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Between Work and Family in Germany and Europe. The Impact of Work–family Conflicts on the Health of Women and Men.

Cumulative Dissertation

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List of Abbreviations

ACLPM	Autoregressive and cross-lagged panel models
CI	Confidence Interval
COR	Conservation of resources
DS	Depressive symptoms
EHIS	European Health Interview Survey
EU	European Union
EWCS	European Working Conditions Survey
FTWC	Family-to-work conflict
OR	Odds Ratio
Pairfam	Panel Analysis of Intimate Relationships and Family Dynamics
RQ	Research question
SEM	Structural equation modeling
SRH	Self-reported general health
WFC	Work–family conflict
WTFC	Work-to-family conflict

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Zusammenfassung

Die Vereinbarkeit von Beruf und Familie ist Gegenstand gesellschaftlicher Diskussionen in westlichen Gesellschaften. Vereinbarkeitskonflikte (work–family conflicts, WFC) entstehen, wenn es Frauen und Männern nicht gelingt, ihre Arbeits- und Familienrollen miteinander zu vereinbaren. Zusammenhänge zu verschiedenen Aspekten von Gesundheit und zum Wohlbefinden wurden bereits in Studien aus den USA gezeigt.

Diese Arbeit enthält vier Publikationen. In diesen liefert sie eine Übersicht über die bestehende Forschung aus Europa zum Thema WFC und Gesundheit und ergänzt frühere Evidenz: Die Dissertation 1) umfasst Längsschnittstudien, die den Einfluss von WFC auf die Gesundheit untersuchen, 2) untersucht die Rolle von Vereinbarkeitspolitik in Europa in diesem Zusammenhang, und 3) analysiert Unterschiede zwischen Frauen und Männern.

Ergebnisse zeigen, dass nur wenige Publikationen auf Basis europäischer Daten existieren, die Zusammenhänge zwischen WFC und verschiedenen Gesundheitsaspekten aufzeigen. Unterschiede zwischen Frauen und Männern wurden nur selten untersucht. Der Zusammenhang zwischen WFC und Gesundheit ließ sich auch mit mehreren Expositions-Zeitpunkten, bzw. im Längsschnitt zeigen. Während sich die Prävalenz von WFC zwischen den europäischen Ländern unterscheidet, besteht kein Unterschied im Zusammenhang zwischen WFC und Gesundheit. Unterschiede in der Prävalenz von WFC lassen sich teilweise durch Indikatoren für Vereinbarkeitspolitik erklären. Weiterhin wurden keine Unterschiede zwischen Frauen und Männern im Zusammenhang von WFC und Gesundheit festgestellt. Die Analyse von Heterogenität innerhalb der Geschlechtergruppen gibt Hinweise darauf, dass höhere Bildung die gesundheitlichen Belastungen bei Männern, aber nicht bei Frauen verringern kann.

Die Interpretation der Ergebnisse, methodische Fragen und Implikationen für Politik und Praxis werden vor dem Hintergrund neuer pandemiegetriebener Entwicklungen in der WFC-Forschung und im öffentlichen Diskurs abgeleitet und diskutiert.

Abstract

Reconciling work and family roles is a topic of vital and controversial discussion in Western societies. When women and men fail to reconcile their work and family roles, the result is work–family conflict (WFC), which prior research has connected to various aspects of health and well-being.

The present thesis consists of four publications, which include one review and three secondary data analyses. They both summarize the existing research on WFC and health in Europe and substantially contributes to the literature. Accordingly, the present study 1) narrows the research gap in longitudinal studies that examine the effect of WFC on health, 2) evaluates how societal structures such as reconciliation policies and gendered division of work affect WFC and health across European countries, and 3) analyzes gender differences in the association between WFC and health.

Results show a relatively small number of publications come from the European region, which present associations between WFC and several aspects of health. However, gender differences are not thoroughly examined. When looking at (causal) associations over time, WFC has an effect on both general and mental health. While this association does not differ between European countries, the prevalence of WFC itself does. These differences in WFC reporting can be partly explained by country-level indicators of reconciliation policies. No gender differences in the association between WFC and health were observed in the empirical data, but an analysis of heterogeneity within the gender groups revealed that higher education may alleviate health-related burdens among men but not among women.

Interpretation of results, methodological issues, and implications for policy and practice are discussed in light of recent pandemic-driven developments in WFC research and public discourse.

Preliminary note

This cumulative dissertation includes the following publications, which were peer-reviewed and published in international scientific journals. Results were also presented as talks or posters at scientific conferences.

Publications

I. Borgmann, LS, P Rattay, and T Lampert. 2019. 'Health-Related Consequences of Work–family Conflict from a European Perspective: Results of a Scoping Review', Front Public Health, 7. doi: 10.3389/fpubh.2019.00189.

II. Borgmann, LS, LE Kroll, S Müters, P Rattay, and T Lampert. 2019. 'Work–family Conflict, Self-Reported General Health and Work–family Reconciliation Policies in Europe: Results from the European Working Conditions Survey 2015', SSM Popul Health, 9. doi: 10.1016/j.ssmph.2019.100465.

III. Borgmann, LS, P Rattay, and T Lampert. 2020. 'Longitudinal Analysis of Work-to-Family Conflict and Self-Reported General Health among Working Parents in Germany', Int J Env Res Pub He, 17. doi: 10.3390/ijerph17113966.

IV. Yucel, D, and LS Borgmann. 2021. 'Work–Family Conflict and Depressive Symptoms among Dual-Earner Couples in Germany: A Dyadic and Longitudinal Analysis'. So Sci Res, in press. doi: 10.1016/j.ssresearch.2021.102684.

Conference Presentations

Borgmann, LS, P Rattay, and T Lampert. 2019. 'Machen Vereinbarkeitskonflikte zwischen Beruf und Familie krank? Eine Längsschnitt-Betrachtung der subjektiven Gesundheit erwerbstätiger Mütter und Väter mit Daten der pairfam-Studie.' DGSMP Jahrestagung, 16.-18.09.2019, Düsseldorf.

Borgmann, LS, LE Kroll, S Müters, P Rattay, and T Lampert. 2019. 'Work–family Conflict, Self-Reported General Health, and Work–family Reconciliation Policies in Europe: Results from the European Working Conditions Survey 2015.' 8th International Conference of Work and Family, 01.-02.07.2019, Barcelona, Spanien.

Borgmann, LS, LE Kroll, S Müters, P Rattay, and T Lampert. 2019. 'Zusammenhänge zwischen Vereinbarkeitskonflikten von Beruf und Familie und Gesundheit in Europa. ' Armut und Gesundheit, 14.-15.03.2019, Berlin, Deutschland.

Borgmann, LS, P Rattay, and T Lampert. 2018. 'Gesundheit zwischen Familie und Beruf. Ein Scoping Review des europäischen Forschungsstands.' Jahrestagung der Deutschen Gesellschaft für Sozialmedizin und Prävention, 12.-14.09.2018, Dresden, Deutschland.

Borgmann, LS, P Rattay, and T Lampert. 2018. 'The Impact of Work–family-Conflict on Health. A Scoping Review of International Research.' 17th Biennial Congress of the ESHMS, 06.-08.06.2018, Lisbon, Portugal.

Borgmann, LS, P Rattay, and T Lampert. 2018. 'Gesundheit zwischen Beruf und Familie. Ein Scoping Review des internationalen Forschungsstands.' Jahrestagung der Deutschen Gesellschaft für Demografie, 14.-16.03.2018, Köln, Deutschland.

Conference Posters

Borgmann, LS, P Rattay, and T Lampert. 2019. 'Longitudinal Analysis of Work–family Conflict and Self-rated Health Among Working Parents in Germany.' European Public Health Conference, 27.-30.11.2019, Marseille, Frankreich.

Borgmann, LS, P Rattay, and T Lampert. 2018. 'Work–family Conflict and Self-rated Health in Europe.' European Public Health Conference, 28.11.-01.12.2018, Ljubljana, Slowenien.

1 Introduction

1.1 Challenges in Reconciling Work and Family Roles

The digitalization and globalization of the job market have led to changes in job roles and new demands on employment, such as flexible work hours and more travel (Gallie and Russell 2009). At the same time, both women and men in the work force are increasingly faced with challenges when caring for their children and elderly relatives (Gallie and Russell 2009; McGinnity and Whelan 2009).

The topic has gained importance as the proportion of dual-earner couples in western societies is rising, meaning a growing number of parents in Europe hold both work and family roles (Hill et al. 2004). Consequently, a number of European countries have enacted new laws to improve the reconciliation of paid work and family duties, regulating, for example, parental leave, formal childcare, and the care of relatives (MacInnes 2006). However, national reconciliation policies differ considerably between European states (Waldfogel 2006; McGinnity and Whelan 2009), as do the respective cultural backgrounds, social contexts, and gender norms (Notten, Grunow, and Verbakel 2017).

In Germany, for example, labor market participation increased from 57% in 1991 to nearly 73% in 2020 among women aged 15 to 64 (Eurostat 2022). As policy makers and companies tried to adapt to these changes, the reconciliation of work and family lives became a focus of family policy. New measures were introduced in 2007 and updated in 2021, e.g. a parental leave scheme for mothers and fathers that covers up to eighteen months of paid parental leave, as well as a guaranteed place in an institutional childcare facility (starting at age 12 months) for each child. However, men and women are incentivized to different extents to use these policies. In German families, this typically manifests in rather traditional gender role models, where the majority of mothers takes 12 months of parental leave but only a very small percentage of fathers take more than two months (Aisenbrey and Fasang 2017). Women in Germany also provide care for relatives

significantly more often than men (Robert Koch-Institut 2020).

Both these trends have consequences for the share of paid and care work and is reflected in the fact that the modern breadwinner model, where the man works full-time while the woman works part-time, prevails as the most common way of combining work and family lives in dual-earner couples in Germany—70% of married or cohabitating couples with children under the age of 18 matched this model in 2016 (Statistisches Bundesamt 2022). Thus, the burden of reconciling both roles is mostly put on mothers, who complete paid work while taking care of the majority of household and care work, as shown by diary studies on time use (Bundesregierung 2021).

Additionally, a growing number of European women and mothers in the labor force, combined with a stable number of men and fathers working full-time, has decreased families' available time for care work. To a certain extent, this is compensated by institutional childcare, which is expanding in many European countries (European Comission 2022). However, the aforementioned new demands from job roles, combined with the limited availability of institutional childcare for young children in some countries and growing demands for care work for the elderly due to aging societies, lead to challenges among both mothers and fathers in reconciling work and family roles (Vaziri et al. 2020). Thus, what scholars have labeled work–family conflict (WFC) arises as the boundaries between work and family become blurred and the demands of both areas of life overlap (Greenhaus and Beutell 1985).

1.2 Work–family Conflicts: A Definition

WFC is defined as inter-role conflict in which demands from work and family roles are incompatible (Greenhaus and Beutell 1985). The resulting conflicts are conceptualized in two directions: work-to-family conflict (WTFC) is present when demands at work disrupt family life, while family-to-work conflict (FTWC) occurs when demands in one's family make fulfilling one's job role more challenging. It is assumed that the directionality of WFC is only

set once the individual responds to the conflicting roles: if they prioritize the work-related responsibility, e.g., taking an unplanned work-related call at home instead of doing homework with their children, WTFC occurs; but if they decide to attend to the family-related responsibility, e.g., leaving work early to pick up a sick child from an institutional childcare facility, FTWC is in place (Greenhaus and Beutell 1985). WTFC and FTWC are usually described as moderately correlated but distinct constructs (Byron 2005; Mesmer-Magnus and Viswesvaran 2005). In addition to the direction of the conflict (WTFC vs. FTWC), scholars also distinguish between types of conflict: time-, strain-, or behavior-based (Greenhaus and Beutell 1985).

The term ‘family’ in WFC may refer to different aspects of family life, such as caring for biological or adopted children, caring for (elderly) relatives, or maintaining spousal relationships. The majority of measurement instruments, however, do not distinguish between different aspects of family life and, in some cases, measure the construct even more broadly with the term “personal life” (Kossek and Lee 2017). In the present thesis, the concept of ‘family’ is usually referred to as ‘parenthood’ but it also refers to responsibilities for relatives in need of care, as well as to the spousal relationship.

1.3 Work–family Conflicts and Health-Related Consequences

WFC comes at excessive costs for individuals and societies, as it can deteriorate their ability to work and increase the likelihood of having an impaired family life. Furthermore, WFC has major detrimental effects on individual health and well-being. Reviews and meta-analyses show that WFC is negatively associated with mental and physical health, self-reported general health (SRH), and sleep and positively associated with adverse health-related behaviors such as smoking and alcohol consumption and more frequent healthcare utilization (Amstad et al. 2011; Greenhaus, Allen, and Spector 2006).

1.3.1 A Theoretical Approach to WFC and Health

Theoretical considerations are necessary to fully understand the association between WFC

and health. One of the key theoretical frameworks here is the conservation of resources theory (COR; Hobfoll 1989, 2001). It proposes that individuals obtain and maintain a range of resources, classified into conditions, personal characteristics, and energies. Conditions are defined in terms of status, such as being married or having significant job security. Personal characteristics are described as resources that help to resist stress, like self-esteem or optimism, while energies such as knowledge, time, and money aid the acquisition of other resources. Also, resource loss is more sustainable than resource gain, meaning that acquiring new resources will not necessarily compensate for a potential or actual loss of one's current resources (Hobfoll and Schumm 2009).

Stress, in this model, is seen as a reaction to a threatened or actual loss of resources, or a threat to an expected increase of resources following an investment of other resources. In accordance with COR theory (Hobfoll and Schumm 2009), stress can result from the depletion of a resource due to role conflicts: for example, if a person feels vulnerable to losing his or her job, he or she may feel pressured to invest more resources to avert the threat of job loss. Often, these resources are deducted from the family role, meaning it cannot be fully completed. This mismatch between work and family spheres may cause inter-role conflict that leads to stress due to lost resources in the family sphere. Likewise, stress prompts a negative state of being in both roles, which in turn may lead to adverse health outcomes (Grandey and Cropanzano 1999).

Components of the COR theory, such as cultural and environmental factors, the role of time, as well as categories of social differentiation such as gender, education, employment status, or place of living, may shape the association between stress and health. These elements are outlined and explained in the sections below.

1.3.2 Reverse Causation and Loss Spirals in the Association of WFC and Health

The association between WFC and health can also be looked at in a reverse perspective: poorer health—in COR terms, fewer personal resources due to health-related

impairments—may lead to fewer available resources for coping with resource threats from the work and/or family role. Taking this one step further, COR theory suggests that resource loss leads to even more resource loss: people with fewer personal resources, because of e.g., health impairments, will be more prone to further resource loss compared to people with ample resources, because fewer resources are available to accommodate external demands (e.g., from the work or family environment) or to access new resources (e.g., in one's job role). In COR theory, this phenomenon is called the loss spiral. Loss spirals follow initial losses, where each loss leads to having fewer resources available to confront the next loss or threat of loss (Hobfoll 2001).

1.3.3 Relevance of Societal and Institutional Contexts for the Association of WFC and Health

An individual's availability of resources is shaped by structures on the societal level, such as traditions and culture or welfare state regimes, as well as by institutional factors such as educational facilities, structures in the workplace, etc. Thus, as Hobfoll and Schumm (2009) pointed out, individual behaviors have to be viewed, studied, and interpreted within social and institutional contexts. They defined stress as "a reaction to the environment in which there is threat of net loss of resources, actual net loss of resources, or lack of resource gain following the investment of resources" in an individual (Hobfoll and Schumm 2009, p. 287).

In the present study's context, reconciliation policies and employment rates (on the societal level) as well as family models and workplace characteristics (on the institutional level) influence available resources for fulfilling work and family roles. Here, resources may include one's financial situation, which is impacted by, among other things, payment schemes in the parental leave system and job security after parental leave. They also include an individual's available time, impacted, for example, by the availability of institutional childcare facilities (Grönlund and Öun 2010; Hämmig 2014).

Similarly, gender norms vary in different societies and may shape both the availability of

resources as well as patterns of resource gain and loss differently for women and men (Hobfoll 2001; Huffmann et al. 2014). Here, gender norms refer to the standards and expectations that are placed on the roles of women and men within distinct cultural settings (McGinnity and Whelan 2009). Thus, the association between WFC and health may vary in strength and magnitude, depending on the societal and institutional contexts in which it is studied (Hagqvist, Gådin, and Nordenmark 2017; Pinillos-Franco and Somarriba 2018; Ollier-Malaterre et al. 2013).

1.3.4 Gender Differences in the Association between WFC and Health

According to COR theory, resources can be unevenly distributed depending upon categories of social differentiation such as gender, education, employment status, or place of living (Hobfoll 2001, 1989). For a deeper understanding of the role of gender in the association between WFC and health stress process theory can be employed (Pearlin et al. 2005). This theory posits that a person's individual capacity to cope with a threat to their job or family role influences how they react to a stressor. This capacity is formed and limited by circumstantial and individual factors, often in combination. For the present question, this means that, e.g., two women with the same number of children and comparable weekly working hours may react differently to a threat to their job role because they had different experiences in the past or come from different cultural or economic backgrounds. As a result, they may experience differences in stress and health-related burdens (Pearlin et al. 2005; Fan, Lam, and Moen 2019).

1.3.5 How Stress from WFC Leads to Health Impairments

Deducting from COR theory, the resource threat coming from WFC produces stress which, in turn, impacts the health of working women and men. But what is stress and how exactly does it impact physical and mental health? Stress is seen as a nonspecific response of the body to any kind of demand. It is not an inherently negative thing to be avoided but rather a necessary bodily reaction to stay alive. Accordingly, scholars distinguish between

eustress, associated with desirable effects and *distress*, which is associated with undesirable effects in the human body (Selye 1976).

Stress process theory postulates that serious sources of distress in life are causal antecedents of individual health and well-being (Pearlin et al. 1981; Pearlin et al. 2005). Distress may take various forms and interacts with the social and economic circumstances a person is born into. Besides eventful stressors, Pearlin et al. (2005) described chronic stressors such as persistent conflicts at work or in one's family life, financial strains, and repeated discriminatory experiences.

People react to eventful and chronic stress with physiological and psychological symptoms. These may differ between individuals as well as within individuals, depending on the source of stress, environmental circumstances, genetics, life course events, social status, learned behavior, etc. (Schneiderman, Ironson, and Siegel 2005). Bodily reactions may lead to adverse health behavior (e.g., sleep deprivation, alcohol abuse, smoking, unhealthy eating habits) and physiological mechanisms (e.g., increased heart rate or elevated blood pressure). They impact the acute and long-term health of individuals, as described (for example) in the allostatic load model (McEwen 2015, McEwen and Seeman 1999).

1.4 Current Research on WFC and Health

1.4.1 The Association Between WFC and Health

Research on WFC and health launched in the 1980s in the USA and Canada and gained more and more traction and publicity in the first decade of the 21st century (Allen et al. 2000; Bianchi and Milkie 2010; Casper et al. 2007). By comparison, few WFC publications are based on European data, and the scholarly discussion of the impact of work and family reconciliation on everyday life and health is lagging behind the topic's societal and political relevance (Powell et al. 2019). To date, no published reviews of study subjects, methodological quality, and results of existing research have focused exclusively on the European region for WFC and health. This gap is important: since political and cultural

contexts may play an important role in the association between WFC and health, results from other parts of the world can only be adapted for the European context to a limited extent (Ollier-Malaterre et al. 2013).

Existing review studies, which are mainly based on data from the USA and Canada or mix results from various regions of the world (Powell et al. 2019), show that both directions of WFC are associated with mental and physical health, SRH, health-related behavior, sleep, and healthcare utilization. They furthermore suggest that WTFC and FTWC each exert a unique effect on health outcomes, though the association between WTFC and health usually appears stronger than the association between FTWC and health (Amstad et al. 2011; Gisler et al. 2018; Greenhaus, Allen, and Spector 2006).

Besides the lack of studies based on European data, existing research leaves other important gaps to be filled. First, longitudinal studies and analyses examining the role of time in the association between WFC and health, although growing in numbers, remain rather scarce (Allen et al. 2019). This is seen as an important gap in research due to their advantage of illuminating causal relationships (Zapf, Dormann, and Frese 1996; Taris and Kompier 2003). Second, when looking at the association between WFC and health specifically, only a few studies examined reverse causality and reciprocity. Reverse causality, in which health impairments lead to higher levels of WFC, was tracked in only three longitudinal studies, covering WTFC and emotional exhaustion (Demerouti et al. 2004), FTWC and depressive symptoms (Bergs et al. 2018), and WFC and physical health (Britt and Dawson 2005). Publications studying reciprocal associations, i.e., WFC leading to poorer health and poor health simultaneously leading to higher levels of WFC, are equally scarce. Bergs at al. (2018) showed reciprocal effects for depressive symptoms, Demerouti et al. (2004) documented similar effects for emotional exhaustion, and two other studies presented results indicating a reciprocal association between WFC and general mental health (Neto et al. 2016; Rubio et al. 2015).

Although prior longitudinal and reciprocal analyses exist, only three of them consider more

than two measurement points (Bergs et al. 2018; Demerouti et al. 2004; Neto et al. 2016). This prevents effective analysis of concepts like the loss spiral, as proposed in COR theory. Specifically, including multiple time points allows researchers to examine a) the effects of different durations or occasions of exposition to WFC and health over time in one person, b) the role of different time lags in the association between WFC and health, and c) patterns of transitions in and out of WFC over time (Allen et al. 2019).

1.4.2 The Role of Family Policies

As outlined above, both individual differences and the political and cultural backgrounds people live in may lead to differences in the prevalence and consequences of WFC (Ollier-Malaterre et al. 2013). In Scandinavian countries, for example, fewer people reported WFC than in southern and eastern European countries (Hagqvist, Gådin, and Nordenmark 2017; Artazcoz et al. 2013; Lunau et al. 2014). Prior research commonly applied comparisons of country groups clustered along welfare-state regimes or collectivistic vs. individual societies (Lunau et al. 2014; Allen et al. 2015), but only two studies examined individual indicators of reconciliation policies (Notten, Grunow, and Verbakel 2017; Stier, Lewin-Epstein, and Braun 2012).

In terms of variations in the association of WFC and health between European countries, prior research is scarce and remains inconclusive. Artazcoz et al. (2013) used a country-group approach and could not find any negative health effects of WFC for Nordic countries compared to other European regions. In Nordic countries, dual-earner models and a high level of equality between working mothers and fathers are strongly politically supported. On the contrary, Hagqvist, Gådin, and Nordenmark (2017) reported that in countries with a high degree of politically and socially supported equality for working mothers and fathers, the association between WFC and poorer health was stronger than in countries that support more traditional family models. However, no study to date has attempted to combine detailed measures of reconciliation policies with indicators for the distribution of paid and care work between genders.

1.4.3 The Role of Gender

To shift from macro-level trends to individual characteristics, the available evidence on gender differences in the association between WFC and health provides mixed results, as Hagqvist, Gådin, and Nordenmark (2017), Lunau et al. (2014), and Kobayashi et al. (2017) also pointed out. For the Swedish population, for example, Leineweber et al. (2013) found that WFC predicted a decline in SRH among women, but not among men, while Canivet et al. (2010) showed in a cross-sectional study design that WTFC was related to mental health among women only. On the other hand, Yucel and Fan (2019) presented results for Germany showing that both WTFC and FTWC, over time, were more strongly related with mental health among men than among women. Other cross-sectional studies, however, showed no differences in how WFC predicted health between women and men in the United Kingdom (Emslie, Hunt, and Macintyre 2004) or in Finland (Winter et al. 2006).

One cause of the inconclusive results on gender differences may be a lack of differentiation within the groups of working mothers and fathers. Some heterogeneity is likely hidden in the data, for example between single mothers and partnered mothers, between men with shiftwork and men with flexible work schedules, between women and men with different personal experiences or coping skills, or between mothers with different discriminatory experiences. However, only one study (from Japan) directly examined heterogeneity within groups of women and men when looking at WFC and health: Kobayashi et al. (2017) demonstrated that the association between WFC and SRH was more evident among women with low household income, compared to women from higher income groups. This interaction was not observed among men. This research gap calls for innovative approaches and more efforts to study heterogeneity among gender groups in the association between WFC and health.

1.5 Research Questions

In summary, studies on the health-related consequences of work–family conflicts based on

European data are scarce. A literature review and assessment of the theoretical background revealed several specific gaps in the scholarly discussion around WFC and health. First, because the role of time is crucial to understand causal effects in the associations between WFC and health, more advanced longitudinal approaches are needed. Second, cultural and political factors must be taken into account, particularly the role of family policies and gendered divisions of work in diverse cultural environments. And third, perspectives on gender differences in the association between WFC and health must be deepened by examining heterogeneity within gender groups.

The present thesis contributes to filling these gaps and is guided by four research questions (RQs). Overall, the researcher's efforts to answer these questions resulted in four publications, which constitute the main body of work for the thesis. Please see Table 1 for summary of the contributing publications for each RQ. First, RQ1 assesses whether and how WFC and health are associated in the European context. As outlined above, prior research from the USA and Canada suggested a strong association. Thus, this thesis examines whether results from prior non-European contexts can be reproduced with European data.

RQ2 examines the role of time in associations between WFC and health. The empirical studies assess how different time lags, as well as different lengths of exposition, are associated with WTFC. They also investigate reverse and reciprocal associations between WFC and health. RQ3 considers structures on the societal level and looks at the role of reconciliation policies and gendered division of work for between-country differences in the prevalence of WFC, as well as in the association between WFC and health. Moreover, the analyses assess the role of distinct policy measures in the prevalence of WFC in European countries. Finally, RQ4 explicitly evaluates the role of gender in the association between WFC and health. Differences between women and men are assessed and heterogeneity within the gender groups is examined.

Table 1. Research Questions and Contributing Publications.

No.	Research Question	Main Contributions	Publication No.
1	How are WFC and health associated in the European context?	Borgmann, Rattay, and Lampert 2019 Borgmann, Kroll, Müters, Rattay, and Lampert 2019 Borgmann, Rattay, and Lampert 2020 Yucel and Borgmann 2021	Publication I Publication II Publication III Publication IV
2	What role does time play in the associations between WFC and health?	Borgmann, Rattay, and Lampert 2020 Yucel and Borgmann 2021	Publication III Publication IV
3	How do reconciliation policies in Europe contribute to the prevalence of WFC, as well as to the association between WFC and health?	Borgmann, Kroll, Müters, Rattay, and Lampert 2019	Publication II
4	What role do gender and heterogeneity within gender groups play in the association between WFC and health?	Borgmann, Rattay, and Lampert 2019 Borgmann, Kroll, Müters, Rattay, and Lampert 2019 Borgmann, Rattay, and Lampert 2020 Yucel and Borgmann 2021	Publication I Publication II Publication III Publication IV

2 Material and Methods

The present dissertation consists of four publications, which are based on a literature review and secondary analysis of two different data sets. Table 2 contains information on the publications' data, samples, outcomes, form of WFC as the exposition variable, and methods of analysis.

Table 2. Material and Methods in the Four Publications.

Publ. No.	Data	Sample	N	Outcome	Exposition	Method of Analysis
I	Literature review	Publications from Europe; see 2.1 for inclusion and exclusion criteria.	25	Self-reported general health, mental health, physical health, sleep, health-related behavior, health services utilization	WFC, WTFC, and FTWC	Scoping review
II	EWCS	Participants from wave 6, who were in active employment and cohabitated with at least one child under the age of 18.	10,273	Self-reported general health	WFC (scale of unknown origin)	Multilevel multivariable regression model
III	Pairfam	Participants from waves 6 and 8, who were in active employment and cohabitated with at least one child under the age of 18.	1,514	Self-reported general health	WTFC (scale from Carlson, Kacmar, and Williams 2000)	Multivariable regression model with interaction effects
IV	Pairfam	Couples from waves 6, 8, and 10, who were in active employment. All persons were included where both the anchor and partner completed the questionnaire and who stayed in the same couple relationship between waves 6 and 10.	631	Depressive symptoms	WTFC and FTWC (scale from Carlson, Kacmar, and Williams 2000)	Autoregressive and cross-lagged panel models using structural equation modelling

2.1 Scoping review

In Publication I, a scoping review approach was applied to investigate the research landscape regarding the association between WFC and health in Europe (Borgmann, Rattay, and Lampert 2019). Compared to systematic reviews or meta-analyses, this approach is more explorative and maps the evidence on a given topic (Arksey and O'Malley 2005; Levac, Colquhoun, and O'Brien 2010; Munn et al. 2018). Prior research regarding the health-related consequences of WFC came from several different disciplines, including public health, sociology, organizational psychology, and management sciences. To take this into account, multiple search strategies were combined, as suggested by the scoping method. Specifically, a prospective search based on landmark publications was supplemented with keyword and hand searches in publication lists of relevant journals.

For the initial search, the citations of four landmark publications (Amstad et al. 2011; Allen et al. 2000; Bianchi and Milkie 2010; Greenhaus, Allen, and Spector 2006) were tracked prospectively. Landmark publications are defined as the most relevant publications in a field, which can be operationalized by, e.g., the number of citations. A prospective search in PubMed and Scopus incorporated all literature from 2000 to 2017 that cited the landmark publications (n=1,853 results). This search was supplemented by a retrospective search in Scopus, using search terms generated from the results of the prospective search (n=1,890 results). Additional hand searches were executed in selected journals, the publication lists of research networks, and Google Scholar (total n=5,497 results). Inclusion and exclusion criteria were defined and applied systematically, which resulted in a total of n=25 publications to be included for content analysis.

Results were presented as narrative syntheses, grouped by different health outcomes. A special focus emphasized characteristics of the data and analysis (representative samples vs. non-representative samples and cross-sectional vs. longitudinal analysis), direction of the work–family conflict examined (WFC vs. WTFC vs. FTWC), whether gender differences were analyzed, and whether the roles of other social determinants of health were considered.

2.2 Data and Analysis

2.2.1 Data and Samples

To answer the research questions above, secondary data analysis was conducted using two sets of data: the European Working Conditions Survey (EWCS) and the German Panel Analysis of Intimate Relationships and Family Dynamics (pairfam).

2.2.1.1 European Working Conditions Survey

EWCS was launched in 1990 as a cross-sectional representative survey in 35 European countries and has since been repeated every five years. For the present research, data from wave 6 of the EWCS was analyzed, which was conducted in 2015 and surveyed 43,850 employed persons aged fifteen and over. Sampling procedures included multi-stage stratified samples, which were surveyed using computer-assisted telephone interviews. Further details on the survey methods appear in the EWCS 2015 technical report (Eurofound 2016).

2.2.1.2 Panel Analysis of Intimate Relationships and Family Dynamics

Pairfam, an extensive longitudinal survey, started in 2008 (n=12,402). Participants were interviewed yearly using computer-assisted personal interviews. Pairfam consists of a multi-actor panel design where each anchor is asked for permission to interview their partner, children, and parents in each wave (Brüderl et al. 2019). Further technical details on the collection of pairfam data was reported by Huinik et al. (2011).

2.2.1.3 Samples

For Publication II (Borgmann, Kroll, Müters, Rattay, and Lampert 2019), the sample included all working parents from wave 6 of the EWCS who were living with at least one child under the age of 18 in the household (n=10,273). Data for Publication III (Borgmann, Rattay, and Lampert 2020) was limited to anchor persons from waves 6 and 8 of the pairfam data set who were in active employment and lived with at least one child under the age of 18 (n=1,514). For Publication IV (Yucel and Borgmann 2021), the sample consisted of working couples from the pairfam data sets in waves 6, 8, and 10. All persons were included where both the anchor and

partner completed the questionnaire, where both partners were active in the labor force, and where both partners stayed in the couple relationship between waves 6 and 10.

Thus, in the present thesis, the scoping review and two out of three empirical publications (Publications I–III) limited the sample to women and men living with children under the age of 18, thus focusing family responsibilities on (but not limiting them to) taking care of underage children. Publication IV, however, did not limit participants to parents but opted for a broader definition of family, which may include the spousal relationship and caring for relatives beyond childcare responsibilities.

2.2.2 Dependent, Independent, and Control Variables

2.2.2.1 Health as the Dependent Variable

Health was operationalized as SRH in Publications II and III and as depressive symptoms in Publication IV. SRH has been proven to be a sufficient proxy measure for general, physical, and mental health in prior research (Lampert et al. 2018). To assess SRH in Publications II and III, participants were asked how they would generally rate their health. Response options in Publication II were on a five-point Likert-scale from very good to very bad, while in Publication III they were initially rated from very good to bad and dichotomized later. Categorizing an ordinal scale into a binary response has been proven to have no impact on the estimated effects of covariates but holds the advantage of providing results that are comparable to prior research and easy to interpret (Finnäs, Nyqvist, and Saarela 2008).

Depressive symptoms were used as the dependent variable in Publication IV, assessed with five items assessing negative mood from the State-Trait Depression Scales (Spaderna, Schmukle, and Krohne 2002). Respondents were presented with statements and asked to indicate how often they felt this way (almost always to almost never). Statements included feeling melancholic, depressed, sad, desperate, and gloomy. The items were summed and averaged to create a scale for each of the relevant waves (6, 8, and 10) from pairfam.

Although SRH is academically known to be a sufficient proxy for general, physical, and mental

health (Lampert et al. 2018), depressive symptoms were chosen as the outcome for Publication IV. This outcome may be perceived as a more robust indicator, which enhances the thesis' message about the severe impact of WFC on health in the German working population, particularly when communicating results to the broader public to influence policy and practice.

2.2.2.2 WFC, WTFC, and FTWC as the Construct of Interest

In prior research, WFC, WTFC, and FTWC were all measured with a great variety of different scales, which makes comparisons between results difficult, a challenge that has been outlined before (Allen et al. 2000; Demerouti, Martinez Corts, and Boz 2013; Min et al. 2021). This phenomenon was also observed in the present thesis: two different measurement scales for WFC were used in the secondary data sets, which will be considered when discussing the results.

EWCS (Publication II)

In the EWCS data used for Publication II, WFC was measured with five items of unknown origin, each with response options on a five-point Likert scale (always to never). Respondents were asked "How often in the last 12 months have you … /Since you started your main paid job, how often have you … (1) kept worrying about work when you were not working, (2) felt too tired after work to do some of the household jobs which needed to be done, (3) found that your job prevented you from giving the time you wanted to your family, (4) found it difficult to concentrate on your job because of your family responsibilities, and (5) found that your family responsibilities prevented you from giving the time you should to your job?" Item (1) was not considered because it does not directly measure a reconciliation conflict between paid work and family life in particular, and it was also not considered in comparable scales (Breyer and Bluemke 2016). Most likely, items (2) and (3) refer to WTFC while (4) and (5) refer to FTWC (please see section 1.2 for definitions). Results from a factor analysis, however, suggested only one underlying factor, which was labeled WFC. As there was no reference for creating an index out of the items specific to the EWCS dataset, a sum index was formed instead with

a minimum of 0 and a maximum of 16 points, as has been done in previous research with comparable items (Breyer and Bluemke 2016). The index was dichotomized, where 8 and more points were interpreted as “high WFC” and 0 to 7 points as “low WFC.” The results of a sensitivity analysis showed that a differently set cutoff between 9 and 10 points did not produce a significant change of results on the association between WFC and SRH.

Pairfam (Publications III and IV)

In the pairfam data set, however, a total of eight items on WFC were collected, four each referring to WTFC and FTWC, according to the pairfam instructions for analysis (Thönnissen et al. 2016). The scale was adapted from a widely used scale developed by Carlson, Kacmar, and Williams (2000) and was translated into German by Wolff and Höge (2011). Respondents were asked to rate statements with response options on a five-point Likert scale (absolutely to not at all). The statements for WTFC included: “(1) my personal life suffers because of a high workload, (2) my work prevents me from doing things with my family, (3) outside of work I must think about work, (4) after stress at work I find it difficult to relax at home and enjoy time with my family.” Those for FTWC were: “(5) time needed for family keeps me from being more involved in my job, (6) my time for work is limited due to my personal schedule, (7) stress in my private life makes it difficult for me to concentrate on work, and (8) conflicts in my private life limit my work performance.”

Publication III focused on WTFC only, even though both directions of WFC were measured in pairfam, because only about 10 percent of women and men reported high FTWC across waves 6 and 8. Cronbach’s alpha for the WTFC scale was 0.80 (wave 6) and 0.77 (wave 8) for mothers, and 0.74 (wave 6) and 0.75 (wave 8) for fathers, indicating good internal reliability. The index, with a range from 4 to 20 points was dichotomized, with 11 and more points being interpreted as “high WTFC” and 4 to 10 points as “low WTFC.” To allow for examining multiple expositions in the pairfam data set to WTFC in Publication III, participants were divided into four groups based on their exposition to WTFC at T0 and T1: persons with low WTFC at both times (T0: low WTFC, T1: low WTFC, reference group), persons with high WTFC at both times

(T0: high WTFC, T1: high WTFC), persons with high WTFC at T1 only (T0: low WTFC, T1: high WTFC), and persons with high WTFC at T0 only (T0: high WTFC, T1: low WTFC).

Publication IV looked at both dimensions of WFC, i.e., WTFC and FTWC. For each direction, all four items were summed and averaged to create a continuous score for WTFC and FTWC, respectively, for each of the three waves of pairfam 6, 8, and 10. Cronbach's alpha ranged from 0.76 to 0.78 for men and 0.80 to 0.82 for women, indicating high internal reliability. Also, both scores were significantly correlated. This is consistent with prior research, which suggests that WTFC and FTWC are low to moderately related but distinct constructs (Byron 2005; Mesmer-Magnus and Viswesvaran 2005).

2.2.2.3 Structures on the Societal Level: Measures for Reconciliation Policies and Gendered Division of Work

In Publication II, indicators of countries' reconciliation policies provided by the Organization for Economic Cooperation and Development (OECD) were included. Based on prior research, eight indicators were selected, which have been shown to measure the impact of reconciliation policies as well as the gendered division of work (Thévenon 2011): gender gap in the employment rate (in percent), maternal employment rate (in percent), public expenditure on family benefits in cash (in percent of the GDP), public expenditure on family benefits in kind (in percent of the GDP), length of paid maternity/parental leave for mothers and fathers (in weeks), and children aged 0–2 and aged 3–5 in formal childcare/pre-school (in percent).

2.2.2.4 Examining Heterogeneity in the Gender Groups: The Interaction of WFC and Education

Publication III included interaction effects between education and WFC to allow for the examination of heterogeneity within gender groups. Education (International Standard Classification of Education, ISCED) was coded dichotomously as "low and medium education" or "high education," with "high education" covering all tertiary educational qualifications. Education was selected as the measure of interest as it is one of three components that are

commonly used to measure socioeconomic status (education, income, and occupational status). Previous studies have shown that educational attainment, even when included alone, may be a proxy measure explaining social and health-related inequalities (Ross and Wu 1995; Walsemann, Gee, and Ro 2013).

2.2.2.5 Control Variables

Analyses in Publications II, III, and IV controlled for relevant sociodemographic and occupational factors that are correlated with WFC and SRH or depressive symptoms. Age, education, number of persons in the household, partner status, age of the youngest child, each partner's weekly work hours, household income, and area of residence (for Germany) were included as sociodemographic factors. Factors related to employment included sector, occupation, existence of a works council, fixed term of own employment contract, length of stay in current job, shift work, self-assessed working time, and working time autonomy.

2.3 Methods of Analysis

In the present thesis, a variety of different analytical approaches were applied to analyze the EWCS and pairfam datasets. First, the cross-sectional association between WFC and SRH was examined to demonstrate a basic association between both variables in Publications II and III. To take advantage of the multi-country design of the EWCS, a logistic regression model for hierarchical data (multilevel regression) was also applied in Publication II to consider differences in the association of WFC and SRH among countries. As a first step, a multilevel model with SRH as a dependent variable and WFC as an independent variable was calculated, in which indicators for reconciliation policies were not included.

In the second step, multi-level models with WFC as the dependent variable were calculated in order to clarify the association between reconciliation policy indicators and WFC. Here, three models were calculated: an "empty model," which estimates the between-country variation of WFC (the intercept), a second model containing occupational and sociodemographic control variables, and a third model adding the reconciliation policy

indicators as independent variables.

The analysis of two waves from pairfam in Publication III was carried out by applying logistic regression to the four time-based groups with WTFC as the independent variable. ORs were estimated for SRH at T1. Model 0 included age and area of residence as control variables. Model 1 additionally controlled for health at T0. In model 2, the variables household income and education were added. Model 3 included family-related variables and model 4 included work-related variables. Finally, model 5 included all the variables mentioned. To examine heterogeneity within gender groups, the groups of mothers and fathers with high and low WTFC were stratified by their highest educational attainment. This was done by including the interaction of WTFC and education and estimating predictive margins for the two gender groups. The models for predictive margins were controlled for SRH at T0, age, and area of residence. Due to very small sample sizes, the interactions were stratified by gender instead of applying a threefold interaction between WTFC, gender, and education, to produce a better examination and illustration of results.

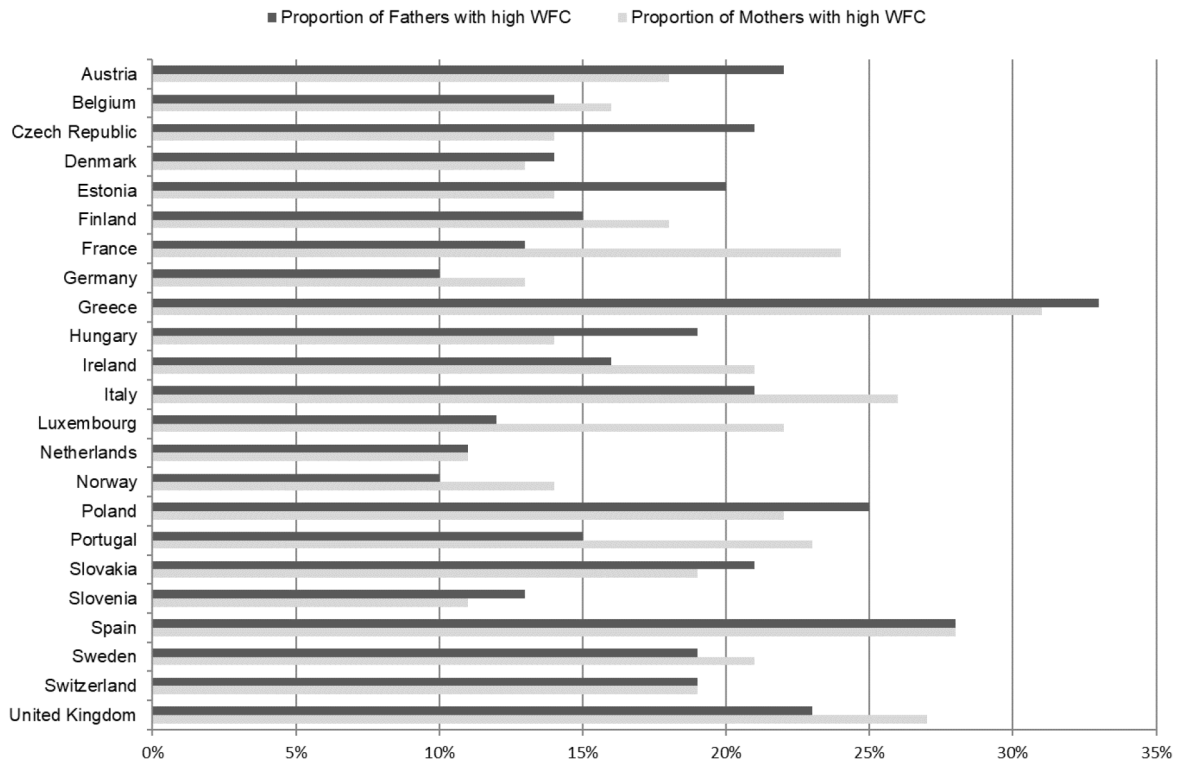
A further step toward causal analysis was carried out in Publication IV. Autoregressive and cross-lagged panel models (ACLPMs) were estimated using structural equation modeling (SEM). This approach allows for testing of longitudinal as well as reciprocal effects over time (Ackerman et al. 2012; Nestler, Grimm, and Schönbrodt 2015). Specifically, the direct effect of WTFC and FTWC on depressive symptoms were assessed over time. In addition, the reverse effect was analyzed, meaning the effect of depressive symptoms on WTFC and FTWC over time. Finally, the reciprocal relationship among WTFC (and FTWC) and depressive symptoms was tested simultaneously. Gender differences were analyzed for all models.

3 Results

Results from Borgmann et al. (2019, Publication II) demonstrated differences among European countries in the percentage of mothers and fathers who reported high WFC (see Figure 1) – ranging from 11% in Slovenia and The Netherlands to 31% in Greece among

mothers, and from 10% in Germany to 33% in Greece among fathers. However, the prevalence of WFC varies not only between countries but also within each country, depending on the instrument and data collection method: Borgmann, Rattay and Lampert (2020, Publication III) reported 33% of mothers with high WTFC and 41% of fathers, which differs substantially from the EWCS data, where only 13% of mothers and 10% of fathers reported high WFC. When differentiating the groups of mothers and fathers by weekly working hours, gender differences become clearer: 24% of full-time working mothers in Europe reported WFC, compared to only 18% of full-time working fathers (Borgmann et al. 2019, Publication II). For Germany, differentiation within the gender groups revealed that higher weekly working hours and the presence of shift work are associated with higher WTFC (Borgmann, Rattay, and Lampert 2020, Publication III).

Figure 1. Proportion of Mothers and Fathers with High WFC in %, by Country, n=10.273.



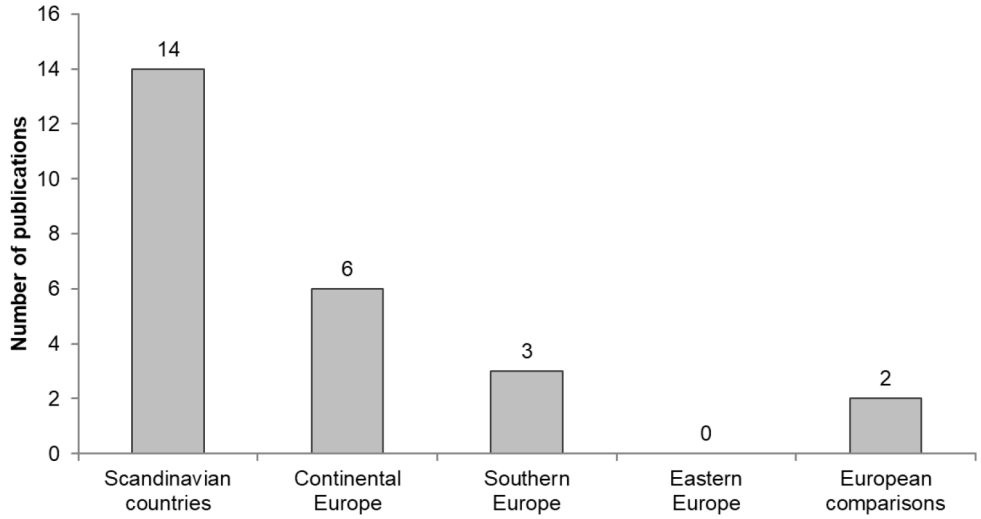
For health-related variables, differences between European countries and within Germany were also observed. In Borgmann et al. (2019, Publication II), the country with the highest prevalence of moderate to (very) poor SRH was Estonia (30%) while the lowest prevalence

was observed in Greece (4%). In the pairfam data set, 33% of mothers reported satisfactory to bad SRH compared to 27% of fathers.

3.1 Evidence on the Association Between WFC and Health in Europe (RQ1)

Results of the scoping review in Publication 1 (Borgmann, Rattay, and Lampert 2019, Publication I) showed that 25 studies on WFC and health have been conducted based on European data between the years 2000 and 2017 (see Figure 2). Besides confirming associations between different WFC concepts and several health-related outcomes, the analyses revealed a wide variety in study populations and samples, a great number of applied scales for analyzing WFC, only a small number of longitudinal analyses, and a lack of theoretical discussion in the majority of the 25 publications. Furthermore, publications were coming mostly from Scandinavian countries and continental Europe, revealing a lack of studies from southern and eastern Europe as well as few cross-European comparisons (see Figure 2). Also, the scholars reached no consensus regarding gender differences in the association between WFC and health.

Figure 2. Number of Reviewed Publications (n=25) Examining the Association Between WFC and Health in Europe, by Region, 2000-2017.



To add to this body of literature, Publications II, III, and IV of this thesis examined the association between WFC, WTFC (and FTCW), and the health-related outcomes SRH and

depressive symptoms, using secondary analysis of the EWCS and pairfam data sets. Results from cross-sectional analysis show significant associations between WFC and SRH (Borgmann et al. 2019, Publication II) and WTFC and SRH (Borgmann, Rattay, and Lampert 2020, Publication III].

3.2 The Role of Time in the Association Between WFC and Health (RQ2)

Results from Publication III (Borgmann, Rattay, and Lampert 2020) demonstrated the association between two expositions to WTFC and SRH across two waves. The research showed that the group of parents with high WTFC at both T0 and T1, as well as the group with high WTFC at T1 only, reported satisfactory to bad SRH at T1 significantly more often than parents who never reported high WTFC (reference group). This difference, however, was not present for mothers and fathers who reported high WFC at T0 only (see Tables 3 and 4), i.e. they had already moved out of WTFC at the point in time when their SRH was assessed. As satisfactory to bad SRH was not limited to incident cases at T1, the results controlled for SRH at baseline (T0) and added further control variables in models 2 to 5. However, the control variables did not fully explain the associations between WTFC and SRH among mothers and fathers.

Table 3. Odds Ratios (and 95% Confidence Intervals) for Satisfactory to Bad SRH (T1) by WTFC (T0 and T1), n=791 mothers.

WTFC T0:T1	Crude Model	Health at T0	Socio Demographics	Family Characteristics	Work Characteristics	Full Model
Model No.	(0)	(1)	(2)	(3)	(4)	(5)
n	791	791	714	770	743	653
Low:Low	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
High:High	**3.23 (2.17, 4.80)**	**2.80 (1.86, 4.22)**	**3.24 (2.09, 5.05)**	**2.95 (1.92, 4.53)**	**2.54 (1.65, 3.92)**	**2.94 (1.81, 4.80)**
Low:High	**2.54 (1.67, 3.87)**	**2.38 (1.54, 3.68)**	**2.44 (1.54, 3.88)**	**2.34 (1.48, 3.69)**	**2.10 (1.39, 3.44)**	**2.13 (1.29, 3.51)**
High:Low	1.38 (0.82, 2.31)	1.25 (0.72, 2.11)	1.28 (0.72, 2.23)	1.28 (0.72, 2.21)	1.01 (0.56, 1.78)	1.03 (0.54, 1.89)
AIC	974.64	930.12	839.23	906.63	888.59	786.98

bold = significance (1 is not included in the 95% CI), AIC = Akaike Inf. Crit.
Model 0 included age and area of residence as control variables.
Model 1 additionally controlled for health at T0.
Model 2 additionally controlled for household income and education.
Model 3 included age, area of residence, health at T0, number of children under 18 in the household, age of the youngest child, information on the division of labor between partners for childcare, marital status, and whether the respondent lives with a partner in the household.
Model 4 included variables from model 0 and 1 and additionally added employment status, shift work, and the employment status of partners.
Model 5 included all the variables mentioned, excluding whether the respondent lives with a partner in the household, as this information was already included in the employment status variable of the partners.

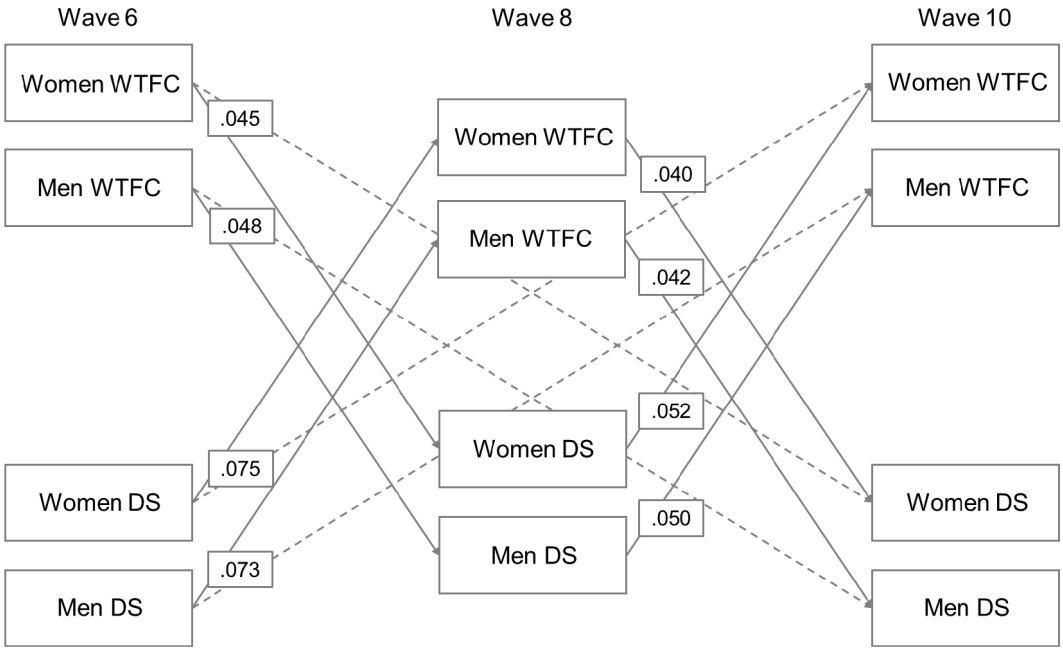
Table 4. Odds Ratios (and 95% Confidence Intervals) for Satisfactory to Bad SRH (T1) by WTFC (T0 and T1), n=723 fathers.

WTFC T0:T1	Crude Model	Health at T0	Socio Demographics	Family Characteristics	Work Characteristics	Full Model
Model No.	(0)	(1)	(2)	(3)	(4)	(5)
n	723	723	683	715	705	661
Low:Low	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
High:High	**2.39 (1.63, 3.51)**	**2.03 (1.36, 3.02)**	**2.15 (1.41, 3.27)**	**2.05 (1.37, 3.09)**	**2.14 (1.42, 3.23)**	**2.21 (1.42, 3.45)**
Low:High	**1.81 (1.07, 3.07)**	**1.78 (1.03, 3.04)**	**1.84 (1.04, 3.19)**	**1.91 (1.09, 3.29)**	**1.84 (1.05, 3.17)**	**1.96 (1.09 3.47)**
High:Low	1.22 (0.69, 2.15)	1.01 (0.55, 1.79)	1.11 (0.59, 2.02)	1.03 (0.55, 1.84)	1.04 (0.55, 1.88)	1.11 (0.57, 2.07)
AIC	974.64	930.12	839.23	906.63	888.59	786.98

bold = significance (1 is not included in the 95% CI), AIC = Akaike Inf. Crit.
Model 0 included age and area of residence as control variables.
Model 1 additionally controlled for health at T0.
Model 2 additionally controlled for household income and education.
Model 3 included age, area of residence, health at T0, number of children under 18 in the household, age of the youngest child, information on the division of labor between partners for childcare, marital status, and whether the respondent lives with a partner in the household.
Model 4 included variables from model 0 and 1 and added employment status, shift work, and the employment status of partners.
Model 5 included all the variables mentioned, excluding whether the respondent lives with a partner in the household, as this information was already included in the employment status variable of the partners.

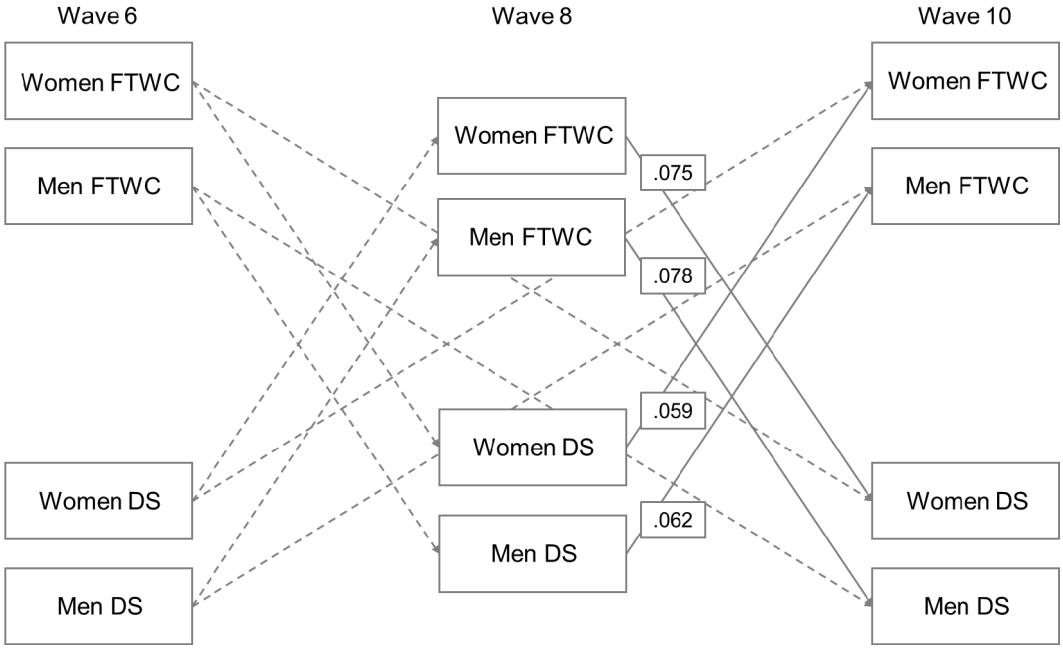
Yucel and Borgmann (2021, Publication IV) took the call for longitudinal research one step further. The analyses were focused on the association between WTFC (and FTWC) and depressive symptoms while simultaneously looking at reverse effects and reciprocity in this association. Based on three waves from the pairfam panel, the results suggested a reverse and reciprocal relationship between WTFC (and FTWC) and depressive symptoms. This means that higher levels of WTFC and FTWC led to higher levels of depressive symptoms. Furthermore, the reverse direction of association was in effect: higher levels of depressive symptoms led to higher levels in WTFC and FTWC. And lastly, both directions of association happen simultaneously, implying a reciprocal association between WTFC (and FTWC) and depressive symptoms (see Figures 3 and 4).

Figure 3. Cross-Lagged Paths for the Association Between WTFC and Depressive Symptoms, Standardized Coefficients, n=631 Women and n=631 Men.



DS=depressive symptoms; WFTC=work-to-family conflict. The solid lines indicate significant effects whereas dashed lines indicate insignificant paths. Standardized coefficients are indicated for significant paths only. For un-standardized coefficients and robust standard errors, please see Table 4 in Yucel and Borgmann (2021, Publication IV).

Figure 4. Cross-Lagged Paths for the Association Between FTWC and Depressive Symptoms, Standardized Coefficients, n=631 Women and n=631 Men.



DS=depressive symptoms; FTWC=family-to-work conflict. The solid lines indicate significant effects whereas dashed lines indicate insignificant paths. Standardized coefficients are indicated for significant paths only. For un-standardized coefficients and robust standard errors, please see Table 4 in Yucel and Borgmann (2021, Publication IV).

3.3 The Role of European Reconciliation Policies and Gender Roles Norms in the Association Between WFC and Health (RQ3)

Drawing from the research gaps that were identified in the scoping review, Publication II compared populations in 23 European countries, using data from the EWCS 2015, with regard to between-country differences in the association of WFC and health. A multilevel model was calculated with SRH as the dependent variable. The model did not converge, which suggests that the variation between countries equals zero. Thus, the association between WFC and SRH may not differ between countries, meaning that it has the same direction and magnitude in, for example, Sweden as in Portugal. However, the analysis did reveal differences in the percentage of mothers and fathers who reported high WFC among the 23 countries (see Figure 1).

To explain these distinct levels, political measures of gender equality and reconciliation policies in the 23 countries were taken into account (see Table 5). The results of the

hierarchical regression models show that policies aiming at reducing WFC, such as increasing the length of parental leave for mothers and fathers as well as the percentage of children under the age of three in childcare, were associated with lower levels of WFC among working parents. Gender differences were evident in these results as well: the indicators showed associations between the policy and the country level of WFC for mothers, but not for fathers. However, a higher maternal employment rate was associated with lower WFC in both mothers and fathers.

Table 5. Association Between Indicators of Gender Equality and Reconciliation Policy and High WFC across n=23 European Countries.

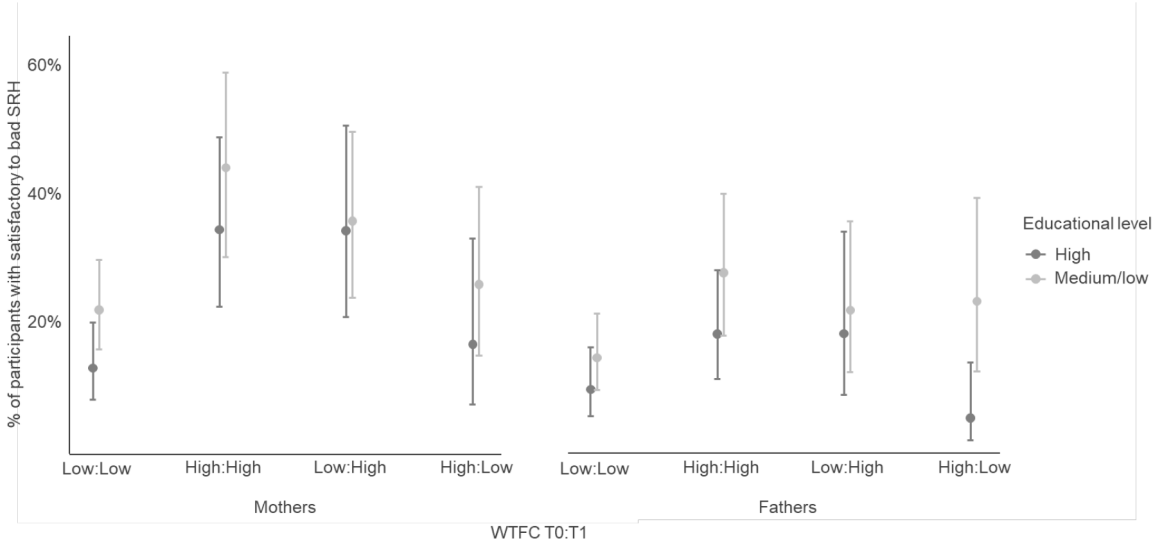
	Mothers OR [95% CI]	**Fathers** OR [95% CI]
N	5,094	4,467
Gender gap in the employment rate in percentage points	1.03 [0.89-1.21]	0.94 [0.77-1.14]
Maternal employment rate in percent	**0.76** **[0.65-0.89]**	**0.76** **[0.63-0.93]**
Public expenditure on family benefits in cash (percent)	1.00 [0.91-1.09]	0.98 [0.88-1.10]
Public expenditure on family benefits in kind (percent)	**1.34** **[1.15-1.56]**	1.11 [0.93-1.34]
Length of paid maternity/parental leave for mothers in weeks	**0.75** **[0.66-0.86]**	0.87 [0.74-1.03]
Length of paid paternity/parental leave for fathers in weeks	**1.21** **[1.05-1.38]**	1.02 [0.85-1.21]
Percentage of children aged 0-2 in formal childcare/pre-school	**0.78** **[0.64-0.95]**	0.93 [0.72-1.19]
Percentage of children aged 3-5 in pre-primary ed./primary school	0.95 [0.84-1.07]	0.94 [0.82-1.08]

Results from a hierarchical multivariable regression model with WFC as the outcome. Bold = significance (1 is not included in the 95%-Confidence Interval). Controlled for age, education, number of persons in the household, partner status, number of persons in the household, age of the youngest child, working time of the partners, sector, occupation, existence of a works council, fixed term of own employment contract, length of stay in current job, shift work, working time, and working time autonomy.

3.4 The Role of Gender in the Association Between WFC and Health (RQ4)

The publications of the present thesis did not show gender differences in the associations between WFC, WTFC (and FTWC), and SRH/depressive symptoms. When looking at European data (Borgmann et al. 2019, Publication II), no gender differences were shown in the cross-sectional analysis of WFC and SRH. Also, taking a longitudinal perspective, Yucel and Borgmann (2021, Publication IV) didn´t find significant gender differences for the association between WTFC (and FTWC) and depressive symptoms. Borgmann, Rattay, and Lampert (2020, Publication III) were likewise unable to detect gendered differences in the association between WTFC and SRH. They also examined heterogeneity within the gender groups. Results suggested that for mothers, no significant difference exists by level of education, meaning that mothers with high WTFC at T0 and T1 or at T1 only are equally burdened, regardless of their educational level. For fathers, however, results suggest, but do not statistically prove, that fathers with lower education may be more heavily burdened by experiencing WTFC at both time points; they reported worse SRH at T1 even when WTFC was present at T0 only (see Figure 5).

Figure 5. Percentage of Parents with Satisfactory to Bad SRH (T1), by WFC (T0 and T1) and Educational Level (T1), n=475 Mothers and n=532 Fathers.



4 Discussion

4.1 Summary and Discussion of Results

4.1.1 Work–family Conflicts and Health in Europe

In line with prior research, results from the present thesis found evidence for an association between WFC, WTFC (and FTWC), and SRH/depressive symptoms in Germany specifically and Europe more broadly. Building on Publication 1's valuable contribution of assessing the research landscape (Borgmann, Rattay, and Lampert 2019), the three empirical publications sought to close some of the general research gaps identified in the literature review.

First, they employed data on the population level. Prior studies mainly looked at the association of WFC and health within specific branches, occupations, or even individual companies. The second research gap identified in Publication 1, namely the lack of consistency in operationalization of WFC (Min et al. 2021), could not be eliminated due to two different scales for measuring WFC in the two data sets (EWCS and pairfam). This is of particular importance as both scales were of different response-types (frequency-based in the EWCS data set and a disagree-agree scale in pairfam). However, as Min et al. (2021) demonstrated in their recent psychometric evaluation of WFC scales, even scales with a differing number of items and different types of response-scales measure the same higher-order construct of WFC. On the other hand, particularly when applying scales to specific populations such as single mothers, low-income populations, or migrants, they strongly suggested piloting scales in quantitative studies and, if possible, qualitative focus groups. This is important advice, as stress process theory suggests that the perception of WFC is strongly shaped by individual characteristics as well as social factors.

Moreover, this thesis revealed another gap in research, demonstrating the limitations of suitable data sets for the analysis of the health-related consequences of WFC in Germany and Europe on a population level. For Germany in particular, other than pairfam no data sets combine detailed variables on WFC and health, while still allowing for longitudinal analysis.

In additional to aforementioned the general discussion of the research of WFC and health in Germany and Europe, the following sections discuss the present study's results on the more specific RQs 2, 3, and 4, emphasizing longitudinal analyses, European comparisons, and the role of gender in the association between WFC and health.

4.1.2 The Role of Time for WFC and Health

Smith et al. (2022) characterized WFC as a highly dynamic and fluctuating experience that may have episodes of stability at the same time, calling for equally dynamic approaches to WFC research. Here, two different approaches were chosen to add to the literature on the role of time in the association between WFC and health. First, the role of multiple expositions to WTFC (and FTWC) was examined by looking at the effects of two (three) instances of WTFC (and FTWC) over two (three) points in time. Studies with multiple occasions of WFC were called for by Allen at al. (2019), based on their review of longitudinal research on WFC. In their view, this step is necessary to better understand the role of time lags as well as transitions in and out of WFC, particularly in the association between WTFC (and FTWC) and health-related consequences.

The present results indicate that WTFC had an immediate effect on health but did not impair general and mental health on a long-term basis (Borgmann, Rattay, and Lampert 2020; Yucel and Borgmann 2021, Publications III and IV). In both studies the effects of WTFC (and FTWC) diminished over time, indicating short-term effects on health. This is consistent with prior research (Allen et al. 2019).

However, it is worth considering whether the theoretical approach, study design, and outcome selection were suitable for detecting the long-term effects of WFC, particularly as the concept of WFC was captured without an indication of duration and frequency (in pairfam) or as an average reporting over the past 12 months (in the EWCS data set). As it is called for in a recent review (Perry-Jenkins and Gerstel 2021), more advanced theoretical concepts and study designs are needed to better understand the role of time in the association between WFC and health. Public health theories accounting for different aspects of time, such as the

allostatic load, as first presented by McEwen and Seeman (1999), or life course perspectives, as applied to work—family research by Moen and Sweet (2004), may provide researchers with a more sophisticated basis for conceptualizing, measuring, and discussing later health impairments from WFC.

The allostatic load theory is event-based and argues that individuals have immediate physiological, psychological, and behavioral reactions to stressors. The concept of 'allostasis' is described as a physical process for recovery from stressors. However, stressor events can accumulate over days, weeks, months, and years, and thus may lead to 'allostatic load', which affects more stable health indicators such as resting blood pressure and long-term mental health (McEwan 2015, McEwen and Seeman 1999). When utilizing this model to research WFC and health, it is important to capture a variety of testable time points (minutes, hours, days, months, and years). With an approach like this, the long-term effects of WFC may be captured even if the acute reaction to WFC stressors fade within shorter time lags (Allen et al. 2019). This approach would also allow for examinations of trajectories in and out of WTFC and FTWC over time, possible starting and ending points of WTFC and FTWC in time, and a deeper understanding of how experiences of WTFC and FTWC develop over time, as it has been outlined in the first few studies testing this approach (Chandola et al. 2019, French and Allen 2020). Applying the allostatic load model would also include the measurement of more objective health measures, such as physical health indicators for stress (e.g., cortisol levels and blood pressure), which may be more reliable as they are not as prone to skewness due to, e.g., social desirability, as is the case with self-reports.

A life course approach to WFC would allow researchers to include individual experiences of conflict over different stages of life as well as incorporate the historical time period and its subsequent norms, values, and trends a cohort or generation is living in and with (Nomaguchi and Milkie 2020). This may also include changes in priorities and subsequent changes in experiencing or being vulnerable to WFC over the life course, which are highly shaped by events like childbirth, major changes in one's job role, or severe illness. Applied to hands-on

research, this would require considering the stage of life an individual is in through data stratification, as it has been done in recent research by McMunn et al. (2021), rather than controlling for—and therefore possibly masking—the relevant circumstances.

A second approach to time in the association between WTFC (and FTWC) and health in the present thesis involved analyses of reverse effects and reciprocal relationships between the variables. Results from Publication IV indicated that a "loss spiral" is in effect, where both WTFC (and FTWC) and depressive symptoms are treated as predictor and outcome variables. This may result in a vicious cycle of resource loss, which ultimately leads to a depletion of resource reserves and thus to exhaustion and adverse health outcomes. These results are supported by propositions of direct and reverse causation as well as reciprocal effects in COR theory (Hobfoll et al. 2018). Also, study designs as proposed by the allostatic load model may be of importance for understanding the vicious cycle: as COR theory proposed, gain spirals may develop at a slower pace compared to loss spirals and may develop their beneficial effects later. Here, long-term quantitative research over several time points with many different lags may even reveal that the combination of work and family roles, though interrupted by phases of conflict, provides long-term health benefits compared to individuals who have neither role or only have one. This idea has also been proposed by the role enhancement hypothesis and is empirically supported by prior research (Rattay et al. 2017; Rattay et al. 2019).

4.1.3 Examining Health-Related Consequences of WTFC and FTCW across Europe

In the present thesis, the author presented one of very few studies that evaluated differences between countries as well as the relevance of reconciliation policies and gender equality for the association between WFC and health in the European region (Publication II). This follows calls for more cross-country studies from prior research (Molina 2021). However, Publication II demonstrated that the association between WFC and general health does not differ between European countries. On the other hand, the levels of WFC differed between the European countries examined and measured for gender equality and reconciliation policies were

associated with different levels of WFC among mothers and fathers.

These results are partly in line with the theoretical considerations outlined in chapter 1: as proposed by COR theory, a country's cultural and political circumstances, operationalized here by indicators of reconciliation policy and gender equality, are associated with the prevalence of WFC as a stressor for many families in Europe. However, in contrast to the propositions of stress process theory, environmental factors such as the country of residence did not impact the association between WFC and SRH.

Does that mean that circumstantial factors have no impact on the described association? This is not the case, as the most recent study in this field demonstrated (Volk and Muckenhuber 2018): in their results, the collectivistic–individualistic dimension of a culture moderated the association between WFC and general health, implying that health effects are lower in collectivistic countries. They, however, studied 31 countries from all over the world, instead of focusing on the European region. The most recent review on the topic by Xu et al. (2018) confirmed their results and furthermore suggested that the state of economic development in a country may moderate the association between WFC and health. They, however, also called for comparisons of countries beyond the European region.

Another explanation for the absence of between-country differences in the association between WFC and health may be found in varying definitions of WFC depending on the cultural context in the examined countries (Allen et al. 2020). If the same instrument is used in all cultural contexts, the measurement of WFC may be inaccurate, producing artefacts in the analysis of the association between WFC and health. Thus, further research should pay more attention to validating instruments in a variety of cultural contexts to make sure their measurements are accurate and comparable.

4.1.4 New Perspectives on Gender

Although we know that practices around the work and family domains are shaped by gender norms (Molina 2021, Powell et al. 2019), all three empirical publications (Borgmann et al.

2019; Borgmann, Rattay, and Lampert 2020; Yucel and Borgmann 2021) revealed no gender differences in the association between WFC and health.

One reason for the absence of gender differences in the present research and the mixed results in prior studies might be that simply differentiating between “men” and “women” does not provide enough distinction. Thus, in the present thesis (Publication III) the author demonstrated the relevance of examining heterogeneity within gender groups when examining the association between WTFC and health. Although the effects were not significant due to small sample sizes, it may be deducted with great caution that lower education may play a role in the association between WTFC and health among fathers but not among mothers: the health of fathers with lower educational levels seemed to be more affected by WTFC compared to fathers from the high educational group. For mothers, all educational levels were affected to the same extent by health-related consequences of WTFC. Often, higher education is associated with higher financial and psychosocial resources that may buffer the health effects of WTFC. Thus, it may be carefully derived that this buffer effect seems to be absent among mothers, suggesting that financial and psychosocial resources do not protect mothers from the detrimental effects of WTFC on health.

The potential absence of buffer effects from higher education among mothers can be explained by structural and individual differences in the distribution of paid and care work among women and men. On average, for example, women in Germany spend more time than men doing unpaid household labor and caring for children and other relatives, irrespective of their education, employment status and weekly work hours (Bundesregierung 2021). This can, according to COR theory, result in resource depletion for women who work as much as their male partners (Molina 2021). Also, men usually spend more hours per week in paid employment, gaining higher salaries and more tenure, so they typically have more resources in the job role, making education and job status more important for men (Wheatley, Lawton, and Hardill 2018). On the other hand, higher education is in some cases associated with a more equal distribution of paid employment and care work in couples, illustrating the

complexity if associations and mutual effects (McMunn et al. 2019). However, choosing education as a proxy measure for job status and financial resources has to be assessed critically, particularly its impact can vary significantly across social and individual characteristics such as race, ethnicity, gender, and age (Perry-Jenkins and Gerstel 2020).

Thus, future research should consider complex intersections of multiple dimensions of social differentiation. Besides measuring the socioeconomic position precisely, new methods of analysis and interpretation are needed. WFC scholars should consider how "characteristics related to social differentiation or power" (Jaehn et al. 2020, p.2) interact with each other instead of just adding them quantitatively. This would allow researchers to look beyond broad categories such as "women" and "men" into subgroups, and, at the same time, consider larger structures of power and historically rooted structures of inequality, as also proposed by life course approaches in work–family research (Nomaguchi and Milkie 2020). This is particularly important as a person's social position is largely influenced by the circumstances he or she was born into, which in turn has an impact on the stressors that person is confronted with over their lifetime, as also suggested by the stress process model and COR theory.

On another note, the differentiation between parents and non-parents has to be discussed for studies of Germany specifically. In one of the key publications in this field, Aisenbrey and Fasang (2017) demonstrated that inequality between women and men peaks when they become parents, as the majority of women in Germany a) take sole parental leave and b) return to their jobs part-time, while fathers typically work full-time throughout their life course. Thus, a more precise differentiation of individuals beyond controlling for the presence of children in the household (as it has been done in the present thesis), is important for understanding mechanisms of WFC and health that may be related to the gendered division of paid and care work. This furthermore emphasizes life course approaches and their ability to shed light on critical life events and subsequent different phases and stages of life between paid and family work, which may not be detected when looking only at single data points or short episodes in the life of individuals.

4.2 Strengths

The present thesis contributed in several ways to the scholarly literature on WFC. First, it delivered the first comprehensive overview of the state of WFC research for Europe from a public health perspective. Specific research gaps were laid out, which may serve as starting points for future research.

Second, the thesis scanned available data sets from Europe for their suitability for analyzing health-related consequences of WFC and recommended two bodies of data that contain relevant variables on WFC and health—including some data for longitudinal research. Furthermore, in applying these population-based data sets, the present thesis supplements the great number of publications that study populations from specific branches, occupations, or job-roles, as these older studies made generalizability and applications for public health decisions rather difficult.

Third, the thesis places its analyses and results on a strong theoretical foundation by applying Pearson's stress model in Publication III (Borgmann, Rattay, and Lampert 2020) and COR theory in Publication IV (Yucel and Borgmann 2021). Prior WFC research and review articles have called for more robust theoretical considerations and reflections, as they are crucial not only for selecting appropriate methodological approaches but also for interpreting results and deducting implications for future research, policy, and practice (Allen et al. 2019, Molina 2021).

Fourth, this thesis adds two new types of analyses examining the role of time in the effects of WTFC (and FTWC) on SRH and depressive symptoms (and vice versa). This important contribution not only supports the fact that impaired health may also cause WTFC (and FTWC), but also reflects on the importance of time lags, measurement timings, and transitions in and out of WFC to the research landscape.

Moreover, this thesis' examination of a set of indicators for reconciliation policies, in combination with measures for gender equality, is the first of its kind and revealed insights into gender differences in certain policy actions when it comes to the prevalence of WFC. Similarly,

to generate a deeper understanding of the role of gender, the thesis contributes by examining heterogeneity within gender groups. Although the significance of the results was limited, new perspectives on the role of gender were introduced into the field of WFC research, opening up space for future research.

Lastly, a key strength of this work is that individual factors such as education, along with structural aspects such as gender equality and reconciliation policy, are considered simultaneously. As health disparities do not have a unilateral origin, they should always be examined from multiple perspectives and levels out outlined in the eco-social and intersectional perspectives on public health (Merz et al., 2021).

4.3 Limitations and Implications for Future Research

Despite the strong contributions of this thesis, some of its limitations have to be acknowledged and discussed. First, the generalizability of the results is limited: both the review and all three empirical publications were mainly focused on different-sex couples living with children in the household. Although single parents were technically included in the sample in Publication III (Borgmann, Rattay, and Lampert 2020), they were not analyzed separately because of small cell sizes, particularly among men (single fathers with low WTFC n=19 and high WTFC n=10). However, it is known from prior research (Borgmann, Rattay, and Lampert 2018) that single parents, who make up about one-fifth of all parents in Germany, face specific challenges and greater health impairments in the realm of combining paid and care work, as they are often the only breadwinner and caretaker in the family system. Thus, the author urgently calls for more research on the consequences of WFC on German single parents' general, physical, and mental health. The same goes for women and men providing care for elderly relatives, who were technically included in the sample of Publication IV, but were not analyzed separately. As many European societies age, this group of people and their specific burdens, particularly when they care for both elderly relatives and children, needs closer attention in public health research.

Data sets for doing so, however, are scarce. The updated questionnaire from the study

„Gesundheit in Deutschland aktuell“ (Lange et al. 2015) does now include data on WFC in addition to the numerous health variables, letting researchers identify single parents and women and men with care responsibilities for relatives, but the study is not designed longitudinally and does not allow for causal conclusions. Pairfam data sets are extremely valuable when it comes to the panel design and questions about the family sphere, but loss-to-follow-up is present and, thus, sample sizes become smaller, which may be an issue when studying smaller population groups such as single parents. However, future research should take more advantage of the depth of the pairfam questionnaire and include information on the share of paid and care work or support from other family members (besides partners) regarding childcare. For country comparisons, the EHIS data collection may be of importance when studying the health of single parents, but WFC is not measured directly (Rattay et al. 2019).

This illustrates the general paradox of research on WFC and health: although reconciling work and family roles seems to be a major in public discourse, particularly after the COVID-19 pandemic challenged work and care responsibilities (Blum and Dobrotić 2021), data collection strategies lag behind and don´t allow researchers to fully examine the association between WFC and health in all parts of society. As a general recommendation, the assessment of WTFC and FTWC should be included in panel studies on health. This would ensure that high quality longitudinal data is available for future analysis. Along similar lines, studying work and family challenges among same-sex couples might be of interest, particularly from a gender perspective. Research here will be able to answer questions about how reconciling work and family roles may work differently when “traditional” gender role expectations are questioned.

Also, particular challenges in migrant communities have not been considered in the present research. Although the data sets were representative for Germany and Europe, and thus included representative shares of participants with migrant backgrounds, the samples were too small to run analyses stratified by ethnicity/descent. The perspective of migrant communities needs more attention in the European context, as culture strongly shapes the

experience of WFC (Allen et al. 2020) and it has been observed already that migrant workers experience less WFC compared to native workers (Ojha 2020). It is also possible that another selection effect occurred, as only employed persons were included in the samples. Some of those who felt burdened by WFC already might have given up employment and thus excluded themselves from the sample considered here.

Second, the causal nature of analysis in Borgmann et al. (2020, Publication III) and Yucel and Borgmann (2021, Publication IV) has to be discussed. A longitudinal design does not allow for causal conclusions per se and neither study limited its analyses to incidents of health impairments at measurement points after the baseline. However, as the possibility of unmeasured variables and effects can never be fully excluded, a strong theoretical foundation is even more important. These theoretical considerations provide us with arguments for the plausibility (or absence thereof) of causal statistical associations. Thus, associations should not be deducted only from the analyses themselves, but also from the theoretical plausibility of the presumed causal relationship. Although this has been attempted in the present thesis, future work not only needs more advanced research designs, but also a further consideration of theoretical foundations of the study design, for example by applying the allostatic load model or life course approaches (as outlined in 4.1.2).

Third, mixed methods study designs would enhance the quantitative nature of the present thesis. Including instruments such as semi-structured interviews or biographical interviewing techniques would allow for further in-depth analyses of the organization of family and work responsibilities, not only for heterosexual couples but for diverse family models, such as single parents and homosexual couples. Likewise, it could explore diversity in occupations, such as analyzing self-employed individuals. Also, longitudinal qualitative designs, particularly when applied in a mixed methods design with quantitative analysis, may shed light on causal mechanisms between WFC and health.

Lastly, the present thesis focuses on a risk perspective. However, the combination of paid work, parenthood, and partnership does not have negative effects on health on a general

basis, as postulated by the multiple role attachment hypothesis and presented in Publication II (Borgmann et al. 2019). In fact, both spheres have the ability to positively influence each other and create the mutual enrichment of work and family roles, a phenomenon associated with positive health effects (Agrawal and Mahajan 2021).

4.4 Recommendations for Policy and Practice

The negative effects of WFC on health and vice versa, as shown in the present thesis, are a public health problem that has to be met by political and practical actions. One way policymakers can respond is to focus family policy on the reconciliation of both work and family spheres. The European Union set an example in 2010 by publishing Directive 2010/18/EU, which requires Member States to provide at least four months of parental leave per parent. However, specific leave policies vary among countries in length, method of entitlement (for the whole family to be divided by parents as they choose vs. individually), and payments (Koslowski et al. 2021).

Germany provides up to three years of parental leave, moderate amounts of financial support with flexible schemes, ongoing expansion of childcare facilities, recent reforms to parental leave policies, and the very recent introduction of reliable full-day care for elementary school students. However, the burden of reconciling both roles, to date, relies heavily on mothers not only doing paid work to financially support their families but also taking care of the majority of household and care work, as diary studies on time use show (Bundesregierung 2021).

A more equal share of paid and household/care work, thus, may be one way to distribute the challenge of reconciling both the work and the family sphere between genders. To achieve this equality, however, family and labor market policies in Germany need to step up to the next level. One way could be to extend the months that are to be exclusively taken by the father/second parent and making them non-transferable to the mother. This, however, would mean that the amount of parental allowance would have to be adjusted significantly, due to a significant gender pay gap in Germany (Koslowski et al. 2021). As we know the challenges for parents in sharing parental leave more equally, a political approach of this kind would a) entitle

and enable fathers to take more paid parental leave, even when they are the main breadwinners in a household, and b) may contribute to breaking up traditional gender roles and making the division and paid work and unpaid household and care work more equal between genders (Bünning, Fulda, and Hipp 2020).

However, besides the mere extension of parental leave, political measures should also focus on people outside of standard office hours, e.g., those in shift work as well as parents who are solely responsible for care work. Here, childcare facilities, including schools, have to be extended in a way that parents can rely on earlier opening hours and childcare on holidays also. The latter would be of particular significance for single parents, as childcare closing days usually exceed the holiday leave provided by employers.

Although such political initiatives and programs also aim to convince employers to enact family-friendly policies, such as working from home and flexible work hours, a recent study reported room for improvement in this field (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth 2019). They particularly emphasized that providing family-friendly policy measures alone is not sufficient unless the corporate culture becomes family-friendly itself. This step would require, among other things, understanding that paid and care work is equally important—and putting that understanding into practice. Positive examples of a family-friendly culture in companies include job-sharing constructs, in which two employees with part-time contracts share one job; actively approaching expectant mothers and fathers about their plans for parental leave; and providing free and anonymous mental, personal, and legal counsel for employees.

Against the background of this thesis' findings, creating and nurturing a family-friendly company culture may also contribute to keeping employees healthy, reducing sick days, and improving their overall performance. Here, direct public health practice comes into play: guiding companies to becoming truly family-friendly, empowering young parents to stand up for their rights, and counseling general health practitioners to regularly retrieve information about the stress level and reconciliation conflicts at home.

4.5 A New Perspective from the COVID-19 Pandemic

In the past two years, the COVID-19 pandemic aggravated challenges in combining care and paid work in many parts of the world (Czymara, Langenkamp, and Cano 2021; Fisher et al. 2020; Hipp and Bünning 2021; Shockley et al. 2021; Vaziri et al. 2020). The majority of countries implemented high-impact measures such as closing schools and childcare facilities, curfews, or full lockdowns, and many individuals transitioned into home-office, home-schooling, and long weeks and months of isolation. Meanwhile others, especially those working in healthcare and manufacturing, had to juggle home-based childcare and hectic work schedules. Lockdowns also affected the employment sector heavily beyond the challenges of remote work, as many working hours were cut due to declining numbers of customers. Similarly, many self-employed individuals lost revenue and unemployment levels grew (Fisher et al. 2020; Hipp and Bünning 2021).

The unavailability of schooling, institutional childcare, and care for the elderly was predominantly compensated by women in most European countries. Slightly more women than men reduced their weekly working hours, although many women who work in “essential jobs” such as doctors, nurses, and care personnel, increased their working hours (Hans-Boeckler Stiftung 2021; Hipp and Bünning 2021). At the same time, men reported worrying more about their paid work and the financial situation of the family compared to women (Czymara, Langenkamp, and Cano 2021).

What is concerning, however, is that even after re-openings of daycare facilities and schools, gendered responsibilities for care work remained highly divided between women and men, with even wider gaps (Hans-Boeckler Stiftung 2021). At the same time, women were more prone to health risks in the pandemic as e.g. more than 75% of individuals in healthcare jobs, where social distancing as one of the key measures of protection again COVID-19 was nearly impossible, were women (Statistisches Bundesamt 2020). This emphasizes the importance of finding strategies for preventing WFC, not only for individual health and well-being, but also for society in general. WFC protrudes into both the private and public sphere, exposing

supposedly individual decisions of sharing paid and care work as issues that cannot be solved individually—they need political will and policymaking. Only with new strategies in the policies and laws for families, the labor market, taxes, and healthcare can the individual burden of avoiding WFC (e.g., by having fewer children or reducing working hours) be lifted.

For academic research on the reconciliation of work and family spheres, the pandemic thus brought new challenges and questions. As the present thesis proved, in Europe WFC and health are, at least in the short term, interrelated, so WFC should be perceived as a public health threat in Western societies. Accordingly, future research needs to focus on how to alleviate the burden of WFC from individuals balancing care and paid work. First, as political and individual efforts toward gender equality seemed to vanish and the divisions of care and paid work again became more gendered in the European region due to pandemic dynamics, understanding the role of gender in work and family research is now more needed than ever. Although it seems that health-related burdens of WFC appear in women and men to a similar extent, women are more prone to WFC itself, particularly when they are working long hours or shift work (Borgmann et al. 2019; Borgmann, Rattay, and Lampert 2020, Publications II and III). Though researchers regularly cite the well-documented gendered division of paid and unpaid work, research, policy, and practice all need to move beyond the mere description of the problem into developing, implementing, and evaluating new measures for more gender equality on all levels.

Second, the pandemic put children's health in the focus of social discourse. Research on the consequences of WFC among parents for children´s health has been scarce at best, though preliminary results show associations between higher WFC among parents and health-related burdens for children (Yucel and Latshaw 2021). Understanding the extent of this problem as well as the underlying mechanisms of stress transmission should be subjects of further research. On a positive note, the academic public health community reacted quickly and initiated data collection soon after the pandemic hit. Thus, future research will hopefully be able to make use of a suitable body of data to understand social differences that were

emphasized or created within our new reality, along with the day-to-day routines of women and men trying to balance paid and family work in Germany and beyond.

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Contribution Statement

This cumulative dissertation consists of four articles, which are referred to in the main text. All articles are published in international peer-reviewed journals. Three articles were published with Lea-Sophie Borgmann as the leading author. One article was published with Lea-Sophie Borgmann as the second out of two authors. Full-article manuscripts can be found in the appendix.

The author contributed to the four publications in different ways, please see Table 6 for details.

Table 6. Contribution Statement.

No.	Title	First Author	Order of Authors	Contribution Statement
I	Health-Related Consequences of Work–family Conflict from a European Perspective: Results of a Scoping Review	Borgmann, LS	Borgmann, LS Rattay, P Lampert, T	LSB was in charge of reviewing prior research, research questions, study design, analysis, discussion of the results, writing of the manuscript and incorporating revision comments. PR advised on the first draft of the manuscript and the revision. TL supervised the process of writing. All authors read and approved the final manuscript.
II	Work–family Conflict, Self-Reported General Health and Work–family Reconciliation Policies in Europe: Results from the European Working Conditions Survey 2015	Borgmann, LS	Borgmann, LS Kroll, LE Müters, S Rattay, P Lampert, T	LSB was in charge of reviewing prior research, research questions, study design, analysis, discussion of the results, writing of the manuscript and incorporating revision comments. LEK advised on study design, analysis, and the revision. SM advised on analysis and the first draft of the manuscript. PR advised on analysis, the first draft the manuscript, and the revision. TL supervised the process of writing. All authors read and approved the final manuscript.

III	Longitudinal Analysis of Work-to-Family Conflict and Self-Reported General Health among Working Parents in Germany	Borgmann, LS	Borgmann, LS Rattay, P Lampert, T	LSB was in charge of theory, reviewing prior research, research questions, study design, analysis, discussion of the results, writing of the manuscript and incorporating revision comments. PR advised on analysis, the first draft of the manuscript and the revision. TL supervised the process of writing. All authors read and approved the final manuscript.
IV	Work–Family Conflict and Depressive Symptoms among Dual-Earner Couples in Germany: A Dyadic and Longitudinal Analysis	Yucel, D	Yucel, D Borgmann, LS	DY was in charge of study design and analysis. LSB was in charge of theory, reviewing prior research, hypotheses, discussion of the results, and writing of the manuscript. LSB advised on study design and analysis. Both authors incorporated revision comments and read and approved the final manuscript.

Publications in this Dissertation

Publication I

Borgmann, LS, P Rattay, and T Lampert. 2019. 'Health-Related Consequences of Work–family Conflict from a European Perspective: Results of a Scoping Review', Front Public Health, 7. doi: 10.3389/fpubh.2019.00189

Abstract

Background: Rising percentages of working mothers and increasing numbers of dual-earner couples are putting work-family conflicts on the agenda. Studies based on data from the US have already proven a link between work-family conflict and health in working parents with heterogeneous results for certain health outcomes and subgroups. Also, to date no comprehensive overview of the existing evidence regarding the impact of work-family conflict on health among European working parents exist.

Methods: A scoping review was conducted to identify and analyze knowledge gaps regarding health-related consequences of work-family conflicts. To search for relevant publications on work-family conflicts and health, a systematic prospective literature search was carried out in two international databases (PubMed and Scopus) based on four landmark publications. The search was complemented by a systematic retrospective search in Scopus and hand searches. Inclusion criteria were a focus on work-family conflict, an analysis of health-related outcomes, and the presentation of empirical results. The publications were summarized in narrative style.

Results: A total of n = 25 publications on work-family conflict and health in Europe were identified. The data suggests that a variety of instruments is used to measure work-family conflict. Also, work-family conflict and health are linked in Europe, although longitudinal data do not always show robust causal interrelations. Most studies focus on self-rated, mental, and physical health. Results for gender-specific health outcomes remain controversial.

Conclusion: The review provides an overview of existing evidence for health-related consequences of work-family conflicts in Europe. The results of the review strengthen the evidence for a link between work-family conflict and health. However, heterogeneous

results regarding the direction of work-family conflict and high-risk groups are a matter for discussion. This study investigates whether differences in the results can be accounted for by diverse measurement methods and study populations. Furthermore, different family policies in the European region as well intersectional approaches should be taken into account in further research.

Publication II

Borgmann, LS, LE Kroll, S Müters, P Rattay, and T Lampert. 2019. 'Work–family Conflict, Self-Reported General Health and Work–family Reconciliation Policies in Europe: Results from the European Working Conditions Survey 2015', SSM Popul Health, 9. doi: 10.1016/j.ssmph.2019.100465

Abstract

The increasing labor market participation of women in Europe leads to many women and men having to reconcile paid work with family work and thus reporting work-family conflict (WFC). WFC is related to different dimensions of health. In the present article, we analyzed the role different reconciliation policies among European countries may play regarding WFC and its association with self-reported health.

The analyses are based on data from Eurofound's European Working Conditions Survey 2015. The working populations from 23 European countries aged between 18 and 59 with at least one child up to 18 years of age are included (n = 10,273). Weighted logistic regression was applied to estimate the association between WFC and self-reported general health (SRH). Using multilevel models, country-level variations in the association of individual-level WFC and health were calculated. In a second step, the effect of country-level reconciliation policies on WFC was examined (adjusted for age, sociodemographic and occupational characteristics).

The odds ratio for moderate to very poor SRH is 2.5 (95% CI: 1.92–3.34) for mothers with high WFC compared to mothers with low WFC. For fathers with high WFC, the adjusted odds ratio is also 2.5 (95% CI: 1.80–3.37). Between countries, the association between WFC and health is similar. Country-level parental leave policies, the use of formal childcare and mothers' labor market participation are associated with reduced WFC in Europe.

In conclusion, the results reveal a strong association between WFC and SRH in Europe. The multilevel analyses show that certain reconciliation policies have an impact on the prevalence of WFC, with different results for mothers and fathers. Mothers in particular can be supported by sufficient maternal leave and formal care for children. These are tangible policy approaches for reducing WFC and may thus improve health in Europe.

Publication III

Borgmann, LS, P Rattay, and T Lampert. 2020. 'Longitudinal Analysis of Work-to-Family Conflict and Self-Reported General Health among Working Parents in Germany', Int J Env Res Pub He, 17(11). doi: 10.3390/ijerph17113966

Abstract

The combination of work and family roles can lead to work-to-family conflict (WTFC), which may have consequences for the parents' health. We examined the association between WTFC and self-reported general health among working parents in Germany over time. Data were drawn from wave 6 (2013) and wave 8 (2015) of the German family and relationship panel. It included working persons living together with at least one child in the household (791 mothers and 723 fathers). Using logistic regressions, we estimated the longitudinal effects of WTFC in wave 6 and 8 on self-reported general health in wave 8. Moderating effects of education were also considered. The odds ratio for poor self-reported general health for mothers who developed WTFC in wave 8 compared to mothers who never reported conflicts was 2.4 (95% CI: 1.54–3.68). For fathers with newly emerged WTFC in wave 8, the odds ratio was 1.8 (95% CI: 1.03–3.04). Interactions of WTFC with low education showed no significant effects on self-reported general health, although tendencies show that fathers with lower education are more affected. It remains to be discussed how health-related consequences of WTFC can be reduced e.g., through workplace interventions and reconciliation policies.

Publication IV

Yucel, D, and LS Borgmann. 2021. 'Work–family Conflict and Depressive Symptoms among Dual-earner Couples in Ger-many: a Dyadic and Longitudinal Analysis', So Sci Res, 104: 102684. doi: 10.1016/j.ssresearch.2021.102684

Abstract

This study contributes to the existing literature by testing the longitudinal effects of both types of work–family conflict (i.e., work-to-family conflict [WTFC] and family-to-work conflict [FTWC]) on depressive symptoms, using data from three waves of the German Family Panel (pairfam) survey collected over a four-year period. Using responses from 631 married or cohabiting heterosexual couples, the analyses are estimated using dyadic data analysis and auto-regressive and cross-lagged panel models. This analytical approach tests direct causation, reverse causation, and reciprocal relationships among WTFC, FTWC and depressive symptoms. The results suggest a reciprocal relationship with significant cross-lagged actor effects between WTFC (and FTWC) and depressive symptoms. However, there were no gender differences in the cross-lagged actor effects between men and women, and no significant partner effects. These results highlight the bidirectional nature of the relationship between work–family conflict and depressive symptoms, which has several implications for research and practice.

Thesis Statement of Independence

I herewith formally declare that I, Lea-Sophie Borgmann, have written the submitted thesis independently and without unauthorized assistance. I did not use any outside support except for the quoted literature and other sources mentioned in the paper. I clearly marked and separately listed all of the literature and all of the other sources which I employed when producing this academic work, either literally or in content. This thesis has not been handed in or published before in the same or similar form.

Hamburg, 2. Mai 2022

Lea-Sophie Borgmann