

Re-Partnering and Single mothers' Mental Health and Life Satisfaction Trajectories

Philipp Dierker¹, Mine Kühn¹, Mikko Myrskylä¹

¹*Max Planck Institute for Demographic Research*

1 Introduction

There is widespread agreement in research that family exerts a highly relevant influence on the health of its members, as it represents the extent of economic, social, and psychological resources that in turn affect the individuals' health (Carr & Springer, 2010). In this context, single mothers are considered a particularly vulnerable group associated with diverse health problems (Burstrom et al., 2010; Davies et al., 1997; Demo & Acock, 1996; Hughes & Waite, 2009; Lansford et al., 2001; Nomaguchi & Milkie, 2003; Thompson & Ensminger, 1989). This health disadvantage is often attributed to single mothers' exposure to an extensive amount of stress (Avison et al., 2007; Hilton et al., 2001; Kühn, 2018), mainly caused by financial deprivation (Amato, 2000; Burstrom et al., 2010; Cooper et al., 2009), and the lack of social resources (Avison et al., 2007; Crosier et al., 2007).

Accordingly, there are good reasons to suggest that *re-partnering* – which we define as a new partner joining the household – could counteract these disadvantages. However, existing studies investigating single mothers' re-partnering and health outcomes have produced mixed findings (Buehler et al., 1986; Demo & Acock, 1996; Ganong & Coleman, 1991; Langlais et al., 2016; Recksiedler & Bernardi, 2019; Weingarten, 1980). It remains unclear whether re-partnering

actually has a direct effect on single mothers' life satisfaction and mental health, or whether differences between re-partnered mothers and single mothers are due to selection effects. Furthermore, we know little about the underlying mechanisms that might lead to changes in single mothers' life satisfaction and mental health following re-partnering. We identify three major gaps in research on re-partnering and single mothers' health: a lack of studies examining both selection and direct effects, a lack of empirical testing of specific mechanisms that might explain direct effects, and a lack of results based on long term panel data. While there are some recent studies that rely on panel data to investigate various re-partnering effects (Brown et al., 2019; Bzostek et al., 2012; Gloor et al., 2021; Lin et al., 2019; Noël-Miller, 2013; Ophir, 2021; Pevalin & Ermisch, 2004) many of the studies that explicitly focus on re-partnering of single mothers (Berger et al., 2018) or health outcomes (Hiyoshi et al., 2015; Li et al., 2021) or both (Recksiedler et al., 2021) use cross-sectional, spell or cohort data.

Addressing these gaps, this study draws on theoretical insights from scholarship on marital resource theory, social stress, the life course, and selection theory to contribute to the literature on the interplay between re-partnering of single mothers and their life satisfaction and mental health in three key ways. First, panel data from the German Socio-economic Panel (SOEP) and from the British Household Panel Study (BHPS) and the Understanding Society study (UKHLS) allows us to investigate both possible selection processes and direct effects of re-partnering. Using fixed effects models, we partialize out all time-constant factors and thus control for a large amount of unobserved heterogeneity. Second, we examine not only the direct effects, but also the extent to which these are explained by possible mediators. Third, we examine the extent to which the effects differ between the national contexts of Germany and the United Kingdom, as we assume that welfare state and socio-demographic differences cause the effects to diverge. Our work's findings

contribute to elucidate re-partnering as a transition in the life course of single mothers and the associated effects on their life satisfaction and mental health trajectories between national contexts.

2 Theoretical background

2.1 Previous empirical findings

Within the body of research on the effect of re-partnering on life satisfaction and mental health, the amount of research that explicitly focused on single mothers is limited (Buehler et al., 1986; Demo & Acock, 1996; Ganong & Coleman, 1991; Langlais et al., 2016; Recksiedler & Bernardi, 2019; Weingarten, 1980), while other studies investigated re-partnering among adults in general (Evans & Kelley, 2004; Glenn, 1981; Gloor et al., 2021; Hiyoshi et al., 2015; Hughes & Waite, 2009; Li et al., 2021; Lin et al., 2019; Noda et al., 2009; Spanier & Furstenberg, 1982; Weingarten, 1985). Results of this research are mixed. Most studies have found a positive relationship between re-partnering and mental health or measures of life satisfaction and well-being (Demo & Acock, 1996; Evans & Kelley, 2004; Glenn, 1981; Gloor et al., 2021; Hughes & Waite, 2009; Lin et al., 2019; Noda et al., 2009; Weingarten, 1980). Only Hiyoshi (2015) showed evidence for a higher risk of depression among those who are re-partnered compared to those who remain separated, and Ganong (1991) and Spanier (1982) did not find any significant effects. However, some studies also showed heterogeneity in their findings. Buehler et al. (1986) found positive relationships only between re-partnering and income-related well-being measures, but no significant links with self-esteem and satisfaction with parenting. In examining the effect of dating on single mothers' life satisfaction, Langlais et al. (2016) found positive effects when relationship quality is high and negative effects for low quality. Li et al. (2021) showed a positive correlation between re-partnering and mental health only for men, but no significant association for women. In their cross-

comparative analyses of re-partnering effects on single mothers' health, Recksiedler and Bernardi (2019) showed no significant re-partnering effects in the pooled sample, but a positive association in market-oriented welfare state contexts. Weingarten (1985) analyzed correlations between re-partnering and various well-being measures and found a significant positive correlation for happiness, but not for global life satisfaction.

The major shortcoming of previous studies on the relationship between re-partnering and health is that only few are based on long-term panel data (Evans & Kelley, 2004; Gloor et al., 2021; Jin et al., 2019; Langlais et al., 2016; Noda et al., 2009) or methods that are suitable to obtain causal effects (Li et al., 2021). Therefore, the trajectories around re-partnering transitions are understudied. It remains unclear whether certain correlations can be interpreted as effects of re-partnering, or whether they arise from social selection. This links up with the discussion about selection effects in research on family and health (Carr & Springer, 2010; Lamb et al., 2003; Mikucka et al., 2021). Due to the respective analytical approaches, the question of selection versus causation has not been answered even by the studies that rely on panel data that address the effect of re-partnering on (single mothers') life satisfaction and mental health.

2.2 Mechanisms linking single mother's re-partnering and health

2.2.1 Selection into re-partnering

Single mothers are a particularly disadvantaged group in the re-partnering market because of their gender (Brown et al., 2019; Ivanova et al., 2013; Leopold, 2018; Raley & Sweeney, 2020; Wu & Schimmele, 2005) and their role as parents (De Graaf & Kalmijn, 2003; Gałezewska et al., 2017; Ivanova et al., 2013; Lampard & Peggs, 1999). Within this group, however, there is debate about whether certain single mothers may have specific health conditions that make them more likely to select into re-partnering. The assumption of social selection into re-partnering is derived from the

marriage selection hypothesis, according to which individuals' health influences marital transitions in that the healthy are more likely to be married than the unhealthy (Barrett, 2000; Carr & Springer, 2010). There are two types of explanation: according to the direct process, health status is a criterion both for assortative mating and union dissolution, and according to the indirect process, health behaviors are the criteria (Wu & Hart, 2002). With regard to single mothers, it is assumed that they as a group are already subject to health selection, since poor mental health is found to increase the risk of dissolving a union (Davies et al., 1997; Pevalin & Ermisch, 2004). However, comparing health trajectories of single mothers, the social selection hypotheses would therefore suggest that the health of re-partnered mothers is already better before co-residing with their new partner compared to those remaining single. Evidence for this is limited: Pevalin and Ermisch (2004) found a positive social selection only for re-partnering after a cohabiting union but not after a marriage and Recksiedler and Bernardi (2019) interpreted their results as indicating selection mechanisms among re-partnered single mothers, but without modeling the health trajectories longitudinally. Derived from these theoretical considerations and existing the empirical findings, we expect that single mothers who re-partner are more satisfied and have better mental health than those who do not re-partner already before the re-partnering (**Hypothesis 1**).

2.2.2 Causal effects of re-partnering on health

Even if it is presented as contradictory in some research, there is no reason to rule out direct effects of re-partnering given possible selection mechanisms. Theoretical approaches in research predominantly point to positive effects of re-partnering on single mothers' life satisfaction and mental health. Following the marital resource model (Williams & Umberson, 2004), causal mechanisms for the link between health and re-partnering are due to additional economic, social, and emotional resources contributed to the household by the new partner.

The assumption in marriage and health research that women's health benefits from marriage are primarily driven by material well-being due to increased financial resources (Wu & Hart, 2002) takes on even greater significance for single mothers, whose prior separation is often accompanied by economic decline (Harkness, 2018; Leopold, 2018). Accordingly, the offset of stressors caused by economic insecurity or even poverty through re-partnering might lead to increases in life satisfaction and mental health (De Graaf & Kalmijn, 2003; Kalmijn & Monden, 2010), as shown by Dziak et al. (2010).

The assumption of a positive health effect through social support is also widespread in research on marriage and cohabitation. This is often explained through protection against negative effects of stress and disadvantage (Crosier et al., 2007), but also through new access to social networks (Perelli-Harris et al., 2018) and control of health behavior by the new partner (Hughes & Waite, 2009). For single mothers, however, the most important social resource is assumed to be childcare support because of the amount of stress due to role overload among single mothers (Gregg et al., 2009; Pollmann-Schult, 2018). Prior research shows that shared childcare responsibilities significantly reduce parenting stress (Cooper et al., 2009), which may positively influence single mother's life satisfaction and mental health (Recksiedler & Bernardi, 2019; Thompson & Ensminger, 1989). Consequently, it is widely supported that re-partnering in the sense of co-residing leads to better life satisfaction and mental health in single mothers due to a reduction in parenting stress (Cooper et al., 2009; Hofferth & Anderson, 2003). However, this is not only because the mother has to spend less time overall on childcare, but also because she can spend more time on the more enjoyable and rewarding activities with the child (Harkness, 2016b; Meier et al., 2016). This is also because the mother can reduce her working hours due to the new partner's financial resources (Koster et al., 2021), suggesting that the effect of different types of resources

on single mothers' life satisfaction and mental health are strongly interrelated. Another social resource discussed in the literature is a reduction in the burden of housework by the new partner. Studies on this, however, mostly compare housework in first and re-partnered union, yielding mixed results (Beblo & Solaz, 2020; Ishi-Kuntz & Coltrane, 1992; Ophir, 2021).

The third component of the resource model is represented by emotional support. According to this, emotional warmth and sexual intimacy of a romantic relationship positively affect the mother's life satisfaction and mental health beyond financial and social support (Ivanova et al., 2013; Perelli-Harris et al., 2018). These effects might be particularly pronounced during or following stressful periods (Kalmijn, 2017), amongst which we consider the single mother period.

Thus, following the assumptions of the resource model, re-partnering is expected to have a positive impact on single mothers' life satisfaction and mental health (**Hypothesis 2**).

Contradictory to the assumptions of the resource model, there are also considerations in the literature that re-partnering may have a negative impact on single mothers' life satisfaction and mental health. One argument is that re-partnering can drain resources for the single mothers (Hughes & Waite, 2009), for example in a residential move (Cooper et al., 2009) or in instable re-partnered relationships that cost emotional and financial resources rather than providing new ones (Recksiedler & Bernardi, 2019). According to another assumption, there might be a negative re-partnering effect on single mothers' life satisfaction and mental health caused by the role of children in stepfamily-like contexts with emerging role conflicts and strains (Lansford et al., 2001; Recksiedler & Bernardi, 2019; van der Wiel et al., 2020). Direct conflicts may arise between the mother and the child, as a new partner may distract the mother from spending time with the child (Koster et al., 2021) and the mother-child relationship may lose closeness and warmth as the new partner also claims emotional affection (Beck et al., 2010). Assuming that this has a negative impact

on the mother because of the close connection between the mother's and the child's health, this assumption detrimentally contradicts the social support component of the resource model. Furthermore, there is the risk of conflict between the child and the new partner (De Graaf & Kalmijn, 2003), which in turn might cause increasing levels of stress (Cooper et al., 2009) and restricted parenting opportunities (Koster et al., 2021) leading to life satisfaction and mental health disadvantages among the mother. Another explanation supporting a negative re-partnering effect among single mothers is suggested by the social stress model, stating that partnership changes are always stressful life events that usually have a negative impact on the life satisfaction and mental health of the individuals involved (Beck et al., 2010; Osborne et al., 2012).

According to the crisis model, re-partnering can therefore be expected to have a negative impact on the life satisfaction and mental health of single mothers (**Hypothesis 3**). Nevertheless, following Buehler et al. (1986), we do not understand the two approaches as diametrically opposed, but rather assume that re-partnering always contains both resource-gaining and crisis elements, which can only be pronounced to different degrees and accordingly tend to result in positive or negative effects.

2.3 The German and British institutional contexts

Beyond these assumptions of individual effects of re-partnering, all single mothers are involved in macro contexts at the national level, with different institutional settings. In addition to the effects within a context, there has been an increasing interest in research in moderating effects of the national institutional contexts on re-partnering effects (Feldhaus & Preetz, 2021; Gałezewska et al., 2017; Recksiedler & Bernardi, 2019). Our assumption is that various factors at the macro level might influence re-partnering behavior, which in turn impacts the stability of re-partnering relationships. The share of negative re-partnering effects in the sense of the crisis model is expected

to be more pronounced in unstable re-partnered relationships, while in stable re-partnered relationships, more benefits are gained from the additional resources (see Perelli-Harris & Lyons-Amos, 2015; Pevalin & Ermisch, 2004; Recksiedler & Bernardi, 2019). The comparison between the German and the British context is particularly well suited due to differences in the socio-demographic profile of single mothers as well as welfare state related differences (Myrskylä & Margolis, 2014; Pollmann-Schult, 2018; Recksiedler & Bernardi, 2019; Uunk, 2004).

The moderating factor most extensively addressed in research is the welfare state context and corresponding family policies. Through varying degrees of support and incentives, these regulations can shape the need for single mothers to re-partner. It can be assumed that in countries with more welfare state support for single mothers, the pressure to re-partner in terms of financial resources is less strong (Pollmann-Schult, 2018). Rather, particularly with regard to re-marriage, tax disadvantages for dual earner couples may encourage single mothers to remain single in order to maintain their eligibility for state benefits (Perelli-Harris et al., 2018). Another family policy that can potentially affect the re-partnering behavior of single mothers is the reconciliation of work and family life (Harkness, 2016b), expressed through legal regulations of labor market participation of single mothers (Recksiedler & Bernardi, 2019).

Although the German system is still considered a male-breadwinner model due to tax advantages of households with a high- and a low-earner (Burstrom et al., 2010; Perelli-Harris et al., 2018; Recksiedler & Bernardi, 2019) that discourages women to work (Cooke, 2006), it is also important to highlight that financial support for all families in Germany – including single mother families – is above the OECD average (Thévenon, 2011). Over the 1990s and 2000s, several labor market and family policy reforms were introduced that included a shift away from the predominantly cash-based system of family policy toward a focus on more in-kind benefits and employment supply

(Zagel et al., 2021). The British welfare state is defined as a liberal market economy (Schmitt, 2012), with minimal state interference and a predominant understanding that family support and childcare are private matters (Burstrom et al., 2010; McLean, 2014). In the early 2000s, reforms were introduced in the UK under the title “New Deal for Lone parents”, which explicitly targeted single parents and aimed to encourage them to enter the labor market through a variety of measures (Gregg et al., 2009; Harkness, 2016a). Nevertheless, the employment rate of single mothers has been higher in Germany than in the UK since at least 2005 (OECD, 2021). In addition, Germany’s state family benefits are higher than those in the UK, and while Germany’s net childcare cost are among the lowest in OECD comparison, UK’s are among the highest (OECD, 2021). Maternity leave policies are also more generous in Germany in that the length of paid maternity leave and paid parental home care leave for mothers is longer and the average payment rate is almost twice as high compared to the UK (OECD, 2021).

Therefore, we expect that single mothers in the UK fare worse with regard to their economic resources. This may cause a greater pressure to find a new partner in order to compensate for the lack of financial resources, which could lead to more unstable re-partnering behavior. Evidence for this has already been provided by Recksiedler and Bernardi (2019), thus reinforcing effects of emerging crises and resource drain. In Germany, therefore, we expect re-partnering to have pronounced positive effects on life satisfaction and mental health (**Hypothesis 4**), whereas in the UK we expect effects to be weak to negative (**Hypothesis 5**).

3 Data and method

3.1 Data

For our analyses, we draw on comparable data sources for the different countries. For the German context, we use data from the German Socio-Economic Panel (SOEP) from the years 1984 to 2020. For the British context, we use data from the British Household Panel Study (BHPS) from the years 1991 to 2008 and the subsequent UK Household Longitudinal Study (UKHLS) from the years 2009 to 2020. The SOEP is a large representative national panel study of private households in Germany, conducted yearly since 1984 (Wagner et al., 2007). The BHPS is an annual survey that started in 1991, also consisting of a nationally representative sample of households. From 2009 onwards, this survey evolved into the UKHLS study. We followed the recommendations of harmonizing the two data sources, provided by the UK Data Service (University of Essex, 2022). The data are perfectly suited for answering our research questions for three main reasons. First, both surveys cover very long time periods (SOEP: 1984-2020; BHPS/UKHLS: 1991-2020), which allows us to capture both transitions of entry into single motherhood and re-partnering, and the trajectories of life satisfaction and mental health around these transitions. Second, the data provide detailed socio-demographic individual and household information on single mothers, their children, new and ex partners, and children of new and ex-partners. This enables us to provide accurate information on household composition at each point in time. Third, the data offer extensive information that is comparable across national context on life satisfaction and mental health, as well as on variables that we use in order to test the mechanisms of the re-partnering effects.

In order to obtain the largest possible sample sizes and thus more precise estimates, we examine the questions on selection and causation of re-partnering effects separately in two different samples. We examine possible selection effects in a sample in which we investigate differences

between re-partnered and non-re-partnered single mothers (*between-sample*). As a common baseline, we consider entry into single motherhood and then compare the life satisfaction and mental health trajectories of those who re-partner within five years after entry into single motherhood and those who remain single. To capture the direct effects of re-partnering, we look at the trajectories of life satisfaction and mental health *within* those single mothers for whom a re-partnering event can be observed over the course of the survey period (*within-sample*). Both samples thus consist only of individuals who were single mothers for at least one survey time. We define these as mothers who live with at least one underage child in the same household and do not share this household with the father of at least one of the children or with any other male partner. We excluded other household compositions, such as multigenerational households, from the samples for reasons of comparability. As shown in Table 1, the within-sample consists of 1198 individuals with 5688 observations from Germany and 715 individuals with 1962 observations from the UK, for whom we were able to detect a re-partnering transition during the survey period. The between-sample consists of 1707 individuals with 9730 observations in Germany and 948 individuals with 5496 observations in the UK from mothers for whom entry into single motherhood was observed during the survey period. Of these, 28.59% in Germany and 23.84% in the UK re-partnered during the survey period. The rather small number of mothers for whom we can observe both the entry into single motherhood and a subsequent re-partnering transition argues for our approach of examining the direct re-partnering effects separately in the within-sample. Based on the socio-demographic characteristics presented in Table 1, we see that these do not differ significantly in the two samples. In addition, we observe some differences between Germany and the UK, while these do not pose an obstacle to the comparability of the two countries in our analyses.

Table 1: Descriptive characteristics of the analytical samples

	Within sample				Between sample			
	SOEP		BHPS/UKHLS		SOEP		BHPS/UKHLS	
	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD
Re-partnered within 5 years					28.59		23.84	
Age at re-partnering	35.68	7.59	33.84	7.86	35.36	6.56	33.79	7.54
Age at entry into single motherhood if re-partnered					33.25	6.48	31.52	7.41
Age at entry into single motherhood if not re-partnered					37.66	7.55	36.87	8.24
Age at first birth if re-partnered					23.69	4.24	24.56	5.31
Age at first birth if not re-partnered					25.00	5.19	26.06	6.10
Number of children at re-partnering	1.76	0.90	1.81	0.94	1.90	0.92	1.90	0.89
Number of children at entry into single motherhood if re-partnered					1.79	0.89	1.73	0.86
Number of children at entry into single motherhood if not re-partnered					1.91	0.99	1.92	0.97
Age of youngest child at re-partnering	7.41	5.05	6.51	4.86	7.17	4.79	5.88	4.44
Age of youngest child at entry into single motherhood if re-partnered					6.04	3.91	4.56	3.81
Age of youngest child at entry into single motherhood if not re-partnered					8.18	4.91	6.94	4.82
N(individuals)	1198		715		1707		948	
N(observations)	5688		1962		9730		5496	

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020)

3.2 Key measures

3.2.1 Predictor: Re-partnering of single mothers

Our main predictor variable is the re-partnering of single mothers. We define the re-partnering event as the time when, after a period of single motherhood, a new partner moves into the household of the mother and children. For the study of selection effects, we focus on the entry into single motherhood. We define this as the event in which the father of one of the children or another partner leaves the household and at the next observation time the mother shares the household only with her children, of whom at least one has to be underage.

3.2.2 Outcomes

Our key outcomes are life satisfaction and mental health. In the German sample, respondents were asked in all waves, “How satisfied are you with your life, all things considered?”. Responses range from 0 (completely dissatisfied) to 10 (completely satisfied). In the British sample, we derived life satisfaction from the item “Please choose the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation: Your life overall”. Responses range from 1 (completely dissatisfied) to 7 (completely satisfied), but we rescaled it to a range of 0 to 10 due to better comparability between the countries. This item was surveyed annually from 1996 onwards. For mental health, the composite SF-12 mental health score is present in both the German and UK data. The SF-12 questionnaire contains a battery of 12 questions on 8 dimensions of health-related quality of life, namely physical functioning, role physical, bodily pain, general health perception, energy/vitality, social functioning, role emotional, and mental health (Andersen et al., 2007; Jenkinson & Layte, 1997). These are derived from the larger SF-36 questionnaire. Using a principal component analyses, the eight subscales are assigned to one of two factors, one of which is the mental health scale (MCS-12). Information on this is surveyed

biennially in the German data from 2002 onwards and annually in the British data from 2009 onwards.

3.2.3 Mechanisms

To capture potential mechanisms, we examine the mediating effects of several variables on the effect of re-partnering on the outcomes and include only variables that are similarly present in both the German and the British samples. First, we test two income-related variables as mediators: monthly household equivalent net income and satisfaction with household income. Both the German and the British samples contain information on monthly net household income, from which we derived the equivalent income using the square root scale (OECD, 2020). In the German sample, the question “How satisfied are you with your household income?” was asked in all waves and the respondents had to answer on a scale from 0 (completely dissatisfied) to 10 (completely satisfied). In the UK sample, the question was asked annually from 1996 onwards, and here respondents had to answer the question “How satisfied or dissatisfied are you with the following aspects of your current situation? The income of your household” on a scale from 0 (not satisfied at all) to 7 (completely satisfied). We rescaled the scale to a range from 0 to 10. As a further mediator, we consider the time use on housework. While the German data provides annual information on the average number of hours per working day for all waves, the UK data offer the average number of hours per week annually from 1992 onwards. In addition, we include a variable on residential move as a mediator. This is a dummy that provides information on whether the mother’s address has changed in comparison to the previous year. This allows us to show whether a move has taken place in the course of re-partnering. The last mediator variable we consider is also a dummy that provides information on whether children of the new partner have moved into the household in the course of re-partnering.

3.2.4 Controls

In all analyses, we control for effects of the age of the (single) mother, the mother's youngest child, and calendar year period effects. Age is a potential confounding variable in the association between family type and health, as it selects individuals into different family types (Sharma, 2015; Teachman & Heckert, 1985) and health outcomes (de Ree & Alessie, 2011; Gaitz & Scott, 1972). The age of the youngest child is included because research has often shown effects of the child's age on both the mental health (Evenson & Simon, 2005; Ruppner et al., 2019; Simon & Caputo, 2019) and the re-partnering behavior of the parents (Koo et al., 1984). We also include the calendar year, as previous research has shown effects on both health outcomes (Bell, 2014) and family status (Kahn et al., 2017). All three control variables are included in the models as categorical variables with 5-year intervals. To check the robustness of our analyses, we also estimated models with 3-year intervals as well as dummies for each individual year/age. The patterns of the results do not differ from the 5-year intervals.

3.3 Analytical approach

For all analyses we use longitudinal fixed effects linear regression models (Wooldridge, 2002, pp. 265–269) with standard errors clustered at the individual level to examine changes in life satisfaction and mental health. All models presented below are stratified by both country (Germany and UK) and outcome (life satisfaction and mental health). We rely on two different model designs. The first is designed to capture the trajectories of life satisfaction and mental health, both comparing re-partnered and non-re-partnered single mothers and for the focus on the transition of re-partnering. Following the modification of Clark et al. (2008) by Myrskylä and Margolis (2014), we are able to observe both selection respectively anticipation as well as changes that are short-term (1 to 2 years) and long-term (3 to 5 years). This is modeled as

$$Y_{it} = \alpha_i + \theta_0 E_{0,it} + \theta_{1-2} A_{1-2,it} + \theta_{3-5} A_{3-5,it} + \boldsymbol{\beta}' \mathbf{X}_{it} + \varepsilon_{it}$$

where Y_{it} is either life satisfaction or mental health for individual i at time t ; α_i is the individual fixed effect; \mathbf{X} is a vector of covariates (mother's age, youngest child's age, period); and E and A_k are dummy variables for different time points or periods. E is the event of re-partnering respectively entry into single motherhood and A_k capture k years after the event. All coefficients θ_k are compared to the life satisfaction or mental health two to one years before the event. Using this model, we first examine whether selections are present. Doing so, we estimate the model with E as entry into single motherhood and compare the group of those mother who re-partner within five years of this event and those who remain single. Subsequently, we focus only on mothers who re-partner, with E representing the re-partnering event. This allows us to examine the trajectories of life satisfaction and mental health around this transition.

To investigate the mechanisms explaining the effects of re-partnering on the outcome variables, we rely on a different fixed effects model in which we focus on one coefficient that captures the effect of a dummy variable (single vs. re-partnered). This is modeled as

$$Y_{it} = \alpha_i + \theta P_{it} + \boldsymbol{\beta}' \mathbf{X}_{it} + \varepsilon_{it}$$

where P is a dummy referring to the entire period in which the mother is re-partnered with the coefficient comparing the re-partnering period with the preceding period of singlehood. To study the influence of different variables as mediators, we successively add the different mediators and compare each model with the base model of the raw effect of re-partnering.

4 Results

4.1 Descriptive results

In Table 2, the mean differences of the outcome variables and the mediator variables are presented. These results are based on the within-sample, i.e., the mother who first have a singlehood period and a subsequent re-partnering period. The mean differences shown are pooled across all observations in this sample. In the German sample, both life satisfaction and mental health SF-12 scores are significantly higher for observations in which mothers are re-partnered. In the British sample, there are no significant differences in the outcome variables. This suggests that positive re-partnering effects are only present in the German context, while in the UK context positive resource effects do not exceed crisis effects to the same extent as in Germany. In both countries, both the values of actual household income are significantly higher in the re-partnered observations than in the observations during singlehood, as are the subjective values of satisfaction with household income. Also, for the hours of housework of mothers, the values in both national contexts are significantly higher for the period in which the mother is re-partnered. The strongly diverging values between the countries are due to the different measurements, since the variable in the German context refers to the average housework per working day and in the British context to the average housework per week. This result should be emphasized as in the sense of the resource model it would be more likely to expect that a new partner brings social resources into the household by reducing the mother's workload in the household. The present result, however, rather suggests that a new partner requires additional resources from the mother, who remains responsible for the housework. Additionally, Table 2 shows that the number of mothers for whom re-partnering is associated with a residential move is about 10 percentage points higher in Germany than in the UK. Lastly, it is shown that in the UK, in more than 12 percent of re-partnering relationship of

single mothers, at least one additional child of the new partner comes into the joint household. In Germany, this is the case in more than 5 percent of re-partnering relationships of single mothers.

Table 2: Mean differences in outcome and mediator variables

	SOEP			BHPS/UKHLS		
	Single	Re-partnered	Difference	Single	Re-partnered	Difference
Life satisfaction	6.87	7.19	***	6.66	6.84	-
Mental health	46.66	47.95	*	46.69	46.45	-
Income	6.77	7.13	***	6.24	6.84	***
Income satisfaction	5.11	6.10	***	4.91	5.46	***
Housework hours	2.44	2.70	***	14.03	17.57	***
Residential move		30.80%			20.98%	
New children in HH		5.51%			12.87%	

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020)

Note: Statistical significance of mean differences: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2 Selection

Figure 1 shows the trajectories before and after entry into single motherhood in Germany. Predicted values are shown for life satisfaction and mental health; coefficients are presented in Table 4 in the appendix. Significant differences in the predicted values between those mothers who re-partner and those who remain single are present in life satisfaction from the first year after entry into single motherhood and in mental health from the third year. Both before and at the time of the event, the differences between the groups are not significant. Nevertheless, a pattern is discernible in the case of life satisfaction, which indicates that there is positive selection of the group of re-partnered mothers to a certain extent, since the values are higher in the years before singlehood and in the year of the event compared to those mothers who remain single. However, the different trajectories after the event indicate that differences between the two groups cannot be explained by selection alone, suggesting a direct effect of re-partnering on life satisfaction in Germany. In

the mental health trajectories, there is no evidence for a (partial) explanation of the differences between the groups due to selection. Rather, the group of mothers who remain alone exhibits better mental health before entry into singlehood.

Germany (SOEP)

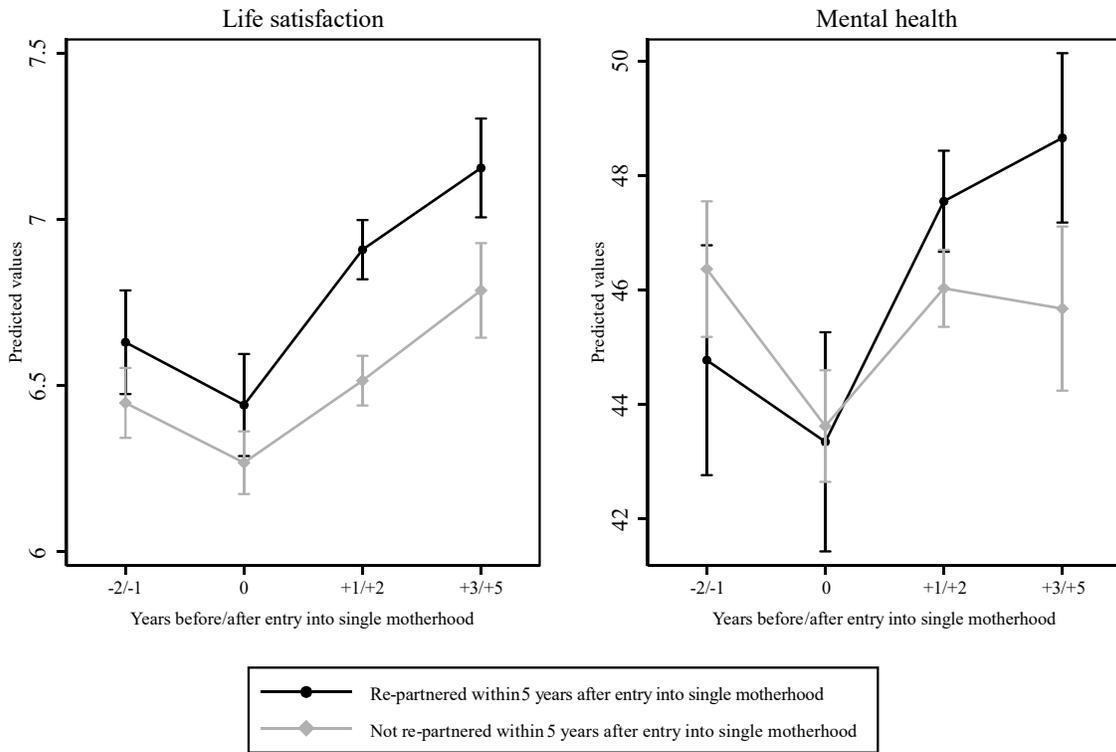


Figure 1: Mental health and life satisfaction trajectories before and after entry into single motherhood in Germany

The trajectories before and after the transition into single motherhood in the UK shown in Figure 2 are similar to the German results. For life satisfaction, re-partnered mothers show significantly higher life satisfaction from the first year after entry into singlehood onwards. Although the differences before the event are not significant, there is a pattern suggesting that differences in life satisfaction between the two groups can partly be explained by positive selection. However, due to the different trajectories after entry into single motherhood, it is evident that differences cannot be explained by selection alone and thus indicate that direct effects of re-partnering on life

satisfaction exist. As with the results for the German sample, there is no evidence of positive selection for mental health, because those mothers who re-partner have better mental health in the years before entry into singlehood. There are no significant differences in mental health trajectories in the UK even after the event, but the scores of those mothers who re-partner within five years are higher and the trajectories show steeper upward curves.

United Kingdom (BHPS/UKHLS)

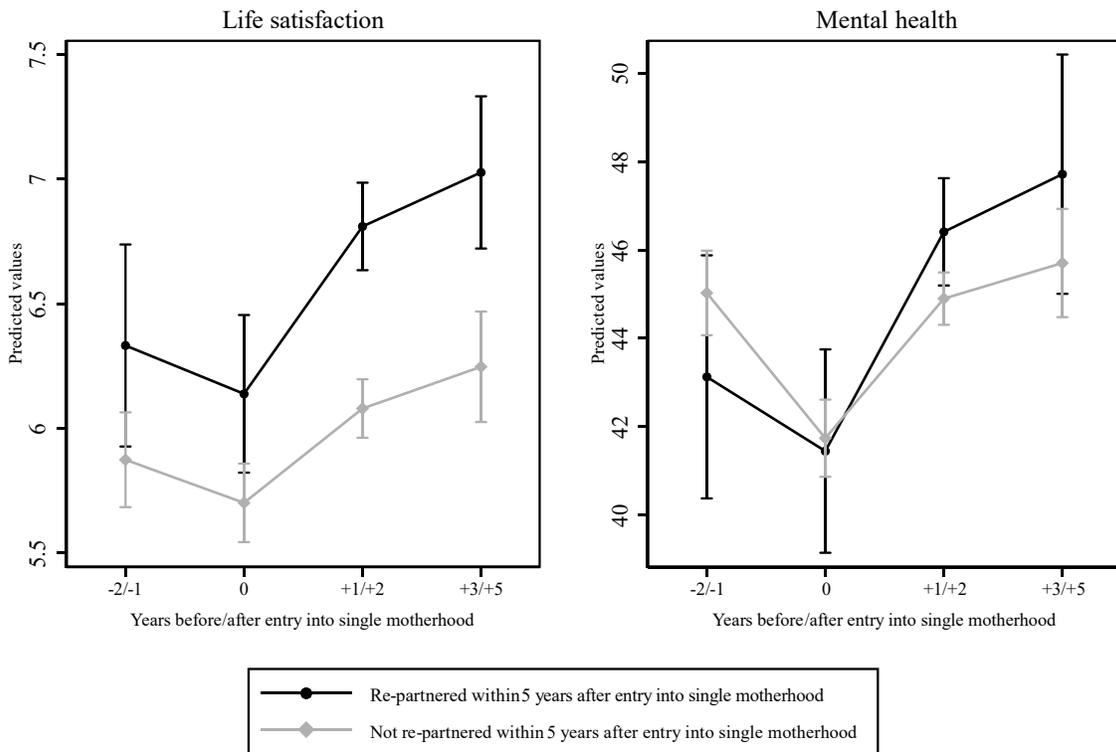


Figure 2: Mental health and life satisfaction trajectories before and after entry into single motherhood in the UK

These results indicate that in both national contexts there are selections in life satisfaction, since those who re-partner show higher values even before entry into single motherhood. Additionally, it can be assumed that due to the stronger increasing trajectory thereafter among those who re-partner within five years, there are also direct effects of re-partnering on life satisfaction. Selections are not found for mental health in either Germany or UK. We observe a stronger increasing

curve among mother who re-partner after entry into single motherhood, but the groups differ significantly only in Germany. The selection hypothesis H1, which assumes that mothers who re-partner already show better life satisfaction and mental health scores before entering singlehood, is thus confirmed at least on the basis of the pattern for life satisfaction in Germany. However, for mental health there is no evidence at all for positive selection into re-partnering. With regard to hypothesis H1, the results of the British context are similar to those of the German context. There are indications of positive selection for life satisfaction, but not for mental health.

4.3 Causation

Table 3 shows the direct effects of re-partnering on life satisfaction and mental health. Here, we show both the combined effect derived from the coefficient of a variable differentiating only between the single-mother-period and the re-partnering-period as well as the trajectories comparing life satisfaction and mental health two to one year before re-partnering to the year of re-partnering, one to two years after re-partnering, and three to five years after re-partnering. The effect of the re-partnering period on life satisfaction is positive and significant in both national contexts, but the effect in Germany is stronger at 0.54 compared to the effect in the UK at 0.29. Focusing on the trajectories, the effect in Germany is positive and significant in the year of re-partnering as well as one to two years after re-partnering followed by a decline to a non-significant effect of 0.20 at three to five years after the re-partnering event. In the UK, the effect in the trajectory is only significant in the year of re-partnering and is declining afterwards to non-significant effects of 0.12 one to five years after the re-partnering event. The effect of the combined re-partnering on mental health is significant and positive at 1.62 in Germany and negative but nonsignificant in UK. Looking at the trajectories, the effect of the year of re-partnering in Germany is positive and significant

at 1.62, but for the subsequent years, there are no significant effects. In the British sample, there are no significant effects for the whole trajectory of mental health.

Table 3: Fixed effects of re-partnering on mental health and life satisfaction

	Life satisfaction				Mental health			
	SOEP		BHPS/UKHLS		SOEP		BHPS/UKHLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Re-partnering Dummy (Ref.: Not re-partnered)	0.54***		0.29*		1.62*		-1.14	
	(0.05)		(0.15)		(0.69)		(1.08)	
Re-partnering trajectory (Ref.: -2/-1)								
0		0.56***		0.36*		1.48*		-0.65
		(0.06)		(0.16)		(0.73)		(1.14)
+1/+2		0.38***		0.12		1.68		-2.18
		(0.07)		(0.18)		(0.89)		(1.30)
+3/+5		0.20		0.12		1.37		-1.75
		(0.11)		(0.26)		(1.31)		(2.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (observations)	5687	5687	1958	1958	1785	1785	859	859
N (individuals)	1198	1198	714	714	847	847	422	422

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020)

Note: *p<0.05, **p<0.01, ***p<0.001

The trajectories of the predicted values derived from these coefficients are presented in Figure 3. The life satisfaction trajectories show that in both Germany and the UK, the single mothers show the lowest values before the re-partnering event and the highest values at the time of the event. In both contexts, there is a decline in life satisfaction following the event. For all time points, the values in Germany are higher compared to the UK. These differences are significant in the year of the re-partnering event and one to two years afterwards. The difference between the national contexts is much more pronounced in the mental health trajectories. Here, we observe an increase in the German context between two to one year before re-partnering and the year of the event. In the subsequent years, the values stay at a similar level. In contrast, the trajectory in the UK describes

a decline in mental health from two to one year before the re-partnering until one to two years after the event and a slight increase until three to five years after the re-partnering.

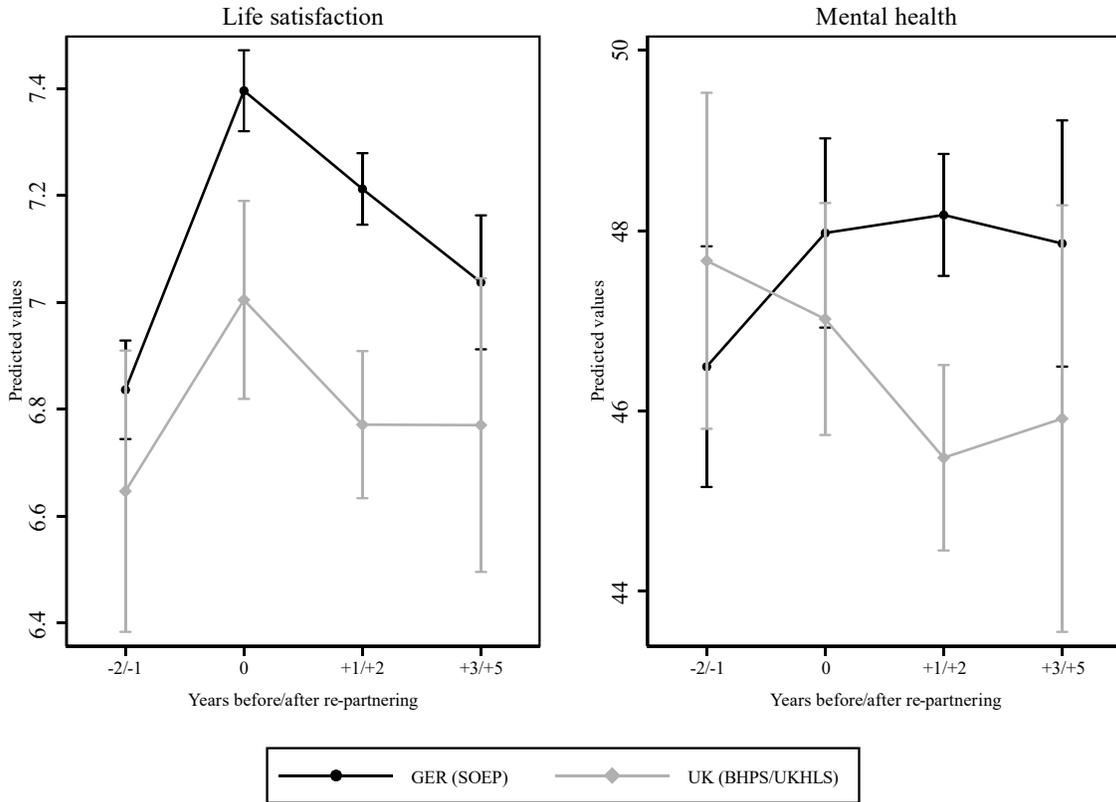


Figure 3: Mental health and life satisfaction trajectories before and after re-partnering in Germany and the UK

The results suggest positive direct effects of re-partnering on life satisfaction in both countries. However, this effect is much stronger and lasts longer in Germany, while in the UK the effect seems to be rather short-term. In Germany, there is also a positive effect on mental health, which seems to be more stable than for life satisfaction, as it remains relatively constant after an initial increase until the year of the re-partnering event. In the UK, no positive effect of re-partnering on mental health can be found, but rather a decline in the trajectory. Thus, hypothesis H2 can be confirmed for life satisfaction in both the German and the British context, with the effect lasting longer in Germany. For mental health, the positive effects suggested by H2 can only be confirmed

in the German context. Since the re-partnering effects on mental health in the UK are negative, the results suggest that, in the sense of hypothesis H3, the crisis character of the circumstances of re-partnering predominates. Focusing on the context comparison, hypothesis H4, which states that re-partnering has positive effects on life satisfaction and mental health in Germany, can be confirmed. H5, which suggests that the effects in the UK are weaker than in Germany or even negative, can be clearly confirmed for mental health due to the negative estimates, but also for life satisfaction the results show weaker and shorter-term effects than in Germany, which is why these results are also in line with H5.

4.4 Mechanisms

The effects of the base model present the coefficients of the re-partnering dummy shown in Table 3. In order to identify the main drivers of the effects, we stepwise included different variables as covariates in the models. It is shown in Figure 4 that in Germany, the positive effect of re-partnering on life satisfaction is partially explained through the household income and an even greater extent of the effect is explained through the satisfaction with household income. However, it has to be stressed that also with the income-related mediators included, the effects are still positively significant. Hours of housework as well as residential move and new partner's children do not seem to make any difference once included in the model. Considering the British context, both household income and satisfaction with household income also seem to work as mediators of the positive and significant effect of the base model. In each of the models with one of these variables, the positive effect of re-partnering on life satisfaction is no longer significant. As in the German context, hours of housework do not seem to work as a mediator of the re-partnering effect of life satisfaction in the UK. Including information on residential move as a covariate increases the effect in the British context. This suggests a negative effect of a residential move. Information about new

children of the partner in the household as a covariate, on the other hand, does not change the effect of re-partnering on life satisfaction in the UK.

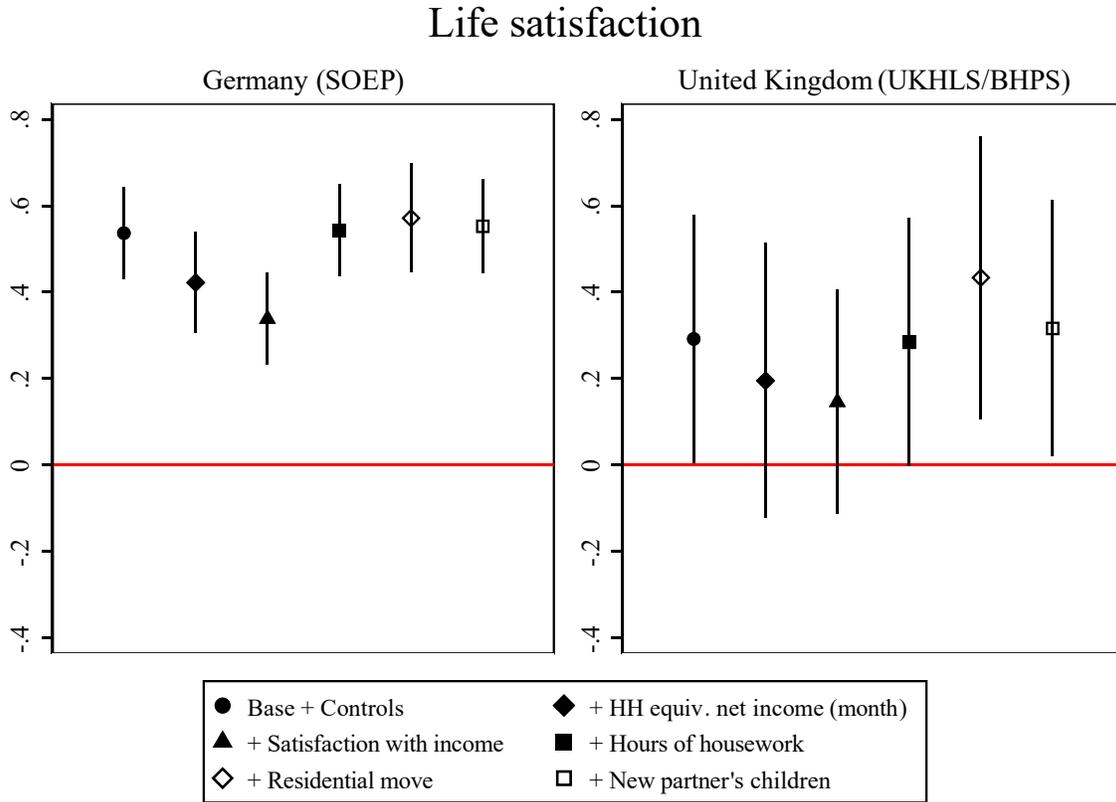


Figure 4: Mediations of re-partnering effects on life satisfaction in Germany and the UK

Examining the effect of re-partnering on mental health in terms of mechanisms, the inclusion of household income does not make a difference. However, when satisfaction with household income is added, part of the positive effect is explained away, so that the still positive re-partnering effect is no longer significant here. As in the investigation of life satisfaction, the inclusion of the variable of hours of housework by the mother hardly changes anything in the effect of the base model. The effect is still positively significant. When including the variable of residential move as a covariate, the effect of re-partnering on mental health in Germany is no longer significant. However, this is rather due to the larger confidence interval, since the coefficient is not considerably smaller

compared to the base model. New children of the partner in the household as a covariate also do not change the base model effect of re-partnering on mental health. In the UK, the base effect of re-partnering on mental health is negative but not significant. This is not changed by increasing any of the possible mediator variables. The income-related variables and hours of housework change very little in the re-partnering effect when included as covariates in the model. When residential move is included, the effect becomes considerably more negative, but remains non-significant. Adding information of new children of the partner in the household, makes the re-partnering effect less negative and therefore weaker compared to the base model.

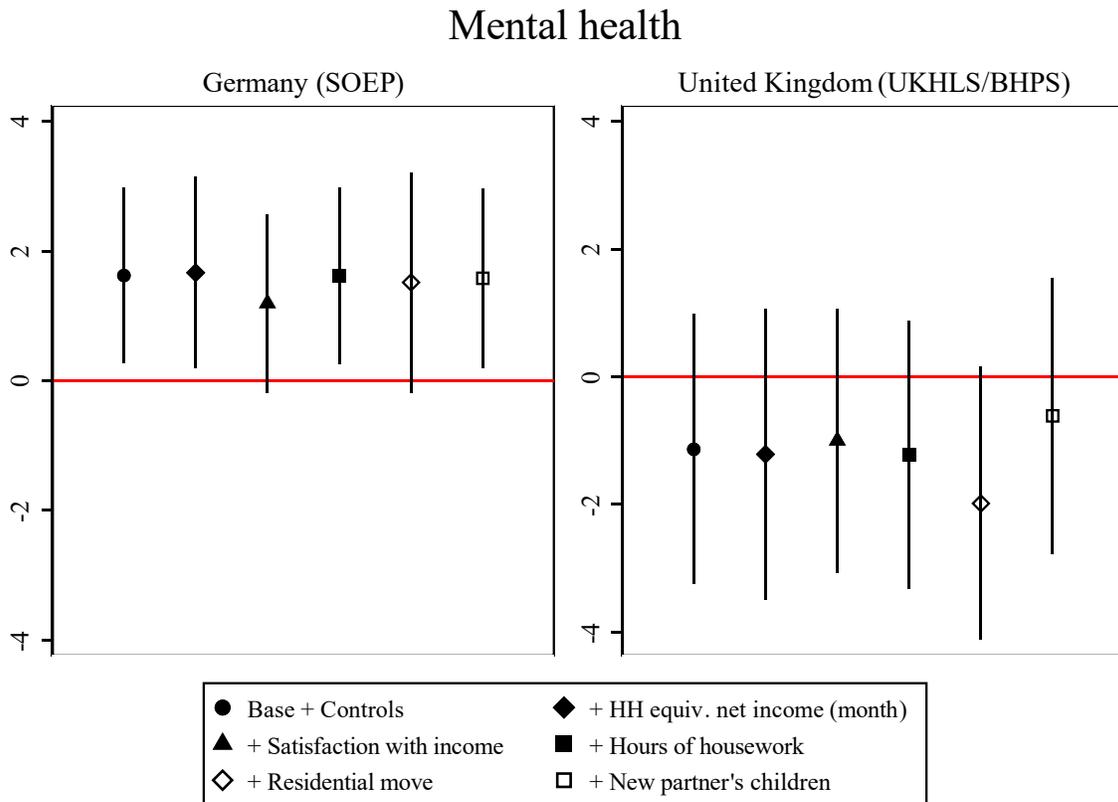


Figure 5: Mediations of re-partnering effects on mental health in Germany and the UK

5 Discussion

This study sought to contribute to a better understanding of the relationship between single mothers' re-partnering and health trajectories drawing on more than 30 years of panel data from representative surveys in Germany and the UK. In our analyses, we took advantage of the longitudinal character of the data and controlled for time-invariant unobserved heterogeneity to reveal both selection and direct effects of re-partnering and the underlying mechanisms. Our results show that while differences in life satisfaction between re-partnered and non-re-partnered single mothers can be partially explained by positive selection, there are also direct positive effects of re-partnering on life satisfaction. This holds for both the German and the British context, but the effects in Germany are much more pronounced and long-lasting. These findings follow assumptions and empirical findings from previous research that the likelihood of forming a re-partnering union is higher among individuals with better health and well-being (Pevalin & Ermisch, 2004; Sassler, 2010). The positive direct effects are also consistent with studies testing those type of re-partnering effects on health using causally robust methods such as instrumental variable regression (Li et al., 2021). Nevertheless, in both national contexts a very strong increase in life satisfaction in the year of re-partnering is followed by a subsequent decline, which can be interpreted in the sense of Kalmijn (2017) as a "honeymoon effect" of re-partnering. We find no evidence for selection effects in mental health, but we do find a positive direct impact of re-partnering on mental health in Germany. In the UK, however, re-partnering is accompanied by a decline in mental health. The weaker or negative effects in the UK in contrast to the positive effects in Germany are consistent with assumptions in research that the liberal market-oriented welfare state model in the UK leads to more unstable partnership histories (Recksiedler & Bernardi, 2019; Thévenon, 2011).

Our results show that the mediator variables we used in order to test the drivers of these direct effects do not have a huge impact on the effect in most cases. In the case of life satisfaction, however, the variables of household income and satisfaction with household income stand out, and while they do not explain the entire effect, they do explain considerable amounts of the positive re-partnering effects in both Germany and the UK. This is in line with the assumptions of the resource model in the literature regarding financial resources (Gloor et al., 2021; Williams & Umberson, 2004). In the case of the re-partnering effect on mental health in the German sample, only satisfaction with household income helps to explain a substantial part of the positive effect. It is striking that, contrary to our expectations, a new partner does not relieve the mother of housework, but rather re-partnering is significantly correlated with an increase in housework. This contradicts the assumptions of the resource model, but is consistent with recent findings in the literature on re-partnering and housework (Ophir, 2021).

The most unexpected finding for us is the strong difference between the effects on life satisfaction and on mental health especially in the British context. One explanation for that is that with life satisfaction, we analyze the effect of re-partnering taking a multi-dimensional perspective of well-being which captures immediate and short-time effects. Mental health, measured by SF-12 as a composite score, represents more long-term and deep-seated feelings of the individual, so it may be that the instability of re-partnering relationships in the UK has a negative impact not on the short-term life satisfaction, but rather on the more robust form of mental health.

Despite the many advantages of our design, our study is not without limitations. The first is that we do not distinguish between marriage and cohabitation, both at separation, through which entry into single motherhood is triggered, and at re-partnering. This problem has been addressed in previous research (Bastin, 2019; Perelli-Harris et al., 2018), strongly advocating for distinguishing

between marriage and cohabitation in the investigation of (re-)partnering behavior. Furthermore, our focus on shared households did not allow us to gain information about how re-partnering into living apart together relationships (van der Wiel et al., 2020) in which certain resources are shared affect the outcomes. Another limitation is that we do not consider in our analyses whether the re-partnering event is the coming together with a new partner or the reconciling with the new partner, although the latter has been demonstrated in research several times (Kiernan et al., 2011; Nepomnyaschy & Teitler, 2013). A final limitation is that although we use data in Germany since 1984, we do not distinguish between Western and Eastern Germany. Since there are still strong differences, especially with regard to the prevalence and importance of cohabitation (Perelli-Harris et al., 2018), even since reunification in 1990, a distinction within the German context would certainly be very useful.

Because our results provide robust estimates and how these vary across contexts and outcomes, but can only partially explain the mechanisms, it would be promising for future research to deeper investigate those mediating effects. First, it would be important to investigate other possible mediators that we could not consider, such as relationship quality as a measure of emotional resources. Second, it would be rewarding to find out how exactly financial resources, which had the greatest impact on the effects in our analyses, increased mothers' life satisfaction and mental health throughout a re-partnering transition. One possible explanation for this could be the child's well-being, which improves under better economic conditions (Berger et al., 2018) and is closely linked to the mother's health (Demo & Acock, 1996).

Overall, our work provides meaningful insights into how re-partnering affects single mothers' life satisfaction and mental health. That additional household income, and even more satisfaction with household income, can partially explain a positive re-partnering effect should encourage policy

makers to consider whether increased financial support can benefit single mothers even without a new partner. The finding that re-partnering does not relieve single mothers of housework, but rather puts even more strain on them, should also be understood as a societal problem and addressed in order to prevent re-partnering from becoming a cause of adverse health effects for single mothers.

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Table 4: Fixed effects of transition into single motherhood stratified by re-partnering

	Life satisfaction				Mental health			
	SOEP		BHPS/UKHLS		SOEP		BHPS/UKHLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trajectory coefficient (Ref.: -2/-1)								
0	-0.18*	-0.19	-0.17	-0.19	-2.75***	-1.43	-3.29***	-1.68
	(0.07)	(0.10)	(0.11)	(0.22)	(0.68)	(1.28)	(0.65)	(1.50)
+1/+2	0.07	0.28*	0.21	0.48	-0.34	2.78*	-0.13	3.29*
	(0.08)	(0.11)	(0.14)	(0.26)	(0.82)	(1.16)	(0.71)	(1.58)
+3/+5	0.34**	0.52***	0.37	0.69*	-0.69	3.89*	0.68	4.60
	(0.12)	(0.15)	(0.20)	(0.35)	(1.28)	(1.69)	(1.05)	(2.69)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (observations)	6242	3055	3530	1202	2277	885	2284	468
N (individuals)	1218	488	715	222	949	352	455	76

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020)

Note: *p<0.05, **p<0.01, ***p<0.001

Table 5: Fixed effects of mediated models

<i>Life satisfaction</i>	SOEP							BHPS/UKHLS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Re-partnering Dummy	0.54*** (0.05)	0.42*** (0.06)	0.34*** (0.05)	0.54*** (0.05)	0.57*** (0.06)	0.55*** (0.06)	0.29* (0.15)	0.20 (0.16)	0.15 (0.13)	0.28 (0.15)	0.43** (0.17)	0.32* (0.15)
Income		0.42*** (0.08)						0.12 (0.08)				
Income satisfaction			0.21*** (0.01)						0.35*** (0.03)			
Hours per week on housework				-0.05* (0.02)						0.00 (0.01)		
Residential move					-0.11 (0.10)						-0.46 (0.25)	
Partner's children						-0.29 (0.18)						-0.24 (0.34)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (observations)	5687	5687	5687	5687	5687	5687	1958	1958	1958	1958	1958	1958
N (individuals)	1198	1198	1198	1198	1198	1198	714	714	714	714	714	714

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020); Note: * p<0.05, ** p<0.01, *** p<0.001

<i>Mental health</i>	SOEP							BHPS/UKHLS				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Re-partnering Dummy	1.62* (0.69)	1.67* (0.75)	1.19 (0.70)	1.62* (0.70)	1.52 (0.86)	1.58* (0.71)	-1.14 (1.08)	-1.22 (1.16)	-1.00 (1.05)	-1.22 (1.07)	-1.99 (1.09)	-0.61 (1.10)
Income		-0.16 (0.95)						0.14 (0.66)				
Income satisfaction			0.44** (0.14)						0.64*** (0.17)			
Hours per week on housework				0.05 (0.24)						-0.11* (0.04)		
Residential move					0.24 (1.08)						7.13** (2.35)	
Partner's children						0.68 (2.15)						-4.49 (2.87)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N (observations)	1785	1785	1785	1785	1785	1785	859	859	859	859	859	859
N (individuals)	847	847	847	847	847	847	422	422	422	422	422	422

Source: SOEP (1984-2020), BHPS/UKHLS (1991-2020); Note: * p<0.05, ** p<0.01, *** p<0.001