sequences, which include heterogenous forms of fixed-term employment and outcome dynamics over longer periods. The current study design enables comparisons with previous studies, which also focused on single transitions, and provides first empirical evidence on spillover effects for Germany (Inanc 2018; Schumann and Kuchinke 2020).

Even though we complement previous studies by examining specific mediators such as job insecurity and financial worries on the individual level, we could not additionally account for mediators at the couple level (Baron & Rapp 2019). Delayed or even non-existent transitions into

first home ownership or the need to move several times due to frequent job changes might increase stress and consequently reduce the relationship quality (Blom, Verbakel and Kraaykamp 2020). Since these events are strongly intertwined with employment careers, future research will profit from combing both domains. This strategy would also be in line with theoretical arguments and might give insights into cumulative disadvantages.

Overall, this article shows that the effects of employment transitions are not only limited to those individuals who experience it, but also affect their partners. This study furthermore provides evidence that the type of contract seems to be less relevant than being employed at all when it comes to spillover effects on partners' well-being in Germany. Regarding the scenarios of the integrative potential of fixed-term employment versus fears that persistent job insecurity leads to negative effects of similar magnitude or even worse than unemployment, the former scenario seems to prevail. The positive effect of fixed-term re-employment extends to partners, such that studies which only focus on the affected individuals might underestimate the positive overall effects such transitions entail.

Eventually, more in depth (cross-national) studies of the mediators that produce positive spillover effects of fixed-term re-employment will advance our understanding of the processes that link employment careers with partners' well-being. While we show that these spillover effects could be explained by the positive effects on the well-being of the directly affected individuals, we still need to understand in greater detail how the intertwined employment and family trajectories affect well-being of both partners in the longer run.

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7 Appendix (OR 1)

Table S1: Spillover effects of fixed-term employment on the well-being of partners and gender differences by place of socialization

Table S2: Spillover effects of fixed-term employment on the well-being of partners by gender and the mediating role of the well-being of individuals

Table S3: Effects of fixed-term employment on the well-being of individuals by gender and the mediating role of individuals' perceived job insecurity and financial worries

Table S4: Robustness check 1: Spillover effects of unemployment to permanent employment transitions on the well-being of partners by gender

Table S5: Robustness check 2: Spillover effects of fixed-term employment on the well-being of partners by gender and place of socialization (25–40-year-old individuals)

Table S6: Robustness check 3: Spillover effects of fixed-term employment on the well-being of partners by gender (effects for fixed-term temporary agency workers and fixed-term non-temporary agency workers)

Table S1: Spillover effects of fixed-term employment on the well-being of partners and gender differences by place of socialization

Dependent variable: ***Partner's well-being***	**M1** β (t-value)	**M2** β (t-value)	**M3** β (t-value)	**M4** β (t-value)
	unemployment to fixed-term employment		fixed-term to permanent employment	
Employment status transition *(Ref.: no transition)*				
transition	0.30***	0.46***	-0.06	-0.05
	(4.14)	(3.84)	(-1.54)	(-1.02)
age	0.26	0.05	-0.18	-0.37
	(1.52)	(0.24)	(-0.99)	(-1.54)
age²	0.00	-0.00	-0.00	-0.00
	(0.42)	(-0.16)	(-0.46)	(-0.43)
unemployment rate	0.00	0.08	-0.02	0.03
	(0.10)	(1.02)	(-1.04)	(0.95)
Interaction with gender *(Ref.: male)*				
female × transition	-0.23**	-0.46***	0.05	0.05
	(-2.21)	(-2.58)	(0.89)	(0.67)
female × age	-0.32	0.00	0.19	0.10
	(-1.46)	(0.01)	(0.84)	(0.31)
female × age²	-0.00	-0.00	0.00*	0.00
	(-0.94)	(-1.02)	(1.75)	(1.34)
female × unemployment rate	-0.05	-0.17	-0.05*	-0.06
	(-0.90)	(-1.00)	(-1.81)	(-1.10)
Interaction with socialization *(Ref: West Germany)*				
east × transition		-0.29*		-0.00
		(-1.85)		(-0.04)
east × age		0.59		0.36
		(1.63)		(1.01)
east × age²		0.00		0.00
		(0.75)		(0.03)
east × unemployment rate		-0.12		-0.04
		(-1.38)		(-0.85)
female × east × transition		0.38*		-0.01
		(1.73)		(-0.07)
female × east × age		-0.75		0.19
		(-1.59)		(0.38)
female × east × age²		0.00		0.00
		(0.41)		(0.12)
female × east × unemployment rate		0.17		0.00
		(0.89)		(0.01)
constant	3.89	1.78	9.63***	11.41***
	(1.00)	(0.42)	(2.73)	(3.13)
Period effects?	✓	✓	✓	✓
N (observations)	10,907	10,907	18,167	18,167
N (spells)	3,463	3,463	3,947	3,947
N (couples)	2,373	2,373	2,990	2,990

Note: Socio-Economic Panel, version 34, 1995-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female (M1, M3) and female and east (M2, M4). Age and place of socialization refer to the partner. The standard errors are clustered at the couple level.

Table S2: Spillover effects of fixed-term employment on the well-being of partners by gender and the mediating role of the well-being of individuals

Dependent variable: **Partner's well-being**	M1 β (t-value)	M2 β (t-value)	M3 β (t-value)	M4 β (t-value)
	unemployment to fixed-term employment		fixed-term to permanent employment	
Employment status transition *(Ref.: no transition)*				
transition	0.30***	0.11	-0.06	-0.07*
	(4.14)	(1.57)	(-1.54)	(-1.83)
age	0.26	-0.09	-0.18	0.00
	(1.52)	(-1.38)	(-0.99)	(0.11)
age²	0.00	0.00	-0.00	-0.00
	(0.42)	(0.73)	(-0.46)	(-0.97)
unemployment rate	0.00	0.03	-0.02	-0.01
	(0.10)	(0.88)	(-1.04)	(-0.87)
Interaction with gender *(Ref.: male)*				
female × transition	-0.23**	-0.16	0.05	0.07
	(-2.21)	(-1.57)	(0.89)	(1.32)
female × age	-0.32	-0.25	0.19	0.30
	(-1.46)	(-1.16)	(0.84)	(1.25)
female × age²	-0.00	-0.00	0.00*	0.00**
	(-0.94)	(-1.26)	(1.75)	(2.17)
female × unemployment rate	-0.05	-0.05	-0.05*	-0.04
	(-0.90)	(-1.03)	(-1.81)	(-1.56)
constant	3.89	12.58***	9.63***	0.87
	(1.00)	(3.46)	(2.73)	(0.24)
Period effects?	✓	✓	✓	✓
Mediator				
own life satisfaction		0.31***		0.25***
		(15.58)		(14.57)
female × own life satisfaction		-0.01		0.01
		(-0.56)		(0.49)
N (observations)	10,907	10,907	18,167	18,167
N (spells)	3,463	3,463	3,947	3,947
N (couples)	2,373	2,373	2,990	2,990

Note: Socio-Economic Panel, version 34, 1995-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female. Age refers to the partner. The standard errors are clustered at the couple level.

Table S3: Effects of fixed-term employment on the well-being of individuals by gender and the mediating role of individuals' perceived job insecurity and financial worries

Dependent variable: *Individual's well-being*	M1 β (t-value)	M2 β (t-value)
	fixed-term to permanent employment	
Employment status transition *(Ref.: no transition)*		
transition	0.03	0.00
	(0.84)	(0.07)
age	-0.07***	-0.06**
	(-2.62)	(-2.28)
age²	0.00**	0.00**
	(2.40)	(2.03)
unemployment rate	-0.01	-0.02
	(-0.98)	(-1.09)
Interaction with gender *(Ref.: male)*		
female × transition	-0.08	-0.09
	(-1.41)	(-1.52)
female × age	-0.41*	-0.45**
	(-1.91)	(-2.07)
female × age²	-0.00	-0.00
	(-1.07)	(-0.76)
female × unemployment rate	-0.03	-0.02
	(-1.41)	(-1.04)
constant	15.24***	15.75***
	(5.19)	(5.37)
Period effects?	✓	✓
Mediators		
Financial worries *(Ref.: no worries)*		
worries		-0.28***
		(-7.32)
female × worries		0.04
		(0.65)
Job insecurity *(Ref.: no job insecurity)*		
insecurity		-0.11***
		(-2.76)
female × insecurity		-0.07
		(-1.25)
N (observations)	18,167	18,167
N (spells)	3,947	3,947
N (individuals)	2,990	2,990

Note: Socio-Economic Panel, version 34, 1995-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female. The standard errors are clustered at the couple level.

Table S4: Robustness check 1: Spillover effects of unemployment to permanent employment transitions on the well-being of partners by gender

	M1
	β
Dependent variable:	(t-value)
Partner's well-being (M1-2)	
Individual well-being (M3)	
Employment status transition *(Ref.: no transition)*	
transition	0.35***
	(5.90)
age	0.22
	(1.53)
age²	0.00
	(0.18)
unemployment rate	0.00
	(0.10)
Interaction with gender *(Ref.: male)*	
female × transition	-0.28***
	(-3.19)
female × age	-0.26
	(-1.37)
female × age²	-0.00
	(-0.41)
female × unemployment rate	-0.07*
	(-1.89)
constant	3.66
	(1.04)
Period effects?	✓
N (observations)	14,741
N (spells)	3,860
N (couples)	2,659

Note: Socio-Economic Panel, version 34, 1995-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female. Age refers to the partner. The standard errors are clustered at the couple level.

Table S5: Robustness check 2: Spillover effects of fixed-term employment on the well-being of partners by gender and place of socialization (25–40-year-old individuals)

Dependent variable: *Partner's well-being*	M1 β (t-value)	M2 β (t-value)
	unemployment to fixed-term employment	fixed-term to permanent employment
Employment status transition *(Ref.: no transition)*		
transition	0.31**	0.07
	(2.33)	(1.19)
age	0.90*	-0.74***
	(1.85)	(-2.63)
age²	-0.01**	0.00
	(-2.17)	(1.11)
unemployment rate	-0.03	-0.02
	(-0.52)	(-0.66)
Interaction with gender *(Ref.: male)*		
female × transition	-0.26	-0.10
	(-1.39)	(-1.09)
female × age	-0.60	0.51
	(-0.93)	(1.31)
female × age²	0.01	-0.00
	(1.04)	(-0.73)
female × unemployment rate	0.03	0.00
	(0.29)	(0.06)
constant	-3.12	17.72***
	(-0.46)	(4.59)
Period effects?	✓	✓
N (observations)	2,627	6,520
N (spells)	1,004	1,876
N (couples)	739	1,434

Note: Socio-Economic Panel, version 34, 1995-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female. Age refers to the partner. The standard errors are clustered at the couple level.

Table S6: Robustness check 3: Spillover effects of fixed-term employment on the well-being of partners by gender (effects for fixed-term temporary agency workers and fixed-term non-temporary agency workers)

	M1	**M2**	**M3**	**M4**
Dependent variable:	β	β	β	β
Partner's well-being	(t-value)	(t-value)	(t-value)	(t-value)
	unemployment to fixed-term …		fixed-term … to permanent employment	
	TAW	NTAW	TAW	NTAW
Employment status transition *(Ref.: no transition)*				
transition	0.23	0.31***	0.42***	-0.14***
	(1.52)	(3.46)	(2.92)	(-2.95)
age	-0.02	-0.09	-1.61***	0.04
	(-0.16)	(-0.61)	(-3.64)	(0.32)
age²	0.00	0.00	0.00	-0.00
	(0.59)	(0.49)	(1.61)	(-0.42)
unemployment rate	-0.03	-0.03	-0.00	-0.04*
	(-0.71)	(-0.76)	(-0.03)	(-1.85)
Interaction with gender *(Ref.: male)*				
female × transition	-0.09	-0.21	-0.03	0.08
	(-0.33)	(-1.64)	(-0.13)	(1.16)
female × age	-0.08	-0.09	-0.23	0.05
	(-0.38)	(-0.47)	(-0.81)	(0.23)
female × age²	-0.00	-0.00	0.00	0.00
	(-1.31)	(-1.14)	(0.52)	(1.58)
female × unemployment rate	-0.03	-0.05	-0.19	-0.00
	(-0.36)	(-0.79)	(-0.98)	(-0.14)
constant	10.05***	12.75***	62.78***	4.82
	(2.74)	(3.77)	(4.69)	(1.35)
Period effects?	✓	✓	✓	✓
N (observations)	6,154	7,392	1,029	12,325
N (spells)	1,990	2,385	240	2,889
N (couples)	1,478	1,715	226	2,256

Note: Socio-Economic Panel, version 34, 2003-2017. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All models include period effects and the respective interactions with female. Age refers to the partner. The standard errors are clustered at the couple level. TAW = temporary agency work, NTAW = non temporary agency work.

Article 4

Couples' Early Career Trajectories and Later Life Housing Consequences in Germany: Investigating Cumulative Disadvantages

Abstract

Using data on couples from the German Socio-Economic Panel (1995–2018), this study investigates how couples' early career trajectories affect housing outcomes in early adulthood and how this effect is mediated by couples' joint cumulative income. We apply a life course perspective by identifying dynamic treatments consisting of couples' consecutive employment statuses and examining their longer-term effects on homeownership and income shares spent on rent. Using multichannel sequence and regression analysis, we find that couples in which both partners have insecure employment trajectories, characterized by frequent spells of fixed-term employment and unemployment, are 25 percentage points less likely to own a home in early adulthood compared to couples with more secure career trajectories. Surprisingly, the couples' cumulative income does not remarkably mediate this effect, explaining less than one-fifth of the total effect. For couples who do not own their home but rent, we find that couples with insecure careers spend between 2 and 5 percentage points more of their joint income on rent compared to couples where both partners have secure career trajectories. Cumulative income disadvantages mediate the effects on shares of income spent on rent and reduce the effect sizes by 30–40 percent. Our findings indicate that inequalities caused by early career patterns can accumulate not only over time but also within couples and transfer to other areas of life, exacerbating housing and wealth inequalities in the longer run.

1 Introduction

Rising housing and rental prices are issues that have been extensively discussed in public debate in many industrialized countries, mainly for two reasons. First, homeownership is an important private pension investment to ensure low living expenses and a high living standard during retirement (Dewilde & Raeymaeckers, 2008). However, rising property prices prevent individuals and families from making the transition to homeownership, which could foster old-age poverty in the long run. Rising property prices are observed in almost all European countries, but the tensions are particularly visible on the German housing market. In Germany, construction prices for residential buildings have been rising by an average of 4% every year since 2000 (German Federal Statistical Office, 2020).

Second, competitive housing markets with increasing rents make it more difficult for renters to save privately for their pensions and accumulate capital to obtain loans to purchase a home (Arundel & Lennartz, 2019). In Germany, households that moved into their home in 2015 or later paid an average of 12% more rent than the average household in 2018 (German Federal Statistical Office, 2019). Therefore, homeownership opportunities are becoming increasingly difficult to attain and realize due to the increasingly difficult situation on the housing market.

Housing research has examined the determinants of homeownership and, in particular, highlighted the importance of the employment situation (Lazarus & Folkman, 1984; Bosmans et al., 2016; Baron & Rapp, 2019). Unemployment, temporary employment, or other forms of non-standard work are argued to include greater perceived job and income insecurity (Kalleberg et al., 2000). This insecurity might impede the ability to plan for the future, which affects longer-term decisions (Bosmans et al., 2016; Lazarus & Folkman, 1984).

In particular, young workers who are in a phase of life in which many crucial decisions for the future are made (e.g., concerning family formation or homeownership), are at risk of facing such career insecurities (Gebel & Giesecke, 2009; Baron & Rapp, 2019). Previous studies show that the likelihood of becoming a homeowner depends strongly on the type of employment status (Baron & Rapp, 2019; McGarth & Keister, 2008; Lersch & Dewilde, 2015) and income uncertainty (Diaz-Serrano, 2005) that individuals experience.

The housing literature has a long tradition of theoretically referring to a life course framework when considering the impact of family histories on longer-term housing careers (Henretta, 1987; Haurin et al., 1994; Ineichen, 1981). This strand of literature also emphasizes the role of the couple perspective (Kurz, 2000; Wagner & Mulder, 2000; Baron & Rapp, 2019; Dotti Sani

& Acciai, 2018). The life course perspective compliments this line of research by focusing on the longer-term effects on moving behavior (Herbers et al., 2014) or housing qualities (Feijten & Mulder, 2005), emphasizing the relevance of the timing of events and the longevity of effects.

This paper ties in with the life course perspective by making three contributions to the previous literature on career (in)security and housing. First, we analyze the effect on housing of couples' joint employment trajectories that incorporate different employment statuses of both partners in parallel. To do so, we apply a two-step approach by first performing multichannel sequence analysis and cluster analysis to define patterns of couples' careers. This first step allows us to build a dynamic treatment, which takes both partners' early career (in)security into account. In a second step, we estimate the effect of these career types of couples on the probability to be homeowners and the income spent on rent in early adulthood, namely when couples are in their mid-twenties to late thirties. Previous studies have highlighted the importance of career interruptions, but have mainly focused on individual employment statuses (Kurz, 2000) or unemployment experiences (Herbers et al., 2014; Feijten & Mulder, 2005). In addition, several studies emphasize the importance of a longer-term couple perspective (Baron & Rapp, 2019; Blom et al., 2020; Kurz, 2000), but few studies apply this design. If at all, these studies control for the partner's employment status (McGarth & Keister, 2008) and only rarely focus on couples (Dotti Sani & Acciai, 2018).

Second, we add to the housing literature by looking not only at the likelihood of homeownership but also at rental outcomes. While the previous literature mainly compares the effect of different independent variables on being either a homeowner or a renter (Arundel & Lennartz, 2019; Thomas & Mulder, 2016; Bobek et al., 2020; Lennartz & Helbrecht, 2018), we utilize the concept of rent burdens (Backhaus et al., 2015). More precisely, we refer to the share of income spent on rent. Rent burden, or sometimes referred to as rent affordability, is an important topic of public debate, but the literature on its determinants is sparse (Backhaus et al., 2015).

Third, we empirically test whether households' cumulative income (dis)advantages mediate the effects on the two housing outcomes. Following up on an earlier study showing that labor income insecurity reduces the probability of becoming a homeowner (Diaz-Serrano, 2005), we apply this insight to the context of employment trajectories with varying degrees of income (in)security and extend it to rent outcomes. The mediation effect of income has been theorized in several studies (McGarth & Keister, 2008; Dotti Sani & Acciai, 2018; Haurin, 1991), but has not yet been empirically tested in a longer-term context of housing consequences.

Three research questions are posed to examine whether (dis)advantages in employment trajectories at early career stages can accumulate within couples and over time to affect housing outcomes. We ask, first, how couples' early career trajectories affect the probability of being homeowners in the last year of observation. Second, we examine whether couples' early career trajectories affect the share of income spent on rent in the last year of observation. Third, we investigate the relevance of joint cumulative income as a mediator of the effect of couples' early career (in)securities on both the probability of being homeowners and the share of income couples spend on rent.

To answer our research questions, we use longitudinal household data of the German Socio-Economic Panel (SOEP) from 1995 to 2018 on couples between the ages of 18 and 38 who are observed for seven years. We apply multichannel sequence analysis and cluster analysis to reveal distinct patterns of employment career (in)security within couples and multivariate regression analysis to examine the longer-term effects of these patterns on homeownership and the share of income spent on rent.

1.1 The German context

Germany represents an especially interesting case for our study for two main reasons: the characteristics of its housing system and its labor market system. More specifically, Germany has the lowest homeownership rate in the Eurozone, with about 40% of households owning their home in 2020, and the second lowest among OECD countries (Kaas et al., 2020). Accordingly, almost two-third of households are renters. Renting and social housing for renters have a long tradition in Germany, dating back to the period after World War II (Voigtländer, 2009). There is only moderate rent regulation, i.e., landlords are relatively free to choose tenants and rent prices, whilst rent increases for existing rental contracts are tightly regulated (Cholodilin et al., 2016). Moreover, tenants are strongly protected, which could make it more attractive to rent than to own a home. This strong renter protection also makes the renting market more rigid and more selective about who rents and who owns a home (Voigtländer, 2009; Kurz, 2000; Wagner & Mulder, 2000).

At the same time, the German labor market has one of the lowest youth unemployment rates within the Eurozone. In 2014, for example, about 4% of people aged 15–34 were unemployed, 49% were labor market inactive (including education and civil service), and 47% were employed. Of all employed young persons, 80% had a permanent job contract, about 15% had a fixed-term job contract, and 5% were self-employed (Dietrich, 2017). Germany is one prime example of a strictly separated 'two-tiered' labor market. Such labor markets comprise a

primary labor market segment with highly regulated and protected well-paid permanent employment and a secondary labor market segment, including atypical employment of lower quality, which is less regulated and protected (Gundert & Hohendanner, 2014). Therefore, individuals in the secondary segment may be particularly disadvantaged when it comes to housing decisions.

2 Theory and hypotheses

2.1 Employment statuses and the life course framework

Employment careers consist of successive labor market and employment statuses. Different labor market or employment statuses should offer distinct advantages or disadvantages in terms of manifest functions like income or latent functions such as (perceived) job stability (Jahoda, 1982). *Unemployment* or *inactivity* do not provide the manifest function of income, making it more difficult to afford homeownership or expensive rents. In contrast, employment provides income, but must be further distinguished by type of contract or employment (Kalleberg, 2000).

Permanent employment offers income and the prospect of a secure, stable, and long-term job, possibly facilitating entry into homeownership and the payment of high rents. In contrast, *fixed-term employment* is associated with rather low job stability and often lower income (Gebel, 2010; Kalleberg, 2000; Barbieri & Scherer, 2009). The term fixed-term employment summarizes all forms of contracts that have a predetermined expiry date, including fixed-term contracts with one employer, temporary agency work on a fixed-term contract, as well as casual or seasonal work. Alternatively, *self-employment* is not tied to any specific employer, but depends on the demand for the goods or services offered by the self-employed person. This dependency makes both income and continuity of employment more fluctuating and uncertain compared to permanent employment.

Since all these labor market statuses could be part of a single employment trajectory, it is important to examine not only the effects of current employment statuses or single transitions. Rather, for an accurate prediction of homeownership and the income spent on rent, the focus should be on how (dis)advantages of different employment paths might transfer to housing.

Because couples share housing costs, both the probability of being homeowners and the amount of income spent on rent should depend on the early employment careers of both partners. For instance, if both partners have high career volatility early in their career, e.g., because both partners switch frequently between unemployment and self-employment, the disadvantages in income and job security accumulate within the couple and should jointly affect housing in later

years. The effect for these couples should be negative compared to couples in which both partners are permanently employed during their early careers. Accordingly, the advantages of one partner's career trajectory may also offset the disadvantages of the other partner's insecure career.

These arguments refer to the idea of 'interdependence between life domains' (Bernardi et al., 2019), meaning that resources from one domain (i.e., the employment domain) are related to goals from another domain (i.e., the housing domain). The couple perspective refers to the idea of 'linked lives' (Elder 1994) or 'multilevel interdependence of the life course' (Bernardi et al., 2019). These interdependencies, or linked lives, describe the idea that individuals are embedded in higher level social units, i.e., relationships, such as partnership or marriage, which influence them in their decision-making processes and enable the sharing of resources (Elder, 1994). In addition, the arguments point to the 'time-related interdependence of the life course' (Bernardi et al., 2019), meaning that accumulated resources in the employment trajectory directly affect the likelihood in later years of being homeowners and the amount of income that is spent on rent.

2.2 The effect of couples' career trajectories on homeownership

Individuals experiencing repeated periods of job instability early in their careers, such as fixed-term employment or self-employment, earn lower wages on average compared to individuals with standard careers (Gash, 2008; Booth et al., 2002a; Booth et al., 2002b; Gebel, 2010). In periods of unemployment or labor market inactivity, individuals even receive no labor income. As a result, these individuals are unlikely to build important savings early in their careers, which are however necessary to afford a home in later years. In addition to the income disadvantages, the job insecurity and instability experienced in such trajectories make it rational to avoid large and long-term financial investments such as buying a home. Homeownership would also tie individuals to a specific location, making frequent job and location changes more difficult (Baron & Rapp, 2019).

In turn, since lenders want to keep the risk of mortgage default low, credit institutions might find it less attractive to lend to the unemployed, inactive, or individuals with insecure employment careers (Akdogan et al., 2019). From a life course and linked lives perspective, these disadvantages accumulate not only over time but also within households (Elder, 1994; Bernardi et al., 2019). Subsequently, these cumulative disadvantages could reduce the likelihood of entry into homeownership for couples in which both partners have an insecure employment trajectory.

In contrast, if at least one partner has a secure and continuous permanent job that also leads to potentially higher savings, credit institutions might also be more willing to lend to these individuals. In case of couples where both partners have secure employment careers, characterized primarily by permanent employment and a secure income, credit institutes should be even more willing to give out large loans.

H1a: *The more insecure early employment trajectories of couples are, the less likely couples should be homeowners later in their careers.*

One of the most important explanations for these homeownership disadvantages are accumulations of income inequality within early careers. Couples in which both partners have secure careers from the start can save money continuously to gain security and be able to make large investments. In contrast, couples on insecure career pathways with repeated unemployment, inactivity, fixed-term or self-employment have a much harder time generating large savings (Akdogan et al., 2019). Moreover, young workers on insecure career pathways not only earn less or no pay on average compared to permanent workers, but they also have poorer or almost no prospects for promotion and corresponding earnings increases (Booth et al., 2002b; Gebel, 2010; Gash, 2008). These disadvantages in savings faced by young people with unstable employment trajectories amplify over time and make it more complicated for couples to achieve homeownership.

H1b: *Lower cumulative income partly mediates the negative effect of couples' early insecure employment trajectories on the probability of being homeowners later in their careers.*

2.3 The effect of couples' career trajectories on the share of income spent on rent

It is not only the ability to buy one's own home that may be negatively affected by early career instability. Because of income disadvantages, individuals with repeated spells of insecure employment statuses, such as inactivity, unemployment, fixed-term, or self-employment may have more difficulty finding affordable rental housing relative to their income. This difficulty can be exacerbated over time because landlords tend to raise rents with each new tenant to compensate for renovations and use rising property values to their advantage.

The longer one can live in the same place, the smaller the share of income one tends to spend on rent. Two important reasons are that rent increases for existing rental contracts are tightly regulated by German law (Cholodilin et al., 2016), and incomes usually rise over time. Repeated inactivity, unemployment, fixed-term or even self-employment should be associated with more

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frequent job changes and moves than stable permanent employment (Addison et al., 2015). Therefore, on average, rent tenure is likely to be shorter for workers with insecure careers than for workers with stable careers. Simultaneously, for workers with insecure careers, promotions and income increases are less likely than for workers with continuous permanent careers (Booth et al., 2002b; Gebel, 2010; Gash, 2008). Consequently, workers affected by unstable and insecure careers may find it more difficult to obtain housing with affordable rents relative to their income.

In addition, individuals with insecure career patterns may be more reluctant to search extensively for affordable rental housing. Individuals with insecure career patterns might anticipate moving soon, such as when their fixed-term contract expires, and they need to find a new job. This anticipated volatility could also lead individuals with insecure career trajectories to accept rents that are more expensive relative to their income. Besides that, landlords – comparable to credit institutions – might be less willing to rent to employees with non-permanent jobs or to the unemployed to ensure continuous payment of rents, if landlords do not need tenants only for temporary interim rent. These preferences of landlords could further force individuals with unstable careers and low incomes to accept housing on unfavorable conditions, increasing the likelihood of paying a significant portion of their own income for rent.

Just as buying a house is usually a household decision for which both partners' income and career prospects are considered (Blom et al., 2020), finding affordable rental housing should also be determined by the couples' shared resources. Hence, all of these considerations apply even more when both partners in a couple experience insecure careers. In contrast, couples with secure careers and higher incomes should be more willing to invest in longer searching periods to find adequate and affordable rental housing relative to their income, as they expect to live at the same place for a longer time. Due to their stable jobs, it is more likely that both partners will remain in the same rental home for an extended period of time. Since individuals with such stable careers are more likely to receive promotions and salary increases, their advantages in the shares of income spent on rent should become even more favorable over time.

H2a: *The more insecure early employment trajectories of couples are, the higher the share of couples' income spent on rent later in their careers should be.*

Accumulated income disadvantages can theoretically explain some of these differences, although the reasons are not the same as for the link between career instability and homeownership. For couples with at least one partner who is on an insecure career path, it is likely that the accumulation of prior low or no income directly affects the current income and

thus the share of the income spent on rent. More specifically, prior low income due to unstable careers could be interpreted as a signal of low work attachment and commitment by employers (Mooi-Reci & Wooden, 2017; Fuller, 2011).

These signals can directly affect the current income in terms of so-called scarring effects (Gangl, 2006; Dieckhoff, 2011). Scarring effects suggest that earlier disadvantages due to insecure careers, such as lower earnings and lower-quality jobs or periods of unemployment, can negatively affect future employment chances and income. This mediating effect may be even stronger when both partners have unstable early career trajectories. Within unstable career trajectories, couples accumulate low earnings from low-quality jobs.

These disadvantages reduce subsequent joint income, narrowing the gap between income and rent payments, i.e., the disposable income. Couples with high career security are more likely to receive more frequent promotions and salary increases. The accumulation of these increasing income advantages also affects the current income shares spent on rent. It is likely that the promotions or seniority payments from the earlier career are still visible in the later career.

H2b: *Lower cumulative income partly mediates the positive effect of couples' early insecure employment trajectories on the share of couples' income spent on rent later in their careers.*

3 Empirical strategy

3.1 Data

The data for our analysis come from the German Socio-Economic Panel (SOEP). The SOEP is an annual household panel providing information on the employment and living conditions of German households since 1984 (Wagner et al., 2007). The initial response rate is over 60% for the first sample drawn in 1984, and the average wave-to-wave re-interview rate is over 70% (Siegers et al., 2020). Besides the high response rates, the survey ensures high data quality and panel stability by adding refreshment samples throughout the years and by following up on individuals who have left their original household (Siegers et al., 2020; Wagner et al., 2007).

For our analyses, the SOEP yields three main advantages. First, it provides detailed annual data on individuals' activity status, type of contract, and various housing measures, such as information on homeownership and rent. Second, we have independent information from both partners because each adult household member is interviewed separately. This design allows us to construct reliable sequences of couples' employment trajectories. Third, the SOEP is one of

the longest-running household panel surveys, allowing us to examine longer employment sequences and later career outcomes such as homeownership and the share of income spent on rent.

Our sample is restricted to the years from 1995[1] to 2018 and includes heterosexual couples, married or otherwise, living together in a household throughout the observation period. Both partners have completed education, which excludes e.g., insignificant student jobs from the analysis. To depict early careers, both partners are between 18 and 38 years old. In addition, the probability of homeownership increases significantly for individuals in this age range (Andrews & Sánchez, 2011).

Couples must be observed for seven subsequent years to be included in the sample. This restriction ensures that we only analyze stable and longer-term couples who are at a stage in life when family formation and transition to homeownership are most likely (Baron & Rapp, 2019). Moreover, we arrive at the seven-year observation window as a compromise between being able to investigate early careers of stable couples holistically and not losing too many cases with an even longer observation period. We do not define our observation period as the first seven years in the labor market after partners completed their education, since partners within couples do not necessarily complete education at the same time.

Of the 174609 couple-years we observe in the SOEP, 136667 are deleted because they fall outside our age restriction, and another 20015 because they fall outside our required seven-year observation period. After additionally deleting observations with missing values on relevant variables, the restrictions finally yield a sample size of 1257 couples and 8799 couple-years. In our sample, male partners are on average born in 1973 and are on average about 28 years old at the first observation. Female partners are on average born around 1975 and are on average 26 years old at the first observation.

3.2 Methods

To test the hypotheses, we apply multichannel sequence analysis (Gauthier et al., 2010). This approach allows us to illustrate careers as a succession of states and to create holistic treatments of career (in)security or career (in)stability that do not only focus on single career statuses or transitions (Fuller & Stecy-Hildebrandt, 2015; Aisenbrey & Fasang, 2010). Thus, sequences

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[1] We include only the waves from 1995 and onwards since the type of contract was not measured accurately enough for our analysis in the waves before.

consist of annually measured employment statuses of both partners[2]. The first step of this approach is to measure the distance between sequences of couples. To measure this distance, the individual career sequences of both partners are combined into one sequence consisting of multiple states (in this case, the employment status of each partner).

In a second step, the similarities between each couples' sequence are judged using Optimal Matching (OM). Within this approach, a pair of sequences is considered more distinct from one another if more changes need to be made to one sequence to transform it into the other (Studer & Ritschard, 2016; Halpin, 2017). Each change applied to the sequences is associated with a certain cost assigned by the researcher. Here, we assign constant substitution costs of 2 and insertion or deletion (indel) costs of 1. Other algorithms, such as Hamming distances, are more sensitive to timing differences between sequences (Studer & Ritschard, 2016). However, timing differences are not central to answering our research question. We are mainly interested in *how much* career (in)stability certain trajectories entail, rather than *when* this (in)stability occurs.

The alignment of sequences results in a so-called distance matrix, which provides information about the (dis)similarity for each pair of couple sequences. This matrix forms the basis for a cluster analysis that reveals distinct patterns of couples' employment trajectories. We use the most commonly applied hierarchical Ward's algorithm for clustering of sequences (Halpin, 2017; Ward, 1963). This algorithm seeks to minimize the within-cluster variance, which increases homogeneity within the clusters.

Deciding on the correct number of clusters is not straightforward. We take suggestions from previous literature and form our decision based on the meaningfulness of the different cluster solutions according to our proposed theory. In addition, we rely on objective measures such as the elbow method and average silhouette width (Aisenbrey & Fasang, 2010; Fuller & Stecy-Hildebrandt, 2015; Studer, 2013). While the elbow method suggests an optimal cluster number of three or four clusters, looking at the average silhouette width suggest a three-cluster solution fits best. Ultimately, we opt for a four-cluster solution, as the three-cluster solution would not sufficiently differentiate different types of atypical employment, a difference that is not only empirically, but also theoretically important.

Of course, partitioning all couple sequences into four types of couples' career patterns still leaves some heterogeneity within the clusters, with rare couple career sequences not represented

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[2] We replace missing employment statuses in the sequences of each partner if the state before and after the missing state are the same as suggested by Halpin (2016).

as a separate cluster. Nonetheless, each cluster summarizes a specific pattern of couples' career trajectories that can be generalized to all individual couple sequences within the cluster (Fuller & Stecy-Hildebrandt, 2015). The multichannel sequence analysis is performed in R using the TraMineR package (Gabadinho et al., 2011).

The final step of our analysis uses the resulting clusters of career trajectories to predict homeownership and the share of income spent on rent. The patterns of couples' career trajectories resulting from clustering the multichannel sequences are measured during the early career t_0. The housing outcomes, namely the share of income spent on rent and homeownership, are measured in the later career t_1. Using this definition, we impose a causal order of events. We estimate average marginal effects (AMEs) from binary logistic regression models (homeownership) and perform linear regression analyses (share of income spent on rent). Standard errors are clustered on the couple level to reveal correct test statistics.

To test our hypotheses on homeownership and the shares of income spent on rent, we estimate two models. The first model includes only the patterns of career trajectories to predict homeownership (H1a), or shares of income spent on rent (H2a). The second model additionally includes the cumulative household income as a mediator into the two distinct models (H1b, H2b). Therefore, the coefficient for each career pattern in the first model equals the total effect (H1a, H2a), while the coefficients in the second model show the direct effect (H1b, H2b). The difference between the two coefficients shows how much can be explained by the household income (indirect effect). We use the *KHB* ado in Stata (Kohler & Karlson, 2010), which allows the estimation of the statistical significance of the mediation effect also for binary logistic regression models (Mustillo et al., 2018).

3.3 Measures

3.3.1 Independent variable

We use the clusters of couples' career sequences as our treatment. In these sequences, each partner can be observed in five different states: being out of labor, registered as unemployed, self-employed, having a permanent job, or having a fixed term-job. Therefore, we depict the labor market positions discussed in the theory section. These states are measured on an annual basis in the SOEP for seven consecutive years and for both partners within a household. From the cluster analysis, we obtain four distinct clusters or patterns of couples' early employment trajectories, which we describe in more detail in the descriptive results section (4.1).

3.3.2 Dependent variables

Homeownership is measured at the household level (i.e., at the couple level) by asking whether the dwelling in which couples currently live is owned or rented by them. Responses are summarized into homeownership (=1) and no homeownership (=0), indicating that household members are tenants. Couples living in any other types of housing, such as dormitories, are excluded from the analysis.

For all couples who pay rent and do not own their home, we consider the affordability of their rent as our second outcome of the housing situation. Specifically, we measure what percentage of the couples' total income is spent on rent (Backhaus et al., 2015). For this ratio, we look at the share of total household net income, which includes any government payments like housing benefits, that is spent on rent (including utilities). This measurement of income is important because if we were to look only at employment income, we would systematically overestimate the negative effect of insecure couple careers on the share of income spent on rent. Government payments such as housing benefits are intended to help poorer households with housing affordability, which may also cushion the impact of those careers on the shares of income spent on rent.

The two outcome variables are measured in the last year of observation (year seven), when partners within couples are between a minimum of 25 (the lower age limit of the sample restriction 18+7) and a maximum of 38 years old (the upper age limit of the sample restriction).

3.3.3 Mediator

Cumulative income is measured by the same income variable we use to measure the shares of income spent on rent. The mediator measures couples' cumulative net household income (in 10000 Euro increments) over the seven-year observation period. For the very few missing values (approximately 3% of the couple-years), we use the imputed version of the household income variable to avoid losing important information on couples (Frick & Grabka, 2014). Otherwise, the unimputed version could have biased the results.

3.3.4 Control variables

Sociodemographic characteristics of both partners measured in the first year of observation are included as control variables. These characteristics include the highest educational attainment in the couple, the year of the start of the sequence, the year of birth of both partners, the migration background of both partners, the occupation of the parents when respondents were 15 years old (highest within the couple), the East or West German location of the household, and the existence of children in the household. We expect this sociodemographic information

to affect both the assignment to the couple employment clusters and the likelihood of being homeowners as well as the shares of income spent on rent. We only include confounding control variables that have an effect on both treatment and outcome to avoid overcontrol and simultaneity bias in our models (Elwert & Winship, 2014). Table 1 in the Appendix summarizes how these control variables are distributed in each of the four clusters, while Table 2 in the Appendix summarizes how the dependent variables are distributed across clusters.

4 Results

4.1 Descriptive results of the multichannel sequence analysis

Our descriptive findings refer to the four distinct career patterns revealed by the cluster analysis on the multichannel employment sequences, which are presented in a sequence index plot (Figure 1). The clusters on the left describe the careers of male partners, while the clusters on the right illustrate the careers of female partners.

Figure 1: Clusters of couples' early career trajectories

Note: Socio-Economic Panel, version 35, 1995–2018.

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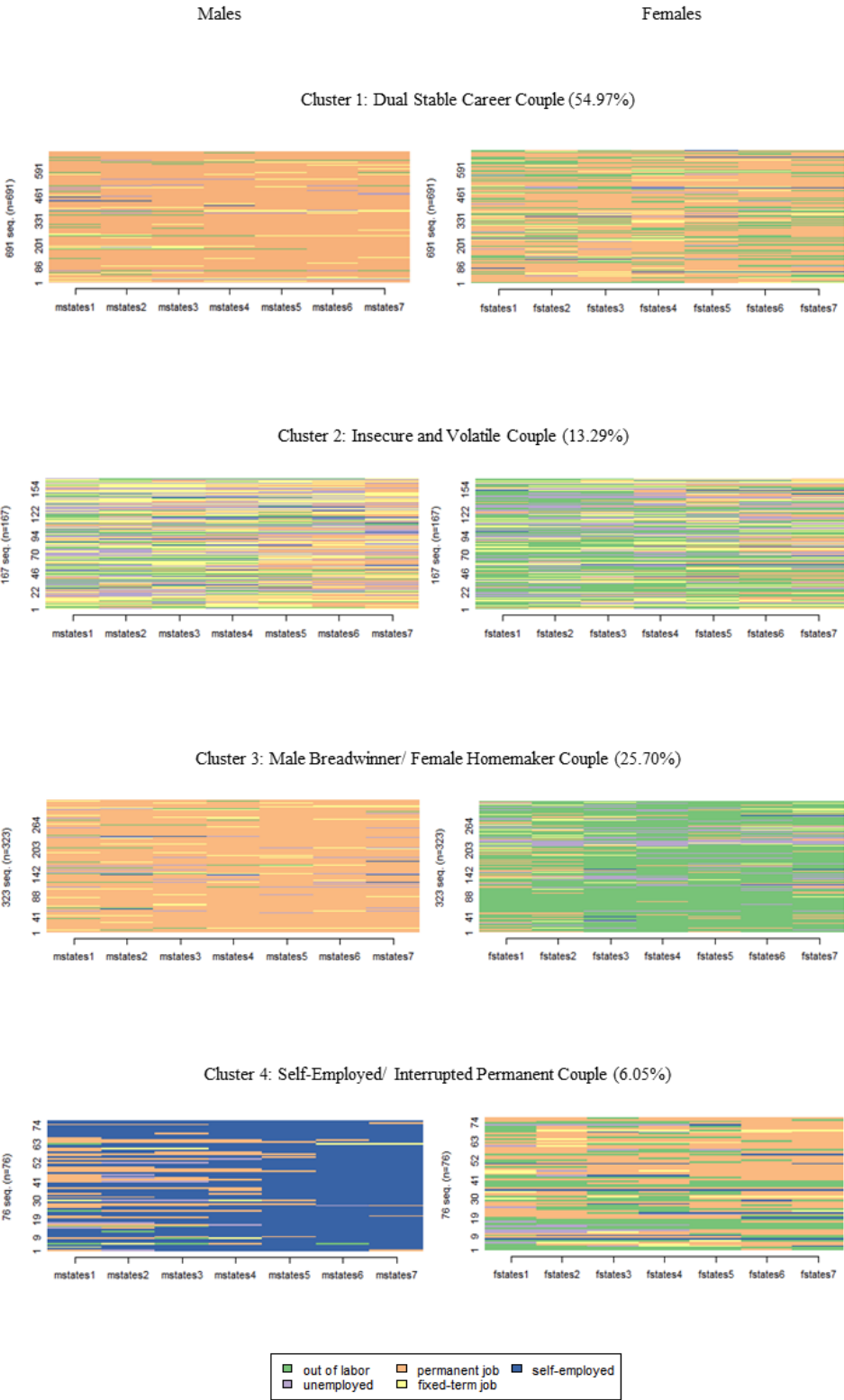
The first cluster (first row in Figure 1) summarizes the majority of couples, with slightly more than 50%, and can best be described as *dual stable career couples*. In this cluster, both partners work in permanent jobs for most years of their early careers. However, while men are permanently employed for most years (5.96 years on average), we see some interruptions (out of labor) for women. These gaps could indicate interruptions due to childcare or other caregiving responsibilities. Female partners spend an average of 4.66 years in permanent employment in this cluster.

The second cluster (second row in Figure 1) comprises about 13% of couples. Both partners have *insecure and volatile* careers. Especially the male partners spend a lot of time in fixed-term employment (2.13 years on average) and unemployment (1.74 years on average). However, men in this cluster also spend some years in permanent employment (1.75 years on average). Looking at the respective cluster, we see that some men make transitions to permanent employment, especially at the end of our observation window. Among female partners in this cluster, the most time is spent out of labor (2.87 years on average). However, the amount of time they spend in unemployment (1.57 years on average) and in fixed-term employment (1.40 years on average) follows closely behind. In general, couples in this cluster seem to have more instable and turbulent careers.

The first two clusters have in common that both partners follow similar career trajectories. This similarity could reflect assortative mating. It also means that career advantages or disadvantages associated with certain career trajectories accumulate in these couples.

The third cluster (third row in Figure 1) comprises the second most couples (about a quarter) and can be best described as the typical arrangement of *male breadwinner/female homemaker*. In this cluster, men work most of the time in permanent jobs (6.03 years on average), while the female partner does not take part in the labor market most of the time (5.20 years on average). Compared to the *dual stable career couple* and the *insecure and volatile couple* cluster, we see a clear division of tasks within the couple. The male partner takes on the task of breadwinning and works on a secure employment trajectory, while the female partner presumably takes on the task of homemaker and does not actively participate in the labor market.

The last cluster, the *self-employed/interrupted permanent* cluster (last row in Figure 1), is the smallest with only slightly more than 6% of cases. It includes couples where the male partner is mainly self-employed (5.37 years on average) and the female partner moves in and out of the labor market between periods of permanent employment. The female partner spends the most years in permanent employment (3.49 years on average), followed by periods of labor inactivity

(2.25 years on average). In contrast to the *dual stable career* and the *insecure and volatile* cluster, the career experiences of the partners in the *male breadwinner/female homemaker* and the *self-employed/interrupted permanent* clusters are very different from each other.

The four clusters illustrate the different levels of stability and security associated with couples' career trajectories. The *dual stable career couple*, in which both partners have standard careers consisting mainly of permanent employment, arguably entails the most career security. At the other end of the spectrum is the cluster of couples with *insecure and volatile* careers consisting of fixed-term employment, unemployment, and even, especially for female partners, labor market inactivity. These career patterns closely resemble the entrapment often associated with non-standard jobs. The other two clusters can be located somewhere between these two extremes of career security and insecurity. The *male breadwinner/female homemaker* cluster represents a degree of security because at least the male partner has a stable job. The self-employment of the male partner in the last cluster, the *self-employed/interrupted permanent* couple cluster, which could also entail some degree of career insecurity, is balanced by relatively long periods of permanent employment of the female partner.

A look at the characteristics of the couples in each cluster (Table 1 in the Appendix) reveals that couples in the *insecure and volatile* career cluster are the youngest within the sample. At sequence start, men in this cluster are on average 26 years old, while their female partners are on average 24 years old. In addition, the couples in this cluster are from the youngest birth cohort, with men born on average around 1977 and women around 1979.

These findings are consistent with previous literature showing that labor market insecurity is most prevalent among recent cohorts of young workers (Gebel & Giesecke, 2009; Baron & Rapp, 2019; Gebel & Giesecke, 2016). Men are on average oldest in the cluster *self-employed/interrupted permanent* (about 29 years), but closely followed by men in the *dual stable career couple* cluster (about 28 years). Women are oldest in the *dual stable career couple* cluster with about 26 years. Finally, women in the *male breadwinner/female homemaker* cluster belong to the oldest birth cohort, born on average around 1974. Among men, the oldest birth cohorts are found in the *self-employed/interrupted permanent* and the *male breadwinner/female homemaker* cluster, with birth years around 1972.

4.2 Multivariate analyses: regression results

To test our hypotheses, we estimate regression models that incorporate the identified career patterns to predict housing outcomes in early adulthood and account in a second step for

cumulative income as a mediator. We are especially interested in the disadvantages that may arise from insecure careers compared to secure careers. Hence, we use the *dual stable career couples* cluster (i.e., the most secure one) as the reference category in our models. For the binary logistic regression models, we estimate AMEs that indicate the probability in percentage points to experience homeownership for couples belonging to the remaining clusters relative to the reference cluster. The coefficients of all regression models can be found in the Appendix (Table 3 for homeownership and Table 4 for income spent on rent).

4.2.1 The effect of couples' career trajectories on homeownership

We expect in H1a that the more insecure a couple's early career trajectory is, the less likely it is to be homeowners in early adulthood. In H1b, we hypothesize that the cumulative household net income may be a mediator of the effect of couples' career (in)security on the probability of homeownership. To test these hypotheses, we estimate a model once without (total effect, results on H1a) and once with the mediator (direct effect, results on H1b) and perform a statistical test for the mediation effect (Table 3, last column). The main findings are depicted in Figure 2.

Figure 2: Effect of couples' career trajectories on homeownership and cumulative income as a mediator for this effect
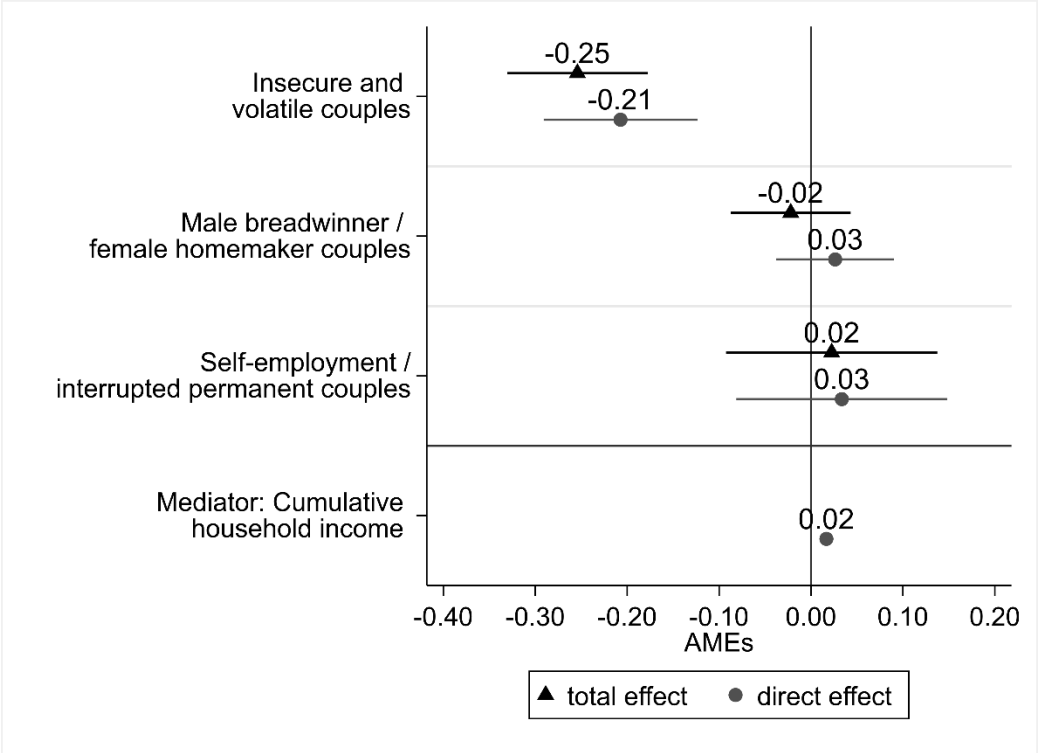
Note: Socio-Economic Panel, version 35, 1995–2018. Reference group consists of dual stable career couples. The lines through the point estimates represent the 95% confidence intervals. Effects of control variables are not included into the graph but can be found in Table 3 in the Appendix.

The first coefficient in each row (triangle) represents the total effect estimated based on the specification without cumulative income as a mediator (finding on H1a). Directly below each total effect is the respective direct effect (finding on H1b), illustrating the impact of the employment trajectories after controlling for the cumulative net household income (circles). In the last row, we see the effect of cumulative household net income on the probability of homeownership, which is included only in the second model specification. The results represent AMEs of the logistic regression predicting homeownership in the last observation, that is, when couples are in their later careers.

The estimates for the total effects show that couples in the *insecure and volatile* cluster have a much lower probability of homeownership (25 percentage points) compared to secure career couples. *Male breadwinner/female homemaker* couples are 2 percentage points less likely to be homeowners. However, this difference is statistically insignificant. In contrast to what we

expected, *male self-employed/female interrupted permanent* couples have a 2 percentage points higher likelihood of being homeowners compared to the most secure pattern.

While we hypothesize that self-employment is relatively insecure, previous studies show that farmers, who are often also self-employed, tend to be homeowners (Kurz 2000; Kurz 2004). Moreover, studies which argue that the self-employees are likely to have business relationships to local clients, tying them to this specific location, also find that self-employed are more likely to own their home (Mulder & Wagner, 1998). These findings and the fact that self-employment is a heterogeneous employment category could explain the small positive and statistically insignificant effect we find.

In line with our hypotheses on H1a, we see that couples' insecure early career trajectories – especially when both partners experience early career insecurity – reduce the likelihood of being homeowners in early adulthood.

Turning to the results for H1b, we see a statistically significant difference of 4 percentage points (-.25-(-.21) = -.04 with $z = -3.44$) between the total effect and the direct effect of the likelihood of homeownership for *insecure and volatile* couple career trajectories compared to the most secure one. The direct effect is smaller than the total effect, but still significant and meaningful (21 percentage points). When comparing *male breadwinner/female homemaker* couples to secure couples, the coefficient becomes positive when cumulative income is included in the model. These couples are now slightly more likely to be homeowners compared to the secure employment career couples. However, this difference is statistically insignificant ($z = .46$). Comparing the likelihood of the *self-employed/interrupted permanent* couple to be homeowners with the secure employment trajectories couples, the total effect is almost equal to the direct effect, implying that there is no substantial mediation effect, although it is still significant ($z = 2.73$).

Finally, there is a positive effect of the cumulative net household income of 2 percentage points, i.e., a 10,000 Euros increase in cumulative income increases the likelihood to be homeowners by 2 percentage points. This effect is not as substantial as one might have expected.

These results imply – in line with our hypothesis H1b – that there is a mediating effect of cumulative household earnings, even if it is rather small and only occurs for *insecure and volatile couples*.

4.2.2 The effect of couples' career trajectories on the share of income spent on rent

In H2a, we expect that the more insecure couple career patterns are, the higher the share of income spent on rent will be. The final hypothesis, H2b, addresses the mediating role of cumulative income (dis)advantages on the relationship between career trajectories and the share of income that is spent on rent in early adulthood. The total (triangle, findings on H2a) and direct effect (circle, findings on H2b) are shown in Figure 3, which presents the results of the linear regression models (results of the statistical tests for the mediator can be found in Table 4, last column).

Figure 3: Effect of couples' career trajectories on the share of income spent on rent and cumulative income as a mediator for this effect
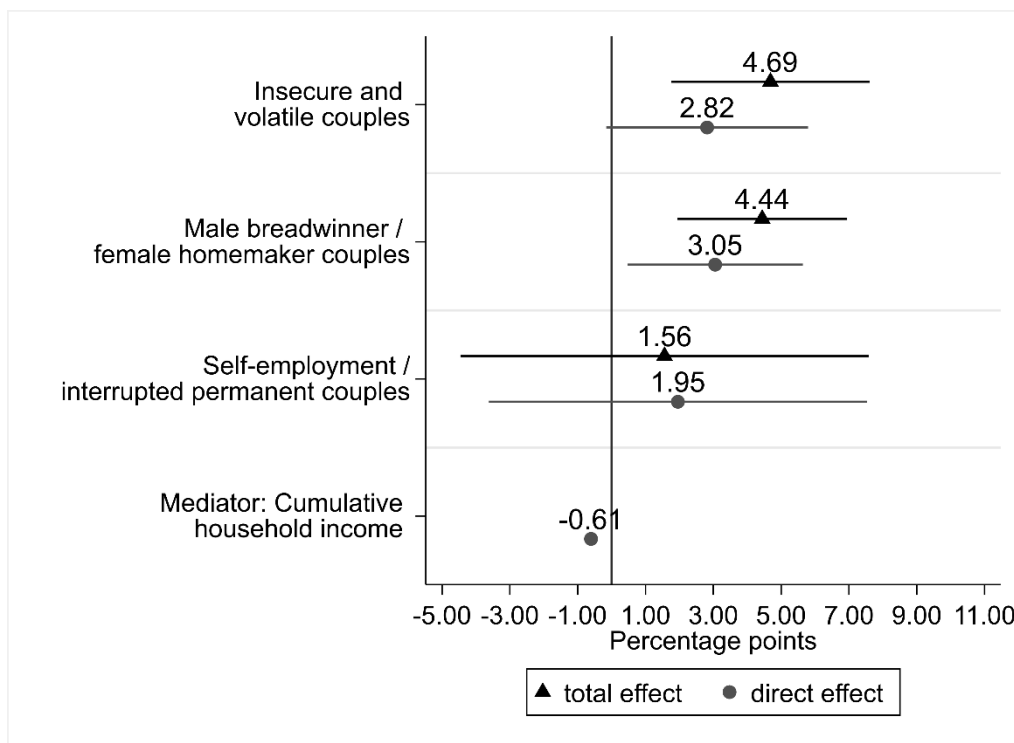
Note: Socio-Economic Panel, version 35, 1995–2018. Reference group consists of dual stable career couples. The lines through the point estimates represent the 95% confidence intervals. Effects of control variables are not included into the graph but can be found in Table 4 in the Appendix.

Looking at the total effects, we see that couples with insecure careers spend a significantly higher share of their income on rent, which makes their housing less affordable. More specifically, compared to the most secure couple career pattern, couples in the *insecure and volatile* career cluster spend about 5 percentage points of their income more on their rent.

Interestingly, the traditional *male breadwinner/female homemaker* couple is also at a significant disadvantage here compared to the *dual stable career couple*. Moreover, the effect is almost as large as for the most insecure career couples. For *self-employed/interrupted permanent* employment couples, the ratio is also higher compared to secure couple career trajectories (1.56 percentage points), but statistically insignificant. These findings support hypothesis H2a.

Regarding the results for H2b, the largest total effect, that of *insecure and volatile couples* compared to *dual stable career couples*, is partly mediated by cumulative income. More specifically, the direct effect is 1.87 percentage points smaller, implying a decrease in the effect size of almost 40%. This difference is also statistically significant ($z = 2.52$). As for the comparison between the traditional *male breadwinner/female homemaker couples* to the most secure type of couples' career trajectories, the large positive total effect decreases by 1.39 percentage points. In relative terms, the total effect shrinks by 31%. Thus, the cumulative income disadvantages cannot explain as much of the effect as for the most insecure couples, but the reduction is still statistically significant ($z = 1.96$). Therefore, cumulative income disadvantages appear to play an important role in the larger shares of income spent on rent by the *insecure and volatile couples* and *male breadwinner/female homemaker couples* compared to *dual stable career couples*.

Although the effect is not fully explained by cumulative income, it explains more than one-third of the effect for both types of couples. For *self-employed/interrupted permanent couples*, for whom the total effect is the smallest, adding the cumulative income to the model slightly increases the effect by .39 percentage points. However, this increase is neither empirically nor statistically significant ($z = -.56$). The findings thus do not support the hypothesis that cumulative household income plays any important role in this rather small group difference. Finally, looking at the effect of cumulative income, we find that a 10000 Euros increase in cumulative household income leads to a statistically significant .61 percentage points decrease in the share of income spent on rent.

Overall, prior cumulative income advantages reduce the share of income spent on rent, suggesting that prior income disadvantages also add up and negatively affect current shares of income spent on rent. The data on hand support our last hypothesis (H2b) that cumulative income (dis)advantages mediate the effect of insecure employment trajectories on the shares of income that couples spend on rent in early adulthood for *insecure and volatile* and *male breadwinner/female homemaker couples*. These findings support the notion that prior

experiences with low quality jobs may have negative signalling effects on the subsequent career of couples in the *insecure and volatile* career cluster.

4.3 Sensitivity analyses

To test the sensitivity of the results, we conduct several sensitivity tests in two sets. The first set refers to the choice of measurement of career insecurity and the second set is related to the role of (cumulative) income and absolute rent prices.

4.3.1 Choice of measurement

To test the sensitivity of our clusters, we apply two other algorithms in addition to the OM approach, namely the Hamming distance and the Dynamic Hamming distance, which are more sensitive to timing differences between sequences than the OM approach (Studer & Ritschard, 2016). Both alternative algorithms (not presented) lead to very similar cluster solutions of couples' early career trajectories compared to the patterns we uncover with the OM approach. We also test the sensitivity of our results to the alternative of an index of sequence volatility, i.e., the index of turbulence (Halpin, 2017). This index considers the number of spells[3] in each (couple) sequence as a measure of career turbulence (see Table 5 in the Appendix for the distribution across clusters). Using the index of turbulence at the couple level as a predictor of housing outcomes leads to essentially similar results, namely that higher levels of turbulence lead to a lower likelihood of homeownership and a higher share of income spent on rent (not presented).

4.3.2 Role of (cumulative) income and rent prices

We introduce initial household income as an additional control variable in our regression models instead of including it in our measurement of cumulative income. This change in model specification produces somewhat smaller effects for the *insecure and volatile* career couple in the case of homeownership compared to the main model (Table 6 in the Appendix, models M1 and M2), however, results are very similar for the share of income spent on rent (Table 7 in the Appendix, models M1 and M2).

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[3] Consecutive years in the same sequence state are considered as one spell, e.g., three years of unemployment (first spell), followed by two years of fixed-term employment (second spell), and another two years of unemployment (third spell), would be considered as three employment spells. We count the spells first separately for each partner and combine them in a second step to create the index at the couple level.

Additionally, to ensure that our findings on the share of income paid for rent are not driven by household income or rental prices per se, we estimate models where we include these two variables separately, measured in the seventh year. While the household income in later years reduces the share of income spent on rent by about 5 percentage points, couples with *insecure and volatile* careers still pay about 4 percentage points more of their income on rent (Table 7 in the Appendix, model M5). These findings reaffirm that cumulative household income is an important explanation for the higher shares of income paid for rent by couples with more insecure careers, beyond the impact of the current income. Acounting for rent price in the seventh year shows that rent itself only slightly increases the share of income spent on rent, while couples with *insecure and volatile* careers still spend over 3 percentage points more of their income on rent (Table 7 in the Appendix, model M6).

Finally, we examine the effect of cumulative income for each partner separately to see if one partner's contributions to cumulative household income are more important than the other's in explaining our results. For this individual measure of cumulative income, we consider only income from employment as well as unemployment and parental benefits and exclude all government transfers received at the household level (i.e., housing benefits). For homeownership, the results show that the male partner's cumulative income is much more important than the female partner's cumulative income both as a predictor of homeownership and in explaining the negative effect of career insecurity (Table 6 in the Appendix, model M1, M3, and M4). For the share of income spent on rent, the results are different. Here, female partner's cumulative income is a more important predictor of the share of income paid for rent and for reducing the effect of career insecurity (Table 7 in the Appendix, model M1, M3, and M4). The male partner's cumulative income also has an impact, but in this case, it is not as important as the female partner's cumulative income.

Overall, our findings appear insensitive to other model specifications as well as other measures of early career insecurity in couples.

5 Discussion and conclusion

This paper reaffirms the previous literature by showing that job instability and insecurity, e.g., through fixed-term employment, lower the probability of homeownership (Baron & Rapp, 2019). We extend these findings by taking a life course perspective. We show that disadvantages in homeownership result from the accumulation of longer-term instable employment careers within couples. These cumulative disadvantages within early careers lead

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to significantly lower probabilities of homeownership compared to stable career patterns. Other couple career patterns do not appear to affect the probability of being homeowners. Thus, regarding homeownership, the double burden of instable careers experienced by both partners is more damaging than when only one partner has an insecure employment path.

Although income has been suggested as an important mediator in previous studies (McGarth & Keister, 2008; Dotti Sani & Acciai, 2018), we find that income plays a very small role in mediating the effect of early career on the probability of being homeowners. These results suggest that other channels, such as lower plannability or difficulty in obtaining credit, might play an even more important role for couples with insecure career trajectories.

We complement previous studies on the effects of employment status on homeownership (Baron & Rapp, 2019; McGarth & Keister, 2008; Lersch & Dewilde, 2015) by additionally accounting for shares of income spent on rent, an outcome that has been neglected so far by the literature (Backhaus et al., 2019). Even though Germany is still the prime example of people renting instead of buying a home, the share of renters is steadily increasing in all European countries (Arundel & Doling, 2017; Dotti Sani & Acciai, 2018). Therefore, the effects uncovered in this study may provide a glimpse into the future for other countries.

We show that career insecurity among couples significantly increases the share of income spent on rent. Not only does this mean that these couples have less money available for leisure activities that are important for ensuring well-being, but it may also be harder for them to save money to afford homeownership or build financial cushions. Previous literature suggests that income uncertainty is an important explanation for the decision to buy a home (Diaz-Serrano, 2005). We show that longer-term income instabilities or disadvantages are crucial in mediating the effects of career insecurity on the income spent on rent.

The fact that the most severe negative effects of couples' employment trajectories on housing are experienced by couples who are already most disadvantaged in terms of their career prospects (i.e., *insecure and volatile* couples) illustrates how disadvantages persist and even accumulate. Specifically, we uncover a double disadvantage experienced by couples with the most insecure careers. These insecure career couples are less likely to own a home in their early adulthood and more likely to rent, for which they have to spend a higher share of their income. Thus, our findings highlight the difficulties of already disadvantaged groups in catching up with advantaged dual stable career couples in terms of wealth accumulation. This finding is alarming in light of rising levels of social inequality and old-age poverty.

Despite the strengths of the present study, some limitations remain. Due to the choice of our study design and data restrictions, we cannot differentiate between very specific employment statuses such as specific forms of self-employment or atypical employment, or between less common career trajectories. We could not consider a more precise definition of our mediator, such as more holistic income trajectories, to reveal how cumulative income disadvantages arise. While our sensitivity analysis suggests differences in the role of gender in income contributions for the two outcomes, future research should more fully account for heterogeneity in employment statuses, as well as possibly gendered income trajectories to better understand how and for whom the mediator works in detail.

In addition, we face the problem that non-random panel attrition might bias our results. Since individuals who move frequently or experience periods of unemployment are more likely to drop out of panel studies such the SOEP (Siegers et al., 2020), we may underestimate the extent of career insecurity within couples. Our results could therefore be interpreted as conservative estimates of the relationship of career insecurity and housing situation, as we may not be observing couples with the most volatile careers in our sample.

Due to data limitations, we were also unable to analyze effects of early career trajectories on housing outcomes or financial well-being in retirement. Moreover, by focusing on Germany, we cannot investigate effects of employment trajectories from a country-comparative perspective to better understand the consequences of different housing market systems (Lersch & Dewilde, 2015). These open questions should be analyzed in future research by studying theoretically driven employment sequences and outcome dynamics over longer periods utilizing multilevel analyses for different countries.

Limitations aside, this paper advances our knowledge of longer-term consequences of (in)stable employment that go beyond income effects. We use multichannel sequence analysis that uncovers complex career patterns (Gauthier et al., 2010) and relate the career patterns to housing outcomes in later lives. Overall, this article shows that the effects of employment trajectories on housing outcomes depend on intertwined early career trajectories.

These findings suggest that studies focusing only on individuals' employment status or transitions may greatly underestimate the effects and associated costs of career insecurity. Moreover, this article broadens the focus from considering homeownership versus renting to include renting quality outcomes. We provide first results on the severe negative consequences of career (in)security on rent affordability. Our findings thus underline the various

disadvantages of non-standard employment for individuals and the accumulation of disadvantages within couples.

Finally, our results imply that government benefits such as housing payments do not sufficiently mitigate the housing disadvantages of couples' insecure and volatile careers. Examining the mediating effect of more detailed income trajectories of couples as well as the longer-term consequences of the revealed housing inequalities, such as poverty, family formation, or health and well-being, could be useful for more holistic policymaking. A country-comparative perspective will help to improve our understanding of how different housing policies moderate these impacts.

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7 Appendix

Table 1: Descriptive statistics for control variables by couples' career trajectories

	Dual stable career couples	Insecure and volatile couples	Male breadwinner / female homemaker couples	Self-employed / interrupted permanent couples
Highest education in household				
Primary and lower secondary	3.33	13.17	10.53	1.32
Upper secondary	48.05	54.49	52.63	50.00
Post-secondary, non-tertiary	14.33	8.98	11.76	11.84
Short tertiary	9.99	2.40	8.05	13.16
Tertiary	24.31	20.96	17.03	23.68
Males' migration background				
None	80.61	73.65	59.75	77.63
Direct or indirect	19.39	26.35	40.25	22.37
Females' migration background				
None	79.74	76.65	59.75	78.95
Direct or indirect	20.26	23.35	40.25	21.05
Sequence starts in				
East Germany	26.92	35.33	19.20	32.89
West Germany	73.08	64.67	80.80	67.11
Children in household				
No	60.20	52.69	40.87	51.32
Yes	39.80	47.31	59.13	48.68
Highest ISCO-88 of parents				
Major group 1: Managers	11.72	12.57	8.67	14.47
Major group 2: Professionals	18.38	25.15	17.65	23.68
Major group 3: Technicians and associate professionals	23.15	21.56	16.41	17.11
Major group 4: Clerical support workers	11.43	5.99	7.74	9.21
Major group 5: Service and sales workers	9.26	7.78	9.60	3.95
Major group 6+7: Skilled workers / craft and related trades workers	18.23	16.77	24.46	21.05
Major group 8+9: machine operators/ elementary occupations	7.81	10.18	15.48	10.53
Mean birth year males (SD)	1972.92 (6.53)	1977.39 (6.69)	1972.14 (6.73)	1971.91 (6.17)
Mean birth year females (SD)	1974.72 (6.68)	1979.01 (6.78)	1974.30 (6.90)	1974.41 (6.64)
Mean year of sequence start (SD)	2000.99 (6.10)	2003.45 (6.22)	1999.85 (5.76)	2000.43 (5.86)
Mean cumulative net household income (SD)	221904.56 (69545.89)	175788.57 (76036.50)	182731.28 (53579.55)	214203.79 (72734.02)
Total %	54.97	13.29	25.70	6.05
N	691	167	323	76

Note: Socio-Economic Panel, version 35, 1995–2018.

Table 2: Descriptive statistics for housing consequences by couples' career trajectories

	Dual stable career couples	Insecure and volatile couples	Male breadwinner/ female homemaker couples	Self-employed/ interrupted permanent couples	Total % (N)
Homeownership					
No	49.18	19.67	26.09	5.05	100 (732)
Yes	63.05	4.38	25.14	7.43	100 (525)
Income share spent on rent (SD)	25.96 (13.67)	28.50 (14.94)	32.16 (14.78)	28.02 (17.92)	(688)*

Note: Socio-Economic Panel, version 35, 1995-2018, *44 (732-688=44) renters did not give information on their rent, they were not dropped form the analysis on homeownership to increase sample size. Results are largely the same when they are dropped.

Table 3: Results of the logistic regression of homeownership, AMEs

	Null Model	+ Control variables	+ Mediator	Δ total / direct effect
	AME (*z-value*)	*AME* (*z-value*)	*AME* (*z-value*)	*AME* (*z-value*)
Couples' career trajectories				
Ref.: Dual stable career couples				
Insecure and volatile couples	-0.34***	-0.25***	-0.21***	-0.04***
	(-10.42)	(-6.52)	(-4.85)	(-3.44)
Male breadwinner / female	-0.07**	-0.02	0.03	0.05***
homemaker couples	(-2.11)	(-0.66)	(0.81)	(2.73)
Self-employed /	0.03	0.02	0.03	0.01
interrupted permanent couples	(0.57)	(0.38)	(0.57)	(0.46)
Controls				
Highest education in household				
Ref.: Primary and lower secondary				
Upper secondary		0.23***	0.22***	
		(4.25)	(3.69)	
Post-secondary, non-tertiary		0.24***	0.22***	
		(3.66)	(3.24)	
Short tertiary		0.45***	0.40***	
		(6.17)	(5.29)	
Tertiary		0.22***	0.13**	
		(3.54)	(2.05)	
Females' migration background				
Ref.: None				
Direct or indirect		0.02	0.02	
		(0.52)	(0.43)	
Males' migration background				
Ref.: None				
Direct or indirect		-0.07	-0.06	
		(-1.53)	(-1.40)	
Location at sequence start				
Ref.: East Germany				
West Germany		0.07**	0.01	
		(2.38)	(0.34)	
Children in household				
Ref.: No children				
Children		-0.01	0.01	
		(-0.27)	(0.24)	
Highest ISCO-88 of parents				
Ref.: Major group 1: Managers				
Major group 2: Professionals		-0.06	-0.06	
		(-1.34)	(-1.15)	
Major group 3: Technicians and associate		0.03	0.04	
professionals		(0.66)	(0.91)	
Major group 4: Clerical support workers		-0.04	-0.02	
		(-0.64)	(-0.28)	
Major group 5: Service and sales workers		-0.06	-0.03	
		(-1.01)	(-0.50)	
Major group 6+7: Skilled workers / craft		-0.02	0.02	
and related trades workers		(-0.33)	(0.39)	
Major group 8+9: machine operators /		-0.06	-0.03	

elementary occupations		(-0.93)	(-0.51)
Birth year males		-0.03***	-0.02***
		(-4.55)	(-3.77)
Birth year female		-0.01	-0.00
		(-1.39)	(-0.48)
Year of sequence start		0.03***	0.02***
		(5.43)	(2.62)
Mediator			
Cumulative net household income			0.02***
(in 10.000 Euros)			(6.32)
N	1257	1257	1257

Note: Socio-Economic Panel, version 35, 1995–2018. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Results of the linear regression of the income share spent on rent

	Null Model	+ Control variables	+ Mediator	Δ total / direct effect
	β (*t-value*)	β (*t-value*)	β (*t-value*)	β (*z-value*)
Couples' career trajectories				
Ref.: Dual stable career couples				
Insecure and volatile couples	2.54*	4.69***	2.82*	-1.87***
	(1.75)	(3.15)	(1.86)	(-2.52)
Male breadwinner / female	6.20***	4.44***	3.05**	-1.39***
homemaker couples	(4.67)	(3.48)	(2.32)	(-1.96)
Self-employed /	2.06	1.56	1.95	0.39
interrupted permanent couples	(0.76)	(0.51)	(0.69)	(-0.59)
Controls				
Highest education in household				
Ref.: Primary and lower secondary				
Upper secondary		-3.06*	-2.79	
		(-1.73)	(-1.63)	
Post-secondary, non-tertiary		-5.19**	-5.30***	
		(-2.49)	(-2.61)	
Short tertiary		-5.85**	-4.87*	
		(-2.03)	(-1.75)	
Tertiary		-5.42***	-2.16	
		(-2.58)	(-1.03)	
Females' migration background				
Ref.: None				
Direct or indirect		-1.88	-1.74	
		(-1.11)	(-1.08)	
Males' migration background				
Ref.: None				
Direct or indirect		0.65	-0.03	
		(0.39)	(-0.02)	
Location at sequence start				
Ref.: East Germany				
West Germany		0.40	2.14*	
		(0.33)	(1.73)	
Children in household				
Ref.: No children				
Children		4.37***	3.82***	
		(3.60)	(3.19)	
Highest ISCO-88 of parents				
Ref.: Major group 1: Managers				
Major group 2: Professionals		3.15*	2.71	
		(1.81)	(1.62)	
Major group 3: Technicians and associate		1.63	0.78	
professionals		(1.00)	(0.50)	

Major group 4: Clerical support workers		3.74	2.84
		(1.53)	(1.20)
Major group 5: Service and sales workers		2.78	1.22
		(1.41)	(0.62)
Major group 6+7: Skilled workers / craft		3.40*	1.95
and related trades workers		(1.91)	(1.14)
Major group 8+9: machine operators /		3.76	2.31
elementary occupations		(1.58)	(1.01)
Birth year males		0.05	-0.11
		(0.23)	(-0.49)
Birth year female		-0.19	-0.35
		(-0.81)	(-1.52)
Year of sequence start		-0.74***	-0.24
		(-3.13)	(-1.00)
Mediator			
Cumulative net household income			-0.61***
(in 10.000 Euros)			(-5.74)
N	688	688	688

Note: Socio-Economic Panel, version 35, 1995–2018. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Average number of spells in individual and couple sequences

	Overall average (SD)	Average per cluster (SD)			
		Dual stable career couples	Insecure and volatile couples	Male breadwinner/ female homemaker couples	Self-employed/ interrupted permanent couples
Male partner	2.09	1.84	3.32	1.97	2.08
	(1.38)	(1.25)	(1.35)	(1.37)	(1.23)
Female partner	2.75	2.71	3.16	2.64	2.72
	(1.39)	(1.34)	(1.36)	(1.49)	(1.32)
Couple	4.84	4.56	6.48	4.61	4.80
	(2.10)	(1.89)	(2.06)	(2.23)	(1.86)

Note: Socio-Economic Panel, version 35, 1995-2018.

Table 6: Summary of sensitivity checks for the effect of couples' career trajectories on homeownership

	M1	M2	M3	M4
	AME (*z-value*)	*AME* (*z-value*)	*AME* (*z-value*)	*AME* (*z-value*)
Insecure and volatile couples	-0.25***	-0.21***	-0.22***	-0.25***
	(-6.52)	(-4.87)	(-5.05)	(-6.23)
Male breadwinner/ female homemaker couples	-0.02	0.00	-0.04	-0.02
	(-0.66)	(0.05)	(-1.16)	(-0.53)
Self-employed/ interrupted permanent couples	0.02	0.04	0.01	0.02
	(0.38)	(0.62)	(0.10)	(0.39)
Initial income		0.09***		
		(3.28)		
Male cumulative income			0.02***	
			(7.61)	
Female cumulative income				0.00
				(0.08)
Control variables?	✓	✓	✓	✓
N	1257	1257	1257	1257

Note: Socio-Economic Panel, version 35, 1995–2018. * p < 0.10, ** p < 0.05, *** p < 0.01. Reference group consists of dual stable career couples. The set of included control variables refer to the respective control variables of the model in Table 3, but coefficients are not displayed here, M1 equals the main model (Figure 2).

Table 7: Summary of sensitivity checks for the effect of couples' career trajectories on the share of income spent on rent

	M1	M2	M3	M4	M5	M6
	β	β	β	β	β	β
	(*t-value*)	(*t-value*)	(*t-value*)	(*t-value*)	(*t-value*)	(*t-value*)
Insecure and volatile couples	4.69***	4.73***	3.33**	2.92*	3.60**	3.34***
	(3.15)	(3.12)	(2.20)	(1.91)	(2.52)	(2.90)
Male breadwinner/ female homemaker couples	4.44***	4.45***	4.87***	1.66	2.84**	3.10***
	(3.48)	(3.47)	(3.84)	(1.08)	(2.25)	(3.64)
Self-employed/ interrupted permanent couples	1.56	1.55	2.34	0.76	3.66	-0.82
	(0.51)	(0.50)	(0.80)	(0.24)	(1.42)	(-0.34)
Initial income		0.10				
		(0.18)				
Male cumulative income			-0.45***			
			(-4.80)			
Female cumulative income				-0.61***		
				(-4.21)		
Income year 7					-4.63***	
					(-9.11)	
Rent price year 7						0.03***
						(16.47)
Control variables?	✓	✓	✓	✓	✓	✓
N	688	688	688	688	688	688

Note: Socio-Economic Panel, version 35, 1995–2018. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Reference group consists of dual stable career couples. The set of included control variables refer to the respective control variables of the model in Table 4, but coefficients are not displayed here, M1 equals the main model (Figure 3).

Article 5

The Effect of Early and Mid-Life Work-Family Trajectories on Self-Rated Health in Older Age in West Germany and Italy: A Multichannel Sequence Analysis

Abstract

This paper examines whether gender-specific work-family trajectories in West Germany and Italy differ with respect to the probability of poor health in older age. We use data from the Survey of Health, Ageing and Retirement in Europe (SHARE, waves 3 and 7 of the retrospective SHARELIFE survey) to analyze in a first step gendered work-family trajectories after school-to-work transitions by utilizing multichannel sequence analysis. We observe 20 consecutive years on these work-family trajectories to capture early and mid-career and family patterns. In a second step, we estimate the effect of these trajectory types on the likelihood to report poor health for persons aged 50+ by using binary logistic regression analysis. Our findings show the strongest health effect for Italian women on homemaker work-family trajectories (13 percentage points higher likelihood to have a poor health status compared to Italian childless working women). For West Germany, we observe such effects in smaller magnitude and statistical relevance for men (breadwinners compared to childless working men) only. These findings hint for a greater vulnerability of women on more traditional work-family trajectories for self-rated health in Italy than in West Germany and emphasize the often-assumed vulnerability among women with unfavorable work-family trajectories in old age.

1 Introduction

The literature shows supportive evidence that employment is one of the key determinants for the individual physical and mental health in Western societies (van der Noordt et al., 2014). Since maintaining and improving the health of people is a major concern of policy makers, it is crucial to understand this relationship in greater detail. Previous literature takes different perspectives on the effects. Studies on the effect of single employment statuses, employment transitions (Gebel & Voßemer, 2014; Gash et al., 2007; Präg & Gugushvili, 2021), and more holistic employment trajectories (Voßemer et al., 2018; Eisenberg-Guyot et al., 2020) show that (long-term) unemployment and atypical employment have a particularly negative effect on health.

Within the studies on more holistic employment trajectories, a growing body of literature emphasizes the strong interrelationship of work and family life. Instability on the family trajectories like the period shortly after childbirth or divorce can lead to disruptions in daily routines and therefore increase emotional instability (Mitchell et al., 2015). Not only might stress in family life spillover to the work or vice versa from work to family life, but also might stress due to disadvantages in both domains accumulate and affect health later in life (Tsukerman et al., 2020). For example, long-term single parenthood in combination with different atypical jobs might strongly increase stress (Aisenbrey & Fasang, 2017; Jalovaara & Fasang, 2020) and decrease health. These studies raise serious concerns about an underestimation of the effects on health when accounting for the work domain only.

The studies that exist up to date on the interrelationship of work-family trajectories and physical health outcomes mostly look at subgroups only (van Hedel et al., 2016; Engels et al., 2019). While some studies hint for the specific vulnerability of women regarding negative health outcomes (Engels et al., 2019), others find no specific health effect for women (van Hedel et al., 2016). The cross-country comparative analyses have referred mainly to average effects across countries. A comprehensive analysis of the effects of gendered work-family trajectories for single countries and for different health outcomes like subjective health is still missing. Therefore, this paper addresses the research question: *How do early and mid-life gendered work and family trajectories affect self-rated health in later life in West Germany and Italy?*

We contribute in three ways to the literature. First, we take up a life course perspective (Elder et al., 2004) and more specifically the extension on the cumulative (dis)advantage theories (Dannefer & Kelley-Moore, 2009; Ferraro et al., 2009) with its application on health (Halfon & Hochstein, 2002). We utilize multichannel sequence analysis to receive distinct patterns of

work-family trajectories after transitions from education to employment for 20 consecutive years, so early to mid-career patterns. Literature has started to use this approach to describe important patterns of work-family lives (Aisenbrey & Fasang, 2017; Zagel & van Winkle, 2020) and shows inequality of work-family lives especially for women. We build on the idea of spillover effects between work and family and argue that there might be accumulation processes of disadvantages within the two life domains, which might negatively affect later life health (Tsukerman et al., 2020).

Second, by focusing on health status we address an outcome that has been neglected so far. While there are studies on the effect of gendered work-family trajectories on the risk for cardiovascular health issues for women in the United States (van Hedel et al., 2016) and at the likelihood of depression in older age (Engels et al., 2019), there are – to best of our knowledge – no studies on the health status. Our approach is more comprehensive than studies on only one of the health outcomes, since our measurement accounts for the multidimensionality of health (Gebel & Voßemer, 2014; Eisenberg-Guyot et al., 2020), is highly reliable and valid (Idler & Benyamini, 1997), and enables to combine different strands of literature for more holistic policy making.

Third, different from previous country-comparative studies, we focus on two specific countries in greater detail, namely West Germany[1] and Italy. On the one hand, Italy and West Germany share some similarities regarding traditions in gender norms, namely the importance of the traditional male-breadwinner norm (Blome, 2018). On the other hand, the countries greatly differ in their labor market systems. In Italy, atypical employment is more precarious and affects mostly already disadvantaged groups (Barbieri, 2009; Barbieri et al., 2015). At the same time there is a weaker social security system than in Germany (Blome, 2018), since Italy relies rather on familial than governmental support (Nazio & Blossfeld, 2003). Therefore, effects on health status might be more severe in Italy than in West Germany.

In summary, our findings will advance the understanding of how work-family trajectories' effect on self-rated health might vary by slightly different country-specific contexts. We use data from the Survey of Health, Ageing and Retirement in Europe (SHARE) for West Germany and Italy to examine work-family trajectories over a period of 20 years after first school-to-

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[1] Due to the special historical situation in Germany with two different political regimes and subsequent different gender norms in the former German Democratic Republic (GDR) and the Federal Republic of Germany (FRG), we argue that West Germany is more like Italy in terms of gender norms. Therefore, we only refer to West Germany.

work transition takes place using multichannel sequence analysis. We cluster these trajectories and analyze how these distinct work-family trajectories affect the likelihood to have a poor health status when individuals are 50 years and older (in 2007 and 2017) using binary logistic regression models.

2 Theory and research hypotheses

2.1 The effect of work-family trajectories on later life health status

Health can be seen as the result of a continuous process which develops over an individual's life course (Halfon & Hochstein, 2002). The combination of unfavorable conditions in the work and family channels and subsequent risks and protective factors might not only accumulate within one time point, but if these (un)favorable combinations of statuses endure, the (dis)advantages might also accumulate over time (Halfon & Hochstein, 2002; Dannefer & Kelley-Moore, 2009; Ferraro et al., 2009).

Work-family trajectories consist of simultaneous employment and family histories. Different employment statuses and family statuses are assumed to offer distinct (dis)advantages regarding manifest resources like available income or more latent resources such as status and identity, which should affect the physical and psychological health of individuals (Hobfoll, 1989). The conversation of resources (COR) theory of Hobfoll assumes that a long-term depletion of beneficial resources ends up in health disruptions and depressive symptoms (Hobfoll, 1989). The life course health development (LCHD) model embeds these thoughts on resources in a life course perspective. The assumption is that early life experiences, which can be seen as either potential *risks* or *protective factors*, accumulate along long-term trajectories to influence the health status in later life (Halfon & Hochstein, 2002; Dannefer & Kelley-Moore, 2009).

Following arguments from employment literature (Kalleberg, 2000; Grzywacz & Dooley, 2003), we assume that there is a continuum from combinations of most protective manifest factors on work-family trajectories to the most manifest risk factors. Being in *permanent full-time employment* might offer the most benefits in terms of income and job stability (Kalleberg, 2000). Its combination with *being married and having no children* enables sharing financial resources, including protective factors (Halfon & Hochstein, 2002), for couples without financial responsibilities or opportunity costs for children (Barban, 2013). On the other side of the continuum, *being unemployed or labor market inactive* (Kalleberg, 2000) and *being not married but having children* in early life might pose the largest manifest risk factors (Barban, 2013). If these manifest risk factors and the resulting stress persist over several years, the

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negative health effects might accumulate and greatly reduce health in later life. While we assume that other combinations of employment and family status lie in between those two (Kalleberg, 2000), it is hard to locate them perfectly in between.

If manifest protective factors like marriage and permanent and stable employment are lacking over time, this might lead to emotional restlessness and increased level of stress. Especially the cumulation of instability in work-family trajectories might be harmful for the physical and psychological health status, since it can come along with the perceived loss of control over the own life (Lewchuk et al., 2008; Mitchell et al., 2015). These negative emotions can accumulate over the life course and deteriorate later life health (Halfon & Hochstein, 2002).

For example, if individuals remain unemployed over longer periods and experience financial burden within family live, e.g., due to single parenthood over longer time, this might increase stress and the perception of a lack of control over one's own life. These negative emotions might lead to processes of cumulative disadvantages, which end up in a 'downward spiral' of lacking resources and experiencing manifest risk factors (Halfon & Hochstein, 2002). Therefore, long-term lack of resources and exposure to manifest risk factors increase the stress level and might result in health issues later in life (Hobfoll, 1989; Halfon & Hochstein, 2002).

Hypothesis 1: *Work-family trajectories including more risk factors might increase the risk of poor health in older age compared to work-family with fewer risk factors.*

2.2 Gendered differences in the effect of work-family trajectories on health

The role of gender differences in work-family relationships has been discussed extensively in the literature (Nordenmark & Strandh, 1999; Bauernschuster & Rainer, 2012; Killewald & Lundberg, 2017). Women with disadvantaged labor market prospects might find an alternative role in being mother and housewife, which replaces the latent importance of a job (Nordenmark & Strandh, 1999). For men, being unemployed or having lower quality jobs might be a strong deviation from the masculine norm of being the breadwinner. Moreover, having a child and not being able to fulfill the norm might be even more harmful for men (Bauernschuster & Rainer, 2012). Therefore, for the current situation and from a latent risk factors perspective, disadvantages at the labor market might be more disadvantageous for men's health.

In the longer run and from a manifest risk factors perspective, however, the income disadvantages in combination with the financial risk of having children might outweigh the importance of the alternative role of motherhood due to the double burden of the roles of being a mother but also an employee (Martikainen, 1995). While men perceive marriage wage

premiums, low-earning women perceive motherhood penalties, which might place further financial burdens on their work-family trajectories (Killewald & Lundberg, 2017).

Hypothesis 1.1: *The effect of disadvantageous work-family trajectories on the likelihood of poor health in older age should be stronger for women compared to men.*

2.3 Differences of the gendered effects of work-family trajectories on health between West Germany and Italy

Italy and West Germany share the male-breadwinner female-caretaker norm, which expects men to earn a living and women to take care of children and other relatives (Blome, 2018). Social policies foster this norm, e.g., in West Germany there are tax advantages for married couples, which reward unequal incomes of couples. Both countries adapted their laws in the 1970s to achieve gender equality (Blome, 2018). Therefore, these two countries are similar in terms of what defines latent risk and protective factors, i.e., norms.

When it comes to manifest factors, however, there are differences between the two countries. In Italy, families usually compensate for lacking income due to unemployment and subsequent income loss. West Germany has early established a system of unemployment insurance, which transfers risks of the individual to the federal state (Picot, 2014). Periods of poorly protected precarious employment are much longer in Italy and mostly affect the already disadvantaged individuals (Barbieri, 2009). Atypical work-family trajectories might be especially financially risky in Italy, where individuals cannot sufficiently rely on social policies to buffer even longer periods of unemployment or atypical employment. These country-specific differences in sheltering from financial risks especially affect labor market entrants (Scherer, 2001).

Because Italy has the special structure of relying on the family's resources rather than a generous social support system, Italian women might be especially vulnerable to manifest risk factors in the work-family trajectories. More specifically, women in Germany might profit from the long history of generous social benefits (Picot, 2014), in case they experience financial disadvantages on the labor market and in family life, while the Italian system might not adequately buffer these disadvantages for women.

Hypothesis 1.2: *The gendered effects of disadvantageous work-family trajectories on the likelihood of poor health status should be more visible in Italy than in West Germany.*

3 Research design

3.1 Data

We draw on data from the Survey of Health, Ageing and Retirement in Europe (SHARE), which samples individuals who are 50 years or older. It covers 27 European countries and Israel, where about 140,000 individuals are interviewed (around 380,000 interviews) (Börsch-Supan et al., 2013). We utilize data from West Germany and Italy in waves three (2007) and seven (2017), which build the SHARELIFE waves (Börsch-Supan, 2020a, 2020b; Brugiavini et al., 2020). These waves focus on respondents' life histories, and, more specifically, include retrospective modules on both employment and family trajectories up until to the year of the interview. The approach to collect life history data is following the life history calendar, which is designed to help individuals to remember important life events adequately (Börsch-Supan, 2020a, 2020b). Moreover, the SHARE includes questions on the current health status as well as comprehensive information on the social background and health status in childhood.

The main advantages of using the SHARE data are threefold. First, the SHARELIFE is a unique dataset, which offers extensive information on whole career and family trajectories over the life course from entering the labor market on. Individuals are interviewed when they are older and probably retired or close to retirement, which enables examining long-term effects. Second, since the focus of the SHARE is to measure health for aged people, the data quality of the dependent variable, namely self-rated health, is high. Not only is the concept carefully validated, but also is it measured in childhood, which is an important confounder. Third, the high quality of harmonization of questions and constructs across countries enables cogent country-comparative analyses, which are covered in our approach.

3.2 Sample

We draw on an initial sample of 4,902 individuals for West Germany and 5,529 individuals for Italy, who have always lived in the respective countries. In a first step, for the multichannel sequence analysis, we exclude individuals who have missing information within their 20 years of work or family history after school-to-work transition. This step leaves us with 4,513 individuals for West Germany and 5,505 individuals for Italy. We additionally exclude individuals with missing values on the dependent and control variables for conducting our regression analyses. This final step leaves us with 3,173 individuals (1,402 women and 1,771 men) for West Germany and 3,715 individuals (1,876 women and 1,839 men) for Italy.

When individuals are interviewed and when our dependent variable is measured, so in either wave 3 (2007) or wave 7 (2017), they are between 50 and 97 years old with an average age of

59 years. They are born between 1913 and 1967 with an average birthyear of 1954. Since it is a retrospective survey, the information within the work-family trajectories dates back to when the individuals were on average between 20 years (start of 20 years observation window) and 40 years old (end of 20 years observation window).

3.3 Methods

3.3.1 Multichannel sequence analysis

To identify 20 years work-family trajectories, we apply multichannel sequence analysis. Sequence analysis is a tool to define and describe sequences, i.e., a succession of states (Studer & Ritschard, 2016; Gabadinho et al., 2011). In our case, states are annually measured employment statuses combined with family situations at a single point of time for an individual. These are stratified by gender and country for 20 years after the first school-to-work transition has taken place. Two channels, namely the work and the family channel, form our work-family trajectories. Our multichannel sequence analysis approach, which is conducted in R with the TraMineR package (Gabadinho et al., 2011), proceeds in two steps.

The first step is to measure and evaluate the distance between the family and work sequences for the country- and gender-specific subgroups, i.e., how different are patterns within these sequences between individuals. The evaluation of the distances between the employment and family sequences is defined by using optimal matching (OM). OM defines sequences as being more different from each other if more transitions are required to transform one sequence of one individual into another one. In line with other studies (e.g., Engels et al. 2019), we assign constant substitution costs of 2^2 if substitutions involve a change in the family or the employment status, and insertion or deletion costs of 1. The grouping of sequences results in a dissimilarity matrix, which gives information on the (dis)similarity of each pair of work-family sequences.

This distance matrix is the basis for the second step, a subsequent cluster analysis, which produces clusters of similar sequences and therefore reveals distinct patterns of work-family trajectories. We conduct a hierarchical cluster analysis with Ward's method, which seeks to minimize the within cluster-variance to group together individuals with similar work-family trajectories (Gabadinho et al., 2011). When deciding on the right number of clusters, we follow previous research (Zagel & van Winkle, 2020) aiming to cover complexity of work-family life

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[2] Results do not differ substantially if the substation cost matrix is derived by data-driven methods. However, choosing the substation costs like previous researchers makes comparing the findings more reasonable.

courses. Furthermore, we refer to statistical measurements such as the elbow method and the average silhouette width and opt for the highest number of clusters if the statistics indicate different numbers (Table 1). Therefore, we end up with three clusters for each gender and each country, so twelve in total.

Table 1: Statistical measurement for the decision on number of clusters

Country	Gender	Elbow method	Average silhouette width
Germany	female	3 clusters	3 clusters
	male	3 clusters	2 clusters
Italy	female	3 clusters	2 clusters
	male	3 clusters	2 clusters

Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0.

3.3.2 Regression analysis

We utilize the results of the multichannel sequence analysis, namely the work-family clusters including 20 years work-family trajectories referring to t_0, and estimate the relationship between these and health status in t_1, when individual are 50 years or older (stratified by gender and country). We estimate eight gender- and country-specific binary logistic regression models and report margins.

The basic binary logistic regression model can be equated as

$$y_{it_1} = \ln\left[\frac{p}{p-1}\right] = \beta_0 + \gamma_1 D_{1it_0} + \gamma_2 D_{2it_0} + \delta X_{it_0} + \theta Z_{it_{-1}} + u_i \tag{1}$$

where y_{it_1} represents the probability for individual i to either have a poor health status later in life, so in t_1. β_0 represents the constant. γ_1 is the coefficient of the effect of the second work-family cluster and γ_2 for the third work-family cluster (both are dummy variables, namely D_{1it_0} and D_{2it_0} measured in t_0) when the reference category $D_{3it_0} = 0$. X_{it_0} is a vector with control variables measured at the time point of the trajectories (t_0) and $Z_{it_{-1}}$ is a vector with control variables referring to childhood (t_{-1}). u_i represents the individual-specific error term.

3.4 Measurements

3.4.1 Independent variable

For the work-family trajectories, we first define important employment and family statuses. The employment states comprise seven statuses, namely self-employment, permanent full-time employment, permanent part-time employment, fixed-term full-time employment, fixed-term part-time employment, unemployment, and labor market inactivity. The family statuses cover: being married and having children, married and having no children, not married and having children, not married and having no children. After the multichannel sequence analysis, we end up with twelve gender- and country-specific clusters.

3.4.2 Dependent variable

The dependent variable *self-rated health* is measured by asking the interviewees how they would describe their current health status. We aggregate the five response categories to two, which follows common practice in literature to measure inequality (Ziebarth, 2010), namely "poor health" (previously "fair" and "poor") and "no poor health" (previously "excellent", "very good", and "good"). Research has repeatedly shown that this measurement is a valid predictor of mortality and covers the multidimensionality of physical and mental health (Idler & Benyamini, 1997).

3.4.3 Confounders

In all regression models we control for the social background with several characteristics, which are likely to affect both the work-family trajectories as well as later life health status (Elwert & Winship, 2014). We control whether individuals lived in a poorly equipped home when they were children, how many books their parents owned, how many persons there were per room and the relative position in math and language in school when they were eight years old. We argue that deprivation in childhood is likely to increase the likelihood of disadvantageous early career work-family trajectories and of a bad health status in later life. Furthermore, we control for socio-demographic variables such as years spent in education, age, and wave. Wave is accounted for, since there might be some differences in the effect for younger or older cohorts.

The models include information on the self-rated bad health status in childhood, which should not only increase the manifest risk factors on the work-family trajectories, but also the likelihood to have a bad health status in older ages. We do not control for variables such as income at the time the work-family trajectories take place, to avoid overcontrol bias (Elwert & Winship, 2014; Winship & Morgan, 1999). A detailed overview of the constructs can be found

in the Appendix in Tables S1a (independent and dependent variables) and S1b (control variables).

4 Empirical results

4.1 Multichannel sequence analysis

Figures 1 and 2 include sequence index plots, which show the resulting country- and gender-specific clusters with the included individual work-family trajectories. Each single line of the graph represents one individual trajectory. The plots on the work-family trajectories are sorted by the work channel.

#### 4.1.1 Clusters for West Germany

Figure 1 shows the three work-family clusters of West German women and men.

West German women. The first cluster of trajectories on the left panel "*childless working women*" mainly includes permanently employed women who remain either unmarried or childless and might be classified the cluster with least manifest risk factors ($n = 253$). Most women either marry and remain childless or have children but are unmarried. Even though the latter might be divorced (green colored statuses in the family trajectories), they can rely on their stable career outcomes.

The second cluster "*working mothers*" comprises 645 observations and includes women who are mostly permanently employed during their careers but get married and have children. While this cluster also includes some women, who switch into labor market inactivity when getting married, the majority remains permanently employed or has been permanently employed for some years.

The third cluster "*non-working mothers*" includes 504 women who are during their career mainly labor market inactive or become labor market inactive after a few years of permanent employment, on average marry quite fast and become married mothers. It might hint for cumulative disadvantages, since these women seemingly rely on their partner to earn the living and have children, which bear some financial burdens. Even though only very few women are within these 20 years unmarried and have children, the dependence on the men's labor market outcome is remarkable.

Figure 1: Work-family trajectories of West German women (left) and men (right)
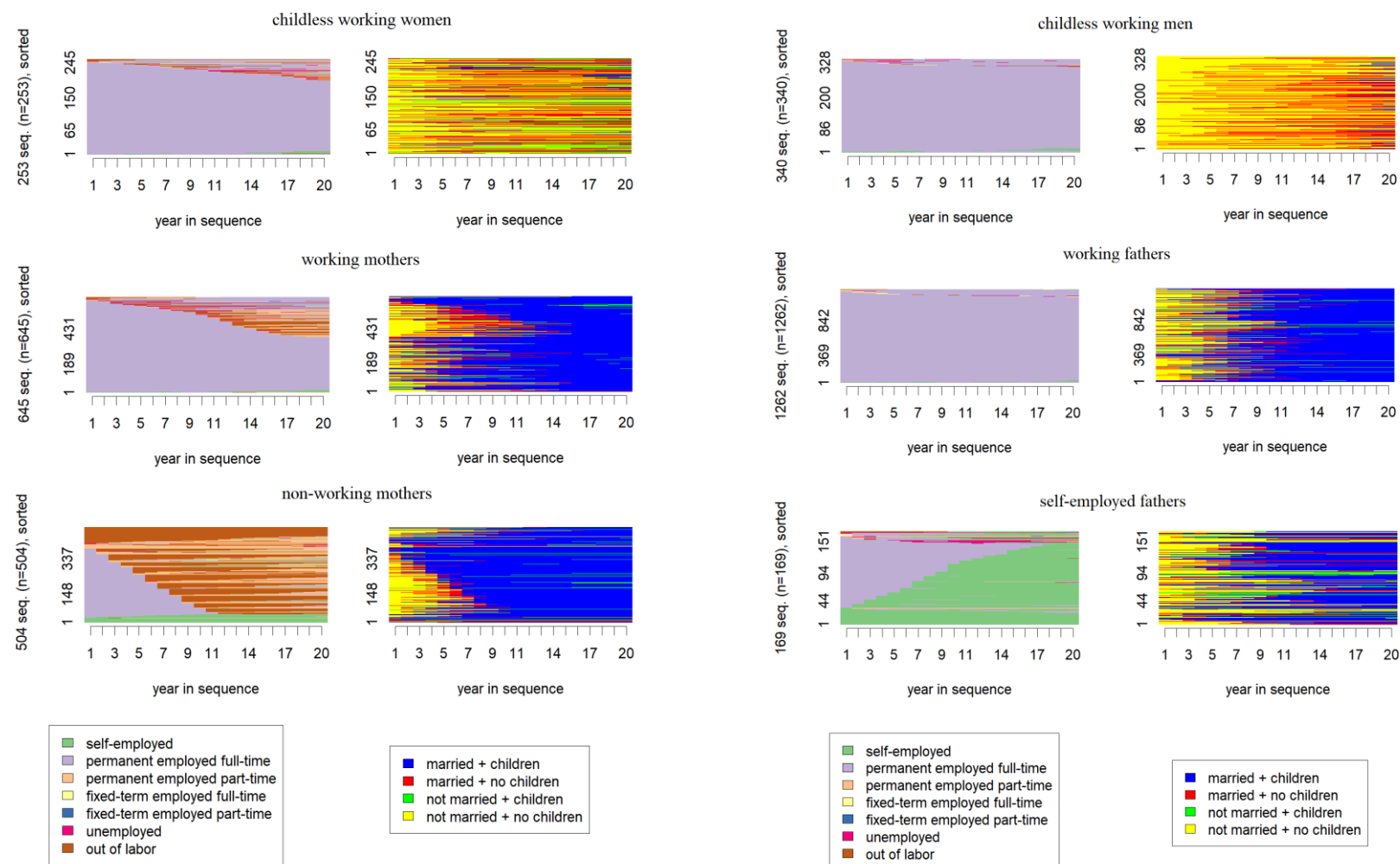
Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0.

West German men. The first cluster on the right panel "*childless working men*" comprises 340 West German men. It includes almost exclusively permanent employment careers and either unmarried or married men without children. From a manifest risk factors perspective, this cluster might include the least financial risk factors.

The second cluster "*working fathers*" includes most West German men (n = 1,262) and represents the traditional male-breadwinner cluster. Men in this cluster have a stable permanent job and become married father during their life courses.

The third cluster "*self-employed fathers*" is the smallest cluster including only 169 men. While these men are mostly self-employed with only very few being unemployed, their family trajectory looks rather turbulent. Most of these men are either affected by the risk a costly divorce or are even divorced someday.

4.1.2 Clusters for Italy

Figure 2 includes work-family trajectories of Italian women and men.

Italian women. The first cluster "*working mothers*" on the left panel includes most Italian women (n = 768). The work trajectories are mostly characterized by stable and permanent employment, while the family pathways are quite heterogenous. Most women marry rather early and if they have children, it is later in the trajectory.

The second cluster "*atypically working mothers*" includes 374 women and is the rarest cluster. This colorful cluster comprises many periods in atypical employment such as fixed-term part-time employment, permanent part-time employment, or self-employment. The careers are mostly characterized by a high degree of volatility. The family pathways look like the first cluster, which means that most women get married and have children later in their lives.

The third cluster "*non-working mothers*" includes 734 primarily labor market inactive women, who marry and have children comparably late. Even before they have children, they are not attached to the labor market and might prepare for their caring duties.

Italian men. The first cluster on the right panel "*working fathers (later in career)*" includes most Italian men (n = 959). Men on this work-family trajectory are mainly in stable and permanent employment. These men marry quite late and most remain childless.

Figure 2: Work-family trajectories of Italian women (left) and men (right)
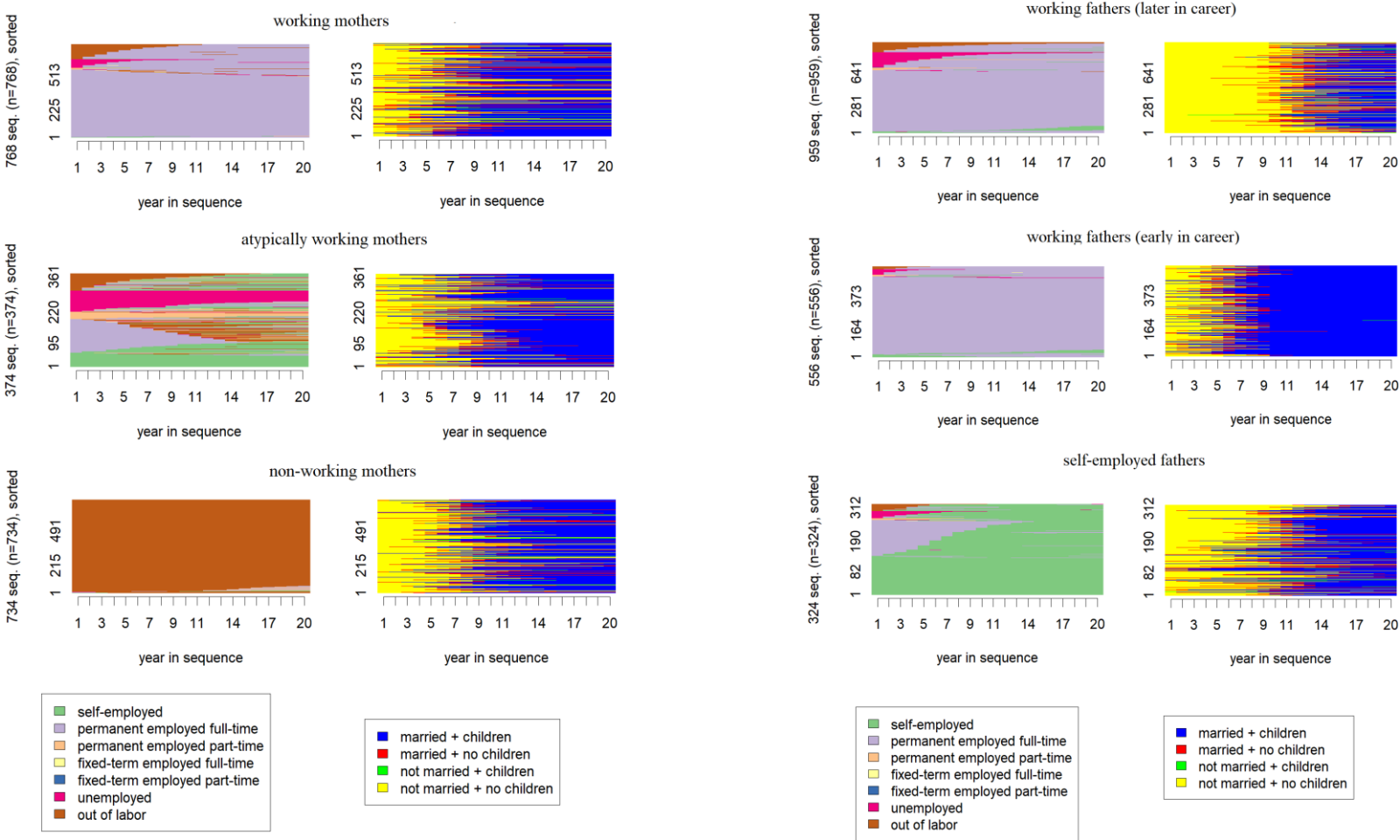
The second cluster "*working fathers (earlier in career)*" includes 556 Italian men, who marry and have children rather early, while they have a stable career. Like the second cluster of West German men, this cluster depicts the traditional male-breadwinner work-family pattern. Compared to the first cluster, these men might experience earlier financial risks, which therefore accumulate over longer periods.

The third cluster "*self-employed fathers*" ($n = 324$) includes mainly long-term self-employment periods, but also a few part-time permanent employment, unemployment, and labor market inactivity periods. The cluster includes the most heterogenous and volatile family trajectories for Italian men.

Table 2 summarizes the mean durations in each status for each of the country- and gender-specific clusters to compare the clusters accordingly.

4.1.3 Summary

The findings show that there are remarkable differences in the work-family trajectories between genders and across countries (see Table 2). The work-family trajectories bear more manifest risk factors for Italians than for West Germans. The higher level of manifest risk factors is especially visible for Italian women, where 59% are on atypical or inactive employment trajectories with on average almost all 20 years of labor market inactivity and having children. For West German women, the share of women on work-family trajectories with high levels of manifest risk factors is much lower with 36% and the amount spent in labor market inactivity is also much smaller (9.10 years on average in the most homemaker cluster). While for West German men there are stable careers (up to an average of 20 years in permanent jobs) with late marriage and no or even late childbirth or long periods of self-employment (11.92 years on average) with turbulent family trajectories, West Italian men's work-family trajectories are more instable as well (longer periods in atypical employment, e.g., 16.19 years on average in self-employment).

Table 2: Mean durations in years in work-family statuses per cluster

| | | Germany | | | | | | Italy | | | | | |
| | | **female** | | | **male** | | | **female** | | | **male** | | |
		Child-less working women	Working mothers	Home-makers	Child-less working men	Bread-winners	Self-empl. fathers	Working mothers	Atyp. working mothers	Home-makers	Late bread-winners	Early bread-winners	Self-empl. fathers
Work	Self-employed	0.17	0.23	1.71	0.21	0.09	11.92	0.08	0.04	6.89	0.50	0.56	16.19
	Permanent FT	18.64	16.93	4.47	19.60	19.75	6.85	18.49	0.19	4.18	17.55	19.13	3.11
	Permanent PT	0.47	1.06	4.64	0.02	0.02	0.47	0.11	0.14	2.28	0.26	0.05	0.11
	Fixed-term FT	0.04	0.03	0.02	0.03	0.05	0.04	0.01	0.00	0.01	0.01	0.01	0.03
	Fixed-term PT	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00
	Unemployed	0.21	0.37	0.06	0.09	0.04	0.60	0.42	0.02	3.56	0.98	1.67	0.32
	Out of labor	0.48	1.38	9.10	0.05	0.06	0.11	0.90	19.61	3.08	0.70	0.09	0.26
Family	Married + C	1.20	14.12	14.99	0.48	13.37	10.20	9.48	10.40	10.96	4.18	14.14	8.42
	Married + no C	6.30	1.92	1.33	5.40	1.62	2.00	2.97	1.98	1.82	2.53	1.42	2.21
	Not married + C	2.80	0.56	0.83	0.02	0.73	1.50	0.36	0.25	0.13	0.25	0.03	0.15
	Not married + no C	9.70	3.40	2.85	14.10	4.28	6.20	7.20	7.37	7.09	12.41	4.41	9.22

Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0.

FT = full-time employed, PT = part-time employed, C = children, empl. = employed, atyp. = atypically.

4.2 Effect of work-family trajectories on health

Figure 3 shows the results for our main binary logistic regression analyses for self-rated health. The upper panel of the figure shows the effects in West Germany and lower panel for Italy. Coefficients are displayed as likelihood for reporting poor health later in life. The detailed models also include coefficients, namely average marginal effects, also from the control variables are shown in the Appendix, Table S2.

4.2.1 Effect in West Germany

For West Germany (upper panel of Figure 3), we see only slight differences between the predicted probabilities for poor health. *Childless working women* have a 38% probability to report a poor health status when 50+. Compared to these, *working mothers* have only a 1 percentage point higher likelihood to report a poor health status (39%). *Non-working mothers* have a 40% likelihood to report a poor health status in older ages. The differences between the clusters range between 1 and 2 percentage points and are not statistically significant.

Both, men on the *working fathers* (42%) and the *self-employed fathers* (44%) trajectory have a higher likelihood to report a poor health status in older age compared to men on the *childless working men* (35%) trajectory. Therefore, West German men on the *working fathers* trajectory have a 7 percentage points higher likelihood to report a poor health status in older age compared to men on the *childless working men* work-family trajectories. West German men on the *self-employed fathers* trajectories even report an 9 percentage points higher likelihood to have a poor health status (not statistically significant).

There are gender differences within West Germany regarding the effects on the health status. West German men seem to suffer more from work-family with longer-term manifest risk factors compared to West German women.

4.2.2 Effect in Italy

For Italian women (lower panel of Figure 3) on the *atypically working mothers* trajectory (42%) compared to women on the *working mothers* (38%) trajectory, there is only a very minor effect on the likelihood to have a poor health status in older age. However, Italian women on the *non-working mothers* (52%) trajectory have a 14 percentage points higher likelihood to report a poor health status in older age compared to women in the *working mothers* cluster. This effect is the largest in effect size and it is statistically significant as well.

Figure 3: The gendered effect of work-family trajectories on likelihood of poor health status in West Germany and Italy
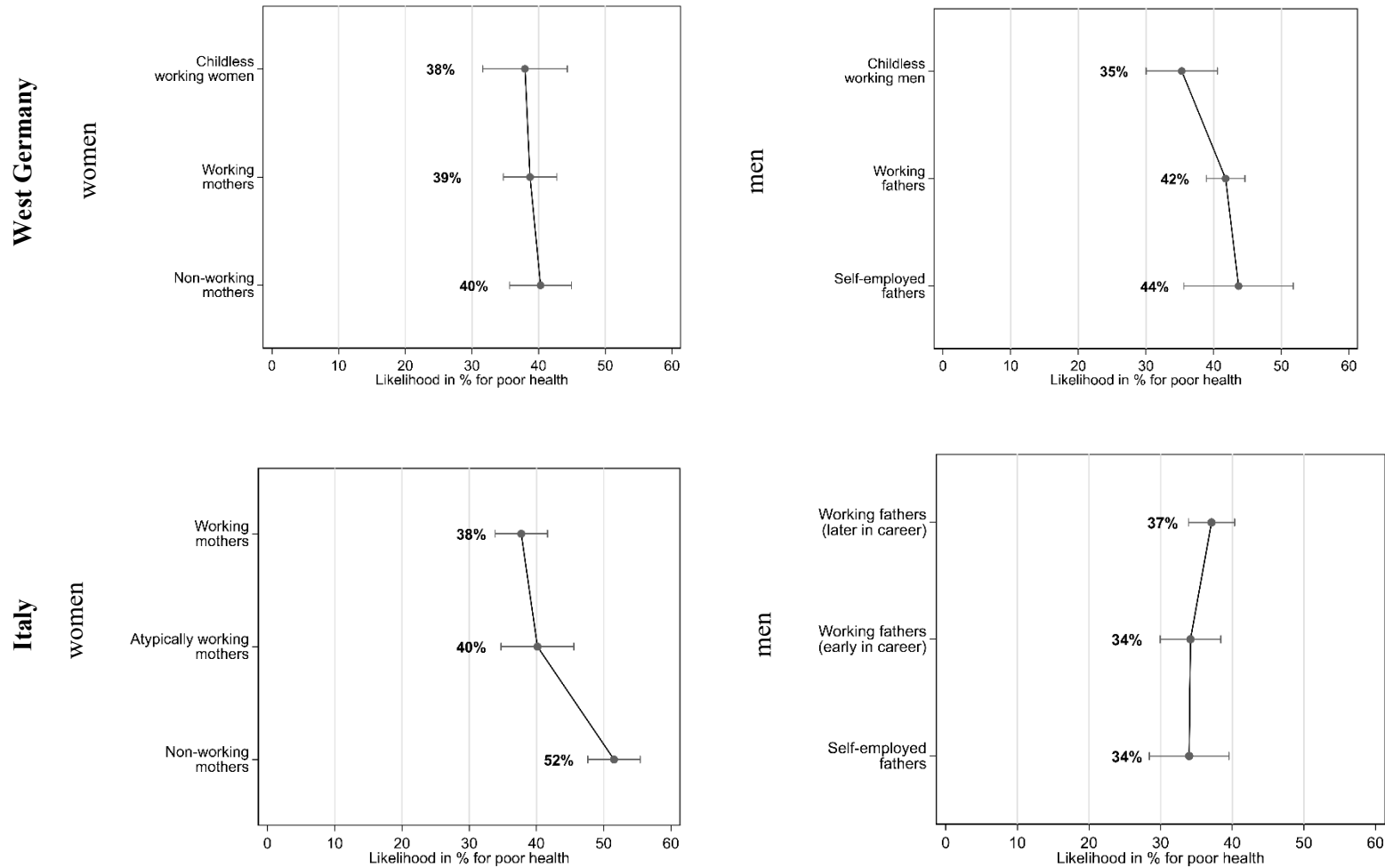
For Italian men on the *working fathers (early in career)* (34%) pattern, the likelihood of reporting a poor health status is 3 percentage points lower when compared to the *working fathers (later in career)* (37%) cluster. This effect is statistically insignificant. The same holds for the *self-employed later fathers* (34%) cluster of Italian men.

The effect sizes are on average higher for Italian women than for Italian men. For women, the cumulation of financial disadvantages within the work and family life is especially harmful for their later life health, while for Italian men we observe only minor and statistically insignificant differences. In Germany, however, longer-term manifest risk factors on the work-family seems to be more harmful for men than women.

4.3 Robustness checks

We might overestimate the effects on poor health status by including widowed and divorced individuals. We apply a two-fold approach to examine the relevance of these categories for our results. First, we introduce four additional categories into the family channel (being divorced and having children, being divorced and not having children, being widowed and having children, being widowed and not having children) and perform another multichannel sequence analysis. Our cluster solution and the further findings of the regression analysis are robust to this redefinition of potential statuses on the family pathway (results are available from the corresponding author on request). Second, we exclude all individuals that are divorced or widowed within the observation window (1.3% of our analysis sample). The conclusions about our suggested cluster solutions and the findings on the effects of the trajectories on health do not change. In summary, the minor share of divorced or widowed individuals does not drive our findings, which reaffirms our approach of excluding these categories to reduce complexity of the clusters.

5 Conclusions

The findings of the study contribute to the literature on effects of work and family on self-rated and mental health. We show that longer-term combinations of risk factors on work-family trajectories in early life can have long-lasting effects on later life self-rated health. These findings are in line with literature on cardiovascular risk for lone mothers in the United States (van Hedel et al., 2016) but contradict the findings for depressive symptoms and medication against it in West Germany, where effects are visible for women but not for men (Engels et al., 2019). We find effects of work-family trajectories for West German men on subjective health but not for women. This effect, however, is particularly visible for financially disadvantaged

Italian women with respect to the career trajectory, for which we find the largest effects of work-family trajectories including risk factors on the probability of later life poor health.

The findings partly support our hypotheses on the effect of work-family trajectories including long-term risk factors on poor health. We do not find clear evidence that financial risk factors increase the likelihood of poor health outcomes. If we take a more nuanced look at gender differences (Hypotheses 1.1 and 2.1), we see that for Italian women and West German men there are indeed larger effects on the health status. In West Germany, however, we see that women on work-family trajectories with longer-term manifest risk factors are seemingly even a little better off than men, which contradicts our hypothesis and might hint for the importance of the alternative role. of motherhood Italian women on traditional work-family trajectories, i.e., the *homemakers*, have the highest probabilities to report a poor health status in later life. Thus, we find stronger effect in Italy than Germany (Hypothesis 1.2).

Our study hints at the important role of social policies in supporting disadvantaged women on the labor market and in family life in policy making, which has a long history in Germany, but not in Italy (Picot, 2014). Even though previous studies show short-term negative effects of single unemployment periods also for Germany (Gebel & Voßemer, 2014), we show that this study design neglects the complexity of employment trajectories and the interdependencies with family life (Zagel & van Winkle, 2020). For Germany, short-term financial disadvantages seemingly vanish over time, while the health inequalities seem to increase for Italy.

Nonetheless, two limitations of our study should be mentioned. First, even though SHARE data are well suited for the purpose of our analysis, there is some discussion about potential recall bias for retrospective surveys (Havari & Mazzonna, 2011). Although the approach of the event history calendar has been validated several times, it cannot completely account for the problem of recall bias (Schröder, 2011). Second, while the advantage of multichannel sequence analysis is that we can describe complex long-term trajectories, the method causes some unexplained heterogeneity within the clusters (Eisenberg-Guyot et al., 2020). Previous literature shows that family trajectories might be more complex (Zagel & van Winkle, 2020), which is neglected by our analysis of work-family trajectories. This assumption is partly tested within the robustness checks and does not seem to be relevant for our analyses.

The limitations build avenues for future research. Forthcoming research will profit from looking at the effect from a multilevel perspective including more countries and country-specific policy measurements (van Hedel et al., 2016) to validate whether there are welfare state specific

differences. It would be important to also account for a couple perspective by including the work trajectory of the long-term partner. Another research question arising from our study might be whether one of the two domains is more important in explaining longer-term health differences. After some years of collecting further SHARE data, it will also be interesting to look at the effect of work-family trajectories on sequences of the dependent variable, i.e., health sequences. Eventually, future research should additionally address the role of potential mediators, such as old age poverty (Möhring, 2015), which might explain the effects of gendered work-family on health outcomes and furtherly back holistic policy making.

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7 Appendix

Table S1a: Measurement constructs for dependent and independent variables

<table>
<tr><th></th><th>Construct</th><th>Question / Items</th><th>Operationalization</th></tr>
<tr><td rowspan="2">Dependent variables</td><td>Self-rated health</td><td>"Would you say your health is …
1 excellent, 2 very good, 3 good, 4 fair, 5 poor?"</td><td>Bad health status
1 = yes ("fair", "poor")
0 = no ("excellent", "very good", "good")</td></tr>
<tr><td>Depression</td><td>EURO-D scale: summation index of 12 items on depressive symptoms (depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite, fatigue, concentration, enjoyment, tearfulness) to be selected
0 = not depressed
12 = very depressed</td><td>Depression
1 = "depression" (4–12)
0 = "no depression" (0–3)</td></tr>
<tr><td rowspan="2">Independent variables</td><td>Employment statuses</td><td>Information from the life history calendar / "lifegrid" for each year after school-to-work transition
Combination of information on …
- job order (starting from the first job on)
- job title (employee or self-employed, unemployed and searching for a job, unemployed but not searching for a job, short term job (less than 6 months), …)
- working hours (full-time or part-time)
- reason for job end (e.g., because job was fixed-term, retrospective recoding of fixed-term jobs)</td><td>Employment statuses
1 = "self-employed"
2 = "permanent employed full-time"
3 = "permanent employed part-time"
4 = "fixed-term employed full-time"
5 = "fixed-term employed part-time"
6 = "unemployed"
7 = "out of labor"</td></tr>
<tr><td>Family statuses</td><td>Information from the life history calendar / "lifegrid" for each year after school-to-work transition
Combination of information on …
- marital status (married or not married)
- number of children (0, 1, …, 16)
- for robustness checks additionally information on divorce or widowhood</td><td>Family statuses
1 = "married + children"
2 = "married + no children"
3 = "not married + children"
4 = "not married + no children"</td></tr>
</table>

Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0.

Table S1b: Measurement constructs for control variables

	Construct	Question / Items	Operationalization
Control variables	Age	Information generated from year of birth ("In which year were you born?")	Age in years
	Health status (childhood)	"Would you say that your health status during your childhood was in general 1 excellent, 2 very good, 3 good, 4 fair, 5 poor, 6 health varied a great deal?"	Bad health status 1 = yes ("fair", "poor", "health varied a great deal") 0 = no ("excellent", "very good", "good")
	Equipment home (childhood)	"Did this accommodation have any of the features on this card when you were aged 10?" (fixed bath, cold running water supply, hot running water supply, inside toilet, central heating)	Poorly equipped home 1 = none of the items 0 = at least one of the items
	Number books (childhood)	"Approximately how many books were there in the place you lived when you were 10? Do not count magazines, newspapers, or your school books.	Number of books in childhood 0 = "0 – 10 books" 1 = "11 – 25 books" 2 = "26 – 100 books" 3 = "101 – 200 books" 4 = "more than 200 books"
	Number persons (childhood)	Combination of two questions "Including yourself, how many people lived in your household at this accommodation when you were 10?" and "How many rooms did your household occupy in this accommodation, including bedrooms but excluding kitchen, bathrooms, and hallways? Do not count boxroom, cellar, attic etc."	Number of persons per room 0 = "> 2 persons" 1 = "> 1 and <= 2 persons" 2 = "<= 1 person"
	Math skills (childhood)	"Now I would like you to think back to your time in school when you were 10 years old. How did you perform in Maths compared to other children in your class? Did you perform much better, better, about the same, worse or much worse than the average?"	Relative position in math 0 = "did not go to school" 1 = "much worse or worse" 2 "about the same" 3 "better" 3 "much better"
	Language skills (childhood)	"And how did you perform in compared to other children in your class? Did you perform much better, better, about the same, worse or much worse than the average?"	Relative position in language 0 = "did not go to school" 1 = "much worse or worse" 2 "about the same" 3 "better" 3 "much better"
	Education	"How many years have you been in full time education?"	Years in education 0–25 years (mean value imputation for missing values)
	Wave	Information in the dataset (either wave 3 or wave 7)	Wave in SHARE 0 = "wave 3" 1 = "wave 7"

Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0.

Table S2: The gendered effect of work-family trajectories on likelihood of poor health status in West Germany and Italy

	M1	M2	M3	M4
Dependent variable: **Poor health status?**	**West Germany**		**Italy**	
(Ref.: *no*)	female	male	female	male
	AME	*AME*	*AME*	*AME*
	(z-value)	(z-value)	(z-value)	(z-value)
Work-family insecurity (Ref.: *first cluster*)				
second cluster	0.01	0.06**	0.02	-0.03
	(0.20)	(2.11)	(0.71)	(-1.07)
third cluster	0.02	0.08*	0.13***	-0.03
	(0.58)	(1.70)	(4.71)	(-0.95)
Age in years	-0.00	-0.00***	0.00***	0.00
	(-0.67)	(-5.88)	(3.74)	(0.29)
Poor health status in childhood? (Ref.: *no*)				
yes	0.20***	0.13***	0.34***	0.34***
	(5.05)	(3.45)	(8.49)	(7.09)
Poorly equipped home? (Ref.: *no*)				
yes	0.11**	0.06	0.06**	0.04
	(2.30)	(1.41)	(2.05)	(1.45)
Number of books at home in childhood (Ref.: *0 – 10 books*)				
11 – 25 books	-0.08**	-0.00	-0.11***	-0.08***
	(-2.00)	(-0.10)	(-3.41)	(-2.66)
26 – 100 books	-0.14***	-0.13***	-0.10***	-0.08**
	(-3.56)	(-3.81)	(-2.67)	(-2.20)
101 – 200 books	-0.15***	-0.16***	-0.12	-0.08
	(-2.99)	(-3.27)	(-1.53)	(-1.06)
more than 200 books	-0.24***	-0.14***	-0.13	0.06
	(-4.65)	(-2.89)	(-1.52)	(0.66)
Number of persons per room (Ref.: *> 2 persons*)				
> 1 and < = 2 persons	-0.05	-0.04	0.00	-0.08***
	(-1.20)	(-1.06)	(0.15)	(-3.10)
< = 1 person	-0.04	-0.06	-0.07**	-0.11***
	(-0.76)	(-1.37)	(-2.00)	(-3.35)
Relative position in math (Ref.: *much worse or worse*)				
about the same	-0.00	0.02	-0.00	-0.10**
	(-0.03)	(0.57)	(-0.09)	(-2.54)
better	0.01	-0.01	-0.03	-0.08**
	(0.25)	(-0.30)	(-0.68)	(-2.08)
much better	0.02	-0.10*	-0.04	-0.02
	(0.24)	(-1.88)	(-0.68)	(-0.35)
Relative position in language (Ref.: *much worse or worse*)				
about the same	0.03	-0.03	-0.05	-0.00
	(0.54)	(-0.72)	(-1.21)	(-0.08)
better	-0.00	-0.04	0.03	-0.05
	(-0.03)	(-0.90)	(0.65)	(-1.32)
much better	0.02	0.02	-0.03	0.01
	(0.33)	(0.29)	(-0.48)	(0.20)
Years in education	-0.02***	-0.01*	-0.01	-0.01***
	(-2.72)	(-1.85)	(-1.43)	(-2.96)
Wave of interview (Ref.: *wave 3*)				
wave 7	-0.03	-0.02	-0.04*	0.01
	(-0.96)	(-0.65)	(-1.78)	(0.52)
N (sequences)	1,402	1,771	1,876	1,839
n (person-years)	28,100	35,420	37,520	36,780

Note: Survey of Health, Ageing and Retirement in Europe (SHARE), version 7.1.0. Standard errors are clustered on the sequence level. Significance levels: * p < 0.1, ** p < 0.05, *** p < 0.01.