LIKE BROTHER LIKE SISTER ?

YU - CHIN HER

LIKE BROTHER, LIKE SISTER?

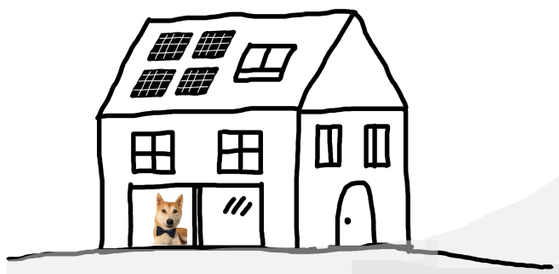
DISENTANGLING THE INTERTWINED ASSOCIATIONS BETWEEN SIBLINGS' LIFE COURSE TRAJECTORIES

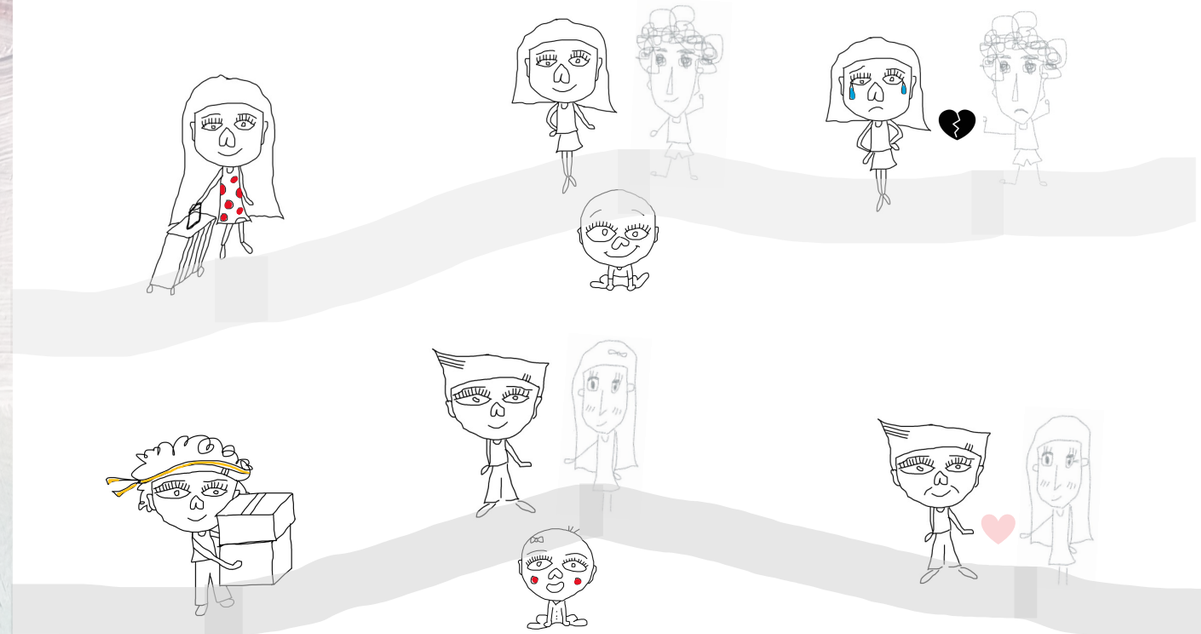
YU-CHIN HER

Proefschrift voorgelegd tot het behalen van de graad Doctor in de Sociale Wetenschappen aan de Universiteit Antwerpen

Universiteit Antwerpen

Promotors: Dimitri Mortelmans & Jorik Vergauwen





LIKE BROTHER, LIKE SISTER?

DISENTANGLING THE INTERTWINED ASSOCIATIONS BETWEEN SIBLINGS' LIFE COURSE TRAJECTORIES

YU-CHIN HER

Like brother, like sister? Disentangling the intertwined associations between siblings' life course trajectories

The dissertation is financially supported by FWO – Het Fonds Wetenschappelijk Onderzoek – Vlaanderen (project: Like brother, like sister: Sibling influence on their respective life course, G017519N).

Printing: Universitas
Illustration: Yu-Chin Her
Layout and design: Yu-Chin Her

Faculty of Social Sciences

Department of Sociology

Centre for Population, Family and Health (CPFH)

Like brother, like sister? Disentangling the intertwined associations between siblings' life course trajectories

Proefschrift voorgelegd tot het behalen van de graad Doctor in de Sociale Wetenschappen, aan de Universiteit Antwerpen

te verdedigen door

Yu-Chin Her

Promotors: Dimitri Mortelmans, Jorik Vergauwen

Antwerp, 2024

Members of the doctoral commission

Dimitri Mortelmans (promotor), University of Antwerp, Belgium

Jorik Vergauwen (promotor), University of Antwerp, Belgium

Karel Neels (chair of the jury), University of Antwerp, Belgium

Jonas Wood, University of Antwerp, Belgium

Kim Bastaits, Hogeschool PXL (Hasselt), Belgium

Members of the doctoral jury

Matthijs Kalmijn, Netherlands Interdisciplinary Demographic Institute (NIDI-KNAW), the Netherlands

Thomas Leopold, University of Cologne, Germany

Acknowledgement / words of gratitude

I know I should not be revealing this, but people who had come to know me 10+ years ago would have never guessed that I might become a PhD. I almost dropped out of high school, quit college once, and twice. Although I did not quit the PhD journey, it has been coupled with peaks and valleys, joy and tears. I would like to take this opportunity to acknowledge and express my gratitude to those who have inspired me and accompanied me all the way, near and far. Without their overflowing support, friendship, and love, this dissertation would not have been possible.

My promotors: Prof. Dr. Dimitri Mortelmans and Prof. Dr. Jorik Vergauwen, thank you for having faith in me. Your support, expertise, and encouragement have been invaluable throughout this challenging but rewarding process. Dimitri, although you always said that I have a smooth PhD, I know it would not have been so without your guidance and help. You have played an important role in shaping my development as an independent scholar, and thank you for opening up opportunities for me. Jorik, thank you for being like my mentor and for letting me open up to you with my concerns when I was stuck. I am highly grateful for the time you dedicated to discussing ideas and providing detailed feedback. It was my privilege to be able to work with Prof. Dr. Matthijs Kalmijn on a chapter of my dissertation. Matthijs, working under your supervision has been a great, unique, and memorable experience.

I would like to thank the members of the doctoral commission: Prof. Dr. Karel Neels, Prof. Dr. Kim Bastaits, and Prof. Dr. Jonas Wood. Thank you for your critical and constructive feedback and for helping me to reflect and improve the dissertation. Karel and Jonas, I almost dreamed about fixed effects (just joking). I have learned so much about statistical and methodological choices, including the associated implications, and I really appreciate it. Kim, thank you for pushing me to think in terms of my research's societal relevance and contribution. I would also like to thank Prof. Dr. Thomas Leopold and Prof. Dr. Matthijs Kalmijn for your willingness to be part of the doctoral jury.

It was my pleasure to be conducting the studies in this dissertation at the Centre for Population, Family and Health (CPFH) of the University of Antwerp. I was told that Belgians are reserved and closed up, but in the past four years, I was surrounded by a group of friendly and warm-hearted colleagues, which I truly appreciate. I would like to thank all my wonderful present and past colleagues for their support, inspiration, and good fellowship. In particular: Linda, it was really nice to take Dutch classes with you, and thank you for all your big hugs. Zeynep, I could not have completed QASS without you, and although we did not get to spend much time in the office together, it was nice to be on this sibling journey with you. Estrelle, what a coincidence that we both have the same birthday, educational background, and also "sometimes" miss the Netherlands. Leen, thank you for being the best buddy that I can always talk to and for all the fun conference trips together. Laura, although we were only colleagues

for one year, it was great to click with you. Nina, I very much enjoyed collaborating with you on the interesting side project. Moreover, I am grateful for all the colleagues (especially Vera, Daniel, and Maaike) at the Netherlands Interdisciplinary Demographic Institute (NIDI), for welcoming me and hosting me during my research stay.

I am very fortunate to have found a group of good friends: Jessie, Ocean, Mindy, Yihan, Matthias, Sunny, Max, Nora, Lisa, and many more, during the bittersweet PhD journey. Thank you for distracting me from work in times of identity crisis and for having fun together. I really enjoyed all the Taiwanese/Asian foodie nights, mahjong game nights, girl dates, and many others. I always felt recharged after those tiny little moments in life. I would also like to thank my close friends in Taiwan, for not forgetting me while I have been abroad. I cannot believe this year will mark my 10th year in Europe.

Studying siblings is of importance, but nothing compared to my two lovely siblings: Wan-Hua and Pei-Chung. I am really lucky to have you both as my siblings. Although I have not been the best big sister, you two are the most wonderful and adorable siblings one can ask for. I am grateful that we all live in the same time zone so that we can chat with each other at night. It makes me feel I am not all alone here without family members. Wan-Hua, thank you for giving me advice and cheering me up when needed. Pei-Chung, thank you for babysitting my dog son (your nephew), Yoshi, almost unconditionally. And Yoshi, despite being Shiba, your cuddles, kisses, smiles, and cuteness overload really comforted me when I need them.

Alex, since you did not put me as your final word of gratitude in your dissertation, I am also not giving you the precious spot. But you know how precious you are to me, my dear Mabao. I really love all our adventures together, spending quality time with you, and just being with you. You are my best friend, my rock, and my supportive giant. Thank you for doing science with me, moving to Antwerp with me, and bearing with me and my grumpiness. I long for an idiot, and I am glad I found my idiot, for loving me, exactly the way I am.

Last but not least, I need to thank my beloved parents for supporting me and always be there for me. To be honest, I have not been an easy kid and I caused a lot of drama/troubles. Without their patience, understanding, love, and encouragement, I definitely would not have made it this far. 爸爸，謝謝你總是個如此安穩的後盾、照顧著我們全家。在我需要你的時候，你總是默默的守護著，謝謝你這麼愛我♥ 最後的壓軸，媽媽，妳知道的，如果沒有妳的開明、夢想、支持，我是不太可能會出國唸書的。謝謝妳一直為這個家付出，一種不太一樣、互補的很到位的付出，謝謝妳讓我們能像朋友一樣跟妳溝通談心。妳知道我最愛妳了，ㄋㄡˋ～

Yu-Chin
Antwerp, January 2024

Table of contents

1

Introduction

Some parts of this chapter were published in *Journal of Family Theory and Review*:

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2021). Siblings' similarities and dissimilarities: A review of theoretical perspectives and empirical insights. *Journal of Family Theory & Review, 13*(4), 447-462.

1.1 Introduction

The study of sibling relationships has garnered significant attention in the field of family research. Siblings share a unique bond that extends throughout their life courses (Cicirelli, 1995). During childhood, siblings are "an integral part of most children's social world" (Furman & Buhrmester, 1985). In adulthood, siblings are characterized by "intimacy at a distance," maintaining meaningful familial ties despite having less interactions and contact frequencies (Connidis, 1992). As siblings age, they become sources of instrumental and emotional support for each other, and their relationship closeness increases as they gain awareness of mortality (Volkom, 2006). While siblings are often described as good friends, people also refer to their closest friend as someone who is "like a sister" or "like a brother," indicating close emotional connections (Connidis, 1989).

The ongoing demographic shifts, such as longer lifespans, prolonged transition to adulthood (Aassve et al., 2002; Holdsworth, 2000), delayed or abstained marriages (Hiekel et al., 2014; Kiernan, 2004), rising rates of divorce (Mortelmans, 2020), and declining fertility (Beaujouan, 2020; Merz & Liefbroer, 2012), are expected to significantly influence individuals' experiences of multiple family connections (Gilligan et al., 2018; Gilligan et al., 2020). At the same time, demographers and sociologists have continuously acknowledged the importance of family members in shaping each other's behaviors and life course transitions. However, most studies focused on how life course patterns are transmitted from parents to offspring (Amato, 1996; Kotte & Ludwig, 2011; Liefbroer & Elzinga, 2012), overlooking the other possible pathways. Compared to the insights on intergenerational transmission of demographic transitions, while scholars have started to investigate the possibility of intragenerational diffusion (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010; Raab et al., 2014), empirical evidence on such horizontal transmission belt is still lacking.

Given the often significant and irreplaceable role siblings play in each other's life, the goal of this dissertation is to investigate the extent to which and how individuals' life course trajectories are "like brother" and "like sister." By observing siblings' life courses, including leaving the parental home, fertility and childbearing, and partnership dissolution, and by incorporating a variety of sibling characteristics, the central question of the dissertation is: "*When an individual makes a life course transition, what is the likelihood that a sibling will (not) follow his or her footstep, and does this depend on certain sibling characteristics?".* Moreover, as siblings often grow up together, sharing the same upbringing and a fair amount of social background and contexts, the dissertation aims to explore the extent to which siblings' life courses are linked because of intragenerational transmission or because of their shared intergenerational transmission. In Chapter 2 and 3, we draw attention to examine if and how siblings' nest-leaving behaviors are intertwined. The focus is shifted to siblings' fertility and childbearing experiences in Chapter 4, investigating particularly the role of sibling relationship quality. Chapter 5 studies siblings' risks of experiencing a relationship breakdown, incorporating both divorce and separation from a cohabitation. In Chapter 6, we conclude the

dissertation by discussing the methodological and theoretical implications, as well as avenues for future research. Altogether, the dissertation aims to contribute to the broader field of family research and to inform policies and social practices related to sibling relationships.

In this introduction chapter, we first illustrate the meaning and evolution of sibling relationships across life courses and compare sibling ties with other social ties (Section 1.2). In Section 1.3, we discuss a wide array of theoretical frameworks and mechanisms that may help to understand the associations between siblings' life course trajectories. Subsequently, Section 1.4 situates sibling relationships within the broader context of family relationships, highlighting why and how siblings growing up in the same family are similar and build individual differences simultaneously. Last, Section 1.5 discusses the demographic behaviors being studied and provides an overview of the research questions and data infrastructures included in the dissertation.

1.2 Setting the scene: Importance of sibling ties

In many contexts worldwide, people often grow up with one or more siblings (Dunifon et al., 2017; Jensen et al., 2023). Children with coresident siblings typically spend a majority of their discretionary time engaging in activities together with their siblings (Dunifon et al., 2017). Namely, siblings' emotional closeness, including a sense of shared experience, trust, and enjoyment of the bond, is an important factor that accompany many people during childhood and adolescence (Jensen et al., 2023; Lee et al., 1990). Unlike parents and children, siblings are often age peers, which makes their relationships more egalitarian and less hierarchical (Connidis, 1992). On average, sibling relationships are also the longest lasting social relationships (Cicirelli, 1995; McHale et al., 2012). It is thus not surprisingly that siblings, being described as companions, role models, confidants, and mentors, have been long recognized as key players in individuals' life (McHale et al., 2012).

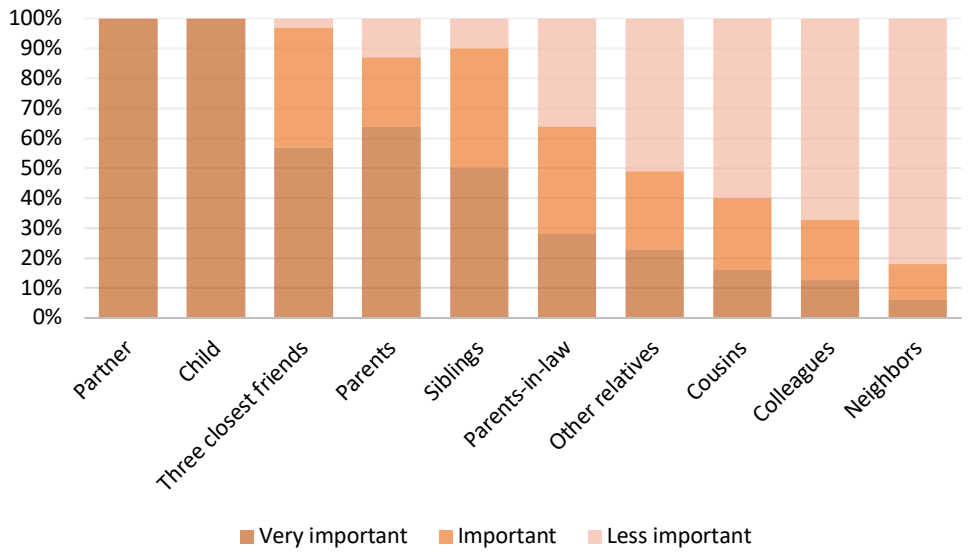
Research has shown that sibling support is associated with higher self-esteem and life satisfaction and lower loneliness and depression, potentially compensating for low support from parents and friends (Milevsky, 2005). A meta-analysis on child development has suggested that warmer and less conflictual sibling relationships are related to less internalized and externalized problems (Buist et al., 2013). Likewise, intimate, supportive, and warm sibling relationships during young adulthood are associated with resilience and the capacity to adapt successfully to different disturbances in adulthood (Ozbay & Aydogan, 2020). Siblings may as well help to overcome difficult times and global crises, such as the COVID-19 pandemic. For example, children with one or more older siblings have less adjustment problems during the COVID-19 pandemic than those without siblings (Hughes et al., 2023).

Despite the significance and uniqueness of sibling ties, not all of them are positive and sibling relationships are also characterized by conflict, competition, rivalry, and estrangement. For instance, sibling bullying is a common form of family violence, and its victims often report suffering from a range of negative outcomes, such as poor well-being and low sense of

competence (Plamondon et al., 2021). A study also differentiated four profiles of sibling relationships, labeled as “affective-intense” (high hostility and high warmth), “hostile” (high hostility and low warmth), “harmonious” (low hostility and high warmth), and “uninvolved” (low hostility and low warmth) (McGuire et al., 1996). Through conflict and negative interactions, however, siblings also learn to be understanding and to take each other’s perspectives, developing new skills such as negotiation, persuasion, and problem-solving (Howe et al., 2002).

Moreover, it is important to note that sibling relationships change over life courses (Jensen et al., 2023). For example, a study found a decrease in sibling conflict and an increase in sibling intimacy in the year following a firstborn’s transition to independent living (Whiteman, McHale, & Crouter, 2011). This implies that sibling relationships may improve when there is a certain distance between them. During adulthood, those who have children might have less time and money to enjoy leisure activities with their siblings, possibly reducing their relationship closeness (Conger & Little, 2010). It is also possible that a newborn baby helps to gather a family together. Later in life, siblings are more likely to be sources of support for individuals who are single, widowed, and childless, especially when they live geographically close to each other (Campbell et al., 1999). While encountering disruptive or adverse family events can make sibling relationships more vulnerable and estranged (Hank & Steinbach, 2022), it has also been suggested that siblings’ contact regularity increases after parental death (Kalmijn & Leopold, 2019). Altogether, sibling relationships are marked with both changes and stability, characterized by closeness, turbulence, estrangement, and reunion across life courses.

Figure 1.1 The importance of personal relationships



Source: Based on data from Keim et al. (2009)

Based on more than 100 semi-structured qualitative interviews, Keim et al. (2009) identified young adults' (aged between 27 and 31 years) social network members and the tie strength between them. The network charts in Figure 1.1 contain the respondents' relatives (mostly parents and siblings, and the partner and children, if applicable) as well as friends and neighbors. The term "importance" indicates the tie strength, which measures emotional closeness, relational support, intimacy, and contact regularity. In most cases, strong ties (i.e., network partners considered "very important" and "important") are partners, children, close friends, parents, and siblings, whereas colleagues, neighbors, and other relatives are often referred to as weaker ties (i.e., network partners of "less importance"). In addition, the respondents without siblings tend to view their cousins as more important network members than those with siblings (Keim et al., 2009). Even though this age group of young adults are likely to be distracted by other social relationships (Conger & Little, 2010), such as romantic relationships, parent–child relationships, and close friendships, their study sheds lights on the significance of sibling relationships.

Similar to other social relationships, sibship is a source of companionship and emotional support (Updegraff et al., 2002), and siblings often connect and communicate with one another with respect to their attitudes over life course decisions (Killoren & Roach, 2014). Given this and the long-standing nature of sibling ties (McHale et al., 2012), compared to other social ties, individuals are more likely to witness and relate to their siblings' life courses longer (Cicirelli, 1991; Connidis, 1992), making siblings importance sources of social influence across life courses.

1.3 Intragenerational transmission and siblings' linked lives

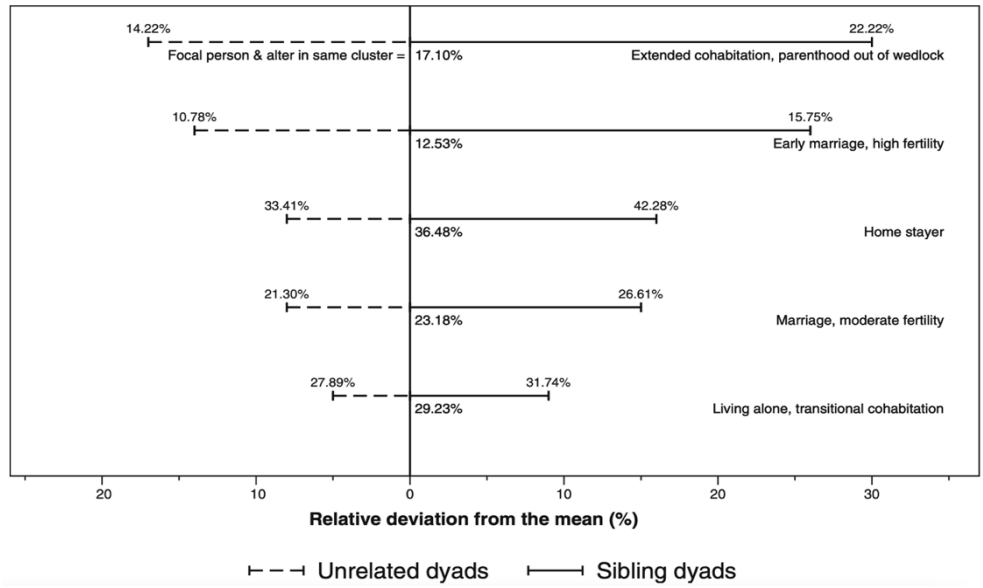
The role of siblings in social influence has been acknowledged in previous studies (Bernardi, 2003; Bernardi & Klärner, 2014; Raab et al., 2014). A growing body of literature has documented that siblings may shape each other in the course of childhood, adolescence, emerging adulthood, and later in life (Cicirelli, 1995; Updegraff et al., 2002). Throughout these stages, siblings often resemble one another with respect to delinquent behaviors (Slomkowski et al., 2005), values and attitudes (McHale et al., 2009), socio-economic status (van Eijck & de Graaf, 1995), and life course events (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Lyngstad & Prskawetz, 2010), among others.

Empirical studies have demonstrated sibling similarity in risky sexual behaviors and attitudes (McHale et al., 2009), smoking frequency (Slomkowski et al., 2005), level of anxiety (Serra Poirier et al., 2017), and suicidal attempts (Edwards et al., 2019). Next to the role of parental education and occupational position, siblings' impact on individuals' educational attainment may as well be important (Grätz et al., 2021; van Eijck & de Graaf, 1995). Although studies investigating whether and how siblings resemble each other in education have yielded mixed results, it is overall evident that sibling similarity is manifested in educational attainment (Hauser & Wong, 1989; van Eijck, 1997) and in field of study choices (van der Vleuten et al., 2020). Stratification scholars additionally showed that siblings are similar in financial resources

(Conley & Glauber, 2008) and occupational status (Hornstra & Maas, 2021). They argued that the processes of social reproduction and mobility are complex and shaped by family dynamics, support, and resources (Conley & Glauber, 2008). Furthermore, siblings who migrate (internally) also "pave the way" for those who follow (Mulder et al., 2020).

Uncovering longitudinal patterns of life course trajectories for sibling and unrelated dyads, a study observed that siblings' family-formation patterns are significantly more similar than unrelated dyads (Raab et al., 2014). The unrelated dyads are assigned conditional on sharing the same parental background characteristics, in order to equalize the variation of the family context between sibling dyads and unrelated dyads. Figure 1.2 displays the probability of siblings and unrelated individuals, who are dyad partners of the focal person, being in the same cluster. Across all clusters, siblings show a higher likelihood of being in the same cluster as the focal person compared to unrelated individuals. For example, if a focal person is in the "marriage, moderate fertility" group, a sibling has a 27% probability of being in the same cluster, compared to 21% for an unrelated individual. According to the authors and as illustrated in the Figure 1.2, this is particularly evident in family-formation patterns associated with educational disadvantage, such as "extended cohabitation, parenthood out of wedlock" and "early marriage, high fertility." All the empirical evidence suggests that siblings' behaviors, including life course transitions are correlated and clustered, if not causally related.

Figure 1.2 Sibling similarity in life course patterns



Note: Focal person and alter in the same cluster: Conditional probabilities and relative deviations from overall mean.
Source: Raab et al. (2014).

In this section, drawing on theoretical frameworks from family sociology, social demography, and psychology, we introduce a series of concepts and mechanisms that help to explain why siblings' behaviors and life course trajectories are interconnected. Furthermore, we discuss the possibility that siblings may sometimes make each other behave differently. Finally, the section highlights the sibling characteristics that may encourage or discourage sibling (dis)similarities.

1.3.1 Family systems and linked lives

The *family systems theory* is a fundamental key to understand individuals' behavioral patterns as family members are essentially interdependent (Cox & Paley, 1997; Cross & Barnes, 2014). Within each family, there are different interdependent and mutually influential subsystems, with the three primary subsystems being marital (between parents), parent-child, and sibling (Cox & Paley, 1997). Because of their interdependence, marital relationships, parent-child dynamics, and other family processes may have implications for sibling relationships, and vice versa (Jensen et al., 2023). For instance, one subsystem may adapt to disruptions of the other subsystem (Engfer, 1988). Moreover, the theory highlights family interactions as crucial factors in sustaining emotional connection among family members and promoting a sense of family coherence or shared meaning (Cox, 2010). When each member is emotionally involved in their bond-building and when family functioning is favorable, they may also better influence each other's behavior (Cook, 2001). Greater levels of family cohesion are also linked to a better life satisfaction and mental well-being for individual family members (Kawachi & Berkman, 2001; Umberson et al., 2010).

The concept of *linked lives*, a central idea in the *life course perspective* stresses that the lives of family members are inextricably connected through interpersonal interactions and processes and across time, place, and life domains (Bernardi et al., 2019; Elder, 1998; Giele & Elder, 1998). According to this perspective, individuals' life course trajectories and outcomes are influenced by the experiences, choices, and circumstances of the people they are linked to, such as family members, friends, and romantic partners (Bengtson & Allen, 1993). The concept acknowledges that individuals are not isolated entities, but rather embedded in social networks and influenced by the lives of those surrounding them. Changes in a person's life may have ripple effects on others, shaping their opportunities, constraints, and life choices (Alwin et al., 2018). Furthermore, individuals may not only receive support and guidance from their networks but also provide them in return, suggesting the dynamic and reciprocal nature of linked lives.

Although the aforementioned two frameworks are not directly incorporated in the empirical chapters, they serve as important foundations for the other theories discussed in this section, as well as the ones related to parent–child relationships in Section 1.4. That is, considering the broader social and family context and interpersonal relationships in understanding individual development and life course decisions is relevant when studying cross-sibling effects.

1.3.2 Social network and social influence

Social network theory integrates two distinct sociological perspectives on human interaction, emphasizing both the influence of structural environments and the agency of individuals (Burt, 1982; Emirbayer & Mische, 1998; Granovetter, 1985). While individuals are shaped by the social structures they are embedded in, these structures do not entirely determine their actions. Instead, they offer a framework of possibilities and constraints, allowing for individual agency. The social structures or social networks provide the context for actions, influencing the actors' interests and shaping their perceptions of potential actions (Burt, 1982). Within this theoretical framework, individuals are embedded in social networks, known as ongoing systems of social relations that impact their attitudes, emotions, and behaviors (Granovetter, 1985). Research in this field has focused on understanding these social relations and the mechanisms through which human actions are diffused and transformed via social interactions (Rossier & Bernardi, 2009).

The importance of taking into account social networks and social interactions when investigating life course decisions have been increasingly acknowledged in demographic literature (Bernardi & Klärner, 2014; Buyukkececi & Leopold, 2020; Jayakody et al., 2008), that "life course transitions can be social acts." Four distinct mechanisms – social contagion, social learning, social pressure, and social support – help to explain why individuals adopt the actions and behaviors of their social network members (e.g., family members, school peers, and workplace colleagues). These mechanisms shed light on how social influence shapes individuals' choices and behaviors within their social circles (Bandura, 1977; Bernardi, 2003; Bernardi & Klärner, 2014; Freeman, 2004). While the mechanisms put strong emphasis on causality between siblings' decisions, which likely needs to be challenged, they provide possible explanations for sibling similarities. In the following, the mechanisms are discussed for an overview, whereas in the concluding chapter, a critical reflection is shown.

The first mechanism is *social* or *emotional contagion*, which is defined as the process by which a person "catches" an idea or behavior from another person who is considered socially similar (Bernardi & Klärner, 2014; Burt & Janicik, 1996). Individuals' reactions due to emotions, such as a sense of embarrassment, happiness, or inadequacy may motivate them to follow their social networks' opinions on appropriate behaviors even when no benefits are at stake, leading to synchronization of generative behaviors among social network members (Bernardi, 2003). To better understand the contagion mechanism by incorporating literature from social psychology, two sub-mechanisms can be further identified: emotional contagion and mimicking (Bernardi & Klärner, 2014). While *emotional contagion* indicates that individuals can spontaneously pick up emotional states and behaviors (e.g., joy, laughter, fear) of their group members (Hatfield et al., 1994), *mimicking* is the automatic adoption of network members' attitudes, goals, or behaviors without conscious intent or awareness (Aarts et al., 2004). Both mechanisms are based on the assumption that social influence can occur below the level of individual awareness. That is, with contagion, actions do not necessarily pass on consciously,

but also occur unconsciously. These mechanisms have been applied to short-term situational behaviors, long-lasting emotional states, and life course decisions (Bernardi, 2003; Cacioppo et al., 2009; Fowler & Christakis, 2008). Moreover, although contagion can take place through all kinds of human interactions, cross-sibling effects may be especially vital. That is, because sibling relationships are often closely connected, cohesive, and homogeneous, the timing of their life transitions are contagious and thus interrelated (Bernardi, 2003).

Second, *social learning* (i.e., role modeling) is also crucial in understanding siblings' linked lives and sibling influence on life course trajectories. Social learning, a process of acquisition, exchange, and shared evaluation of information, stresses that individuals observe the actions and behaviors of their social network partners and learn from their experiences (Bandura, 1977). Individuals may adopt some of the observed behaviors while rejecting the others based on the feasibility and consequences of the actions. Because siblings often grow up together and are bonded closely, they tend to rely on each other's life experiences and information. With such reliability and mental bonding, siblings look after each other and are influential sources of social learning, consulting one another for information on life course transitions (Balbo & Mills, 2011b; Bernardi, 2003; Haurin & Mott, 1990). This is in line with the three requirements of social learning Bandura (1977) proposed: being able to observe and reproduce the behaviors, and being motivated to adjust one's behaviors following those of the others. In most cases, younger siblings tend to look up to their older siblings and view them as role models, especially when they make on-time and successful life course transitions (Axinn et al., 1994; Conger & Little, 2010). The fact that individuals tend to follow their older siblings' pathways leads to similarities between them.

The third interaction mechanism is *social pressure*, which refers to the social force that leads individuals to behave in certain ways (Asch, 1955; Festinger et al., 1950). Based on individuals' perception of what their relevant others may approve and disapprove of, they evaluate the social costs and benefits of acting on and ignoring these opinions (Balbo & Mills, 2011a; Bernardi, 2003). A study has observed that for both men and women, social pressure from parents, friends, and relatives has a strong and positive effect on fertility intentions (Balbo & Mills, 2011a). Regarding the sibling network, it is plausible that the pressure comes from the network itself or related family networks (e.g., parents, relatives). For instance, when a sibling makes an on-time transition to independent living, the children who still live at home with their parents might feel the pressure to move out as well, especially for those similar in age.

The last mechanism concerns *social support* among network members, which lies in the sociological concept of social capital. *Social capital* comprises resources to which individuals have access because of their interpersonal relationships and may include both tangible and intangible support, such as information, money, and emotional comfort (Bourdieu, 1986; Granovetter, 1973; Lin, 1999). Demographic studies have shown that social capital allows individuals to utilize their economic and emotional resources in realizing their goals (Bühler & Philipov, 2005; Schoen et al., 1997). For example, having supportive social relationships is

positively associated with fertility intentions, that individuals with fertility-relevant resources (e.g., financial and childcare support) are more motivated to give birth to a child (Bühler & Philipov, 2005). According to Bernardi and Klärner (2014), the role of social support in explaining social interactions and social influence between network members is more ambiguous, compared to social contagion, social learning, and social pressure. Yet, with respect to siblings' life course transitions, similarities may occur because of e.g., sufficient parental recourses to support the transitions, and mutual sibling support during the processes.

Hand in hand with the social network approach, the theory of *social influence* from social psychological literature indicates that individuals are influenced by social norms and each other, which leads to compliance and conformity. Social norms are the unwritten rules and expectations that influence human beings' tendency to comply with requests or conform to group behavior, and therefore guiding people's behaviors and decision-making within a given social group or society. Three significant elements in this body of work are: social proof, information uncertainty, and liking (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998). The power of *social proof*, also referred to as social validation and a sense of belonging lies in the desire to fit in and be accepted by a group, that people are more likely to conform to an unfamiliar behavior or opinion if they see others engaging in it (Cialdini & Trost, 1998). In particular, individuals tend to seek social proof and guidance from others in situations of *information uncertainty*. When faced with ambiguous decisions or incomplete information, people are more likely to look for social cues and rely on the behaviors or opinions of others to help them make choices (Cialdini & Goldstein, 2004). Furthermore, the level of interpersonal *liking* and closeness between individuals plays a significant role in shaping their compliance with the behaviors of their social networks (Cialdini & Trost, 1998). Research has suggested that for one person's behavior to have an impact on another person, a relationship is needed, preferably a close one (Huston, 1983). In other words, close relationships signal a higher degree of relational embeddedness in social behaviors, strengthening the influence individuals have on each other (Cook, 2001; Felmlee & Sprecher, 2000).

1.3.3 Social comparison and sibling deidentification

Although sibling influence is suggested to lead to sibling similarities, it may operate in the opposite direction and contributes to sibling dissimilarities. According to the theory of *social comparison*, people seek out information about other people's lives, feelings, and abilities, in order to evaluate their own (Festinger, 1954; Titus, 1980). Similar to the theories and mechanisms discussed above, people are more inclined to compare themselves with network members close to them. Due to the nature of sibling relationships, siblings have the dispositional tendency to compare themselves to each other (Jensen et al., 2015). This tendency toward social comparison is associated with the emotional and relational development of siblings. When siblings engage in more frequent comparisons with each other, it co-occurs with warmer sibling relationships. However, it also correlates to higher levels of sibling conflict and emotional distress between them (Jensen et al., 2015). With regards to

siblings' linked lives, comparison between siblings has an important role in motivating one to behave similarly to and differently from others. On the one hand, social comparison of siblings can be related to modelling of siblings' behaviors and attitudes, leading to sibling similarities (Litt et al., 2015). On the other hand, siblings may want to avoid social comparison, developing sibling dissimilarities (Jensen et al., 2015; Whiteman et al., 2014).

The latter mechanism of the comparison theory is coined *sibling deidentification*, which aims to explain the differences in behaviors between siblings. Sibling deidentification theory's rivalry-defense hypothesis suggests that siblings may take on different or opposite life courses and pathways in order to be distinguished from their siblings, reducing social comparison and rivalry, and to establish their own unique identities within the family (Schachter et al., 1976; Whiteman et al., 2007a). Given that identifying with or imitating siblings may exacerbate sibling competition, especially when seeking the same goals and achievements, siblings are likely to develop intentionally different personal qualities and choose different niches (Whiteman & Christiansen, 2008; Whiteman et al., 2007a). By building such a defense mechanism, one may reach a more harmonious and less conflictual relationship with their siblings (Sulloway, 1996; Whiteman, McHale, & Soli, 2011). The deidentification process may also align with the birth order theory (Subsection 1.4.3), which argues that siblings develop different personality traits to decrease sibling comparison and competition. For example, later-born children may strategically develop more sociable and unconventional features to differentiate themselves from their older siblings (Black et al., 2018; Sulloway, 1996). As an alternative process of sibling influence, sibling deidentification theory has primarily been applied to study differences in siblings' personality traits and qualities, and less to siblings' behaviors and life courses (Whiteman et al., 2007a).

1.3.4 Sibling characteristics related to sibling (dis)similarities

After understanding the theories and mechanisms explaining siblings' linked lives and their influence processes, it is important to identify under what conditions sibling similarities and dissimilarities are more pronounced or less pronounced. In this section, four sibling characteristics are discussed: gender composition, age gap, birth order, and relationship closeness.

First of all, siblings' *gender composition* is an important sibling characteristic in the literature, which may strengthen both sibling imitation and distinction. For school performance, while Conley and Glauber (2008) observed that it does not vary by siblings' gender constellation, Benin and Johnson (1984) showed that male dyads influence each other more than other combinations. In line with the latter, same-gender siblings, and especially brothers, show pronounced similarity in their early socioeconomic trajectories (Karhula et al., 2019). Brothers and sisters are also more similar regarding internal migration and family formation trajectories than opposite-gender siblings (Mulder et al., 2020; Raab et al., 2014). It has been argued that sister–sister pairs may influence each other's life courses more than siblings in other gender combinations due to their stronger emotional bonds (Wood & Inman, 1993). Although women

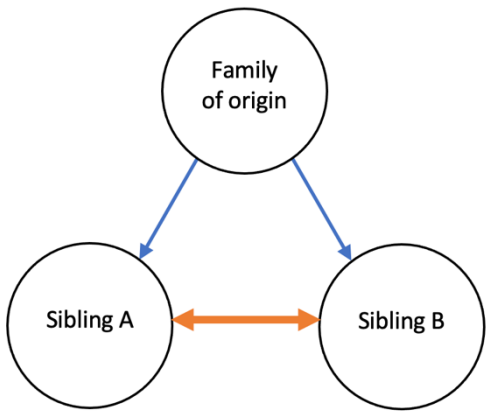
sometimes communicate issues about sexual and romantic relationships with brothers and parents, they do so more frequently and feel more comfortable doing so with sisters (Killoren & Roach, 2014). In terms of role models, siblings are also more likely to look up to one another when they have the same gender (Trim et al., 2006; van der Vleuten et al., 2020). According to Tucker et al. (1997), compared with older brothers, adolescent girls are more likely to view their older sisters as confidants and mentors, receiving more advice and experiencing greater influence from their sisters. Moreover, siblings' social comparison and deidentification tendencies are as well most evident when siblings belong to the same gender (Jensen et al., 2015; Whiteman & Christiansen, 2008; Whiteman et al., 2007a). While women in general are more likely to compare themselves with their siblings (Gibbons & Buunk, 1999; Jensen et al., 2015), sisters might be even more sensitive to such comparison and competition (Whiteman, McHale, & Soli, 2011).

Second, siblings' *age gap* may yield both positive and negative influence on sibling similarity in human actions and life courses. On the one hand, siblings are more likely to be role models when the age gap between them is smaller (Bernardi, 2003; Whiteman & Christiansen, 2008). Close-in-age siblings are relationally and emotionally closer to one another, making them stronger sources of compliance and influence than distant-in-age siblings (Burger et al., 2004). For instance, fertility contagion is especially strong among close-in-age siblings (Kuziemko, 2006). On the other hand, being close in age encourages social comparison and deidentification between siblings, leading to sibling dissimilarities (Jensen et al., 2015; Noller et al., 2008; Schachter et al., 1976; Whiteman & Christiansen, 2008; Whiteman et al., 2007a).

Third, the diffusion and influence processes may also depend on siblings' *birth order*, that younger siblings tend to learn from their older siblings' behaviors. As Axinn et al. (1994) argued, older siblings often serve as "silent behavioral examples" to their younger brothers and sisters (p. 68), independent of their shared socioeconomic status and environments (see Section 1.4 for more details). This also implies that older siblings can sometimes act as negative role models. For example, compared to adolescents with never-pregnant sisters, those with pregnant sisters were less inclined to disapprove teenage childbearing, considered school and career less important, and engaged more in problematic behaviors (East, 1996, 1998). In addition, younger siblings had a higher chance of hanging out with disengaged peers (Wang et al., 2019) and divorcing (de Vuijst et al., 2017) when their older siblings had done so. Moreover, research has shown that younger siblings are more inclined to compare themselves with older siblings than vice versa, which can potentially harm their well-being (Feinberg et al., 2000; Jensen et al., 2015; Noller et al., 2008). Sibling deidentification is most apparent between first- and second-born descendants, and consecutive pairs of siblings (e.g., firstborn–second-born, second-born–third-born) exhibit a higher level of deidentification than jump pairs (e.g. firstborn–third-born). Reduced social comparison due to wider age spacing could help to explain the latter phenomenon (Schachter et al., 1976), echoing the argument that the influence of birth order weakens as age gap widens (Sulloway, 1999).

The fourth characteristic concerns *siblings' relationship closeness*. Previous literature has suggested that the closer the social ties are, the more likely they are to relate to the four mechanisms (i.e., social contagion, social learning, social pressure, social support) of the social network theory and to influence each other's behaviors and attitudes (Bernardi, 2003; Cialdini & Trost, 1998; Keim et al., 2013). Regarding sibling ties, studies have observed that siblings' relationship closeness is positively associated with sibling resemblance in risky sexual behaviors (McHale et al., 2009), smoking frequency (Slomkowski et al., 2005), and anxiety symptoms (Serra Poirier et al., 2017). A qualitative study also indicated that visits to siblings who have children can motivate individuals to have a child on their own, specifically when the sibling relationships are close (Keim et al., 2013). It is worth mentioning that having a large number of siblings may increase one's risk of experiencing sibling aggression (e.g., sibling bullying), implying that sibship size is negatively associated with sibling relationship quality (Tippett & Wolke, 2015). Moreover, siblings' relationship closeness may also be connected to their gender composition and age gap (Burger et al., 2004), that warmer sibling relationships are more common when siblings are similar in terms of demographic characteristics (Killoren & Roach, 2014; Tanskanen & Danielsbacka, 2021).

Figure 1.3 Intrageneration transmission (in orange) vs shared intergenerational transmission (in blue)



1.4 Family of origin and shared intergenerational transmission

Most siblings share genes, family background, parental socioeconomic status, and other social environments, which may all affect their developments and later life outcomes. When studying siblings, it is fundamental to discuss and realize those elements in their lives. The theories introduced in Section 1.3 mostly shed light on how and why siblings' life course trajectories are associated from a horizontal perspective and suggest the possibilities of

intragenerational influence (orange path in Figure 1.3). However, to what extent are sibling similarities the result of sibling influence? Siblings may in fact behave in the same way (or not) because of what they share (e.g., common upbringing). In order to detect the extent to which the sibling associations are causal, their *shared intergenerational transmission* (blue path in Figure 1.3) needs to be taken into account, if possible. In Section 1.4, we provide insights into how the family-of-origin experiences shape sibling (dis)similarities. It is worth mentioning that siblings' shared background may have both biological and social components. Understanding how family background shapes siblings' behaviors is a complex endeavor that involves examining several (theoretical) perspectives. Even though not all of the components are not implemented in the four empirical chapters of the dissertation, addressing them helps to understand why parental background contributes to not only sibling similarities but also sibling dissimilarities.

1.4.1 Shared genetics

First and foremost, it is important to acknowledge that siblings are similar because of shared genetics to a certain degree. Full siblings inherit on average 50% of the same genetic variants from their parents, which increases the likelihood to be genetically predisposed to the same life course-relevant behaviors compared with unrelated individuals (Axinn et al., 1994; Branigan et al., 2013; Lyngstad & Prskawetz, 2010). Genetic studies of sociodemographic behaviors have traditionally used twin- and family-informed designs to infer the influence of genetics. However, in the last decade, studies have increasingly used direct measurements of genetic variants and associated them with different behaviors and life course outcomes. For example, years of education is an important indicator of socioeconomic status and has a heritability of 40%, according to a meta-analysis of twin studies (Branigan et al., 2013). Other examples of genetic influence with respect to life course outcomes are the effects on the number of sexual partners one has, for which common genetic variants explain 13% of variance, and the effects on the number of children born, for which 6% of variance is explained by common variants (Barban et al., 2016).

Sibling similarities due to genetic effects may be further amplified through environmental influence. For instance, children with higher genetic predisposition toward higher educational attainment tend to be raised in better-off homes and have healthier mothers, suggesting that genes might be an indicator of growing up in a more advantageous environment before and after birth (Armstrong-Carter et al., 2020). At the same time, genetic predictions of educational attainment are also correlated with upward social mobility, even for individuals coming from less advantaged homes (Belsky et al., 2016). Upon realizing the extent to which genetics shapes sibling similarities, the dissertation draws attention to the social and environmental aspects that are related to siblings' demographic behaviors.

1.4.2 Family background and shared environments

The impact of family background and shared environments on adult outcomes has been a subject of longstanding interest in the social sciences, and it is closely connected to the concept of intergenerational transmission, which refers to the process through which characteristics, behaviors, outcomes, and attitudes are passed on from one generation to the next within families (Glass et al., 1986; Grusec et al., 2000; Karlson & Birkelund, 2022). Scholars have extensively studied the extent to which and how family environments, parental behaviors, and socioeconomic status are related to the development and life trajectories of offspring (Amato, 1996; Barber, 2001; Kotte & Ludwig, 2011; Liefbroer & Elzinga, 2012; Wolfinger, 1999). For example, research has indicated that fertility behaviors are transmitted from parents to offspring (Axinn et al., 1994) and that the number of siblings is associated with one's own family size (Murphy, 1999).

Siblings, as individuals growing up in the same family context, share not only genes but also common intergenerational transmission by being exposed to similar parental styles, family values, and resources (Axinn et al., 1994; Cicirelli, 1991, 1995; Jensen et al., 2023). While each sibling may have unique experiences and personality traits (Subsection 1.4.3), their shared upbringing within the same family provides an opportunity for them to act on similar behaviors. Moreover, the theories and mechanisms discussed in Subsections 1.3.1 and 1.3.2 may also be applied to parent–child relationships, that children learn from or mimic parents' actions because of their interactions, interdependence, and emotional closeness. In other words, they may also view their parents as role models (Bras et al., 2013).

Studies have shown that family background is important for sibling correlations in cultural consumption (van Eijck, 1997), kinship norms (De Vries et al., 2009), social disadvantages (Vauhkonen et al., 2017), criminal convictions (Eriksson et al., 2016), and labor-economic outcomes (e.g., years of schooling and long-run earnings) (Björklund & Jäntti, 2012). With regards to life course transitions, sibling similarity in fertility is partially explained by parental fertility behavior and social background, with a stronger effect observed for age at first birth than completed fertility (Dahlberg & Kolk, 2018). It has also been suggested that both shared genetic inheritance and social background contribute to the passing on of divorce risks between generations (Dronkers & Hox, 2006).

The traditional and most frequently adopted approach in the study of the role of family background is to use some indicators that measure a family's socioeconomic status, such as educational attainment, occupational status, and earnings. However, it is important to note that family background has an impact on children in various ways that cannot be picked up by only a few indicators (Björklund & Jäntti, 2012; Manski, 1993; van Eijck, 1997). For instance, Dahlberg (2013) showed that parental fertility behavior only plays a very minor role in affecting sibling correlations in fertility, implying that sibling similarity in childbearing stems mainly from other sources. Likewise, it has been argued that parental behaviors cannot fully capture their preferences for their children's behaviors (Axinn et al., 1994). Taken together, exploring the

concept of siblings' shared intergenerational transmission can shed light on the relative contributions of family influence and social environments in shaping various aspects of siblings' lives.

Family background may also contribute to differences between siblings, that siblings growing up in the same household may have different personality traits, temperaments, intellectual level, resources, and well-being (Dunn & Plomin, 1991; Plomin et al., 2001). Some theories were used to explain the differences: The *birth order theory* posits that the sequence in which children are born into a family influences their personality, with first-borns often displaying greater obedience and protectiveness of parent-child relationships, middle-borns acting as peacemakers, and youngest children adopting unconventional and immature traits (Adler, 1928; Horner et al., 2012; Sulloway, 1999). Those possible personality differences and early childhood experiences may be linked to future development in adulthood (Eckstein & Kaufman, 2012). The *resource dilution theory* hypothesizes a negative association between the number of children in a family and children's intellectual, socioeconomic, and educational outcomes (Blake, 1981). This theory assumes that parents have limited resources, such as financial means, time, and social capacity to invest in their children's development and well-being (Jæger, 2009; Workman, 2017). Due to such limitations in the provision of tangible and intangible resources, every additional child lowers the amount of resources a child can obtain (Blake, 1985; Gibbs et al., 2016; Kalmijn & van de Werfhorst, 2016; Riswick & Engelen, 2018; Steelman et al., 2002). Additionally, the theory of *parental differential treatment* highlights the potential for children to perceive unequal treatment from their parents compared to their siblings (Kowal & Kramer, 1997). The type of parenting is related to children's emotional adjustment (McKinney & Renk, 2008). Siblings who do not receive or perceive equal affection from their parents exhibit more sibling jealousy and less self-esteem than their counterparts (Brody, 1998; Rauer & Volling, 2007), which may, in turn, be related to young adults' depressive symptoms and sibling conflict (Hamwey & Whiteman, 2020).

1.5 Aims and research questions of the dissertation

Based on the theories, mechanisms, and literature discussed, the dissertation studies the associations between siblings' life course transitions: (1) leaving the parental home, (2) fertility and childbearing, and (3) relationship breakup, incorporating determinants from family sociology, social demography, and social psychology. In this section, an overview of the demographic transitions studied is first provided, from a European perspective.

1.5.1 Variations in demographic behaviors

Studies suggest that the processes of transitioning to adulthood, family formation, and union dissolution are in flux in Europe (Billari & Liefbroer, 2010; Gauthier, 2007). Compared to previous generations, young adults are leaving the parental home at a later age and that a larger percentage of young adults are opting to live with their parents for an extended period (Bayrakdar & Coulter, 2018; Billari & Liefbroer, 2010; Holdsworth, 2000). While the average

age at which individuals leave the parental home has increased over the past years, it also varies considerably by country (Andersson et al., 2017), with men leaving home as early as 20 in Norway and as late as 29 in Georgia. For women, the age range extends from 20 in Scandinavia, Germany, and France to 28 in Italy. Across different regions in Europe, it seems that Scandinavian men and women leave the parental home the earliest, followed by Western Europeans, Eastern Europeans, and young adults from Southern European countries (Andersson et al., 2017). The lengthening pathway to independent living may be influenced by factors such as economic challenges, rising housing costs, and changing cultural norms (Aassve et al., 2013; Bayrakdar & Coulter, 2018; Billari & Liefbroer, 2007; Stone et al., 2011).

Similar to leaving the parental home, the age at which individuals have their first child has seen a significant increase, indicating that people are postponing parenthood to later stages of life (Mills et al., 2011). On average, women in Europe appear to have their first birth around age 30, compared to 27 in Eastern European countries (Andersson et al., 2017). Women in Eastern Europe also experience a smaller increase in age at first birth than other regions in Europe (Billari & Liefbroer, 2010). Likewise, levels of (voluntary) childlessness have risen in many developed countries, as well as social acceptance and positive attitude towards childlessness (Frejka & Sobotka, 2008; Merz & Liefbroer, 2012). At the same time, the percentage of women having a childbirth within unmarried cohabitation instead of marriage has substantially increased, alongside a rise in the age at which individuals enter into cohabitation or marriage (Billari & Liefbroer, 2010). Such prevalence of late parenthood and childlessness and instability of family formation are coupled with increased levels of educational attainment, labor market participation, and gender egalitarianism (Merz & Liefbroer, 2012; Mills et al., 2011; Savelieva et al., 2023).

In terms of union dissolution, divorce rates in Europe remain remarkably high, that approximately one in three married couples end up getting a divorce (Boertien, 2020; Snoeckx et al., 2008). Furthermore, separation rates of cohabiting couples are even higher than divorce rates (Pasteels & Mortelmans, 2017; Van den Berg & Mortelmans, 2018), and the chances of parental separation are higher for children born in cohabitation compared to those born within marriage (Andersson et al., 2017). Across Europe, there are as well some regional differences (Andersson et al., 2017). In southern Europe, the Netherlands, Romania, Bulgaria, and Georgia, parental couples tend to display the highest stability. Conversely, in France, Estonia, Lithuania, and the Czech Republic, the likelihood of parental separation (from both cohabitation and marriage) exceeds one-third. A number of factors associated with increased risks of union instability and dissolution are, for instance, parental divorce, age at first partnership, socioeconomic status, and personality traits (Kaplan & Herbst, 2015; Kiernan & Cherlin, 1999; Spikic & Mortelmans, 2021).

Given the complex pathways to adulthood and the high levels of union instability, a goal of this dissertation is to enhance our understanding of the determinants of life course decisions. Building on the unique nature of sibling ties and the previously discussed theories and

mechanism, the dissertation explores the role of siblings in shaping individuals' life course trajectories. In the following subsections, the research questions of the dissertation and data infrastructures used to address the questions are introduced, followed by two overarching goals.

1.5.2 Leaving the parental home

As discussed in Section 1.3, previous research has investigated cross-sibling effects in a variety of domains, and that empirical studies on siblings' life courses have predominately addressed the association between siblings' fertility behaviors, under-examining the other transitions, particularly leaving the parental home. A study has compared similarity in the transition to adulthood between sibling dyads and unrelated dyads (Raab et al., 2014), indicating that when an individual is a home stayer (i.e., leave the parental home at a later age), a sibling has a 9% higher probability of being a home stayer as well than an unrelated individual (Figure 1.2). However, no study has yet directly examined the association between siblings' home-leaving behaviors. Moreover, knowledge on the extent to which such association is dependent on siblings' demographic traits (e.g., age gap, gender composition, birth order) is scarce. That is, even if siblings' demographic similarities are known to strengthen sibling influence in different behavioral domains, the role they play in siblings' nest-leaving trajectories is unclear. These unclarities lead to the first research questions:

RQ1: *To what extent does having a nest-leaving sibling increase the likelihood of leaving for oneself? To what extent does the association vary by sibling similarity in demographic traits?*

Chapter 2 uses data from the survey Understanding Society: The U.K. Household Longitudinal Study (UKHLS) (University of Essex, 2020). The UKHLS is an ongoing and nationally representative panel survey that collects a wide range of demographic, socioeconomic, and psychological information at both individual and household levels. The selected dataset comprises 28 waves, with waves 1 to 18 originating from the British Household Panel Survey (BHPS) and waves 19 to 28 from Understanding Society. Notably, Understanding Society is a continuation of the BHPS, with over 60% of the BHPS participants opted to continue their participation in Understanding Society. This harmonized and comprehensive dataset spans the period from 1991 to 2019.

The second research objective, tackled in Chapter 3, is connected to the analysis of the first research aim. To date, no study has yet uncovered whether cross-sibling effects on life courses is stronger among siblings who are similar in personality traits. Past psychological literature has demonstrated the important role of personality in interpersonal relationships, that based on the similarity-attraction effect those who have similar personality traits tend to befriend with each other and have better and deeper connections (Byrne, 1971; Cuperman & Ickes, 2009; Lönnqvist & Itkonen, 2016; Selfhout et al., 2010). Given that resemblance in both demographic and personality traits are linked to relationship closeness (Bernardi, 2003; Burger et al., 2004), it is plausible that close-in-personality siblings are more likely to mimic each

other's demographic transitions than distant-in-personality siblings. To unravel this puzzle, the second research question is formed as below. Chapter 3 again draws on longitudinal data from the UKHLS, specifically a subset of respondents who provided information on their Big Five personality traits.

RQ2: *To what extent is the association between siblings' home-leaving trajectories dependent on sibling similarity in personality traits?*

1.5.3 Fertility and childbearing

Since the 1980s, the importance of considering social interactions and ideational factors when studying childbearing experiences and fertility decline has been acknowledged (Coale & Watkins, 1986). It has been argued that informal conversations with friends and family members about having babies are important for historical changes in "bedroom" behaviors (Watkins, 1995). Since then, there has been a growing interest in investigating the associations between individuals' fertility behaviors and those of their social networks' (Buyukkececi et al., 2020; Pink et al., 2014). Although several studies have examined cross-sibling effects in fertility and showed that one's fertility is associated with a sibling's fertility (Buyukkececi & Leopold, 2020; Kuziemko, 2006; Lyngstad & Prskawetz, 2010), no study has yet discovered the role of sibling relationship quality in such interplay. As a result, with the following research question, Chapter 4 of this dissertation delves into the examination of sibling relationship quality and its implications for family formation decisions, specifically siblings' likelihood of having children together. The findings from this chapter will provide valuable insights into the intertwined associations between sibling dynamics and shared parenting choices, informing our understanding of the complexities of family formation processes.

RQ3: *To what extent is sibling relationship quality related to sibling synchronization of (non-)fertility?*

In this chapter, data from the Netherlands Kinship Panel Study (NKPS) are used. The NKPS is a longitudinal panel survey, consisting of four waves (2002–2004, 2006–2007, 2010–2011, and 2014–2015) that aims to investigate the dynamics of family relationships and intergenerational solidarity in the Netherlands (Dykstra et al., 2005, 2007; Hogerbrugge et al., 2015; Merz et al., 2012). It collects data on various aspects of family life, including fertility, parenting, intergenerational relationships, and caregiving. An important and unique feature of NKPS is that it collects information on the structure and quality of sibling relationships, including measures of closeness, frequency of contact, and conflict. The data allow researchers to examine the dynamics and characteristics of sibling relationships over time, and to explore sibling behaviors associated with these relationships. Overall, the study follows a large sample of individuals and their family members over a period of more than 10 years, providing valuable insights into the complexities of family dynamics and the changing patterns of kinship in the Netherlands.

1.5.4 Relationship breakup

Moving on to Chapter 5, the focus shifts to exploring the association between siblings' relationship breakups, building upon the assumption that witnessing a sibling undergoing such adverse life event could be tied to one's own relationship duration. This chapter investigates the extent to which a sibling's divorce or separation is connected with an individual's risk of experiencing a termination in their own relationship (including both cohabitation and marriage). Moreover, we aim to uncover whether the effect is stronger when siblings belong to the same partnership type (i.e., cohabitation–cohabitation, marriage–marriage). An additional goal of the chapter is to incorporate siblings' demographic characteristics and examine whether being similar in demographic terms allows them to be stronger sources of influence. Besides incorporating some of the theories discussed in earlier sections, this chapter introduces the social identification theory (Tajfel & Turner, 1979; Tajfel, 1978), as well as differences between cohabitation and marriage. This leads us to our final research questions:

RQ4: *Is a sibling's relationship breakup (separation or divorce) related to one's own risk of relationship breakup? Does the association depend on whether they belong to the same partnership type? Is the association moderated by siblings' demographic similarities?*

This longitudinal study utilizes data from the Belgian population register, specifically the Crossroads Bank of Social Security (CBSS), which provides comprehensive individual-level demographic and socioeconomic information, as well as household characteristics. The sample for this study consists of 30,000 randomly selected households, with one-third of the households having an oldest child born in 1980, one-third in 1975, and one-third in 1970. The register data covers the entire period between 1998 and 2018 and allows us to track both individuals' and their siblings' union formation and dissolution trajectories.

1.5.5 Unobserved family-level characteristics and overarching goals

Besides providing answers to the research questions stated above, the dissertation has two overarching goals. First, we aim to have a more representative inclusion of siblings. Previous studies typically examined one sibling pair per family (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Lyngstad & Prskawetz, 2010; Raab et al., 2014). They either focused on families with only two children, or randomly selected two children from families with more than two children. In the dissertation, we aim to take into account all siblings in a family to have a more representative understanding of sibling relationships and siblings' linked lives.

The second goal is to gain a better understanding of the associations between siblings' life course transitions, using not only a between-family approach but also a within-family approach. Identifying social influence, which refers to the direct impact of network partners on an individual's behavior, has posed a significant challenge in social science research. Such challenge stems from differentiating confounding factors from the true social network effects. The confounding factors include e.g., contextual effects arising from unobservable group-level

characteristics. It is important to consider these additional sources of influence when attempting to understand and analyze the dynamics of social networks and the behaviors that emerge within them (Manski, 1993). As discussed in Section 1.4, siblings share family background, social environments, and other commonalities, making the studies of sibling (dis)similarities sensitive to family-related confounding factors. Throughout the chapters included in the dissertation, we will examine the extent to which siblings' life experiences are interconnected and how their shared family environments "get under the skin." By unraveling the links between siblings' home-leaving, fertility, and romantic breakup behaviors, we learn whether and in which domains siblings resemble each other. By attempting to address the potential impact of shared intergenerational transmission and other (unobserved) higher-level characteristics, we gain a more comprehensive understanding of how sibling interactions shape individuals' life choices.

2

Nest leaver or home stayer? Sibling influence on parental home leaving in the United Kingdom

An adapted version of this chapter was published in *Advances in Life Course Research*:

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2022). Nest leaver or home stayer? Sibling influence on parental home leaving in the United Kingdom. *Advances in life course research, 52*, 100464.

Abstract

Studies have suggested that the timing of leaving one's parental home can be influenced by a number of factors, such as gender, educational background, and parental characteristics. However, despite empirical evidence showing that siblings may influence one another's life course decisions, intragenerational effects on leaving home have not been adequately studied. In this study, we investigated the extent to which an event of a sibling leaving is associated with one's decision to leave the parental home and how demographic sibling characteristics may impact on the association. We also tested whether the number of siblings who left the parental home first is related to one's timing of leaving. Using data from "Understanding Society: The U.K. Household Longitudinal Study", we studied the process of leaving the parental home among 22,719 children and their siblings. The results indicated a positive relationship between leaving of a sibling and the own event of leaving. When siblings are brothers and have a small age gap, and when the nest-leaving sibling is older than the at-risk children, this relationship is even stronger. Finally, the more nest-leaving siblings one has, the less likely one is to stay at home. The findings provide evidence for cross-sibling effects on parental home leaving, underscoring the role of intragenerational associations with respect to life course events.

2.1 Introduction

Leaving home, as an important component of adult transitions, has received significant attention from demographers and sociologists in Western countries (Bayrakdar & Coulter, 2018; Billari & Liefbroer, 2007; Liefbroer & Toulemon, 2010; Seiffge-Krenke, 2013). In today's society, transitions to adulthood are not only postponed but also diversified and individualized. Children leave their parental home for more various reasons (e.g., to live independently and to study) and return to live with their parents after having left for a while, suggesting that the timing and patterns of independent living can differ substantially (Aassve et al., 2002; Holdsworth, 2000; Shanahan, 2000). The timing of home leaving can also have several familial and individual consequences. For instance, whereas early home leavers are more likely to be exposed to poverty and have a distanced relationship with their parents (Aassve et al., 2006; Leopold, 2012), late home leavers might have poorer well-being or fewer romantic activities (Seiffge-Krenke, 2013). Therefore, it is important to investigate the reasons for and patterns of parental home leaving (Bayrakdar & Coulter, 2018).

Whereas most research on the influences of family on life courses has focused on intergenerational effects (parents–child), Axinn et al. (1994) addressed the fact that intergenerational effects may be too narrow to capture successfully all the influences a family has on an individual and that the effects from other family members are also important. For example, typically sibling relationships last longer than any other family relationship; thus the potential to influence or be influenced by a sibling's life course also lasts the longest (Cicirelli, 1991; Connidis, 1992; Voorpostel, 2007). Arguably, the relationship between siblings should therefore be considered as important as parent–child relationships (Conger & Little, 2010; Feinberg et al., 2012). Several studies have also suggested that siblings may influence one another regarding various life course events, such as timing/intention of the first sexual encounter, marriage, and childbirth (e.g., Buyukkececi & Leopold, 2020; Haurin & Mott, 1990; Lyngstad & Prskawetz, 2010). Although research focusing on the relationship between siblings and nest leaving seems scarce, one study demonstrated that having a sibling increases the chance of leaving the parental home at a given age compared with being an only child, in the context of Spain and Britain (Holdsworth, 2000). Nevertheless, how and the extent to which siblings affect the dynamics of home leaving are poorly understood (Conger & Little, 2010).

In this paper, we aimed to examine how sibling's leaving and sibling-related factors play a role in children's timing of nest leaving. Our core research question was as follows: To what extent does having a nest-leaving sibling increase the likelihood of leaving for oneself? Because previous studies showed that how siblings affect one another may also depend on various sibling characteristics (e.g., age gap) (Kuziemko, 2006), we subsequently investigated how such sibling effect on home leaving varies by different sibling characteristics. Next, we explored whether the number of siblings who have left the home earlier is positively associated with one's probability of leaving the home. We utilized Wave 1 to Wave 28 of "Understanding Society: The U.K. Household Longitudinal Study" (UKHLS; University of Essex, 2020), which is

an ongoing annual survey project that started interviewing households in 1991 and includes extensive information on the household composition. By shedding light on the current topic using the UKHLS, in which children are tracked for an extended period, we were able to follow them successfully to the point they leave the parental home. Theoretically, this study builds on the knowledge of sibling relationships and intragenerational effects on life course trajectories and expands it to the domain of parental home leaving. Empirically, it provides knowledge on the relationship between a sibling and one's leaving home trajectory and how this takes place.

2.2 Theoretical background and previous research

In contemporary society, most young adults no longer go through the traditional sequence of transitions to adulthood—that is, completing their education, acquiring a full-time job, leaving their parental home, getting married and becoming a parent—but experience them over an extended period and in different orders (Benson & Furstenberg, 2006; Furstenberg et al., 2004). According to Andersson et al. (2017), individuals in Western European countries typically leave their parental home when they are between 20 and 24 years of age. Although some people live independently to pursue higher education, those who leave to form their own households or live on their own may exhibit a delayed leaving, as individuals nowadays postpone long-term commitments and are more inclined to explore various life trajectories (Cote, 2006; Holdsworth, 2000; Jones, 1995). Owing to such unordered or delayed adulthood transitions, scholars have termed modern young adults as "emerging adults," referring to those who experience uncertainty regarding their lives and living arrangements, in contrast to the two prior generations at similar ages (Arnett, 2014; Furstenberg et al., 2004; Pew Research Center, 2012).

Because siblings play a central role in each other's lives and spend considerable time together, scholars have increasingly gained interest in sibling relationships over the past few decades (Connidis, 1992; Feinberg et al., 2012; Jensen et al., 2015; Whiteman & Christiansen, 2008). According to Updegraff et al. (2002), siblings are like close friends that not only communicate and influence each other on relationship views but also serve as sources of companionship and emotional support. However, until now, family sociologists studying siblings' influence on life course trajectories focused mostly on siblings' influence on fertility behavior, union formation, and union dissolution (e.g., Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Lyngstad & Prskawetz, 2010), leaving the influence on other life transitions undetermined. This provides the reason we wanted to study how and the extent to which cross-sibling impact on the timing of nest leaving takes place. In the following sections, we will discuss the proposed theories and mechanisms for investigating siblings' linked lives, particularly regarding their trajectory for leaving the parental home.

2.2.1 Siblings' linked lives through social interaction

Theories on social interaction have suggested that people incorporate the behaviors of other members of society, for instance, family members, peers, or colleagues (Kotte & Ludwig, 2011; Lee et al., 1990; Lyngstad & Prskawetz, 2010). Bernardi (2003) described this incorporation as *social contagion* because actions by one individual can be transmitted to another individual via social interaction. This passing on of life course behaviors can occur both explicitly and implicitly (i.e. one might not be aware of this contagion effect occurring). Contagiousness depends on the closeness and rapport of the relationship. Given that sibling relationships often involve a strong emotional connection, social contagion can be especially relevant in the context of sibling interactions. Seeing a sibling leave the parental home, gain more freedom, become more independent and/or be more like a grown-up can all stimulate the remaining children at home to implicitly or explicitly follow the same path. Hence, Hypothesis 1 (H1) was formed: Having a nest-leaving sibling is positively associated with one's likelihood of leaving the parental home.

Factors that have been shown to play a role in such a contagion effect are, for instance, gender composition and age gap. Before discussing how siblings' gender composition may have an effect, it is worth mentioning that women and men differ in their perceived norms and timing of nest leaving. Although men are more likely to have a perceived deadline for leaving the parental home (Settersten & Hägestad, 1996), women tend to leave earlier because of family formation or leaving to live with a partner (Billari & Liefbroer, 2007). Family norms and distribution of family resources may also impact the difference in leaving between men and women (Billari & Liefbroer, 2007; Billari et al., 2008; Blaauboer & Mulder, 2010; Tosi, 2017). Nevertheless, siblings belonging to the same gender might also leave home shortly after one another because of their potential mutual influence. Raab et al. (2014) showed that same-gender siblings are more similar to one another in family formation trajectories than are opposite-gender siblings. Wood and Inman (1993) also indicated that compared with men, women tend to have more intense and emotionally rich relationships and to emphasize communication and disclosure more in close relationship. It follows that we would expect sister–sister relationships to be closer and more emotionally connected compared with mixed gender or brother–brother relationships. This relationship closeness might in turn result in higher likelihood of influence between sisters than between siblings of other gender compositions. Although some other studies did not find a significant relationship between siblings' gender composition and life course decisions (e.g., de Vuijst et al., 2017), based on the abovementioned evidence, Hypothesis 2 (H2) was formed: The association between leaving of a sibling and oneself is stronger for those belonging to the same gender (a), and especially among sisters (b).

Kuziemko (2006) observed that the closer the age gap between siblings is, the stronger the contagiousness of fertility is, which may be generalized to other life course events as well. In particular, she found that siblings who were born within four years of each other were affected

by their siblings' fertility behavior, but this effect was not visible for children born to much older or much younger siblings. In their study, Raab et al. (2014) found that a larger age difference also distanced the timing of family formation for both siblings and unrelated dyads. Some other studies have provided further evidence of contagion between siblings. Balbo and Mills (2011b) found that the likelihood of wanting children is greater when a sibling has a child under 12 years old. This suggests that the observation of a sibling's life course actions and consequences informs one's own view on transitioning to new life course stages. Similarly, other studies have suggested that cross-sibling effects can be manifested in both the Norwegian first-birth rate (Lyngstad & Prskawetz, 2010) and the timing of sexual initiation (Haurin & Mott, 1990). Thus, Hypothesis (H3) is as follows: The association between leaving of a sibling and oneself is stronger for those with smaller age gap.

Because siblings often grow up together and are bonded closely, they tend to rely on each other's life or family experiences and consult each other for information on life course transitions. With such reliability and mental bonding, siblings look after each other and are an influential source of *social learning* (i.e., role models), as another form of social interaction (Balbo & Mills, 2011b; Bernardi, 2003; Haurin & Mott, 1990). Bandura (1977) suggested three elements important for social learning: observation of the behavior, reproduction of the behavior, and motivation to modify one's behavior. According to previous research, the factors that encourage siblings to learn from one another are similar to those observed in sibling contagion. Siblings are more likely to be role models when the age gap between them is smaller (Bernardi, 2003; Whiteman & Christiansen, 2008) and when they are of the same gender (Boyle et al., 2001; Trim et al., 2006). This supports the notion that individuals tend to imitate models who are similar to themselves (Bandura, 1977) and validates our first two hypotheses. In other words, siblings who are close in age and of the same gender are more likely to influence each other through both social learning and contagion.

However, social learning is unique from contagion theory in emphasizing that younger siblings tend to learn from the behaviors of older siblings. Conger and Little (2010) suggested that when older siblings leave the parental home and succeed, they can function as role models, providing an example and reassurance for their younger siblings to follow suit. The role model effect appears to act independently of other shared environmental effects, such as socioeconomic status (Axinn et al., 1994). Hogan and Kitagawa (1985) also addressed this role model effect by comparing the role of older sisters to that of mothers. Considering all of this, we formed Hypothesis 4 (H4): The association between leaving of a sibling and oneself is stronger when one's sibling is older than oneself.

Finally, based on the contagion theory, it may be reasonable to expect that the more contagious influence one receives, the more likely one is ready to leave the nest. In line with the theory of social learning, it is plausible that the more nest-leaving examples one has, the more motivated one is to leave home. We argue that the number of siblings who have already left the parental home is a driving force concerning nest leaving for the remaining siblings at

home. That is, compared with having only one sibling who has left, having two or more nest-leaving siblings can advance one's leaving due to the extra contagiousness, motivation, and role models. This potential phenomenon may also be explained by the *social pressure* one receives, as the third form of social interaction introduced (Bernardi, 2003). The main argument is that individuals can modify their own behaviors or attitudes to comply with the social norms or be approved by others (Festinger, 1954; Festinger et al., 1950; Neugarten, 1979). In a family environment, social pressure often comes from the parents. In the case of parental home leaving, parents may pressure the home stayers to leave the nest because their siblings have done so already and they are lagging behind. Based on this mechanism, it is very likely that the more siblings transition to a new life course, the more the remaining children's social clock gets stimulated, pressuring them to do so as well (Hernes, 1972). Considering all of this, the last hypothesis (H5) was formed: The number of nest-leaving siblings is positively associated with one's likelihood of leaving the parental home.

2.2.2 Leaving the parental home in the United Kingdom

Since the 1970s, the link between leaving home and family formation has weakened in the United Kingdom, leading to a more prolonged transition to adulthood, which also implies that young adults start to leave home before entering marriage or having their own family and that family formation is no longer their primary reason for leaving the parental home (Grebenik & Mackensen, 1989; Holdsworth, 2000; Jones, 1995). Between 1998 and 2008, there was an increase in the proportion of young people in the United Kingdom living with their parents, and the proportion of people younger than 35 years of age living with a parent has increased significantly since 2000 (Bayrakdar & Coulter, 2018; Stone et al., 2011). Later parental home leaving first occurred with economic prosperity in the United Kingdom, and the decreased likelihood of leaving was even strengthened during the Great Recession. Such a decrease was especially visible for unemployed adults (Lee & Painter, 2013).

Several individual factors are documented to impact the timing of leaving the parental home, such as educational level, income, and employment (Avery et al., 1992; Buck & Scott, 1993; Le Blanc & Wolff, 2006; Nilsson & Strandh, 1999; Raab et al., 2014; Whittington & Peters, 1996). For children's characteristics, while Schwanitz (2017)'s findings showed that education attainment has a positively relationship with delayed independence, Schwanitz et al. (2017) revealed that it is primarily the length of the educational career (i.e., duration of enrollment in education) determining nest leaving to live without a partner. Despite the fact that employment also influences young British adults' event of home leaving (full-time employment is positively related to an independent-living arrangement; Stone et al., 2011), research has suggested that compared with Southern and Continental European countries, its effect is more modest in the United Kingdom (Aassve et al., 2002). As discussed, gender can also play a role in explaining home leaving, as women generally leave earlier than men do (Buck & Scott, 1993; Goldscheider & DaVanzo, 1989).

As for the characteristics of the parental home, studies have shown that the role of parental education and employment status is non-negligible (e.g., parental educational level is positively associated with their children's leaving) (Buck & Scott, 1993; Gierveld et al., 1991; Schwanitz et al., 2017). Household income, however, may or may not have an effect on nest leaving. On the one hand, the feathered-nest hypothesis posits that emerging adults are less willing to leave when they live in a comfortable home provided by their wealthy parents (Avery et al., 1992; Goldscheider & Goldscheider, 1999). On the other hand, affluent parents also have more recourses to support their children's independent living. whether someone lives in a one-parent family could also have an impact in that living with only a father or mother promotes an early transition to independent living (Blaauboer & Mulder, 2010; Buck & Scott, 1993; Holdsworth, 2000; Mitchell et al., 1989). Finally, according to previous studies, housing tenure is related to nest leaving in the United Kingdom since children are more likely to leave when parents are renting instead of owning their house (Bayrakdar & Coulter, 2018; Mulder, 2013; Mulder & Clark, 2000). Bayrakdar and Coulter (2018) also showed that in the United Kingdom, the local housing price has an effect on the young adults' independent living decisions.

2.3 Data and methods

2.3.1 Dataset selection and structure

In this study, we used data from the survey of "Understanding Society: The UKHLS" (University of Essex, 2020). We selected 28 waves of data—Wave 1 to 18 from the "British Household Panel Survey (BHPS)" and Wave 1 to 10 from "Understanding Society"—which together covers the entire period between 1991 and 2019. Understanding Society is built on the BHPS, warranting harmonized and compatible datasets. In other words, the data from UKHLS allowed us to keep track of the households across the BHPS and Understanding Society for our research and thus were used jointly. Over 60% of the BHPS members who were invited to join Understanding Society did so for at least one wave (University of Essex, 2020). As a result, the UKHLS is an ongoing annual and nationally representative panel survey that collects a variety of household and individual information.

We regarded children as leaving in the wave during which they disappeared from the household grid. Concerning sibling identification, children from the same household were identified as siblings based on the mother's lineage, in the case of natural siblings. When a parental divorce occurred, all children joining the household from either the mother's or the father's side were included. In this way, we were able to continue tracing all children from blended families until they had an event. Children leaving the grid due to parental divorce or separation were not counted as leaving the nest as long as they lived with one of their biological parents. We selected families with at least two children living in the household. To exclude families where at least one child had already left the parental house before their entry into the panel study, we selected only families in which no child had left the nest before the household's first wave of participation. To do so, we utilized information on children living outside the household when the household first entered the panel. Furthermore, children

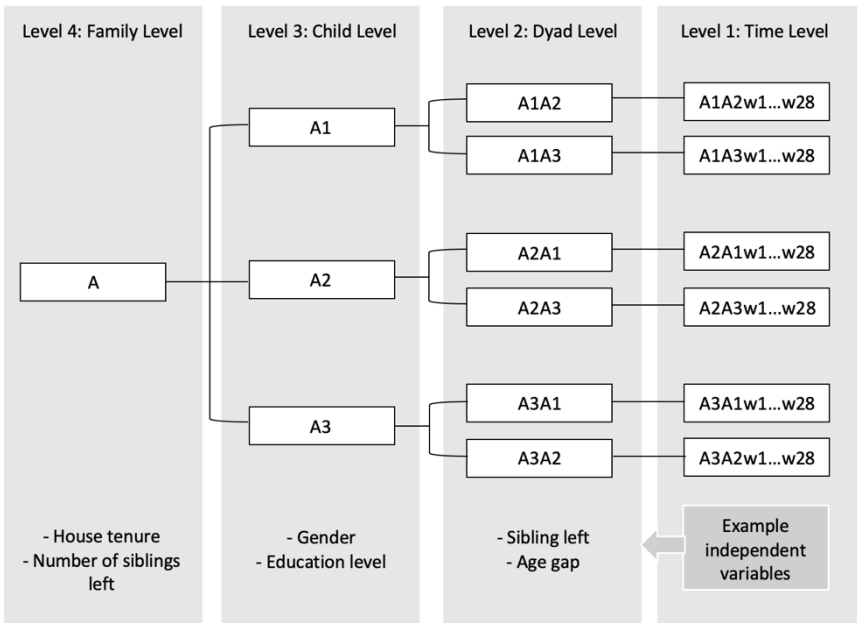
leaving the parental home before the age of 15 were left censored. Those aged above 35 who had not experienced the event of parental home leaving were right censored. The age restrictions imposed correspond to previous studies on parental home leaving (Blaauboer & Mulder, 2010; Chiuri & Del Boca, 2010). In addition, we right censored the children who left due to mortality or attrition of the entire family (for reasons such as non-participation to the survey and migration to live outside of the United Kingdom). In this way, we can be confident that when the children were no longer registered in the household, they most likely experienced the event of parental home leaving.

Unlike previous studies that included only families with two children (e.g., Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Lyngstad & Prskawetz, 2010), we considered all children from a family. To answer our research questions, we created a dataset of children dyads. Each dyad observed the risk set of a child, together with both characteristics of a sibling dyad and their time-varying parental home leaving status. As all possible sibling combinations were considered, children could switch roles in the dyads from being the child at risk to the sibling of potential influence. This allowed us to keep track of each possible sibling combination within a family.

As illustrated in Figure 2.1, a data structure with four levels (family level, child level, dyad level, and time level) was created. In the example, Family A (at the family level) has three children—Child A1, Child A2, and Child A3 (at the child level)—each of whom could be subject to leaving the parental home. While Child A1's event can be influenced by their siblings (A1A2 and A1A3 in Figure 2.1), Child A1 can influence Children A2 and A3's timing of leaving as well (A2A1 and A3A1 in Figure 2.1). In the former case, Child A1 is the child at risk, with the chance of being influenced by their siblings (Child A2 and Child A3). In the latter case, they are the sibling of Child A2 and Child A3, and Child A2 and Child A3 are the ones at risk. The same logic applies for families with two children and with more than three children.[1]

[1] Despite that children need to be at least 15 years old to be at risk, there is no such age restriction when they play a role as a sibling. For instance, in the case that Child A3 is below 15 years old and both children A1 and A2 are above 15 years old (i.e., only Children A1 and A2 are at risk), Child A3 would not be included, and whereas sibling dyads A1A3 and A2A3 would still be kept in the analyses, dyads A3A1 and A3A2 would not.

Figure 2.1 Example of the data structure and variables at each level



Finally, in each dyad, the number of time points observed can range between 1 and 21, depending on the timing of entering and exiting the risk set. Level 1 was coined as the time level, reflecting each observed wave that the children at risk experienced until they had an event or were censored. In sum, we have a four-level data structure in which the time level (*N* = 215,777) is nested in the dyad level (*N* = 44,731), the dyad level is nested in the child level (*N* = 22,719), and the child level is further nested in the family level (*N* = 10,658).

2.3.2 Measures

Dependent variable

The dependent variable in our study is the event of parental home leaving. It is an instantaneous rate that shows the child's risk of nest leaving at any given time point, provided that they are still living in the parental household (Allison, 1982, 1984). The variable indicates at each particular observation point whether or not an at-risk child had an event of leaving. We determined the occurrence of such an event based on the children's registration in the household. That is, when they were no longer reported in their parental home, they had an event of leaving. As discussed, attrition of the entire family, parental separation, and mortality were not counted as leaving. Moreover, we did not take into account the reoccurrence of the event.

Table 2.1 Descriptive statistics of the dependent and independent variables

	N	%	*M*	*SD*
Outcome variable at the sibling dyad level (*N* = 44,731)				
Had event*	14,085	31.49%		
Had no event*	30,646	68.51%		
Family level characteristics (*N* = 10,658)				
Educational level				
High	2,727	25.59%		
Middle	4,084	38.32%		
Low (ref.)	2,603	24.42%		
Unknown	1,244	11.67%		
Employment status*				
Full-time/part-time	6,051	56.77%		
No employment (ref.)	2,923	27.43%		
Unknown	1,684	15.80%		
Relationship status*				
Married/cohabitated	4,594	43.10%		
Divorced/separated (ref.)	4,263	40.00%		
Unknown	1,801	16.90%		
Income*				
High	2,452	23.01%		
Middle	4,232	39.71%		
Low (ref.)	2,118	19.87%		
Unknown	1,856	17.41%		
Housing tenure*				
Yes	6,005	56.34%		
No (ref.)	2,812	26.38%		
Unknown	1,841	17.27%		
Local house price*				
High	2,915	27.35%		
Middle	3,450	32.37%		
Low (ref.)	2,552	23.94%		
Unknown	1,741	16.34%		
Number of siblings left*				
0 sibling	7,332	68.79%		
1 sibling	2,593	24.33%		
2 siblings	583	5.47%		
3 or more siblings	150	1.41%		
Child level characteristics (*N* = 22,719)				
Age*			21.35	4.75
Gender				
Male (ref.)	11,922	52.48%		
Female	10,797	47.52%		
Educational level*				
High	3,310	15.47%		
Middle	9,273	40.82%		
Low (ref.)	1,405	6.18%		
Unknown	8,731	38.43%		
Employment*				
Full-time/part-time	7,132	31.39%		
No employment (ref.)	6,960	30.64%		
Unknown	8,627	37.97%		

Table 2.1 Continue

	N	%	*M*	*SD*
Relationship status*				
Married/registered partner/living as a couple	407	1.79%		
Single (ref.)	12,319	54.22%		
Unknown	9,993	43.99%		
Birth cohort				
1955-1964 (ref.)	126	0.56%		
1965-1974	593	2.61%		
1975-1984	3,657	16.10%		
1985-1994	10,599	46.65%		
1995-2004	7,834	34.48%		
Period*				
1991-1994 (ref.)	1,163	5.12%		
1995-1999	1,338	5.89%		
2000-2004	2,221	9.78%		
2005-2009	8,686	38.23%		
2010-2014	6,217	27.36%		
2015-2019	3,094	13.62%		
Sibling dyad level characteristics (*N* = 44,731)				
Biological sibling				
Yes	39,116	87.45%		
No (ref.)	5,615	12.55%		
Sibling left*				
Yes	10,123	22.63%		
No (ref.)	34,608	77.37%		
Gender composition				
Both females	10,423	23.30%		
Both males	12,391	27.70%		
Different gender (ref.)	21,917	49.00%		
Age gap				
Sibling 3+ years older	20,489	45.80%		
Sibling 2 years older	4,034	9.02%		
Sibling 1 year older	1,860	4.16%		
Same age	1,147	2.56%		
Sibling 1 year younger	1,743	3.90%		
Sibling 2 years younger	3,515	7.86%		
Sibling 3+ years younger (ref.)	11,943	26.70%		

Note: Descriptive statistics were presented at each level. For the time-variant variables (*), we present the descriptive statistics of the last observed wave, except for the variable period, which reflects period of entry. *Source:* UKHLS (1991–2019), calculations by authors.

Variables of interest

Because we were primarily interested in whether a sibling's leaving is positively related to leaving of an at-risk child, we first computed a time-varying variable *sibling left* at the dyad level. The variable indicates for each dyad, whether the considered sibling of the at-risk child had an event (1) or not (0). Next, we computed two demographic sibling characteristics as moderating variables at the dyad level: gender composition of the siblings and their relative age difference. *Gender composition* was a categorical variable with both female and both male

as the two effect groups and different genders as the reference group. Additionally, we used their gender composition to compute a variable indicating whether they belonged to the same gender (ref = no). To capture the effect of age gap and birth order, we created a categorical variable named *relative age difference* with seven categories: sibling three or more years younger, sibling two years younger, sibling a year younger, same age (born in the same year), sibling a year older, sibling two years older, and sibling three or more years older. The moderating variables introduced are time-invariant dyad characteristics. For our last hypothesis, *number of siblings left,* a time-variant variable with four categories: no sibling left, one sibling left, two siblings left and three or more siblings left, measuring the total number of children living outside of the family was created.

Control variables

To obtain more robust results, we controlled for background information that has shown to impact children's timing of nest leaving, as previously discussed (e.g., Avery et al., 1992; Blaauboer & Mulder, 2010; Buck & Scott, 1993; Stone et al., 2011). Those covariates were included at the family level, the child level, or the dyad level. First, at the family level, we controlled for parental educational attainment, employment status, relationship status, household income, housing tenure, and local house price. At the child level, the multivariate models accounted for the at-risk child's age (quadratic), gender, education, employment and relationship status, birth cohort, and period. Although we did not distinguish between natural, step-, and adopted siblings, we controlled for whether the sibling was a child's biological sibling or not at the dyad level.[2]

For both the family level and the child level, *educational background* measured the highest educational qualification one had achieved and consisted of four categories: high (have a degree), middle (completed A-level or secondary high school), unknown (educational level unknown), and low (everything below the other two categories; = ref). *Employment status* had three categories: having a full-time/part-time job or being self-employed, unknown employment, and not currently employed (= ref). For *marital/relationship status*, besides two categories indicating whether the respondents were married, cohabitating, or had a partner, we also used an unknown category to avoid losing a considerable number of observations due to missing values.

At the family level, *income* was coded in three categories (high, middle, and low), with the cutoff points set to the 25th and 75th percentiles (Bayrakdar et al., 2019). Besides the three income categories, we added an unknown category. *Local house price* had four categories. Based on the regional house price trend (Jones, 2021), we divided the house price by region and formed four categories: high, middle, low, and unknown. East of England, London, South East, and South West belonged to the category of high house price; North West, Yorkshire and

[2] Except for parental education, at-risk children's gender, birth cohort, and biological sibling, which are time-constant, all of the other background characteristics were introduced as time-varying covariates.

the Humber, East Midlands, and West Midlands were included in the middle category; and North East, Wales, Scotland, and Northern Ireland were assigned to the low house price category (= ref). *Housing tenure* was a dummy variable denoting whether the parental home was owned or rented (= ref) by the family. Similarly, an unknown category was added to both local house price and housing tenure. At the child level, *age* was modelled as the baseline hazard of parental home leaving by means of a linear and quadratic term. *Gender* was a dummy variable with two categories (ref = male). Birth cohort had five categories (ten-year categories between 1955 and 2004), whereas period had 6 categories (five-year categories between 1991 and 2019). At the dyad level, *biological sibling* was a dummy variable indicating whether the sibling of the at-risk child was a natural sibling (ref = no). Table 2.1 provides an overview of the descriptive statistics at each level.

2.3.3 Analytical strategy

According to Manski (1993), associations between one's decisions on life course events and those of their siblings' not only take place through contagion or social learning but are also difficult to distinguish from exogenous factors. This implies that individuals are influenced by the fact that people belong to the same group (i.e., a shared household). To correct for exogenous effects as much as possible, we modelled the nest-leaving process of all siblings simultaneously, with a random intercept at the family level. This accounted for relevant time-constant unobserved family characteristics. Furthermore, we included many background characteristics at both the family and child level as covariates. Although these controls cannot fully capture the shared environmental background effects, studies have shown that they can, to some extent, help ruling out unobserved characteristics that may have an impact on one's life course decisions (Buyukkececi & Leopold, 2020; Raab et al., 2014). As a sensitivity check, we used a random effect within-between model, which not only corrects for exogeneity but also explicitly models it (Bell et al., 2019; Schunck, 2013). In order to test the reliability of our findings and whether children who are similar leave home around the same time because of age norms (Billari & Liefbroer, 2007; Neugarten, 1979), we compared the results of sibling dyads with those of unrelated dyads. To do so, each at-risk child was matched to an individual from our sample who was born in the same year and has both the same gender and educational attainment as the actual sibling. The additional analyses are included as an Appendix. To examine the effects of our covariates on the event of home leaving, we performed a four-level discrete-time event history analysis by means of PROC GLIMMIX in SAS 9.4. For hypothesis testing, we relied on the *p* values obtained and the Akaike information criterion (AIC).

2.4 Results

Table 2.2 and 2.3 present the parameter estimates and significance levels of the multilevel logistic regression models, with the at-risk children's transition to leaving the parental home as the outcome. As shown in Table 2.2, Model 0 only includes a linear and a quadratic term of age, functioning as the baseline hazard. In Models 1 and 2, control variables at the family and

child levels were added. Model 1 suggests that children whose parents were more educated, had an employment, were divorced or separated, did not own their home, and lived in areas where the local house price was low were more often subject to early parental home leaving, consistent with previous research (e.g., Buck & Scott, 1993; Gierveld et al., 1991; Mitchell et al., 1989; Mulder, 2013). The second model shows that in line with Goldscheider and DaVanzo (1989), daughters were more likely to leave compared with sons. Moreover, whereas being employed and having a relationship encouraged nest leaving for the at-risk children, holding a high or middle educational attainment did not. The latter conforms with the studies by Schwanitz (2017) and Schwanitz et al. (2017), suggesting that a longer period of studying postpones nest leaving.

In Model 3, we added the first dyadic sibling characteristics. The model suggests that stemming from the same biological parent(s) appears to encourage siblings to remain longer in the parental household. We also observed that those who had a nest-leaving sibling showed a higher chance of leaving the parental home, compared with those whose sibling stayed at home (b = 0.753, SE = 0.028), confirming H1, that there is a positive association between a sibling's leaving and an at-risk child's leaving. The results of unrelated dyads indicated that an event of an unrelated individual did not have a positive relationship with leaving of an at-risk child, unlike siblings, suggesting that the predicted and estimated relationship is not likely to be a result of age norms (see additional analysis 1 in the Appendix). To understand whether the association of having a nest-leaving sibling was immediate, we further tested if the estimate became smaller as siblings left longer. The finding (see additional analysis 2 in the Appendix) suggests that although a sibling's leaving was positively associated with an at-risk child's event after two or more years, it was the strongest when it was within a year, in correspondence with previous research that the cross-sibling impact on life course event is strongest when happened immediately (Lyngstad & Prskawetz, 2010).

Table 2.2 Unstandardized coefficients of random-intercept discrete-time event history analysis modeling at-risk children's event of leaving (ref: not leaving)

	Model 0	Model 1	Model 2	Model 3
	b	b	b	b
Intercept	-13.561***	-13.935***	-13.139***	-13.496***
Age	0.867***	0.914***	0.814***	0.911***
Age^2	-0.016***	-0.017***	-0.015***	-0.017***
Family level characteristics				
Education (ref: low)				
High		0.340***	0.392***	0.415***
Middle		0.178***	0.199***	0.198***
Unknown		-0.232***	-0.104*	-0.126**
Employment (ref: no)				
Yes		0.156***	0.150***	0.110***
Unknown		0.084	0.116	0.076
Relationship status (ref: divorced/separated)				
Married/cohabitated		-0.387***	-0.180***	-0.166***
Unknown		-0.573***	-0.545***	-0.517***
Income (ref: low)				
High		0.167***	0.211***	0.325***
Middle		0.080**	0.101***	0.166***
Unknown		-0.111	-0.148	-0.158
Housing tenure (ref: no)				
Yes		-0.278***	-0.331***	-0.388***
Unknown		-0.333**	-0.347**	-0.316**
Local house price (ref: low)				
High		-0.134***	-0.075**	-0.098***
Middle		-0.306***	-0.262***	-0.292***
Unknown		-0.822***	-0.642***	-0.648***
Child level characteristics				
Gender (ref: male)			0.304***	0.355***
Education (ref: low)				
High			-0.092*	-0.036
Middle			-0.129***	-0.088*
Unknown			-0.112	-0.054
Employment (ref: no)				
Yes			0.119***	0.084**
Unknown			-0.192**	-0.259***
Relationship status (ref: single)				
In a relationship			0.437***	0.505***
Unknown			0.314***	0.317***
Birth cohort (ref: 1955-1964)				
1965-1974			0.507	0.207
1975-1984			0.511	0.177
1985-1994			0.282	-0.147
1995-2004			0.024	-0.482
Period (ref: 1991-1994)				
1995-1999			0.007	0.010
2000-2004			-0.025	-0.006
2005-2009			0.020	0.029
2010-2014			-0.034	0.037

Table 2.2 Continue

	Model 0	Model 1	Model 2	Model 3
	b	b	b	b
2015-2019			-0.400***	-0.383***
Sibling dyad level characteristics				
Biological sibling (ref: no)				-0.936***
Sibling left (ref: no)				0.753***
AIC	99812.27	96894.13	95889.34	93991.01

Note: Significance levels: * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

To understand whether certain sibling dyad characteristics (i.e., gender composition, age gap, and birth order) encourage or discourage the nest leaving of at-risk children, siblings' gender composition and relative age difference were added to Model 4 in Table 2.3, including their interaction terms with sibling left. The main regression parameters indicated the effect of certain dyad characteristics with a sibling that had not yet left on the leaving of the at-risk child. The interaction terms represented whether the effect became significantly stronger or weaker when the characteristics related to a sibling that had left. Because Model 4 demonstrates that the interaction term of belonging to the same gender was not significant (*b* = 0.073, *SE* = 0.045), H2a was rejected. In Model 5, gender similarity was further elaborated by distinguishing between male–male and female–female sibling dyads. Given that the AIC of Model 5 was smaller than that of Model 4 and that Model 5 examined siblings' gender composition in more detail compared with Model 4, we turn to Model 5 for the interpretation of the interaction results.

As shown in Model 5, the main effect of brothers was 0.010, whereas its interaction term showed a significant effect of 0.169 (*SE* = 0.054), suggesting that brothers were more likely to influence each other on leaving when the considered sibling had an event. In other words, the association of a brother–brother pair increased when the sibling had left. However, we did not observe such a moderating association for sisters, as the parameter did not significantly differ from mixed-gender dyads. The finding contradicted H2b, that the relationship between leaving of a sibling and oneself is stronger for sisters compared with brothers. As recommended by Ai and Norton (2003) and Karaca-Mandic et al. (2012), in Figure 2.2, we visualized the predicted probabilities of one's leaving depending on siblings' gender composition and whether a nest-leaving sibling was presented.

Table 2.3 Unstandardized coefficients of random-intercept discrete-time event history analysis modeling at-risk children's event of leaving (ref: not leaving)

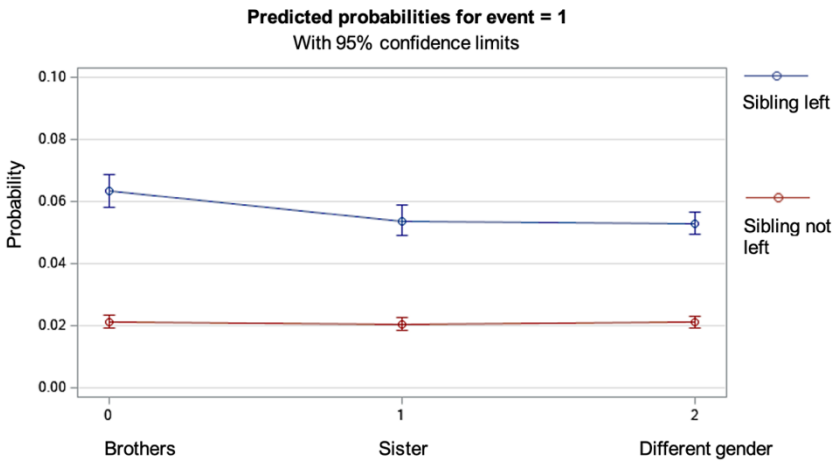
	Model 4	Model 5	Model 6
	b	b	b
Intercept	-12.418***	-12.495***	-14.255***
Age	0.774***	0.776***	0.959***
Age^2	-0.015***	-0.015***	-0.018***
Family level characteristics			
Education (ref: low)			
High	0.341***	0.340***	0.505***
Middle	0.149***	0.148***	0.260***
Unknown	-0.127**	-0.125**	-0.133*
Employment (ref: no)			
Yes	0.102***	0.102***	0.163***
Unknown	0.057	0.058	0.114
Relationship status (ref: divorced/ separated)			
Married/cohabitated	-0.188***	-0.191***	-0.153***
Unknown	-0.487***	-0.488***	-0.527***
Income (ref: low)			
High	0.404***	0.404***	0.296***
Middle	0.212***	0.210***	0.155***
Unknown	-0.172	-0.168	-0.149
Housing tenure (ref: no)			
Yes	-0.344***	-0.347***	-0.402***
Unknown	-0.270**	-0.272**	-0.346**
Local house price (ref: low)			
High	-0.107***	-0.106***	-0.093**
Middle	-0.293***	-0.291***	-0.297***
Unknown	-0.589***	-0.589***	-0.678***
Number of siblings left (ref: no sibling)			
1 sibling			0.884***
2 siblings			0.914***
3 or more siblings			1.519***
Child level characteristics			
Gender (ref: male)	0.340***	0.369***	0.373***
Education (ref: low)			
High	-0.029	-0.031	0.015
Middle	-0.109**	-0.106**	-0.047
Unknown	-0.074	-0.073	-0.014
Employment (ref: no)			
Yes	0.093***	0.093***	0.079**
Unknown	-0.255***	-0.255***	-0.288***
Relationship status (ref: single)			
In a relationship	0.451***	0.452***	0.505***
Unknown	0.310***	0.310***	0.321***
Birth cohort (ref: 1955-1964)			
1965-1974	0.338	0.346	-0.003
1975-1984	0.362	0.368	-0.029
1985-1994	0.052	0.057	-0.407
1995-2004	-0.301	-0.292	-0.805*

Table 2.3 Continue

	Model 4	Model 5	Model 6
	b	b	b
Period (ref: 1991-1994)			
1995-1999	-0.117	-0.117	-0.028
2000-2004	-0.150	-0.148	-0.042
2005-2009	-0.082	-0.085	-0.014
2010-2014	-0.126	-0.122	-0.080
2015-2019	-0.442***	-0.453***	-0.425***
Sibling dyad level characteristics			
Biological sibling (ref: no)	-0.859***	-0.859***	-0.946***
Sibling left (ref: no)	0.964***	0.953***	
Gender composition (ref: different gender)			
Same gender	-0.005		
Both female		-0.021	
Both male		0.015	
Age gap (ref: sibling 3+ years younger)			
Sibling 3+ years older	0.695***	0.696***	
Sibling 2 years older	0.655***	0.656***	
Sibling 1 year older	0.586***	0.589***	
Same age	0.705***	0.708***	
Sibling 1 year younger	0.119	0.120	
Sibling 2 years younger	0.184**	0.184**	
Interactions with sibling left			
Siblings gender composition (ref: different gender)			
Same gender	0.085		
Both female		0.038	
Both male		0.176**	
Age gap (ref: sibling 3+ years younger)			
Sibling 3+ years older	-0.296***	-0.305***	
Sibling 2 years older	0.132	0.131	
Sibling 1 year older	0.255*	0.252*	
Same age	-0.417**	-0.415**	
Sibling 1 year younger	0.396***	0.398***	
Sibling 2 years younger	0.270**	0.269**	
AIC	93461.72	93455.74	93256.07

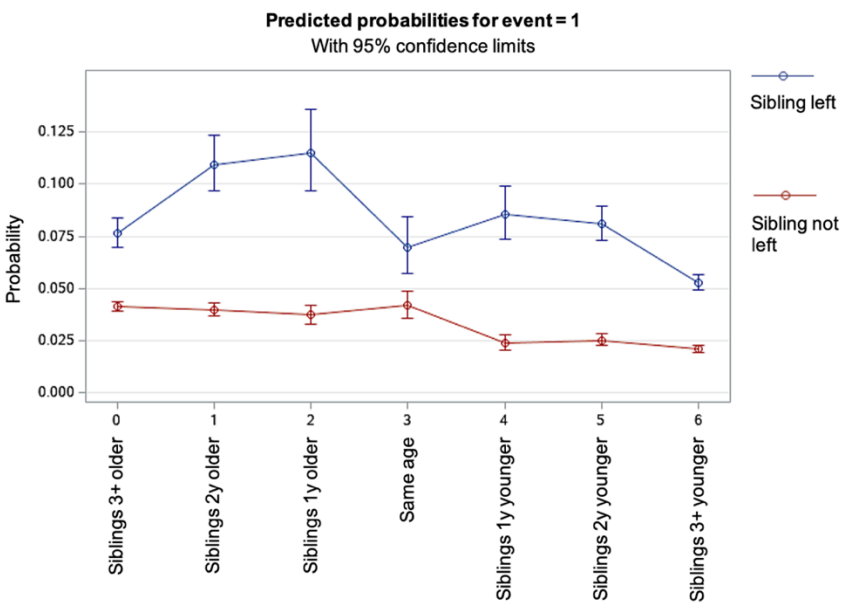
Note: Significance levels: * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Figure 2.2 Interaction plot of siblings' gender composition and sibling left



Source: UKHLS (1991–2019), calculations by authors.

Figure 2.3 Interaction plot of siblings' age gap and sibling left



Source: UKHLS (1991–2019), calculations by authors.

Age gap and birth order between sibling dyads may also play a vital role in explaining the children's timing of leaving. As shown in Model 5 and Figure 2.3, the predicted probability of leaving was the strongest when siblings were one year older, indicating that older siblings who were close in age positively moderated the relationship between leaving of a sibling and oneself. In dyads where siblings were older, the smaller the age gap, the larger the association. When siblings were younger than the at-risk children, a similar association of age gap was observed. Although the probability of being the same age was not as high as we expected, the general trend suggested that as the age gap decreases, the association of having a nest-leaving sibling increases, corresponding to H3. Moreover, older siblings facilitated the relationship between leaving of a sibling and oneself more than their counterpart, confirming H4. The results of the random effect within-between model remained largely the same (see additional analysis 3 in the Appendix). To investigate the robustness of the chosen age categories, we included in the Appendix a plot (Figure 2.4) with more categories, and the overall trend remains the same.

The last model was built on Model 2 instead of Model 5, to avoid potential collinearity issues between sibling left and number of siblings left when being simultaneously modelled. In Model 6, the added predictor, number of siblings left measured the time-variant number of children residing outside of the parental home. The parameter estimates revealed that compared to having zero sibling left, having one sibling, two siblings, and three or more nest-leaving siblings were all positively associated with leaving of the at-risk children, with having three or more leaving siblings showing the strongest association (b = 1.519, SE = 0.059). This implies that the number of nest-leaving siblings are positively correlated with one's leaving, supporting H5.

2.5 Discussion and conclusion

Family sociologists have acknowledged leaving the parental home as an important life course trajectory for decades (e.g., Aassve et al., 2007; Seiffe-Krenke, 2006; Settersten, 1998), but knowledge of how it can be related to individuals' sibling(s) seems scarce. In this article, we examined the extent to which having a home-leaving sibling is associated with one's own event of leaving and how it can be moderated by sibling characteristics. Moreover, we investigated whether the number of children that no longer live at home increases the probability of one's nest leaving. Our findings support that, having a sibling who has already left the household indeed has a positive relationship with one's own event. This implies that a sibling's leaving may promote one's own event, making one less inclined to be a home stayer. This is in line with the theories of social contagion and social learning, which posit that individuals are likely to follow and learn from the life course decisions of their siblings (Bandura, 1977; Bernardi, 2003). It also aligns with previous empirical evidence that there is a relationship between a sibling and one's life course decisions, such as marriage (Buyukkececi & Leopold, 2020), fertility (Lyngstad & Prskawetz, 2010), and divorce (de Vuijst et al., 2017).

To understand the underlying mechanism of such relationship with leaving (e.g., in which cases the association is stronger), we first uncovered the moderating effect of siblings' gender

composition. Surprisingly, we found that the association between leaving of a sibling and oneself is stronger for brothers, compared with sisters and mixed-gender sibling dyads. This result contradicts the study of Wood and Inman (1993), which showed that same-gender dyads, particularly sister–sister dyads, have a closer relationship and higher chance of influencing each other. Similarly, Raab et al. (2014) indicated that same-gender siblings are more correlated in family formation, and Killoren and Roach (2014) showed that sisters feel more comfortable communicating relationship issues with each other than with their brothers or parents. However, Benin and Johnson (1984) and Hauser and Wong (1989) suggested that brothers influence each other more than siblings of other gender combinations regarding education and school performance. Taken together, the ways sibling gender composition has an impact may depend on the life course outcomes. In some domains (e.g., intimate relationships, union formation), sisters may encourage each other more, whereas in other domains (e.g., education, nest leaving), brothers tend to follow each other's steps more.

Our study also suggests that siblings' age gap and birth order play a role with respect to leaving, manifested by sibling dyads' relative age difference. In accordance with our expectations, we find stronger associations for smaller age gaps between siblings, confirming that the extent to which a sibling's leaving is associated with one's leaving may differ by age gap. This corroborates sibling contagion theory, implying that siblings who are more homogeneous are more likely to follow one another's paths (Bernardi, 2003), and adds to the literature that sibling contagion may not only affect one's fertility decisions (e.g., Kuziemko, 2006), but also the timing of home leaving. The finding also supports the theory of social learning, which argues that siblings who are close in age are more likely to learn from and consult each other (Bernardi, 2003). Next, birth order also positively moderates the effect of having a nest-leaving sibling, implying that if a child at risk has an older sibling who has already left the household, the at-risk child has a higher chance of leaving as well. This signifies that in the case of home leaving, compared with younger siblings, older siblings have a higher likelihood of being viewed as role models.

Finally, we examined the effect of the number of nest-leaving siblings. The result corresponds with our expectation that the more siblings live outside of the nest, the more likely the child at risk desires to be independent as well. Even though having siblings leaving the nest may result in the children who still live at home feeling less crowded, gaining more privacy, and receiving potentially more parental resources (Blaauboer & Mulder, 2010; Blake, 1981; Mitchell et al., 1989), those children still prefer to leave rather than remain at home. This may suggest that the effect of household crowdedness is transcended by the power of sibling contagion and social learning. Arguably, each additional sibling leaving the parental home is an extra encouragement for children in the parental home to leave. Alternatively, this can be explained by the social pressure that remaining children receive from their parents. Instead of offering more parental care, parents might apply extra pressure on those children. To live up to family expectations (Hernes, 1972), the children with more nest-leaving siblings may be more inclined to leave rather than remaining at home.

A few studies of cross-sibling effects have looked into the influences of siblings' gender composition, age gap and birth order on life course trajectories, such as giving birth and experiencing divorce (e.g., de Vuijst et al., 2017; Kuziemko, 2006). However, to our knowledge, this is the first study to examine cross-sibling effects on nest leaving using all of these sibling characteristics. It is also one of the very few studies to consider all siblings in a family when examining siblings' associations and life course transitions. By doing so, it is possible to generalize our results to families with more than just two children, as well as to understand the impact of the number of siblings experiencing an event. This study may also reassure existing evidence and suggestion that intragenerational influence may be notably important besides intergenerational influence (e.g., Axinn et al., 1994; Conger & Little, 2010; Her et al., 2021). As a result, we argue that in studies of life course trajectories and family relationships, horizontal relationships should be taken into consideration next to the vertical ones.

Different families can have different normative takes on transitions such as nest leaving (Aassve et al., 2013; Neugarten, 1979), which may influence the timing that children leave the nest (e.g., Billari & Liefbroer, 2007), and make it difficult to disentangle whether there is an actual sibling effect or one leaves the parental home because it is his or her "time." In our study, even though we accounted for nuanced categories of siblings' relative age difference, there is still a possibility that siblings transitioned to independent living after one another because the normative age of leaving of a family has been reached. However, the result of our robustness check did not show a positive relationship between leaving of an unrelated individual and oneself. This indicates that compared to unrelated dyads, siblings are more similar in terms of leaving home, and that its chance of being influenced by normative life course transitions is low. This also decreases the odds that siblings who are close in age and belong to the same gender and educational level leave home around the same time because of age expectation.

Some limitations of the study are noteworthy. First, although we controlled for a number of background characteristics that might influence children's timing of leaving and included a random intercept, this might still not be fully sufficient to rule out exogeneity and all the contextual effects (Manski, 1993). Any causal claims resulting from this study are also tentative. Second, with the current data, it was not feasible to test whether the effect of having a home-leaving sibling could be strengthened by the siblings' relationship quality or closeness. However, based on previous research (Bernardi, 2003; Conger & Little, 2010; Lee et al., 1990), the assessment of siblings' relationships and emotional connections can be particularly important, given that they can also play a significant role in explaining sibling resemblance in life course trajectories. We therefore encourage future researchers to add siblings' relationship quality to the puzzle when investigating cross-sibling effects on life course transitions. Thirdly, future research might also include further in-depth qualitative interviews with siblings to understand and discover the reasons for and mechanisms behind the quantified effects. Fourthly, because parental divorce has increased rapidly in contemporary

society (Mortelmans, 2020), it could also be of societal relevance to focus on the role of siblings in blended families.

To date, most studies concerning familial effects on life course transitions primarily focused on intergenerational influences, for example, how the timing of a mother's first birth relates to the timing of her daughter's first birth (Barber, 2001). Previous research has stressed the importance of investigating intragenerational transmission and that individuals might not be aware that their decisions could be implicitly influenced by their siblings as well (Bernardi, 2003). In this study, we highlight the existence and pathways of sibling transmission on parental home leaving. We shed light on the fact that individuals' timing of parental home leaving can be related to their siblings', being contingent on various sibling characteristics.

2.6 Appendix

Additional analysis 1

According to previous studies, the timing of life course transitions, and leaving the parental home in particular might be determined by age norms (Aassve et al., 2013; Billari & Liefbroer, 2007; Billari et al., 2008; Neugarten, 1979). That is, children from the same family have a likelihood to leave approximately the same age because the family's normative age of leaving is reached. Siblings who are similar in terms of gender, age, and education might be even more sensitive to such an effect. For example, when a sibling is two years older than the at-risk child and left the nest two years ago, it is likely that the child also leaves home around the same age. Even if we controlled for quadratic function of age and the relative age difference between siblings, it is difficult to completely rule out the influence of age norms. As a result, to examine the reliability of our findings, we did a robustness check comparing the results of sibling dyads with the results of unrelated dyads. To do so, for each at-risk child, we matched them with an unrelated individual based on the gender, age, and educational attainment of their actual sibling. Matched individuals per family were kept the same. For instance, if a family has three children (A1, A2, and A3), three unrelated individuals have to be matched to them based on the three criteria (B1, B2, and B3).[3] Six unrelated dyads were created between them and not with other unrelated people (A1B2, A1B3, A2B1, A2B3, A3B1, and A3B2). Because of this, we could keep our four-level data structure. In total, we were able to match 44,724 unrelated dyads, and only six at-risk children could not be matched. Table 2.4 compares the results between sibling dyads and unrelated dyads.

[3] A1 and B1, A2 and B2, and A3 and B3 were born in the same year and had the same gender and educational attainment.

Table 2.4 Discrete-time event history models comparing the results of sibling dyads and unrelated dyads (with leaving as the outcome)

	Sibling dyads	Unrelated dyads
	b	b
Intercept	-14.168***	-13.019***
Age	0.892***	0.816***
Age^2	-0.017***	-0.015***
Family level characteristics		
Education (ref: low)		
High	0.450***	0.392***
Middle	0.249***	0.199***
Unknown	-0.121*	-0.102*
Employment (ref: no)		
Yes	0.131***	0.150***
Unknown	0.110	0.116
Relationship status (ref: divorced/separated)		
Married/cohabitated	-0.190***	-0.181***
Unknown	-0.565***	-0.546***
Income (ref: low)		
High	0.300***	0.210***
Middle	0.161***	0.099***
Unknown	-0.169	-0.149
Housing tenure (ref: no)		
Yes	-0.417***	-0.330***
Unknown	-0.364***	-0.346***
Local house price (ref: low)		
High	-0.082	-0.075**
Middle	-0.278***	-0.261***
Unknown	-0.624***	-0.642***
Child level characteristics		
Gender (ref: male)	0.351***	0.303***
Education (ref: low)		
High	-0.089	-0.089*
Middle	-0.134***	-0.126***
Unknown	-0.086	-0.111
Employment (ref: no)		
Yes	0.098***	0.120***
Unknown	-0.249**	-0.192**
Relationship status (ref: single)		
In a relationship	0.498***	0.438***
Unknown	0.320***	0.315***
Birth cohort (ref: 1955-1964)		
1965-1974	0.275	0.375
1975-1984	0.238	0.373
1985-1994	-0.065	0.145
1995-2004	-0.392	-0.115
Period (ref: 1991-1994)		
1995-1999	-0.000	0.013
2000-2004	-0.015	-0.016
2005-2009	0.027	0.034
2010-2014	-0.022	-0.019

Table 2.4 Continue

	Sibling dyads	Unrelated dyads
	b	b
2015-2019	-0.376***	-0.385***
Sibling dyad level characteristics		
Sibling left (ref: no)	0.798***	-0.061**
N at dyad level	44,731	44,724

Note: Both models mimic Model 3 in Table 2.2 of the main analysis. To warrant comparability, we did not include the control variable biological sibling.
Significance levels: * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Additional analysis 2

In addition to the results for hypothesis-testing, we further investigated whether there is a short-term vs long-term effect of sibling leaving. That is, even if we understand that having a nest-leaving sibling is significantly related to one's event, it is unclear whether there is a differentiation between sibling's event happening within one year, two years, and three or more years. The results of this additional test can be found in Table 2.5.

Table 2.5 Short-term vs long-term effect of sibling left, with the outcome at-risk children's event of leaving (ref: not leaving)

	b
Sibling left (ref: no)	
Sibling left 1 year	1.199***
Sibling left 2 years	0.456***
Sibling left 3 or more years	0.467***

Note: The model uses the same specifications (control variables and multilevel structure) as compared with Model 3 in Table 2.2 of the manuscript.
Significance levels: * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Additional analysis 3

To address the issue of exogeneity, we employed a random effect within-between model (REWB) as sensitivity check. Researchers have favored fixed effect (FE) modeling over random effect (RE) modeling to account for exogeneity and spuriousness (Bell & Jones, 2015). However, FE models remove all higher-level variance, and thus lose a substantial amount of information and nuances of potential contextual effects (Mundlak, 1978). According to Bell and Jones (2015), a RE solution to heterogeneity bias is REWB, which models both the between effect (higher-level mean) and the within effect (the difference between a variable and the higher-level mean) explicitly. In order to utilize REWB for our analyses as a robustness check, we computed between and within effects for our moderating variables gender composition and relative age difference. In our case, the between effects are the effects that varied between families but did not vary across sibling dyads, whereas the within effects are the effects that represented the differences between dyads adjusted for family effects. Table 2.6 presents the results of the REWB model that reproduces Model 5 of the main analysis.

Table 2.6 Unstandardized coefficients of REWB model with at-risk children's event of leaving as an outcome (ref: not leaving)

	b
Sibling dyad level characteristics	
Sibling left (between)	4.938***
Sibling left (within)	-0.110
Gender composition (ref: different gender)	
Both female (between)	-0.100
Both female (within)	-0.124
Both male (between)	0.074
Both male (within)	0.031
Relative age difference (ref: sibling 3+ years younger)	
Sibling 3+ years older (between)	2.876***
Sibling 3+ years older (within)	-0.320***
Sibling 2 years older (between)	1.914***
Sibling 2 years older (within)	-0.352**
Sibling 1 year older (between)	0.718
Sibling 1 year older (within)	-0.356*
Same age (between)	2.379***
Same age (within)	-0.058
Sibling 1 year younger (between)	1.866**
Sibling 1 year younger (within)	-0.453**
Sibling 2 years younger (between)	1.635***
Sibling 2 years younger (within)	-0.271*
Interactions with sibling left (between)	
Gender composition (ref = different gender)	
both female (between)	0.127
both female (within)	0.508*

Table 2.6 Continue

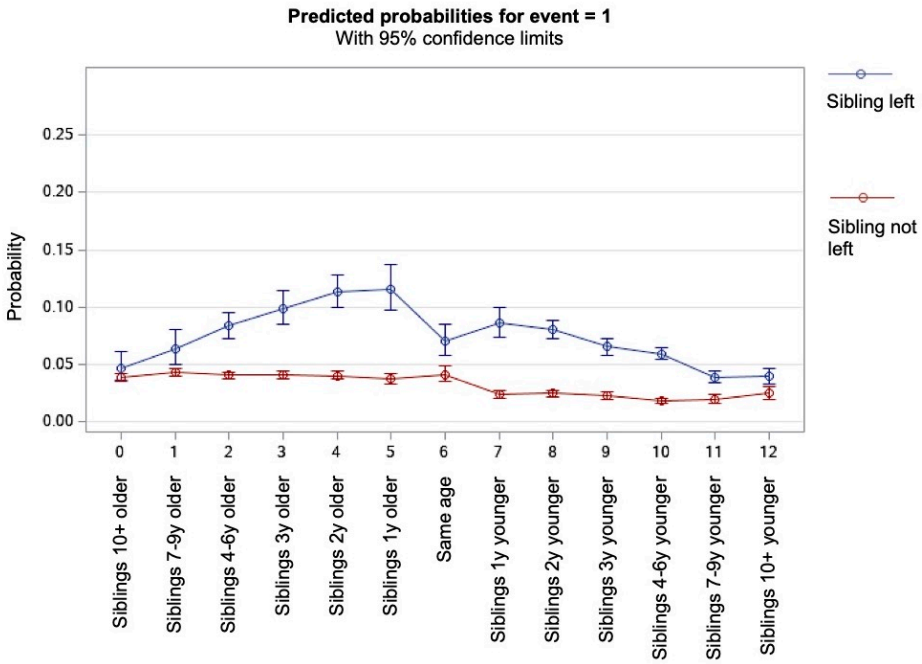
	b
both male (between)	0.193
both male (within)	-0.044
Relative age difference (ref: sibling 3+ years younger)	
Sibling 3+ years older (between)	1.067***
Sibling 3+ years older (within)	2.411***
Sibling 2 years older (between)	3.133***
Sibling 2 years older (within)	2.830***
Sibling 1 year older (between)	4.721***
Sibling 1 year older (within)	2.934***
Same age (between)	-0.939
Same age (within)	1.424**
Sibling 1 year younger (between)	0.237
Sibling 1 year younger (within)	1.874***
Sibling 2 years younger (between)	-0.846**
Sibling 2 years younger (within)	1.579***
Interactions with sibling left (within)	
Gender composition (ref = different gender)	
both female (between)	0.055
both female (within)	-0.094
both male (between)	0.025
both male (within)	0.216*
Relative age difference (ref: sibling 3+ years younger)	
Sibling 3+ years older (between)	0.079
Sibling 3+ years older (within)	-1.319***
Sibling 2 years older (between)	1.820***
Sibling 2 years older (within)	-0.437***
Sibling 1 year older (between)	0.283
Sibling 1 year older (within)	-0.185
Same age (between)	-0.399
Same age (within)	-0.720***
Sibling 1 year younger (between)	0.853
Sibling 1 year younger (within)	0.174
Sibling 2 years younger (between)	-0.846*
Sibling 2 years younger (within)	0.330**

Note: The model uses the same specifications (control variables and multilevel structure) as compared with Model 5 in Table 2.3 of the manuscript.
Significance levels: * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Additional analysis 4

To investigate the robustness of the chosen age categories in Model 4 and 5, we created a new age gap variable with more categories and plotted its interaction with sibling left. The overall trend in Figure 2.4 remains the same as in Figure 2.3.

Figure 2.4 Interaction plot of siblings' age gap (more categories) and sibling left



Source: UKHLS (1991–2019), calculations by authors.

3

Do birds of a feather leave the nest together? The role of sibling personality similarity in the transition to adulthood

An adapted version of this chapter was published in *PLOS ONE*:

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2023). Do birds of a feather leave the nest together? The role of sibling personality similarity in the transition to adulthood. *PLOS One, 18*(5), e0284808.

Abstract

Empirical evidences on intragenerational transmission of life course have been demonstrated and that interpersonal similarity may moderate the effect. In particular, siblings who are more similar in their demographic characteristics are more likely to follow each other's life course transitions. Focusing on parental home-leaving and building upon the social influence processes and similarity-attraction effects, this study investigates whether the association between siblings' departures from the parental home increases when they are similar in the Big Five personality traits, like similarity in demographic traits. We use 28 waves of a longitudinal sample from "Understanding Society: The U.K. Household Longitudinal Study". The results of the multilevel discrete-time event-history analysis (*N* = 3,717 children) indicate that the association between leaving of a sibling and oneself was strengthened when they had a similar level of extraversion, particularly when they were both introverts. This implies that although introverted adolescents and emerging adults might take less initiative regarding social relationships and be more hesitant in their transition to adulthood, when a similarly introverted sibling makes such a transition, they are more inclined to do so. To conclude, the study uncovers the relationship between siblings' personality similarity and their resemblance in nest-leaving, which helps explain young adults' home-leaving decision in an era when delayed leaving is observed.

3.1 Introduction

The process of nest-leaving has slowed since the 1970s, leading to a delayed transition to adulthood and more years spent at the parental home (Bayrakdar & Coulter, 2018; Holdsworth, 2000; Stone et al., 2011), which affects one's further life-course decisions, development, and the parent-child relationship (Leopold, 2012; Seiffge-Krenke, 2013). A number of factors contribute to this delay for young people, including the declining significance of traditional values and the prioritization of lifestyle preferences (Bayrakdar & Coulter, 2018; Billari & Liefbroer, 2010). At the same time, studies have indicated that one's personality and whether one has a nest-leaving sibling also plays a role in shaping this transition (Her et al., 2022; Van Dijk et al., 2020).

Existing literature has emphasized the importance of sibling relationships and documented the connectedness between siblings' life decisions and pathways (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010). Siblings are often viewed as lifelong companions and role models (Cicirelli, 1995). Their intragenerational transmission of life-course events may not only originate from their shared genes and environment but also from the nature of their interaction with one another (Bernardi, 2003; Her et al., 2021). In particular, the process of social influence leads siblings, who are similar in terms of demographic characteristics, to play important roles in each other's decision-making processes (Kuziemko, 2006; Raab et al., 2014). Studies in psychology also suggest that similarity predicts close relationships better than dissimilarity does (Heine et al., 2009; Selfhout et al., 2010; Selfhout et al., 2007).

To date, however, studies focusing on siblings transmission of life courses exclusively looked into demographic similarities and did not examine the potential influence of other traits. In the present study, we draw attention to the role of siblings' Big Five personality traits, particularly the role of sibling similarity in personality with respect to leaving the parental home. Focusing on adolescent siblings and siblings of young adulthood, our goal is to study how and the extent to which siblings' similar personality traits may explain intragenerational transmission of parental-home leaving. By addressing this, our study sheds new light on the existing theories and the relationship between siblings' personality combinations and transition to adulthood.

3.2 Theoretical background

3.2.1 Leaving the parental home during emerging adulthood

The transition to adulthood, which comprises a series of events that include leaving the parental home, starting a professional career, union formation, and entry into parenthood, has been characterized as "late, protracted, and complex" for the current generation (Billari & Liefbroer, 2010). The timeline of those events' occurrence is lengthening, possibly reversible, and no longer in a certain order. This group of young people (aged 18–29) are referred to as "emerging adults", describing those who feel somewhere in between adolescence and

adulthood and who experience instability, role exploration, and change in life pathways (Arnett et al., 2014).

The focus of this study is the transition of leaving the parental nest, which is considered an important step toward establishing a self-sufficient and independent adult life for adolescents and emerging adults. Due to the observed delays in home-leaving and the decreasing normativity of the timing of leaving (Arnett, 2014; Holdsworth, 2000), researchers have focused their attention on investigating the consequences of continued co-residence with parents. First, on-time leavers reported higher rates of romantic activity in comparison to those who did not move out at the same age (Seiffge-Krenke, 2009). Second, those who continued to reside with their parents were less mature and had achieved fewer developmental tasks (e.g., starting a career) (Seiffge-Krenke, 2010). Third, while emerging adults who remain at home may feel as if they are treated like children and show lower levels of well-being (White, 2002), their parents are also more likely to feel financially and emotionally burdened (Seiffge-Krenke, 2010).

Because of these consequences, we aim to study the reasons that contribute to emerging adults' decision to leave. Studies have indicated that structural constraints (e.g., parental resources and de-standardization of traditional values) (Bayrakdar & Coulter, 2018), demographic features (e.g., gender, education, and employment status) (Mitchell et al., 1989; Schwanitz, 2017; Stone et al., 2011), and personality traits (e.g., Jonkmann et al., 2014; Van Dijk et al., 2020) have an impact on individuals' timing of leaving the parental home. Social network effects (e.g., siblings, colleagues, friends) may as well be crucial when making life course decisions (Bernardi, 2003; Buyukkececi et al., 2020). For instance, a sibling's leaving was shown to be positively associated with one's own leaving (Her et al., 2022). In this study, we aim to further elaborate on the sibling transmission effect, using siblings' personality similarity.

3.2.2 Sibling similarity in life-course transitions: Observational learning processes and relationship closeness

Siblings typically live under the same roof and spend a considerable amount of time together during childhood and adolescence (Cicirelli, 1995). Having their relationship nurtured over years of exposure, they may have a stronger impact in each other's transition to adulthood compared to other social network members. Previous studies suggest that social influence processes, namely, the processes of social contagion and social learning (Bandura, 1977; Bernardi, 2003; Mischel, 1966), explain similarities between siblings in terms of their life course trajectories (e.g., Lyngstad & Prskawetz, 2010). The theory of *social contagion* suggests that individuals may influence those around them by their behavior, both intentionally and unintentionally. At the same time, people also unconsciously observe and imitate the behaviors of their networks and those they are close to (e.g, age peers, friends, and siblings, Bernardi, 2003). The notion of *social learning* points to the contagiousness of behaviors as well, but has a stronger focus on the observational learning aspect (Bandura, 1977). Similarly, the *paving-the-way hypothesis* posits that siblings who transit to a new chapter pave the way for

those who follow (Mulder et al., 2020). Of relevance to the present study is that the three mechanisms all regard sibling similarity as a driver of mimicking behaviors.

Drawing on these theories, a number of studies have documented that siblings who are alike in terms of demographic characteristics are more likely to be a stronger source of contagion and role models and pave the way for one another. For example, siblings with a smaller age difference have a higher chance of influencing each other regarding dropping out of high school (Dupéré et al., 2021), leaving the parental home (Her et al., 2022), and entry into parenthood (Kuziemko, 2006). Same-gender siblings are also more similar with respect to internal migration (Mulder et al., 2020) and patterns of family formation (Raab et al., 2014). One of the reasons sibling similarity is related to life-course resemblance is their relationship quality and emotional closeness (Conger & Little, 2010; Dupéré et al., 2021; Her et al., 2021), that siblings similar in age shared more experiences during childhood and could thus enhance relationship closeness in adulthood (Voorpostel et al., 2007). Other studies indicated that gender similarity is associated with increased sibling support and interaction (Killoren & Roach, 2014; Weaver et al., 2003). Nevertheless, while we know being similar in demographic traits is an important factor in reinforcing sibling transmission of life course transitions, including nest-leaving, it is unknown whether other forms of sibling similarity function the same.

Next to these social mechanisms, genetics are an important cause of sibling similarity. On average, full siblings inherit 50% of the same genetic variants from their parents, which makes them genetically more predisposed to being similar in their leaving home behavior, among other life course transitions (Axinn et al., 1994; Branigan et al., 2013; Her et al., 2021). Likewise, siblings' personality similarity can also be explained by their shared genetics, given that personality traits are to some degree heritable (Kandler & Papendick, 2017; Vukasović & Bratko, 2015). The focus of our study was to examine which factors moderate intragenerational transmission of leaving, specifically how personality similarity functions as a potential determinant.

3.2.3 Combing psychological and sociological perspectives: Similarity-attraction effect and personality similarity

Building upon theories of cognitive dissonance and social comparison (Festinger, 1954, 1957), the similarity-attraction effect (SAE) suggests that individuals favor a logical and consistent view of the world (Byrne, 1971). The perspective suggests that we prefer to encounter people with similarity in personality traits because in doing so, our opinions, ideas, and attitudes are validated. Such reinforcement can be associated with positive feelings and leads to attraction. On the contrary, individuals who have different personality traits often disagree with us and create inconsistency in our worldview. We may thus feel anxious, confused, and repelled by those people. In other words, because similarity affords predictability, it enables individuals to interact in a more relaxed manner. This effect is also at the center of the notion behind homophily, which demonstrates that similarity can serve as a foundation for interpersonal attraction (Newcomb, 1956) and that relationship between dissimilar individuals dissolve

more quickly (McPherson et al., 2001). Despite mixed empirical evidence (e.g., Montoya et al., 2008), most literature suggests that personality similarity is linked to better interpersonal relationships than is personality dissimilarity (Cuperman & Ickes, 2009; Heine et al., 2009).

While the previously discussed sociological theories emphasize that similarity in demographics facilitates warm relationships, the SAE stresses the effect of similar personality traits. Research even showed that personality offers a stronger similarity effect than demographic characteristics do in both Canadian and Japanese contexts (Heine et al., 2009). Moreover, the SAE may account for a great deal of social contagion and peer influence (Aral et al., 2009). Taken together, it seems that the sociological and psychological theories share a commonality, that similar individuals tend to have increased transmission and contagion of behaviors, likely via enhanced interaction and close relationship between them. When it comes to cross-sibling effects on nest-leaving, it is important to examine whether and how siblings' personality similarity, serving as a proxy for their relationship closeness, strengthens the intragenerational effect of leaving the parental home.

3.2.4 The role of sibling personality similarity in transmission of leaving the parental home

It is widely accepted that a five-factor model of personality (the Big Five) encompasses the most salient aspects of personality (Goldberg, 1990) that shape individuals' behaviors and experiences (Costa & McCrae, 1997). *Extraversion* is characterized by being enthusiastic, assertive, and positive, and the tendency to enjoy and be dominant in social interaction. *Conscientiousness* captures individual differences in the degree of responsibility, persistence, organization, and perfectionism (Stoeber et al., 2009). *Agreeableness* refers to the tendency to engage in prosocial behaviors and to value harmony, friendliness, and positive relationships. *Neuroticism* is defined by being vulnerable to stress and not being able to cope with negative emotions. Finally, *openness to experience* is expressed in the appreciation of art, unconventional ideas/creativity, curiosity, and intellect. Regarding the similarity effect of the Big Five model, there is consensus that the traits of extraversion, agreeableness and neuroticism are most relevant to people's social behavior (Cuperman & Ickes, 2009; Harris & Vazire, 2016; McCrae & Costa, 1994). In the following, we discuss how siblings' Big Five traits can be related to similarity in their timing of home-leaving.

As for *extraversion*, scholars found that dyads who have the same level of extraversion (both introverts or both extraverts) interact more easily than dyads composed of an introvert and an extravert do (Cuperman & Ickes, 2009). This suggests that the interaction style between people with the same personality makes their relationship more enjoyable. In a similar vein, people often get along with those showing the same level of extraversion because they share the same amount of sociability (Selfhout et al., 2010; Selfhout et al., 2007). Importantly, it was particularly dyads in which both are introverts that had higher odds of being friends and having joyful interactions (Cuperman & Ickes, 2009; Lönnqvist & Itkonen, 2016). This suggestion goes hand in hand with the aforementioned social influence processes that similar demographic characteristics, associated with enhanced relationship quality, lead to life-course resemblance.

Because better interaction and relationship closeness may increase the likelihood that a sibling's leaving paves the road, Hypothesis 1 (H1) was formed: The association between siblings' departures is stronger when they have similar levels of extraversion (a) and, particularly, when they are both introverts (b).

Agreeableness is often characterized by the ability to control undesirable emotions, develop healthy and harmonious relationships, and be less involved in aggressive, threatening, or conflict-related behaviors (Cumberland-Li et al., 2004; Haas et al., 2007). In terms of homophily by agreeableness, studies have shown that adolescents and emerging adults are inclined to form friendships with and be closest to those who have a similar level of agreeableness (Selfhout et al., 2010; Selfhout et al., 2007). They demonstrated that two agreeable people form the most beneficial relationship, compared to a disagreeable pair or a pair in which one is agreeable and the other is disagreeable. Concerning the role of agreeableness in sibling relationships, agreeableness is one of the best predictors of high-quality sibling relationships (Lanthier, 2007). In order to have a warmer and less conflictual sibling relationship, it is important for siblings to have high levels of agreeableness. Considering this, Hypothesis 2 (H2) is as follows: The association between siblings' departures is stronger when they both have high levels of agreeableness.

While agreeableness is related to healthy and close sibling relationships (Lanthier, 2007), *neuroticism* is negatively associated with the quality of sibling relationships (Gözü & Newman, 2019; Lanthier, 2007; Riggio, 2000). Concerning the similarity-attraction effect, similarity in neuroticism can encourage friendship and group formation (Laakasuo et al., 2020). Individuals who are similarly non-neurotic are more inclined to be friends, because conflicts in dyads may escalate when both members are emotionally unstable (Lönnqvist & Itkonen, 2016). When homophily is manifested in neuroticism, it seems reasonable that when siblings are both not neurotic, their relationship and interactions are more pleasant and harmonious. As a result, we formed Hypothesis 3 (H3): The association between siblings' departures is stronger when they both have low levels of neuroticism.

Openness to experience has traditionally been considered an intrapsychic characteristic which pertains to individuals' intellectual lives and is less associated with their social behavior and relationships, unlike extraversion, agreeableness, and neuroticism (McCrae, 1996; McCrae & Costa, 1994). However, similarity in openness can also predict whether individuals become friends (Selfhout et al., 2010). That is, although openness is not a particularly meaningful trait for interpersonal connection, adolescents' self-rated openness tends to be similar to those of their ideal friends (Cheng et al., 1995). The aforementioned studies did not indicate whether the effect of personality similarity is especially strong at only one end of the trait dimension, whereas the other demonstrated that only those with greater openness have similar friends (Lönnqvist & Itkonen, 2016). Based on these studies, Hypothesis 4 (H4) suggests the following: The association between siblings' departures is stronger when they have similar levels of openness (a), and, particularly, when they both have high levels of openness (b).

Given that conscientiousness is as well less relevant to individuals' social behaviors and interpersonal relationships and that no literature on the function of conscientiousness similarity was found, no clear hypothesis concerning this Big Five trait was formed.

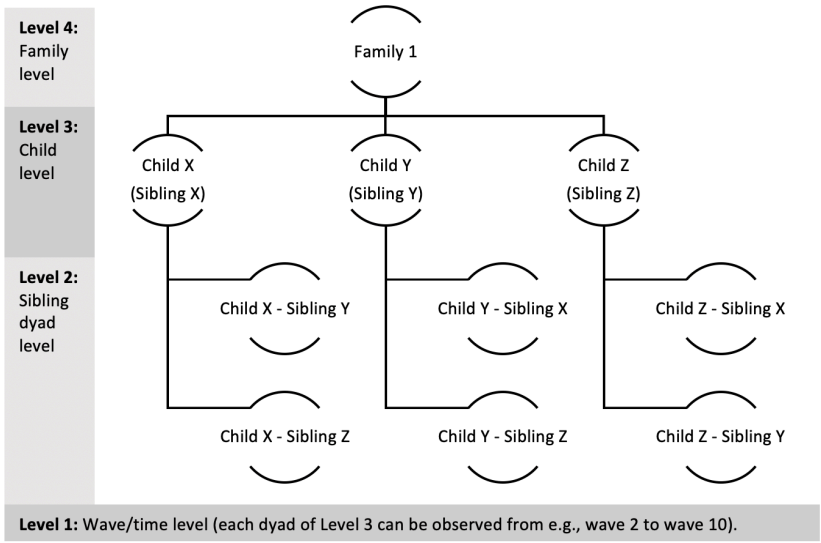
3.3 Data and methods

3.3.1 Dataset selection and structure

The data for this longitudinal study are drawn from the survey Understanding Society: The U.K. Household Longitudinal Study (UKHLS; University of Essex, 2020). UKHLS is an ongoing annual and nationally representative panel survey that gathers a variety of information at the individual and family level. The dataset consists of 28 waves; waves 1 to 18 belong to the British Household Panel Survey (BHPS) and waves 19 to 28 are from Understanding Society. Together, the waves cover the entire period between 1991 and 2019. Understanding Society is a continued version of the BHPS, featuring data harmonized between both studies, allowing us to track households across the whole period. Over 60 % of those who participated in BHPS decided to continue with Understanding Society (University of Essex, 2020).

To capture sibling effects of personality traits in function of parental home leaving, we considered all children from a family, unlike previous studies selecting families with only two children when studying sibling transmission (de Vuijst et al., 2017; Lyngstad & Prskawetz, 2010). This approach results in a more representative sample of multiple-child families. To model the associations between all considered siblings, we created the following structure. As shown in Figure 3.1, our data structure consists of four levels: family level (level 4), child level (level 3), sibling dyad level (level 2), and wave/time level (level 1). The time level is nested in the sibling dyad level, which is nested in the child level, embedded in the family level. Because we considered all children from a family, the data structure is more complex compared to a design with only two children per family (as those are mirroring siblings). Therefore, the sibling dyad level is added to the model. Figure 3.1 provides an example with three children (X, Y and Z) at risk of leaving the household. Each of them can function both as a child at risk and as a sibling with potential influence on another sibling's departure. For instance, when Child X is at risk, Child Y and Child Z are the siblings of influence (i.e., Sibling Y and Sibling Z), leading to sibling dyads XY and XZ. If Child Y is at risk, Child X and Child Z become the mirroring siblings (i.e., Sibling X and Sibling Z), resulting in sibling dyads YX and YZ. At the wave/time level the absence or occurrence of an event is measured for the child at risk.

Figure 3.1 Example of the four-level data structure



Siblings were identified based on the mother's identification, in case of biological siblings. To take into account children from blended families, we included all children joining the household from either the mother's or the father's side in case of a parental dissolution. To determine whether children had left the parental home, we relied on the information of the household grid. In other words, when they were no longer registered in the household grid, they were considered to have left the nest. There were several conditions in which disappearing from the household was not counted as leaving, ensuring that children who were no longer reported in the household grid most likely left the parental household. First, when children left the household because of parental relationship dissolution, as long as they still lived with one of their biological parents, they were not regarded as having left but as new members of blended families. Second, children who passed away were right censored. Third, if a family stopped participating in the survey or migrated outside of the United Kingdom, attrition of the whole family was right censored as well.

Children in some families had already left the nest prior to participating in the survey. To avoid bias, we did not take those families into account. Finally, we left censored those children who had left the parental home before the age of 16. Given our focus on the departure of adolescents and emerging adults from the parental home, those who had not left the nest at the age of 29 were right censored. When children switched roles to the sibling of potential influence, they were required to be at least 13 years old. There was no maximum age restriction for the siblings of potential influence. Overall, we analyzed 33,612 observations in 4,976 sibling dyads (representing 3,717 children and 1,845 families).

3.3.2 Measures

Dependent variable

Our dependent variable was an indicator reflecting whether or not the child at risk has left the parental home, translating into a conditional probability documenting the risk of the children living in the household to leave at any given time (Allison, 1984). In total, 53.38% of the children at risk had an event, and the mean age at the time of leaving was 22.31 (*SD* = 3.15). Censored children left the observation window at age 24.68 on average (*SD* = 3.48). While they might have experienced an event further, this was not captured in our data. At the age of 29, 335 children did not leave the parental home.

Variables of interest

At-risk children's siblings may or may not be living in the household when they had an event. To indicate whether having a nest-leaving sibling is associated with one's own leaving, we created a variable *sibling left*, which is a dichotomous and time-varying variable at the sibling dyad level. When the dyadic sibling of the at-risk child had an event, we assigned the at-risk child a value of 1 (0 = sibling had not left). To examine how the association between siblings' departures may be strengthened or weakened depending on the child's and the sibling's personality traits, we used this indicator to interact with the Big Five personality scales.

The Big Five personality traits were measured in waves 15 and 21 of the UKHLS, and among children aged 16 or above (University of Essex, 2020). When children functioned as siblings of potential influence, their personality traits were taken as siblings' personality traits. The mean age of children was 19.77 (*SD* = 3.19) in wave 15 and 20.56 (*SD* = 3.33) in wave 21. Whenever information on the Big Five was available, we took the information and imputed it for all the waves, making the Big Five variables time-constant. When they were measured in both waves, we used the information of the last wave, given that personality becomes more stable throughout the life span (Bleidorn et al., 2022; Borghuis et al., 2017). A majority of the literature showed that personality does not reach stability before age 25 and is still changing during adulthood (Bleidorn et al., 2022). For this reason, for children who provided the personality information in both waves, we tested the extent to which their personality changed. We found that the change was minimal, with around 75% of the observations showing at most a one-point change. This reassured us that treating the personality variables time-constant did not substantially bias the results when looking at personality during young adulthood and its association with nest leaving.

Each of the Big Five traits was measured using three items on a 7-point scale (1 = does not apply to me at all, 7 = applies to me perfectly; University of Essex, 2020). The mean score of the items was taken as the final score for a particular trait. Some examples of the items are "has a forgiving nature" for extraversion, "does things efficiently" for conscientiousness, "is talkative" for agreeableness, "values artistic and aesthetic experiences" for openness, and

"worries a lot" for neuroticism. The higher someone scored on a particular trait, the better the trait described that person, and vice versa.

To test the moderating role of siblings' personality similarity, we calculated the absolute difference between the personality traits of the siblings (Heine et al., 2009; Luo et al., 2008; Massen & Koski, 2014) and subsequently reversed the values, resulting in five variables: similarity in extraversion, similarity in conscientiousness, similarity in agreeableness, similarity in openness, and similarity in neuroticism. Those variables were time-constant with values ranging between 0 and 6. The higher the score was on this indicator, the more similar their traits were. The larger the difference, the more similar the child was to their sibling.

Control variables

We controlled for a number of background characteristics that were known to impact the timing of children's nest-leaving (Avery et al., 1992; Schwanitz, 2017; Stone et al., 2011). Those covariates were included at the family level, the child level, or the dyad level. First, at the family level, parents' educational background reflected the highest educational qualification achieved. It was grouped into four categories: high (have a degree), middle (completed A-level or secondary high school), low (everything below the other two categories), and unknown. Employment status of the parents was categorized as either being an employee/self-employed, no employment, or unknown employment. The parents' marital/relationship status could either be in a relationship (including being married or cohabiting with a partner) or single (i.e., divorced or separated). An unknown category was included to avoid losing a considerable number of observations due to missing values. For the parental covariates, when both biological parents were present, we selected the mother. Otherwise, we took the available biological parent as the targeted parent. The number of children each family had was included as a continuous variable.

Second, at the child level, age was modelled using both a linear and a quadratic term. Gender was a dummy variable (ref = male). Children's educational attainment, employment status, and relationship status were measured using the same categories as for the parents. Third, because we also considered siblings of blended families, we controlled for whether the sibling was a child's biological sibling at the dyad level by including a dummy indicator (ref = not a biological sibling). Moreover, we controlled for the age difference between siblings in its absolute value (e.g., an age difference of 2 or -2 were both counted as 2) to account for departing around the same time due to age similarity. Table 3.1 provides an overview of the descriptive statistics at each level. Whether these covariates were time variant or invariant is also indicated in Table 3.1.

Table 3.1 Descriptive statistics of the dependent and independent variables

	N	%	*M*	*SD*
Outcome variable at the child level (*N* = 3,717)				
Event*				
Yes	1,984	53.38%		
No	1,733	46.42%		
Family level characteristics (*N* = 1,845)				
Educational level				
High	426	23.09%		
Middle	754	40.87%		
Low (ref.)	582	31.54%		
Unknown	83	4.50%		
Employment status*				
Full-time/part-time	1,101	59.67%		
No employment (ref.)	552	29.92%		
Unknown	192	10.41%		
Relationship status*				
Married/cohabiting/has a partner	771	41.79%		
Divorced/separated/single (ref.)	869	47.10%		
Unknown	205	11.11%		
Number of children			2.90	1.16
Child level characteristics (*N* = 3,717)				
Age*			23.52	3.53
Gender				
Male (ref.)	1,841	49.53%		
Female	1,876	50.47%		
Educational level*				
High	1,000	26.90%		
Middle	1,846	49.66%		
Low (ref.)	227	6.11%		
Unknown	644	17.33%		
Employment*				
Full-time/part-time	2,075	55.82%		
No employment (ref.)	1,003	26.98%		
Unknown	639	17.19%		
Relationship status*				
Married/cohabiting/has a partner	92	2.48%		
Divorced/separated/single (ref.)	2,762	76.66%		
Unknown	832	22.38%		
Child's Big Five traits (range: 1-7)				
Extraversion			4.74	1.14
Conscientiousness			5.02	1.07
Agreeableness			5.45	1.02
Openness			4.74	1.21
Neuroticism			3.76	1.35
Sibling dyad level characteristics (*N* = 4,976)				
Biological sibling				
Yes	4,759	95.64%		
No (ref.)	217	4.36%		
Siblings' age difference			3.60	2.70

Table 3.1 Continue

Variables	*N*	%	*M*	*SD*
Sibling left*				
Yes	2,224	44.69%		
No (ref.)	2,752	55.31%		
Sibling's Big Five traits (range: 1-7)				
Extraversion			4.71	1.14
Conscientiousness			5.09	1.06
Agreeableness			5.46	1.02
Openness			4.73	1.22
Neuroticism			3.76	1.36
Sibling similarity in the Big Five (range: 0-6)				
Similarity in extraversion			4.81	0.93
Similarity in conscientiousness			4.90	0.87
Similarity in agreeableness			4.95	0.87
Similarity in openness			4.76	1.00
Similarity in neuroticism			4.56	1.11

Note: Descriptive statistics were presented at each level. For the time-variant variables (*), we present the descriptive statistics of the last observed wave.
Source: UKHLS (1991–2019), calculations by authors.

3.3.3 Analytical strategy

The analysis drew on discrete-time event-history models predicting the timing of the at-risk children's nest-leaving using a logit link function. The models were estimated by the PROC GLIMMIX procedure in SAS 9.4. We applied multiple strategies to adjust for potential sources of confounding. Besides a causal effect of someone's leaving on their sibling via social learning or contagion, nest-leaving could also represent the effects of different exogenous factors. For instance, because siblings are raised in the same family context, they experience similar family norms and expectations of when to leave the parental home (Manski, 1993; Neugarten, 1979). As a result, the models included random effects (RE) at the family, child, and sibling dyad levels. Moreover, to control for household background, the models introduced various socioeconomic and demographic characteristics as covariates, aiming to avoid the impact of confounders on our results (Buyukkececi & Leopold, 2020; Raab et al., 2014). The analysis indicated that allowing random intercepts at the different levels resulted in an absence of unexplained variance at the sibling dyad level. Therefore, as a first robustness check, we repeated the analysis by randomly selecting one sibling dyad per child (i.e., 3,717 sibling dyads for 3,717 children).

A second robustness check repeated the analysis by using fixed-effects (FE) models. Since at-risk children and their siblings stem from the same families, it is plausible that children from the same family simply leave the nest around the same age or time because they share a number of unobserved group-level characteristics (e.g., parental expectations, family norms) (Manski, 1993). FE models reduce heterogeneity biases originating from time-invariant family

influences (Allison, 2009) and are complementary to RE models, which are more generalizable (Firebaugh et al., 2013). Therefore, we draw on the FE models to address confounding by household background factors. The robustness checks can be found in the supplementary analyses (see the Appendix).

3.4 Results

3.4.1 Main analysis

Table 3.2 presents the results of the event-history analysis (the full table is in the Appendix as Table 3.3). All Big Five personality traits were modeled simultaneously when examining the main and interaction effects. To avoid a long table, interaction terms that were not significant or relevant to the hypotheses were not reported in Table 3.2 but can be found in Table 3.3.

The models were estimated stepwise. In Model 1, we included background characteristics at the family, child, and sibling dyad levels, together with the Big Five traits of the at-risk children and the siblings. The model showed that at-risk children whose parents had a higher educational background and were divorced/separated were more likely to leave the parental home. The number of children in the family was not related to the leaving of the parental home. At the child level, female, employed, and non-single children showed a higher tendency to leave. Children with a middle level of education had a higher chance than those with a lower educational background of remaining at home. At the sibling dyad level, a positive association between siblings' departures was observed, indicating that an association between siblings' timing of leaving. The at-risk children were less likely to leave when they had a biological bond with their sibling and when there was a larger age difference between them. In terms of the Big Five personality traits of the children at risk, our results suggest that among all the Big Five traits, only openness to experience had a statistically significant effect in that the more open one was, the less likely one was to leave. We did not find any significant associations between a sibling's Big Five traits and the timing of a child's leaving.

Model 2 tested whether siblings' similarity in the Big Five traits was related to their similarity in the timing of nest-leaving by including the sibling personality similarity variables and the terms of interaction with sibling left. To better understand the interaction effects, we discussed the results by means of predicted probability plots (Ai & Norton, 2003). As shown in Model 2 and Figure 3.2, the more similar the siblings were regarding their level of extraversion, the more likely a child was to leave following their sibling's departure (b = 0.144, SE = 0.064). In other words, sibling similarity in extraversion was positively associated with similarity in their timing of leaving the parental home, confirming H1a. When a sibling did not leave the nest, similarity in extraversion was linked to a longer stay in the parental home. Although the effect of openness was not statistically significant (b = -0.103, SE = 0.060), we observed from the plotted interaction of predicted probabilities (Figure 3.3) that, if siblings were dissimilar in their level of openness, the effect of sibling left was stronger, which contradicts H4a.

Table 3.2 Unstandardized coefficients of the multilevel discrete-time event-history analysis predicting at-risk children's event of leaving (*N* time level = 33,612)

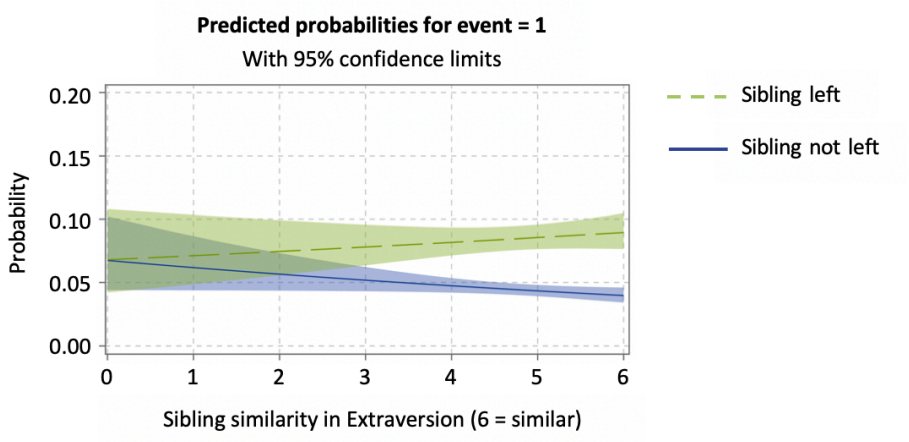
	Model 1		Model 2		Model 3	
	b	se	b	se	b	se
Intercept	-21.980	1.317***	-21.53	1.338***	-24.06	2.047***
Age	1.423	0.109***	1.422	0.109***	1.416	0.109***
Age^2	-0.023	0.002***	-0.023	0.002***	-0.023	0.002***
Family level characteristics						
Education (ref: low)						
High	0.624	0.132***	0.618	0.131***	0.621	0.132***
Middle	0.301	0.112**	0.292	0.111**	0.297	0.111**
Unknown	-0.240	0.237	-0.219	0.236	-0.206	0.236
Employment (ref: no)						
Yes	0.045	0.084	0.055	0.084	0.051	0.084
Unknown	-0.912	0.228***	-0.906	0.228***	-0.889	0.228***
Relationship status (ref: divorced/separated)						
Married/cohabiting	-0.181	0.081*	-0.179	0.081*	-0.180	0.080*
Unknown	-0.576	0.210**	-0.580	0.210**	-0.594	0.210**
Number of children	0.010	0.038	0.016	0.038	0.011	0.038
Child level characteristics						
Gender (ref: male)	0.648	0.091***	0.645	0.090***	0.643	0.091***
Education (ref: low)						
High	-0.204	0.159	-0.207	0.159	-0.205	0.159
Middle	-0.296	0.142*	-0.301	0.141*	-0.300	0.141*
Unknown	-0.394	0.278	-0.399	0.277	-0.394	0.277
Employment (ref: no)						
Yes	0.152	0.069*	0.153	0.069*	0.149	0.069*
Unknown	-0.420	0.247	-0.419	0.247	-0.428	0.246
Relationship status (ref: single)						
In a relationship	0.718	0.225**	0.721	0.225**	0.734	0.226**
Unknown	0.627	0.118***	0.631	0.118***	0.628	0.118***
Child's Big Five traits						
Extraversion (E)	0.060	0.040	0.061	0.040	0.445	0.171**
Conscientiousness (C)	0.034	0.043	0.046	0.043	0.155	0.199
Agreeableness (A)	-0.055	0.045	-0.064	0.046	-0.116	0.217
Openness (O)	-0.116	0.038**	-0.120	0.038**	-0.268	0.130*
Neuroticism (N)	0.054	0.034	0.051	0.034	0.208	0.094*
Sibling dyad level characteristics						
Biological sibling (ref: no)	-0.563	0.186**	-0.542	0.185**	-0.573	0.185**
Siblings' age difference	-0.042	0.013**	-0.042	0.013**	-0.043	0.013**
Sibling left (ref: no)	0.741	0.063***	0.025	0.569	3.597	2.256
Sibling's Big Five traits						
Extraversion	-0.007	0.031			0.404	0.169*
Conscientiousness	-0.034	0.035			0.039	0.198
Agreeableness	0.010	0.036			-0.041	0.216
Openness	-0.046	0.029			-0.197	0.127
Neuroticism	-0.014	0.025			0.111	0.096

Table 3.2 Continue

	Model 1		Model 2		Model 3	
	b	se	b	se	b	se
Sibling similarity in extraversion			-0.094	0.047*		
Sibling similarity in openness			0.036	0.045		
2-way Interactions						
Sibling similarity in E x Sibling left			0.144	0.064*		
Sibling similarity in O x Sibling left			-0.103	0.060		
Child's E x Sibling's E					-0.073	0.035*
Child's E x Sibling left					-0.582	0.227*
Sibling's E x Sibling left					-0.620	0.227**
3-way interactions						
Child's E x Sibling's E x Sibling left					0.102	0.046*
Unexplained variances level 4	0.798	0.149***	0.777	0.148***	0.759	0.146***
Unexplained variances level 3	2.980	0.222***	2.953	0.221***	2.957	0.222***

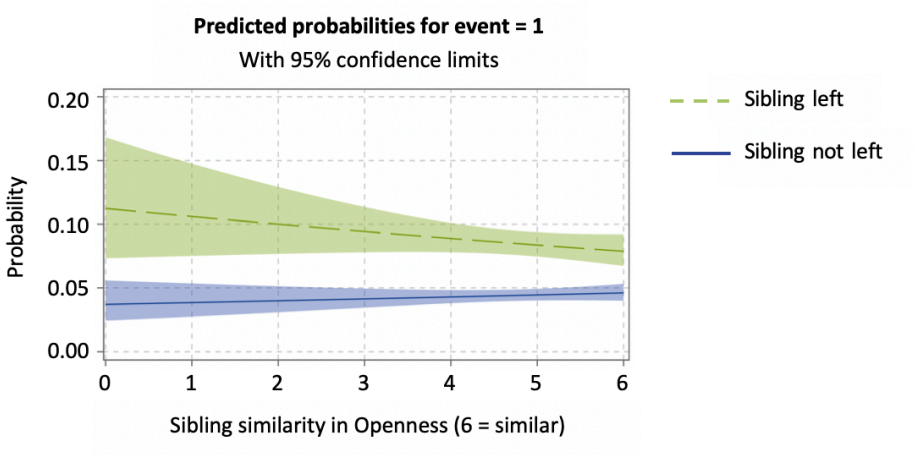
Note: Big Five traits were all modeled together. The effect of sibling similarity in the other Big Five traits as well as the 2-way interactions and 3-way interactions of the other traits can be found in Table 3.3 in the Appendix. * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Figure 3.2 The association between siblings' departures as moderated by siblings' similarity in extraversion. The *x*-axis represents how siblings are similar in terms of their level of extraversion, and a value of 6 indicates that they are highly similar.



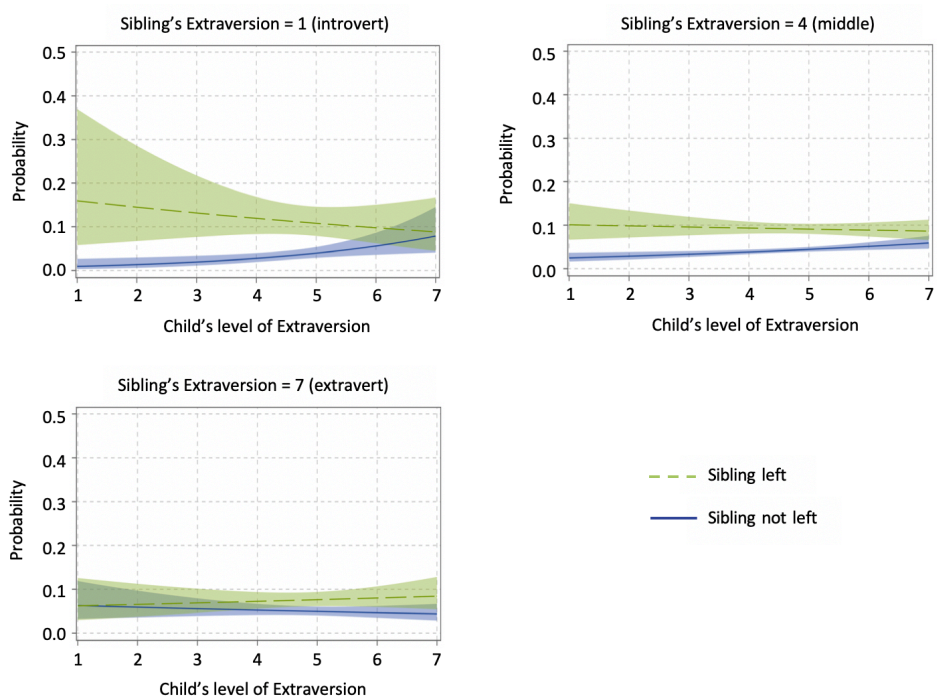
Source: UKHLS (1991–2019), calculations by authors.

Figure 3.3 The association between siblings' departures as moderated by siblings' similarity in openness. The x-axis represents how siblings are similar in terms of their level of openness, and a value of 6 indicates that they are highly similar.



Source: UKHLS (1991–2019), calculations by authors.

Figure 3.4 The association between siblings' departures as moderated by child's extraversion and sibling's extraversion. (Predicted probabilities for event =1, with 95% confidence limits).



Source: UKHLS (1991–2019), calculations by authors.

In Model 3, we further examined whether the effect of personality similarity among siblings may differ depending on the level of extraversion, agreeableness, openness, and neuroticism. It was possible that the association between siblings' departures is only strengthened or weakened on one end of the spectrum (e.g., both of them are highly agreeable). To test this, three-way interaction effects were modeled using at-risk children's Big Five traits, those of their siblings, and the indicator of whether the sibling had left or not. As shown in Model 3 and Figure 3.4, a significant relationship between sibling left, the at-risk child's level of extraversion, and the sibling's level of extraversion was found (b = 0.102, SE = 0.046). When the sibling of an at-risk child had left the parental home, the child was most likely to leave when he/she was an introvert and when the sibling was also an introvert. To understand what introversion entails in this case, we explored different introversion cut-off scores. We found that introverted siblings were more likely to leave home together when they both were above average introverts. If the sibling was introverted and the child was extraverted, the likelihood of leaving decreased. Similarly, introverted children were not motivated by their extraverted siblings' departure. When both of them were extraverted, the probability of leaving was higher than in dissimilar pairs, but still lower than for two introverts. This supports H1b that the relationship between siblings' departures is particularly strong when they are both introverts. In addition, if both the child at risk and the sibling lived at home, the child's risk of departure was the highest if they were extraverted and the sibling was introverted. Given that we did not find a significant three-way interaction effect for agreeableness, neuroticism, and openness, H2, H3, and H4b were not confirmed.

3.4.2 Robustness check and supplementary analysis

For the first robustness check, the models estimating a three-level data structure (excluding sibling dyad level) yielded almost identical results compared to the main analysis (see Table 3.4 in the Appendix). For the second robustness check using FE models, although the intercept of sibling left was shifted to a lower level and its effect became negative, the extent to which similarity in siblings' personality moderated the effect was similar to that in Model 2. The three-way interaction effects in the FE model were also in line with those in Model 3 (see Table 3.5 in the Appendix).

As discussed, agreeableness predicts better interpersonal relationships. To further ensure that the effects found in the main analysis were not confounded by sibling relationship quality, we repeated the analysis based on sub-samples of agreeable and unagreeable dyads (agreeableness scores = 5 being the cutoff point; see supplementary analysis 3 in the Appendix). For both agreeable and unagreeable sibling dyads, the interaction effect of sibling similarity in extraversion was close to the significant level of 0.05, which is likely due to the smaller sample size. However, the direction and magnitude of the effect remained the same, that sibling similarity in extraversion positively moderated sibling transmission of parental home leaving. As for the three-way interaction effect of extraversion, the results of agreeable

dyads showed high resemblance to those of Model 3 in Table 3.2, whereas no effect was found for unagreeable dyads.

Furthermore, we controlled for parental agreeableness, a proxy for parent-child relationship quality, and regions in which the family resided on a reduced sample as a sensitivity check (see supplementary analysis 4 in the Appendix). They largely mimicked the main analysis, confirming that our findings are robust. Finally, we explored whether there was any non-linear effects of the Big Five traits. The results can be found in Figure 3.5 in the Appendix.

3.5 Conclusion and discussion

Previous research has focused on studying intragenerational transmission of life course trajectories using siblings' demographic characteristics, such as gender composition, birth order, and age difference (de Vuijst et al., 2017; Raab et al., 2014). However, no study has yet explored whether similarity in siblings' personalities may function in the same way as similar demographic characteristics, having an impact on the timing of their home-leaving. Based on the observational learning process and the similarity-attraction theory, it is likely that siblings who left the parental home first pave the way for those who follow and especially when they have a similar personality.

Our findings suggest that a sibling's departure was more transmissible when they shared a similar level of extraversion, particularly when they were both introverted. This echoes previous studies that a similar rather than dissimilar degree of extraversion is connected to better social interactions and friendship formation (Cuperman & Ickes, 2009; Selfhout et al., 2010). It is also in line with the theory of social contagion that individuals who are more similar tend to have a higher impact on each other's life course decisions (Bernardi, 2003; Her et al., 2022; Kuziemko, 2006; Raab et al., 2014). Siblings who are both introverts may be even more likely to form an influential source on leaving because of the more predictable, understandable, and enjoyable introverted attraction (Cuperman & Ickes, 2009; Lönnqvist & Itkonen, 2016). This implies that, although introverted adolescents and young adults might take less initiative in social relationships and be more hesitant to make important decisions, when a similarly introverted sibling makes such a transition, they are more inclined to do so as well. We additionally observed that, when a sibling did not leave, dissimilarity in extraversion facilitated the at-risk child's leaving. In this case, children at risk might leave early because they are annoyed by their dissimilar sibling residing at home. However, our third sensitivity analysis tentatively suggests that the three-way interaction results might be mediated by agreeableness and/or sibling relationship quality, as highly agreeable sibling-dyads seemed to be driving the finding. This needs further examination with more optimal measure of sibling relationship quality. Altogether, extraversion seems to be related to siblings' interaction and how contagious their adulthood transition is to one another, given that siblings' agreeableness were accounted for in all models and that all other robustness checks confirmed this finding.

As for sibling similarity in openness, although the effect was not significant, having a nest-leaving sibling appeared to delay one's own leaving when a similar level of openness was observed, unlike what was found with regard to extraversion. This may hint that individuals are more attracted to and impacted by their siblings who are the opposite of themselves or complementary in terms of openness. Although agreeableness and neuroticism are often correlated with interpersonal relationships, we did not find empirical evidence that the association between siblings' departures can be explained by sibling similarity in these two traits. This could mean that, despite the fact that being neurotic and not agreeable were negatively associated with homophily (e.g., a higher risk of relationship dissolution, less chance of a harmonious sibling relationship) (Gözü & Newman, 2019; Spikic & Mortelmans, 2021), they do not seem to change the strength of sibling contagion with regard to nest-leaving.

Being similar in personality and timing of leaving to one's siblings can be due to both genetic and environmental influences. To which degree associations between the home leaving of siblings can be interpreted as sibling influence rather than the consequence of another shared environmental or genetic factor is difficult. The longitudinal design of our study explicitly models the order of events (at-risk child leaving after sibling had already left) and takes into account both random and fixed family effects (in separated models), thus correcting for shared genetics, among others. This allows a more confident interpretation of the estimates as sibling influence. However, as we cannot rule out that the results are driven by genetic effects completely, the alternative interpretation should be considered as well. If both the sibling effect and personality similarity are completely due to genetic similarity, the identified effects in this paper are suggestive of genetic correlations between the phenotypes home leaving and personality (Briley et al., 2018; Briley et al., 2019; Kandler et al., 2019). In other words, the results would suggest that pleiotropic genetic effects are present, which affect both home leaving and personality and cause similarity among siblings for both phenotypes.

To our knowledge, this study is the first to examine the process of nest-leaving using both one's own personality traits and those of one's sibling. It is also the first to study the association between siblings' personality similarity and the resemblance of their life course trajectories. In both the main analysis and the robustness check, we were able to take into account all siblings from a family in a multilevel structure and follow them for up to 14 years. Therefore, our findings are applicable to families with more than two children. In conclusion, our findings suggest that whether the similarity-attraction hypothesis provides support and explanation for sibling resemblance in leaving may depend on the personality trait in question. Among all the hypothesized traits, sibling similarity in extraversion was best linked to attraction and mimicking behaviors, like siblings belonging to the same gender and having a similar age. Parents and social programs supporting transitions to adulthood for adolescents and emerging adults could benefit from the study and understand why some children leave and others stay when their sibling has or has not left. Children's early/delayed leaving can also be assisted better by knowing how siblings' personality combinations are linked to their mimicking behaviors with regard to life course transitions.

Some limitations must be taken into account when interpreting the study results. First, with the current data, we could not directly assess whether siblings' personality similarity facilitated the association between their nest-leaving because of their relationship closeness. While, in line with the literature, we anticipated that sibling similarity leads to enhanced sibling relationships, which, in turn, yields stronger contagion effects, this mechanism needs to be tested in detail. Future studies should investigate whether relationship closeness truly mediates the observed effects. Second, even though we found little change in the personality traits for those who filled in the information in more than one wave, the use of time-constant personality was suboptimal. Especially for those who left the parental home in their late 20s and reported on the personality measured around age 20, their personality might be different from what was captured earlier. Replicating the study with time-varying personality information is thus highly encouraged. Third, because of the observational nature of the study, even though the family-level FE models were included as a robustness check, we still cannot completely exclude confounding by unobserved variables, limiting causal interpretations of the results. Besides addressing these limitations, it might be important for future research to study the association between siblings' personality similarity and their similarity in the timing of transitioning to other life courses (e.g., union formation and dissolution). Furthermore, qualitative analysis exploring the reasons adolescents and young adults are more influenced by siblings with the same level of extraversion may provide a deeper understanding of the topic.

3.6 Appendix

Table 3.3 Unstandardized coefficients of the multilevel discrete-time event-history analysis predicting at-risk children's event of leaving (*N* time level = 33,612)

	Model 1		Model 2		Model 3	
	b	se	b	se	b	se
Intercept	-21.980	1.317***	-21.532	1.338***	-24.059	2.047***
Age	1.423	0.109***	1.422	0.109***	1.416	0.109***
Age^2	-0.023	0.002***	-0.023	0.002***	-0.023	0.002***
Family level characteristics						
Education (ref: low)						
High	0.624	0.132***	0.618	0.131***	0.621	0.132***
Middle	0.301	0.112**	0.292	0.111**	0.297	0.111**
Unknown	-0.240	0.237	-0.219	0.236	-0.206	0.236
Employment (ref: no)						
Yes	0.045	0.084	0.055	0.084	0.051	0.084
Unknown	-0.912	0.228***	-0.906	0.228***	-0.889	0.228***
Relationship status (ref: divorced/separated)						
Married/cohabiting	-0.181	0.081*	-0.179	0.081*	-0.180	0.080*
Unknown	-0.576	0.210**	-0.580	0.210**	-0.594	0.210**
Number of children	0.010	0.038	0.016	0.038	0.011	0.038
Child level characteristics						
Gender (ref: male)	0.648	0.091***	0.645	0.090***	0.643	0.091***
Education (ref: low)						
High	-0.204	0.159	-0.207	0.159	-0.205	0.159
Middle	-0.296	0.142*	-0.301	0.141*	-0.300	0.141*
Unknown	-0.394	0.278	-0.399	0.277	-0.394	0.277
Employment (ref: no)						
Yes	0.152	0.069*	0.153	0.069*	0.149	0.069*
Unknown	-0.420	0.247	-0.419	0.247	-0.428	0.246
Relationship status (ref: single)						
In a relationship	0.718	0.225**	0.721	0.225**	0.734	0.226**
Unknown	0.627	0.118***	0.631	0.118***	0.628	0.118***
Child's Big Five traits						
Extraversion (E)	0.060	0.040	0.061	0.040	0.445	0.171**
Conscientiousness (C)	0.034	0.043	0.046	0.043	0.155	0.199
Agreeableness (A)	-0.055	0.045	-0.064	0.046	-0.116	0.217
Openness (O)	-0.116	0.038**	-0.120	0.038**	-0.268	0.130*
Neuroticism (N)	0.054	0.034	0.051	0.034	0.208	0.094*
Sibling dyad level characteristics						
Biological sibling (ref: no)	-0.563	0.186**	-0.542	0.185**	-0.573	0.185**
Siblings' age difference	-0.042	0.013**	-0.042	0.013**	-0.043	0.013**
Sibling left (ref: no)	0.741	0.063***	0.025	0.569	3.597	2.256
Sibling's Big Five traits						
Extraversion	-0.007	0.031			0.404	0.169*
Conscientiousness	-0.034	0.035			0.039	0.198
Agreeableness	0.010	0.036			-0.041	0.216
Openness	-0.046	0.029			-0.197	0.127
Neuroticism	-0.014	0.025			0.111	0.096

Table 3.3 Continue

	Model 1		Model 2		Model 3	
	b	se	b	se	b	se
Sibling similarity in the Big Five						
Similarity in extraversion			-0.094	0.047*		
Similarity in conscientiousness			-0.094	0.052		
Similarity in agreeableness			0.017	0.053		
Similarity in openness			0.036	0.045		
Similarity in neuroticism			-0.046	0.040		
2-way Interactions						
Sibling similarity in the Big Five and sibling left						
Similarity in E x Sibling left			0.144	0.064*		
Similarity in C x Sibling left			0.004	0.069		
Similarity in A x Sibling left			0.061	0.070		
Similarity in O x Sibling left			-0.103	0.060		
Similarity in N x Sibling left			0.041	0.053		
Child's Big Five and sibling's Big Five						
Child's E x Sibling's E					-0.073	0.035*
Child's C x Sibling's C					-0.014	0.038
Child's A x Sibling's A					0.011	0.039
Child's O x Sibling's O					0.025	0.026
Child's N x Sibling's N					-0.030	0.023
Child's Big Five and sibling left						
Child's E x Sibling left					-0.582	0.227*
Child's C x Sibling left					-0.025	0.264
Child's A x Sibling left					-0.038	0.302
Child's O x Sibling left					0.258	0.174
Child's N x Sibling left					-0.140	0.129
Sibling's Big Five and sibling left						
Sibling's E x Sibling left					-0.620	0.227**
Sibling's C x Sibling left					0.092	0.259
Sibling's A x Sibling left					-0.066	0.304
Sibling's O x Sibling left					0.242	0.174
Sibling's N x Sibling left					-0.057	0.127
3-way interactions						
Child's Big Five, sibling's Big Five, sibling left						
Child's E x Sibling's E x Sibling left					0.102	0.046*
Child's C x Sibling's C x Sibling left					-0.019	0.050
Child's A x Sibling's A x Sibling left					0.011	0.054
Child's O x Sibling's O x Sibling left					-0.037	0.036
Child's N x Sibling's N x Sibling left					0.011	0.032
Unexplained variances level 4	0.798	0.149***	0.777	0.148***	0.759	0.146***
Unexplained variances level 3	2.980	0.222***	2.953	0.221***	2.957	0.222***

Note: * p< .05 ** p< .01 *** p< .001.

Source: UKHLS (1991–2019), calculations by authors.

Supplementary analysis 1

As a first robustness check, we randomly selected one sibling dyad per child using simple random sampling and eliminated the sibling dyad level. With the remaining three levels (the family, child, and time/wave level), we repeated the multilevel discrete-time event-history analysis for Model 2 and 3 in Table 3.2. As shown in Table 3.4, the results with the three-level data structure greatly resembled the main findings.

Table 3.4 Unstandardized coefficients of the multilevel discrete-time event-history analysis with one randomly selected sibling dyad per child (*N* time level = 24,898)

	Model 2		Model 3	
	b	se	b	se
Intercept	-12.216	1.327***	-16.653	2.111***
Child level characteristics				
Child's extraversion	0.041	0.033	0.620	0.171***
Sibling dyad level characteristics				
Sibling left (ref: no)	-0.692	0.604	6.481	2.373**
Sibling's extraversion			0.561	0.172**
Sibling similarity in extraversion	-0.124	0.047**		
2-way Interactions				
Sibling similarity in extraversion x Sibling left	0.172	0.066**		
Child's extraversion x Sibling's extraversion			-0.110	0.035**
Child's extraversion x Sibling left			-0.746	0.235**
Sibling's extraversion x Sibling left			-0.734	0.235**
3-way interactions				
Child's extraversion x Sibling's extraversion x Sibling left			0.127	0.048**
Unexplained variances level 4	0.245	0.113*	0.235	0.112*
Unexplained variances level 3	1.857	0.172***	1.856	0.172***

Note: All covariates in Table 3.3 were included as well. For simplicity and clarity, they were not shown in the table. * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Supplementary analysis 2

We conducted a sensitivity analysis using fixed-effects (FE) modeling by using the family identification as a covariate, creating (n – 1) dummies for each household (Allison, 2009). Furthermore, given that repeated measures may be observed for at-risk children with more than one sibling, a random intercept at the child level was included in the models as well. While time-invariant variables at the family level were removed from the models, as they were accounted for by the family-level fixed effects, time-varying family level characteristics were kept in the model. With this design, we again repeated Model 2 and 3 in Table 3.2. Like the first additional analysis, this additional check provided us with results corresponding to the main analysis (see Table 3.5). Even if the effect of a sibling who had left became negative, if a nest-leaving sibling was observed, the at-risk children were still more likely to leave if they had a similar level of extraversion, especially for two introverts.

Table 3.5 Unstandardized coefficients of the discrete-time event-history analysis with fixed effects at the family level and random effects at the child level (*N* time level = 33,612)

	Model 2		Model 3	
	b	se	b	se
Intercept	-27.472	2.044***	-31.425	3.129***
Child level characteristics				
Child's extraversion	0.043	0.049	0.550	0.235*
Sibling dyad level characteristics				
Sibling left (ref: no)	-1.709	0.585**	2.112	2.424
Sibling's extraversion			0.512	0.230*
Sibling similarity in extraversion	-0.190	0.065**		
2-way Interactions				
Sibling similarity in extraversion x Sibling left	0.206	0.065**		
Child's extraversion x Sibling's extraversion			-0.102	0.047*
Child's extraversion x Sibling left			-0.756	0.246**
Sibling's extraversion x Sibling left			-0.815	0.245***
3-way interactions				
Child's extraversion x Sibling's extraversion x Sibling left			0.150	0.050**
Unexplained variances level 3	1.155	0.164***	1.912	0.292***

Note: Family level fixed effects using (n – 1) dummies for each family (estimates not shown) were included in the model. All covariates in Table 3.3 were included as well (except for time-invariant family level characteristics). For simplicity and clarity, they were not shown in the table. * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Supplementary analysis 3

To further test whether the interaction effects of extraversion were confounded by agreeableness, a proxy of relationship quality, we stratified our sample based on siblings' agreeableness and repeated Model 2 and 3 in Table 3.2. When both the at-risk children and their siblings scored 5 or above on agreeableness, they were counted as agreeable sibling dyads. When they scored below 5, they represented the unagreeable dyads.

Table 3.6 Unstandardized coefficients of the multilevel discrete-time event-history analysis stratified by siblings' agreeableness

	Model 2	Model 3	Model 2	Model 3
	Agreeable siblings		Unagreeable siblings	
	b	b	b	b
Intercept	-17.551***	-23.012***	-19.364***	-19.782***
Child level characteristics				
Child's E	0.070	0.806***	0.016	0.042
Dyad level characteristics				
Sibling left (ref: no)	0.051	8.127**	0.459	0.138
Sibling's E		0.803***		0.003
Sibling similarity in E	-0.071		-0.104	
2-way Interactions				
Sibling similarity in E x Sibling left	0.155+		0.138	
Child's E x Sibling's E		-0.144**		0.001
Child's E x Sibling left		-1.196**		0.017
Sibling's E x Sibling left		-1.246***		-0.025
3-way interactions				
Child's E x Sibling's E x Sibling left		0.226***		-0.021
Unexplained variances level 4	0.452**	0.447**	0.477**	0.462**
Unexplained variances level 3	2.125***	2.132***	1.973***	1.946***
N time level	19,379		14,233	

Note: All covariates in Table 3.3 were included as well, except for the variables and terms related to agreeableness. For simplicity and clarity, they were not shown in the table. + p< .10 * p< .05 ** p< .01 *** p< .001.

Source: UKHLS (1991–2019), calculations by authors.

Supplementary analysis 4

After accounting for parental agreeableness (proxy for parent-child relationship quality) and official regions in the UK in which the family resided (i.e., the parental home), the effects found in Table 3.2 were still present (see Table 3.7 below).

Table 3.7 Unstandardized coefficients of the multilevel discrete-time event-history analysis including parental agreeableness and UK regions (*N* time level = 27,061)

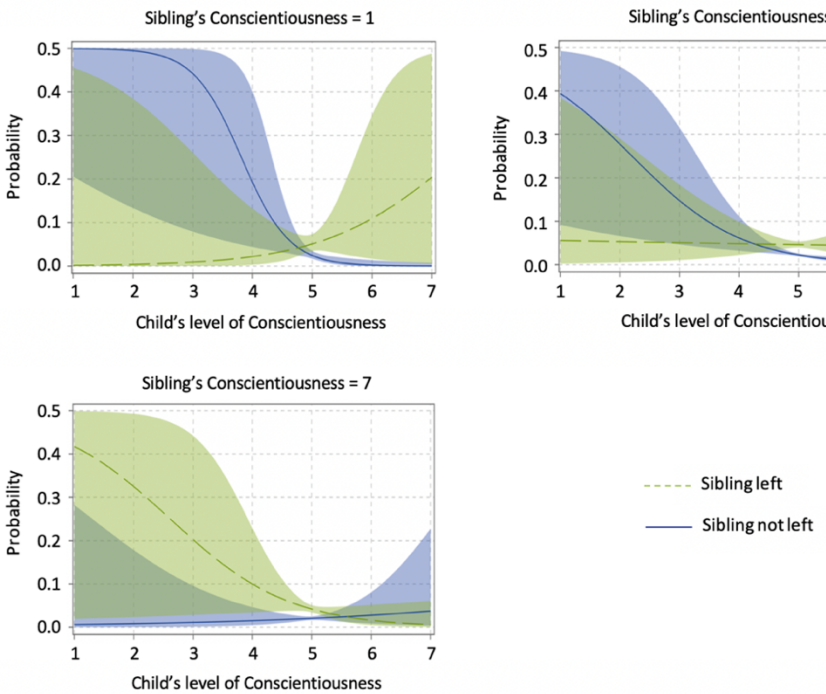
	Model 2		Model 3	
	b	se	b	se
Intercept	-22.444	1.455***	-25.099	2.221***
Family level characteristics				
Parental agreeableness	-0.021	0.052	-0.016	0.052
Region (ref: Northern Ireland)				
North East	0.574	0.296	0.567	0.295
North West	0.859	0.211***	0.870	0.210***
Yorkshire and the Humber	0.626	0.225**	0.617	0.225*
East Midlands	1.214	0.236***	1.200	0.235***
West Midlands	0.239	0.222	0.235	0.222
East of England	0.519	0.223*	0.529	0.222*
London	-0.634	0.228**	-0.648	0.228**
South East	0.610	0.197**	0.624	0.197**
South West	0.710	0.231**	0.700	0.230**
Wales	0.728	0.201**	0.708	0.200**
Scotland	0.634	0.208**	0.627	0.208**
Child level characteristics				
Child's extraversion	0.030	0.042	0.400	0.183*
Sibling dyad level characteristics				
Sibling left (ref: no)	-0.733	0.600	4.331	2.355
Sibling's extraversion			0.391	0.180*
Sibling similarity in extraversion	-0.094	0.051		
2-way Interactions				
Sibling similarity in extraversion x Sibling left	0.163	0.067*		
Child's extraversion x Sibling's extraversion			-0.023	0.041
Child's extraversion x Sibling left			-0.602	0.237*
Sibling's extraversion x Sibling left			-0.638	0.238**
3-way interactions				
Child's extraversion x Sibling's extraversion x Sibling left			0.110	0.048*
Unexplained variances family level	0.817	0.155***	0.794	0.153***
Unexplained variances child level	2.816	0.233***	2.810	0.233***

Note: All covariates in Table 3.3 were included as well. For simplicity and clarity, they were not shown in the table. * p< .05 ** p< .01 *** p< .001.
Source: UKHLS (1991–2019), calculations by authors.

Supplementary analysis 5

In this additional analysis, we tested the non-linear effects of all Big Five traits, by adding the quadratic terms. We found that only the quadratic term of at-risk children's conscientiousness made an additional contribution (see Figure 3.5): if a sibling with low conscientiousness had left, an at-risk child was more likely to leave if he/she was conscientious. Also, if a sibling who was highly conscientious had left, an at-risk child scoring low in conscientiousness was more prone to leaving. However, this increased flexibility of an already complex model also heightens the risk of overfitting, thus especially this finding requires replication before firm conclusions can be made.

Figure 3.5 The association between siblings' departures as moderated by child's conscientiousness and sibling's conscientiousness. The quadratic terms associated with conscientiousness were modeled as well. (Predicted probabilities for event = 1, with 95% confidence limits)



Source: UKHLS (1991–2019), calculations by authors.

4

Jumping together or not? Associations between siblings' relationship quality and fertility transitions

An adapted version of this chapter is under review:

Her, Y.-C., Kalmijn, M. (under review). Jumping together or not? Associations between siblings' relationship quality and fertility transitions.

Abstract

This study aims to understand sibling synchronization of (non-)fertility, using their relationship quality measures. According to social influence theories, individuals' fertility behaviors are associated with their siblings' for reasons such as social learning, social contagion, and information uncertainty. Studies have indicated that such cross-sibling effects are stronger when siblings have similar demographic traits. While being a proxy for sibling relationship quality, no study has yet directly investigated the association between sibling closeness and their fertility transitions. Using four waves of data from the Netherlands Kinship Panel Study, this study adopted a new dynamic design where the outcome is whether or not siblings had children in the same period between panel waves: "jumping together or not" and estimated multilevel binary and multinomial logistic models (*N* dyad-waves = 6,504). The results showed that siblings with higher relationship quality and lower conflict were more inclined to having children simultaneously, compared to the other categories. In contrast to a sibling having a fertility transition alone, sibling relationship quality was positively associated with both having children, whereas sibling conflict was positively associated with both not having children. Sibling closeness is a significant predictor for siblings' fertility alignment, including both having and not having children simultaneously. Cross-sibling effects on fertility and other life course transitions may be better understood when considering sibling relationship quality.

4.1 Introduction

Over the past decades, demographers and other family researchers have increasingly examined how people's fertility transitions depend on the fertility behaviors of their social networks (Balbo & Mills, 2011b; Buyukkececi et al., 2020; Kotte & Ludwig, 2011; Pink et al., 2014). Siblings have been a crucial example in this literature, given that siblings are typically close in age and important for social and emotional support. Siblings often regulate each other's behaviors and emotions in child development and throughout the life span, and are potentially the longest-lasting network partners in many people's life (Cicirelli, 1995; Cox, 2010; Her et al., 2021). The idea that demographic behaviors are diffused among network partners stems from classic theories in social psychology, that individuals mimic one another's actions because of contagion, social learning, and uncertainties, among others (Bandura, 1977; Bernardi & Klärner, 2014; Cialdini & Goldstein, 2004; Cialdini & Trost, 1998).

Previous studies have observed cross-sibling influence on having children (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010), particularly among same-gender and close-in-age sibling dyads (Kuziemko, 2006; Raab et al., 2014). Even if these demographic similarities may serve as a proxy for relationship closeness (Killoren & Roach, 2014; Wood & Inman, 1993), we do not know if the sibling effects are dependent on siblings' relationship quality and whether siblings can also dissuade each other from having children. As adult sibling relationship quality can vary depending on various factors, such as siblings' temperaments, socioeconomic differences, family histories, and parent-child relationships (Brody, 1998; Kalmijn & Leopold, 2019; Milevsky et al., 2005), it cannot be assumed that all sibling ties are close ties. In this study, we aim to study the role sibling closeness plays in the influence processes. Specifically, we examine cross-sibling influence on siblings' fertility transitions using direct information on sibling relationship quality, which enables us to test the presumed mechanism more precisely. To this end, we use panel data from a national sample of adult children and their siblings living in the Netherlands, which contain information on fertility behavior and sibling relationship quality.

4.2 Background

4.2.1 Theoretical background

Social psychology has maintained a longstanding interest in exploring the dynamics of social interaction effects within social networks, and researchers in the field have sought to understand the intricate ways in which individuals influence and are influenced by the behaviors of their network peers (Bandura, 1977; Cialdini & Trost, 1998; Festinger et al., 1950; Fowler & Christakis, 2008; Miller & Dollard, 1941). Theories of social influence explain how individuals' behaviors are influenced by their social networks with four mechanisms: social learning, social pressure, social contagion, and social support. *Social learning* theory argues that individuals observe the actions and behaviors of other people and learn from their experiences (Bandura, 1977). Notions of *social pressure* suggest that human beings conform

to certain social norms and behaviors in order to gain social approval and a sense of belonging (Bernardi & Klärner, 2014; Festinger et al., 1950). Social norms are the unwritten rules and expectations that influence human beings' tendency to comply with requests or conform to group behaviors, and therefore guiding people's actions and decision-making within a given social group or society (Cialdini & Trost, 1998). *Social* or *emotional contagion*, a notion defined in the sociological literature, is the process by which a person spontaneously catches an idea or behavior from another person whom they regard as socially similar (Bernardi, 2003). Finally, although the connection to social influence is more ambiguous and less strong, *social support* involves the reciprocal exchange of goods and services between individuals (Bernardi & Klärner, 2014).

Individuals particularly seek social approval and guidance when information uncertainty is present (Cialdini & Goldstein, 2004). When faced with ambiguous decisions or incomplete information, people are more inclined to seek social cues and rely on the behaviors or opinions of others to guide their own actions. As a result, they are more likely to conform to social norms to avoid potential social disapproval or rejection (Cialdini & Goldstein, 2004). Importantly, greater interpersonal liking and closeness is associated with a higher likelihood of compliance with the behaviors of the network (Cialdini & Trost, 1998). For the behavior of an individual to have a consequence on another individual, people need to have a relationship, and preferably a close one (Bernardi, 2003; Cook, 2001; Felmlee & Sprecher, 2000; Huston, 1983).

Due to the numerous uncertainties involved in making a fertility transition, including factors such as parental readiness and health outcomes of a pregnancy, fertility serves as a compelling and relevant example where social influence can be studied (Bernardi & Klärner, 2014; Lyngstad & Prskawetz, 2010; Rossier & Bernardi, 2009). Scholars have argued that the intention to become parents, the values attributed to parenthood and child, and all of the other elements involved in childbearing decision-making are triggered and diffused by social interactions, embedded in social networks (Granovetter, 1985; Rossier & Bernardi, 2009). As Watkins (1995, p. 296) argued, "that one kind of social interaction, informal conversations with networks of relatives, friends, and neighbors, was important for historical change in bedroom behavior." In this study, we draw on these theoretical frameworks and mechanisms to gain new insights into the ways siblings influence each other. In particular, we take a close look on the relationship quality between siblings.

4.2.2 Previous research

Previous research has shown that fertility behavior may be transmitted between significant others, such as family members, friends, and work colleagues (Buyukkececi et al., 2020; Kotte & Ludwig, 2011; Pink et al., 2014). Focusing on the sibling network and its impact on individuals' fertility decision, studies have found that siblings' fertility transitions are connected. According to Lyngstad and Prskawetz (2010), individuals are particularly likely to have a first birth when their siblings make a fertility transition in the past 36 months (peaking at 12 months). Similarly,

Buyukkececi and Leopold (2020) observed that the hazard of entering parenthood increases within 0 to 3 years after a sibling has a child, using discrete-time hazard models. Employing probit models with sample selection, Balbo and Mills (2011b) revealed that individuals are more likely to realize their fertility intentions when they have at least one sibling with children younger than the age of 12, as opposed to not having any young children in the family. Scholars also demonstrated cross-sibling influence on other life course trajectories, such as leaving the parental home (Her et al., 2022), marriage (Buyukkececi & Leopold, 2020), and divorce (de Vuijst et al., 2017).

To date, however, we know little about mechanisms behind the cross-sibling effects on childbearing, especially the role of sibling relationship quality. Research concerning sibling closeness and intragenerational transmission in other behavior domains has shown that cross-sibling influence is more evident in the context of warmer and more intimate relationships (Rowe & Gulley, 1992; Whiteman et al., 2007a, 2007b). For instance, the correlations between siblings' risky attitudes toward sex and pregnancy and risky sexual behavior are stronger for siblings with close relationships (McHale et al., 2009). Sibling similarity in smoking frequency is also elevated among siblings sharing harmonious and supportive relationships (Slomkowski et al., 2005). Moreover, research based on a sample of early adolescent twins documented that in twins, a sibling's anxiety level increases an adolescent's own anxiety when they perceive a higher level of relationship quality (Serra Poirier et al., 2017).

An indirect way to test hypotheses about relationship quality is by looking at sibling similarity (Burger et al., 2004). For instance, those who belong to the same gender and have a smaller age spacing are more likely to learn from each other's behavior, in part due to that their relationships are closer and thus can relate better to one another's situation (Killoren & Roach, 2014; Trim et al., 2006). With respect to fertility behavior, studies have also utilized demographic similarities between siblings as a proxy for the strength of the relationship. For instance, Kuziemko (2006) found that close-in-age siblings account for much of the fertility contagion compared to siblings who are distanced in age. Raab et al. (2014) indicated that same-gender sibling pairs are also more similar in their family formation trajectories than opposite-gender siblings dyads. Although being similar in terms of demographic traits may be related to relationship quality (Killoren & Roach, 2014; Wood & Inman, 1993), these associations are not strong, implying the need to investigate the potential significance of quality measures. This is well recognized in the literature and previous research has encouraged future researchers to study directly whether social interaction effects are driven by relationship quality between network partners (Raab et al., 2014). Altogether, up until now, there have only been indirect measures of sibling closeness in the examination of their fertility trajectories.

4.2.3 The current study

We use a dynamic to link three measures for sibling relationship quality to siblings' fertility transitions. Most previous studies applied an event-history model of individual fertility

transitions where fertility characteristics or transitions of siblings are predictors along with other standard individual fertility determinants (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010). This approach assumes a directional and sequential influence where one sibling's event is influenced by the other's. However, given that childbearing is a multifaceted process concerning discussions about having a child, attempts to conceive, conception itself, and ultimately, the birth of a child, it may be difficult to assess the direction of network influence (Kuziemko, 2006). Therefore, we adopt a new dynamic design where the outcome is whether or not siblings have children in the same period between panel waves, what we metaphorically refer to as, "jumping together or not." We disregard who is the first to have a child and abstain from assessing who influences whom. Instead, we argue that when two siblings have children in one delineated period, this is evidence of unilateral or mutual influence and therefore evidence that fertility behaviors are socially correlated. Whether the influence is unilateral or mutual is, in our view, less relevant theoretically as these are based on the same social influence processes.

Our design also allows us to focus on and compare the scenarios in which siblings make a fertility transition together ("jumping together") or did not transition together ("not jumping together"). We argue that similarity in not taking a leap into a new path is not dissimilarity but another kind of similarity, which can also be a result of the social influence processes and is largely understudied. By additionally accounting for siblings' non-fertility alignment using such design, which is less feasible and intuitive with the sequential approach, we can better assess the role of sibling relationship measures in the influence process. Based on the theories and studies discussed, we hypothesize that siblings with better relationship quality are more likely to mimic one another's fertility behavior, whether it is having children together (Hypothesis 1) or not having children together (Hypothesis 2), compared to only a sibling has a child.

4.3 Methods

4.3.1 Data and sample

Data were used from the Netherlands Kinship Panel Study (NKPS), consisting of four waves: 2002–2004, 2006–2007, 2010–2011, and 2014–2015 (Dykstra et al., 2005, 2007; Hogerbrugge et al., 2015; Merz et al., 2012). The average (individual) interval between waves was 3.62 years (Kalmijn & Leopold, 2019). NKPS is a large-scale panel study based on a nationally representative sample of individuals residing in the Netherlands. The first three waves were conducted with face-to-face interviews, whereas the last wave was collected using web surveys. The overall response rate in Wave 1 was 45%, and 8,161 respondents participated. The retention rates were 75%, 72%, and 65% for the following waves, respectively. Such decreases are reasonable, given that there is an interval of 3 to 4 years between each wave.

One of the unique features of NKPS is that the *anchor* respondents reported extensively about their siblings, both on siblings' demographic traits and on relationship traits. To save interview time, detailed questions on siblings were limited to a maximum of two – randomly selected –

siblings (sibling a and sibling b). Because the sibling data were provided by the anchor respondents, our sibling measures were respondent centered. In other words, the anchor reported about his/her tie with sibling a and his/her tie with sibling b. Note that no data are available on the quality of the tie between siblings a and b. Our analytical sample first consisted of respondents who participated in the first two or more waves (*N* = 6,091) and who provided information for at least one sibling (*N* = 5,521). Based on the dyadic information, we expanded our data to siblings dyads, yielding 9,479 unique sibling dyads belonging to the 5,521 anchor respondents. We also limited the sample to dyads in which the respondents and siblings were 46 years of age or younger (3,673 dyads belonging to 2,456 anchor respondents). To analyze the effect of sibling relationship quality on their fertility transitions, we further created a dyad-wave file (*N* = 6,504 dyad-waves).

4.3.2 Measures

Dependent variables

In wave 1, the anchor respondents reported their number of children. From wave 2 onwards, they reported additional children with their current or new partner. Siblings' child counts were provided by the anchors in wave 1 and updated in waves 2, 3, and 4. As the information about the biological status of siblings' children was unavailable (stepchild versus own child), all new children from both anchors and their siblings were included to maintain consistency. On average, approximately 70% of the anchor respondents and their siblings were parents already in the first wave. To not further reduce our sample size, we included all births observed in the panel, independent of whether they were first or higher-order births. Because of the 3- to 4-year gap, some respondents and siblings (23%) had more than one fertility transition. However, neither excluding those sibling dyads nor regarding them as having only one transition was appropriate. As a result, our central outcome was whether both anchor and sibling (also called siblings in the remainder of the text) had a (new) child in the same time window (refer to as *had children* thereafter).

To investigate the effect of sibling relationship quality on whether siblings had a child simultaneously, we first created a dependent variable with only two categories: (1) siblings had children simultaneously between waves and (2) only one sibling had a child or both did not have a child (reference category). Second, to explore the situation in which both siblings did not experience a fertility transition and to take into account all possible combinations, we created a dependent variable with three categories: (1) both siblings had children, (2) both siblings did not have a child, and (3) only one sibling had a child. This two-step approach would enable us to take into account the unexamined category: "not jumping together" and to contrast it with and explicitly model the other two categories: "jumping together" and a sibling "jumping alone." Our results (see next section) also suggest that these indeed appear to be two different processes. The number of fertility transitions made by the anchor respondents and their siblings between each wave is shown in Table 4.1. We estimated that 6% of the sibling dyads experienced a joint fertility transition between waves.

Table 4.1 *Number of respondents and siblings at risk that make a transition*

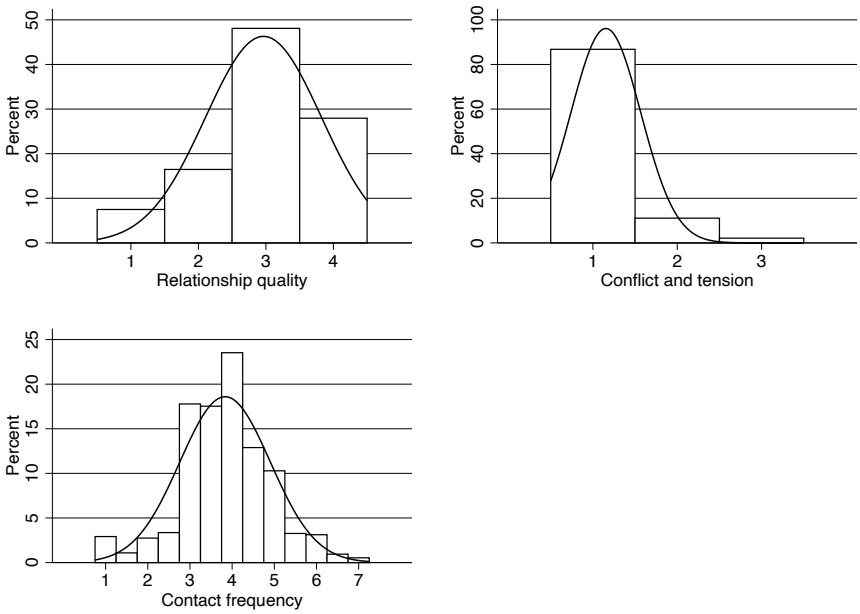
	W1 → W2	W2 → W3	W3 → W4	Total
Had a child				
Anchor	579 (3,002)	344 (1,728)	147 (809)	1,070 (5,539)
Sibling a	477 (2,722)	289 (1,655)	119 (764)	885 (5,821)
Sibling b	282 (1,821)	185 (1,135)	92 (530)	559 (3,486)
Both anchor and sibling a	141 (2,289)	95 (1,266)	40 (530)	276 (4,085)
Both anchor and sibling b	73 (1,379)	45 (736)	24 (304)	142 (2,419)
Did not have a child				
Anchor	2,423 (3,002)	1,384 (1,728)	662 (809)	4,469 (5,539)
Sibling a	2,245 (2,722)	2,046 (2,335)	645 (764)	4,936 (5,821)
Sibling b	1,539 (1,821)	950 (1,135)	438 (530)	2,927 (3,486)
Both anchor and sibling a	1,464 (2,289)	791 (1,266)	333 (530)	2,588 (4,085)
Both anchor and sibling b	911 (1,379)	466 (736)	190 (304)	1,567 (2,419)

Note: Results are shown in the wide format. The numbers of respondents and siblings eligible for each transition are shown in parentheses.
Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

Predictors

We utilized three measures of sibling relationship quality, measured in each wave. The anchor respondents provided information regarding these measures for either one or two siblings. Sibling relationship quality directly measured the quality of relationship between siblings. The respondents were asked to indicate on a scale of 1 (not great), 2 (reasonable), 3 (good), or 4 (very good) how they perceived the quality of the sibling relationship to be. Sibling conflict represented how often the siblings had conflict and tension during the past three months, ranging from 1 (not at all) to 3 (several times). Sibling contact was created by averaging two variables: one measuring siblings' face-to-face contact, and the other that measured phone, letter, and email contact in the past 12 months. The respondents answered the questions on a 7-point scale from 1 (not at all) to 7 (daily). If only one of the two variables were known, we used that piece of information. Figure 4.1 illustrates the distribution of the sibling relationship measures. Even though most sibling relationships were characterized with low or no conflict and tension, some conflictual relationships were observed (20%). Besides, there were equitable variations in the measurements of relationship quality and contact frequency. A standardized score was made for these three sibling relationship measures to provide a direct interpretation of the regression coefficients. The descriptive statistics are displayed in Table 4.2.

Figure 4.1 Distribution of the sibling relationship quality measures



Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

Covariates

We included a set of covariates that are known to be relevant to the outcome (Lyngstad & Prskawetz, 2010; Marynissen et al., 2020). Unlike studies modeling individual fertility transitions, our dynamic approach modeled siblings' joint fertility transitions. As a result, our covariates needed to be incorporated for both siblings at the same time when estimating the outcome. In other words, it was necessary to control for covariates relevant to the anchor respondents' fertility behavior as well as the covariates for siblings. The information available and relevant included age, educational attainment, and parity. We included both the linear age and the quadratic age of the respondents and their siblings. The linear specification was mean-centered, and the quadratic specification was calculated based on it. Educational attainment was measured with ten categories: incomplete elementary, elementary only, lower vocational, lower general secondary, medium general secondary, upper general secondary, intermediate vocational, higher vocational, university, and post-graduate. It was recoded to a linear variable using the International Standard Level of Education (ISLED) (Schröder & Ganzeboom, 2014). While the anchor respondents' educational attainment was a time-varying covariate, we only had time-constant information of the siblings' education from wave 1. The educational attainment variables were mean centered as well.

Based on the number of children each sibling had, we created a categorical variable for parity with three categories: (1) no child (reference category), (2) one child, and (3) two or more children. Moreover, controlled for the gender composition of the sibling dyads with three categories: (1) sisters, (2) brothers, and (3) different genders (reference group). Because we included specifications for both the respondents' and their siblings' age, we did not further account for their age difference. Given that partnership status is an endogenous variable of the outcome (i.e., people who want to have children may enter a union sooner), we did not include it as a covariate. That is, as fertility intentions are known to be associated with both partner search and family formation outcomes (Schoen et al., 1999; Wagner et al., 2019), we chose not to condition on it.

Research has suggested that the sibling relationship may be better understood by considering surrounding family relationships, such as family climate (Cox & Paley, 1997; Minuchin, 1974). Moreover, siblings are also likely to behave similarly because of their shared parental influence (Manski, 1993). To better distinguish the effects of the sibling closeness measures from confounding factors at the family level, we included a measure of family solidarity as an additional covariate. The respondents were asked to indicate on a scale of 1 (strongly disagree) to 5 (strongly agree) how much they agree with statements such as "proud of my family", "often quarrel in family", and "can rely on family". Negative items were recoded so that the higher one scored, the stronger the family solidarity was. A mean score was taken based on a total of 17 items. The scale had really good reliability (Cronbach's alpha = 0.91) and was further standardized for estimation. It was a time-invariant variable measured in wave 1. The descriptive results of all the covariates are also shown in Table 4.2.

4.3.3 Analytical strategy

For each transition between waves, we used a set of covariates and predictors at baseline to predict the outcome (e.g., we used wave 1 predictors to predict the joint (non-)fertility transition between wave 1 and wave 2). As mentioned before, the average number of years between waves was 3.62 (Kalmijn & Leopold, 2019). This was considered sufficiently long for siblings to observe and learn from each other's fertility behavior and experience a transition on their own (or not). For example, when two sisters discuss their future childbearing plans, one of them reveals that she is pregnant and talks about the anticipated joys of motherhood. This conversation influences the other sister, who then discusses the idea with her partner. Motivated by the pregnant sister's excitement, they both become open to starting a family sooner than planned and decide to actively try to have a child as well.

Table 4.2 Descriptive results based on the dyad-wave level

	M	*SD*	Min.	Max.	*N*	%
Age (anchor)	34.11	6.35	18	62	6,504	
Age centered (anchor)	0	6.35	-16.11	27.89	6,504	
Age (sibling)	34.96	7.17	16	46	6,504	
Age centered (sibling)	0	7.17	-18.96	11.04	6,504	
Parity (anchor)						
No child					2,711	41.68
One child					969	14.90
Two or more children					2,824	43.42
Parity (sibling)						
No child					3,136	48.34
One child					899	13.86
Two or more children					2,452	37.80
Education (anchor)	66.57	20.08	16.55	90.63	6,414	
Education centered (anchor)	0	20.08	-50.02	24.06	6,414	
Education (sibling)*	57.97	20.30	16.55	90.63	6,424	
Education centered (sibling)*	0	20.30	-41.42	32.66	6,424	
Siblings' gender composition*						
Different gender					3,184	48.95
Brothers					1,340	20.60
Sisters					1,980	30.44
Family solidarity*	3.93	0.59	1.23	5	6,239	
Family solidarity (std.)*	0	1	-4.60	1.82	6,239	
Sibling relationship quality	2.97	0.86	1	4	6,504	
Sibling relationship quality (std.)	0	1	-2.28	1.20	6,504	
Sibling conflict	1.15	0.42	1	3	6,320	
Sibling conflict (std.)	0	1	-0.37	4.45	6,320	
Sibling contact frequency	3.83	1.07	1	7	6,338	
Sibling contact frequency (std.)	0	1	-2.64	2.95	6,338	

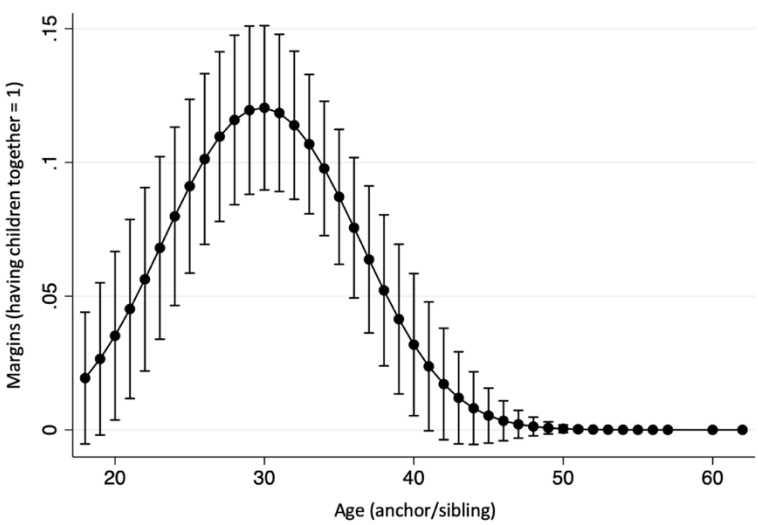
Note: * indicates that the variable is time-invariant.
Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

To analyze the dyad-wave data, we included a random intercept at the sibling dyad level. Moreover, because each anchor respondent reported on a maximum of two siblings regarding the relevant information, we also modeled cluster-robust standard errors for the dyads nested within families (Kalmijn & Leopold, 2019). To test the associations between sibling relationship measures and having a child simultaneously ("jumping together"), in contrast to only one sibling had a child and both did not have a child, we analyzed binary logistic regression models. To distinguish the effect of sibling relationship quality on siblings not having a child simultaneously ("not jumping together") from the other two categories and to compare the quality effects, we estimated multiple multinomial regression models. Given that we modeled siblings' joint fertility transitions, we constrained the effects of anchor and sibling variables (e.g., anchor's age and sibling's age) to be equal. This was done also for any included interaction terms between them. This allowed us to take into account relevant controls while having less complex models. Since siblings were randomly chosen, there is no inherent difference between anchor and sibling so equality constraints are plausible. Moreover, as we did not aim to examine whether the effects of sibling relationship quality measures are

independent from each other, the variables were analyzed separately in different models. The decision was also made based on the fact that they were only weakly or moderately correlated.[4] While data preparations of the study were done in R 4.1.2, the statistical analyses were conducted using STATA 17.

Before analyzing the regression models that can provide insights to the research topic, we estimated a series of baseline models to determine the specification to be used further. Because we regarded siblings' transitions to both first-birth and higher-order birth, we included interaction terms between their age and parity (Model 1 of Table 4.3). Building upon this model, we tested in Model 2 of Table 4.3 whether adding interaction terms between the age specifications and education improved model fit (Marynissen et al., 2020). Moreover, we explored whether the model fit improved after including interaction terms between siblings' parity and education (Model 3 of Table 4.3), given that education was demonstrated to have an effect on parity progression (Kravdal & Rindfuss, 2008; Wood et al., 2014). As shown in Table 4.3, judging from the p-values, AIC and BIC, Model 2 and 3 did not show an improvement in model fit compared to Model 1. Therefore, the baseline specifications in Model 1 was used in further analyses. The age patterns found for the first child and for subsequent children, as estimated in Model 1, are presented as predictive margins in Figure 4.2.[5]

Figure 4.2 Anchor's and sibling's age and fertility transition



Note: Predictive margins calculated from Model 1 of Table 3.
Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

[4] r = -0.194 between siblings' relationship quality and conflict; r = 0.569 between siblings' relationship quality and contact; r = 0.048 between siblings' conflict and contact.
[5] We plan to model a three dimensional margins plot with both siblings' age.

Table 4.3 Logistic regression model of whether siblings had (new) children simultaneously using different baseline specifications

	Model 1	Model 2	Model 3
Age	-0.127**	-0.144**	-0.141**
	(0.000)	(0.000)	(0.000)
Age^2	-0.018**	-0.019**	-0.019**
	(0.000)	(0.000)	(0.000)
Parity (ref: no child)			
One child	0.713**	0.743**	0.633**
	(0.000)	(0.000)	(0.000)
Two or more children	-0.366*	-0.357*	-0.389*
	(0.012)	(0.017)	(0.013)
Education	0.010**	0.013**	0.009*
	(0.000)	(0.000)	(0.023)
Interactions			
Age x one child	-0.015	-0.003	-0.011
	(0.633)	(0.932)	(0.740)
Age x two or more children	-0.095*	-0.080	-0.079
	(0.019)	(0.052)	(0.053)
Age^2 x one child	0.008	0.007	0.008*
	(0.062)	(0.093)	(0.043)
Age^2 x two or more children	0.004	0.004	0.004
	(0.544)	(0.556)	(0.540)
Age x education		0.001	0.001
		(0.174)	(0.259)
Age^2 x education		-0.000	-0.000
		(0.801)	(0.837)
Education x one child			0.013*
			(0.026)
Education x two or more children			0.002
			(0.781)
Constant	-2.548**	-2.586**	-2.501**
	(0.000)	(0.000)	(0.000)
AIC	2418.35	2415.02	2413.89
BIC	2492.62	2502.81	2515.18
Dyad-waves	6,326	6,326	6,326
Dyads	3,616	3,616	3,616

Note: Reference is siblings did not have (new) children simultaneously or only one had. The results of the covariates and the interaction terms represent both the effects for both siblings. Corrected for dyad random effects and family clustering. P-values in parentheses.

Significant levels: * $p < 0.05$, ** $p < 0.01$

Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

4.4 Results

Table 4.4 presents the results of the multilevel logistic regression models. The effects of the main predictors: siblings' relationship quality, conflict, and contact frequency on siblings having children simultaneously were estimated in Model 1, 2 and 3, respectively. In Model 1, we found that sibling relationship quality was positively associated with siblings' joint fertility transitions between panel waves (b = 0.157, p = 0.024). The reference group consists of only one sibling having a child or both not having a child. The effect size suggests a 17% increase in the odds to have children simultaneously per standard deviation increase in quality, a modest effect. Following the same logic, Model 2 suggests that conflict between siblings was negatively related to having children together (b = -0.145, p = 0.042), compared to the other two categories. Both of the findings indicated that sibling relationships characterized by greater emotional bond and closeness and fewer arguments may increase their likelihood of having children simultaneously, in line with expectations. It is important to note that the effects found were independent of the overall family relationship quality. Family solidarity was controlled for in the models and had a non-significant (positive) effect. However, we did not find an effect for sibling contact (b = 0.066, p = 0.340), suggesting that direct quality measures matter more than contact frequency. Compared to different-gender siblings, same-gender siblings (both brothers and sisters) also did not seem to have a higher probability of having children together. The effect remained insignificant when not accounting for sibling closeness.

Table 4.4 Logistic regression model of whether siblings had (new) children simultaneously

	Model 1	Model 2	Model 3
Gender composition (ref: different gender)			
Brothers	0.164	0.162	0.176
	(0.363)	(0.377)	(0.328)
Sisters	0.047	0.097	0.049
	(0.747)	(0.511)	(0.750)
Family solidarity	0.097	0.133	0.136
	(0.209)	(0.084)	(0.076)
Sibling relationship quality	0.157*		
	(0.024)		
Sibling conflict		-0.145*	
		(0.042)	
Sibling contact			0.066
			(0.340)
Constant	-2.618**	-2.596**	-2.606**
	(0.000)	(0.000)	(0.000)
Dyad-wavs	6,076	5,933	5,928
Dyads	3,441	3,383	3,390

Note: Reference is siblings did not have (new) children simultaneously or only one had. Corrected for the covariates included in Model 1 of Table 4.3, dyad random effects, and family clustering. P-values in parentheses.

Significant levels: * $p < 0.05$, ** $p < 0.01$

Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

Next, we turned to the multinomial models for an additional understanding of the cross-sibling influence (Table 4.5). To do so, we modeled two effect groups: (1) both siblings did not have children and (2) both siblings had children in the same period between panel waves, and contrasted them with the reference group: (3) only one sibling had a child in the period between panel waves. As shown in Model 1, compared to a sibling having a child alone, sibling relationship quality was positively associated with acquiring children simultaneously (b = 0.142, p = 0.047). The quality measure, however, did not have an effect on both not having a child. We come back to this finding in the conclusion.

Despite being not significant, there was a tendency that sibling conflict was negatively linked to joint fertility (b = -0.109, p = 0.143), as opposed to a sibling having a fertility transition alone. The direction and magnitude of this finding were similar to the ones in the binary logistic model (Table 4.4). The insignificance was likely due to the smaller sample size of the reference group as a result of the multinomial design. In Table 4.5, compared to only a sibling had a child, sibling conflict was positively related to joint non-fertility (b = 0.100, p = 0.12), signifying that sibling conflict was associated to cross-sibling influence on not having children together. Similar to the logistic regression models, sibling contact did not reveal a significant effect. We additionally observed that sisters, as opposed to different-gender sibling pairs, were more inclined to not having children together, as opposed to one having a child alone (Model 1 and 3). The overall findings showed support for Hypothesis 1 but not for Hypothesis 2.

To test the robustness of our results, we analyzed additionally logistic regression models for siblings' first births (N = 1,713 dyad waves) and higher-order births (N = 2,367 dyad waves), predicted by their relationship closeness measures. This design leads to a serious reduction of the sample since siblings have to have the same 'starting point' in a given wave. As shown in Table 4.6, relationship quality, conflict, and contact frequency between siblings were not significantly associated with becoming parents together, compared to one or both of them remaining childless. As for higher-order births (Table 4.7), although the effect of sibling relationship quality was not significant, the effect size and direction were highly similar to those of the main analysis. Sibling conflict had a negative effect on having subsequent births together, compared to only a sibling had or both did not have. This is in line with our main findings that conflictual siblings were less likely to resemble each other in their fertility.

Table 4.5 Multinomial logistic regression model of whether siblings had (new) children simultaneously and whether siblings had no (new) children simultaneously

	Model 1		Model 2		Model 3	
	Both had children	Both no children	Both had children	Both no children	Both had children	Both no children
Age	-0.100**	0.060**	-0.100**	0.059**	-0.098**	0.061**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age^2	-0.014**	0.009**	-0.014**	0.009**	-0.013**	0.009**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Parity (ref: no child)						
One child	0.311*	-1.104**	0.296*	-1.095**	0.304*	-1.115**
	(0.022)	(0.000)	(0.029)	(0.000)	(0.025)	(0.000)
Two or more children	-0.271	0.399**	-0.300	0.412**	-0.275	0.383**
	(0.082)	(0.000)	(0.057)	(0.000)	(0.076)	(0.000)*
Education	0.006*	-0.007**	0.006*	-0.007**	0.006*	-0.007**
	(0.014)	(0.000)	(0.013)	(0.000)	(0.010)	(0.000)
Interactions						
Age x parity (one child)	0.020	0.100**	0.019	0.097**	0.018	0.098**
	(0.550)	(0.000)	(0.577)	(0.000)	(0.599)	(0.000)
Age x parity (two or more children)	-0.074	0.044*	-0.080	0.042*	-0.076	0.044*
	(0.078)	(0.013)	(0.060)	(0.018)	(0.068)	(0.012)
Age^2 x parity (one child)	0.008	0.001	0.008	0.001	0.008	0.001
	(0.054)	(0.744)	(0.060)	(0.790)	(0.067)	(0.600)
Age^2 x parity (two or more children)	0.003	-0.007**	0.004	-0.006**	0.003	-0.007**
	(0.640)	(0.001)	(0.583)	(0.003)	(0.684)	(0.002)
Gender composition (ref: different gender)						
Brothers	0.099	-0.170	0.095	-0.178	0.109	-0.172
	(0.584)	(0.112)	(0.602)	(0.098)	(0.545)	(0.109)
Sisters	0.121	0.178*	0.163	0.155	0.134	0.210*
	(0.420)	(0.046)	(0.279)	(0.082)	(0.387)	(0.021)
Family solidarity	0.070	-0.072	0.111	-0.055	0.104	-0.083
	(0.372)	(0.145)	(0.154)	(0.251)	(0.180)	(0.086)
Sibling relationship quality	0.142*	-0.030				
	(0.047)	(0.478)				
Sibling conflict			-0.109	0.100*		
			(0.143)	(0.012)		
Sibling contact					0.055	-0.032
					(0.454)	(0.477)
Constant	-1.734**	0.192	-1.718**	0.181	-1.709**	0.208
	(0.000)	(0.080)	(0.000)	(0.098)	(0.000)	(0.062)
Dyad-waves	6,076		5,933		5,928	
Dyads	3,441		3,383		3,390	

Note: Reference is only one sibling had a (new) child. The results of the covariates and the interaction terms represent the effects for both siblings. Corrected for dyad random effects and family clustering. P-values in parentheses.

Significant levels: * $p < 0.05$, ** $p < 0.01$

Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

Table 4.6 Logistic regression model of whether siblings entered parenthood simultaneously

	Model 1	Model 2	Model 3
Age	-0.150**	-0.146**	-0.144**
	(0.000)	(0.000)	(0.000)
Age^2	-0.016**	-0.015**	-0.015**
	(0.000)	(0.000)	(0.000)
Education	0.001	0.001	0.001
	(0.871)	(0.856)	(0.847)
Age x education	0.001	0.000	0.001
	(0.827)	(0.833)	(0.831)
Age^2 x education	0.000	0.000	0.000
	(0.877)	(0.898)	(0.928)
Gender composition (ref: different gender)			
Brothers	0.179	0.118	0.184
	(0.484)	(0.647)	(0.472)
Sisters	0.361	0.374	0.349
	(0.167)	(0.147)	(0.194)
Family solidarity	0.219	0.203	0.223
	(0.144)	(0.156)	(0.124)
Sibling relationship quality	0.039		
	(0.731)		
Sibling conflict		-0.157	
		(0.266)	
Sibling contact			0.069
			(0.563)
Constant	-2.750**	-2.734**	-2.749**
	(0.000)	(0.000)	(0.000)
Dyad-years	1,599	1,570	1,459
Dyads	1,027	1,014	971

Note: Reference is both siblings or one of them remained childless. The results of the covariates and the interaction terms represent the effects for both siblings. Corrected for dyad random effects and family clustering. P-values in parentheses.

Significant levels: * $p < 0.05$, ** $p < 0.01$

Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

Table 4.7 Logistic regression model of whether siblings had higher-order births simultaneously

	Model 1	Model 2	Model 3
Age	-0.730*	-0.755*	-0.729*
	(0.012)	(0.015)	(0.013)
Age^2	-0.012	-0.012	-0.012
	(0.073)	(0.093)	(0.076)
Education	-0.150	-0.177	-0.147
	(0.222)	(0.175)	(0.231)
Age x education	-0.017	-0.020	-0.017
	(0.139)	(0.110)	(0.144)
Age^2 x education	-0.000	-0.001	-0.000
	(0.121)	(0.098)	(0.126)
Gender composition (ref: different gender)			
Brothers	0.235	0.324	0.250
	(0.575)	(0.488)	(0.552)
Sisters	-0.623	-0.601	-0.654
	(0.063)	(0.112)	(0.062)
Family solidarity	-0.096	-0.088	-0.091
	(0.523)	(0.604)	(0.548)
Sibling relationship quality	0.128		
	(0.452)		
Sibling conflict		-0.350*	
		(0.045)	
Sibling contact			0.135
			(0.432)
Constant	-23.100**	-24.479**	-23.090**
	(0.000)	(0.001)	(0.000)
Dyad-years	2,226	2,162	2,224
Dyads	1,523	1,489	1,523

Note: Reference is siblings did not have higher-order births simultaneously or only one had. The results of the covariates and the interaction terms represent the effects for both siblings. Corrected for dyad random effects and family clustering. P-values in parentheses.
Significant levels: * $p < 0.05$, ** $p < 0.01$
Source: NKPS, 2002–2004, 2006–2007, 2010–2011, and 2014–2015, calculations by authors.

4.5 Conclusion

Previous studies have examined cross-sibling effects on fertility, including whether one's own fertility decision is affected by a sibling's fertility (Balbo & Mills, 2011b; Bernardi, 2003; Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010), and how this may vary by siblings' demographic characteristics (Kuziemko, 2006; Raab et al., 2014). However, no study has yet explored the role of sibling relationship quality in siblings' fertility transitions. In addition, we know little concerning sibling similarity in *not* having a child. In the current study, we took a two-step approach. We first tested the association between sibling relationship quality and their joint fertility, in contrast to the other categories. Second, we explored the effect of sibling closeness on joint (non-)fertility, compared to its effect on a sibling bearing a child alone.

The present study makes two contributions. First, to our knowledge, it was the first study that directly tests the effect of sibling relationship quality on sibling similarity in fertility decisions. Our findings suggest that sibling rapport, featured by high quality of relationship and low conflict and tension, is positively associated with sibling synchronization of fertility. This is in line with the social psychological literature that the greater the interpersonal relationship and exchange, the stronger the social influence (Cialdini & Trost, 1998; Felmlee & Sprecher, 2000). Past research often *suspected* that siblings' demographic similarities (i.e., same-gender and close-in-age siblings) are related to sibling resemblance in fertility outcomes but was not able to test this because the data analyzed did not contain measures about the content of the tie (Kuziemko, 2006; Raab et al., 2014). In the current study, we found that the sibling relationship quality measures make a significant albeit modest contribution and are more important than the general family climate and solidarity. This provides direct evidence that the sibling bond may boost fertility alignment, next to associations in delinquent/risky behaviors and anxiety symptoms (McHale et al., 2009; Serra Poirier et al., 2017; Slomkowski et al., 2005), and supports the presumed theoretical mechanisms behind fertility contagion more directly than past studies. Siblings' gender similarity was not associated with the decision to have children together, which could be due to the fact that it was only weakly correlated with sibling relationship quality. We thus argue that it is relationship closeness that drives siblings to behave similarly and not their gender composition.

Second, our study utilized a novel and dynamic research design and was the first to identify the group of siblings who did not have children together in a given observation window ("not jumping together"), next to both had children ("jumping together") and only one had ("jumping alone"). Compared to a sibling jumping alone, siblings were more likely to jump together when the quality of their relationship was good. Yet, sibling relationship quality had no effect on their joint non-fertility. This implies that close siblings are more likely to discuss childbearing possibilities together and not the ideas to not (yet) have (new) children. Family formation, such as planning to have children, is an active and significant life event that requires careful consideration and preparations. In such cases, siblings, particularly those who are emotionally close, may feel the need to communicate, offer support, and encourage each other regarding childbearing. In comparison, the decision to not have children or to delay having them might be viewed as a more *passive* behavior. It involves not taking immediate action and may require less communication or discussion between siblings. As a result, there might be fewer instances where they feel compelled to discuss this aspect of their lives. This explains why the same level of sibling closeness may lead to fewer discussions about the decision to delay or not have children.

With respect to sibling conflict, siblings tended to "not jump together" when they were in a conflictual relationship, that siblings who fight and argue more often may be at greater odds of dissuading each other from having a baby, inconsistent with previous literature. A possible explanation could be that this finding of sibling conflict is biased by unmeasured individual characteristics, such as personality and well-being. As prior research suggested, interpersonal

conflict, including sibling rivalry and bullying, is associated with lower sense of agreeableness and life satisfaction (Jensen-Campbell & Graziano, 2001; Plamondon et al., 2021). These factors, in turn, have a negative impact on the probability of having a child (Aassve et al., 2015; Jokela, 2012; Mencarini et al., 2018).

Altogether, this new design allows us to capture siblings' reproductive simultaneity and the role of their relationship quality in the way that is less feasible with the traditional methods. Our findings suggest that sibling bond can be related to both synchronization in fertility (the original kind of similarity) and synchronization in non-fertility (the alternative kind of similarity).

The sensitivity models on siblings' transitions to first and higher-order births suggest that while sibling relationship quality is not associated with becoming parents or having subsequent births simultaneously, sibling conflict is negatively related to having higher-order births together. Although some of the estimates become less significant, the direction of the effects remain consistent. These together imply that sibling closeness may help to explain sibling alignment in having (additional) children but not necessarily entry into parenthood. The generally less significant results for parenthood transitions might be due to the smaller sample size after distinguishing between parities. Furthermore, a partner is typically required for individuals to be at risk for a first birth and not for later births. This extra condition may further reduce the magnitude of sibling influence. In both models, sibling conflict appeared to have a larger effect size than other measures for sibling relationships, suggesting that not having conflictual sibling relationships is more important for sibling synchronization in fertility than having relationship quality and contact regularity.

The current research sheds new light on the way we understand sibling relationships and influence, particularly their decisions to childbearing. We elaborate on the theories of social influence and previous research and show how sibling relationship quality may facilitate (non-)fertility simultaneity. Further research should consider this dynamic approach when disentangling other social network effects and when modeling other life course trajectories. It is important to note that those social mechanisms and diffusion processes are not the only explanations for fertility changes, that the surrounding ideational factors depend also to a large degree on institutional, economic, and cultural factors (Bernardi & Klärner, 2014). Moreover, sibling similarity in life course trajectories, including family formation can also be due to shared genetics (Axinn et al., 1994; Branigan et al., 2013; Her et al., 2021).

Some limitations of the study need to be noted. First, because we did not have sufficient sample size, we grouped all parities together when studying siblings' fertility transitions. Previous research on fertility has shown that the baseline function of having children is different for first birth and subsequent births and that it is important to control for relevant clocks and covariates (Wood & Neels, 2017; Wood et al., 2014). To ensure that our findings were robust, we analyzed parities separately based on the reduced samples and found that the results do not diverge substantially from the main ones. Moreover, given that our goal is to explore the association between sibling relationship quality and their decisions to have

children together, the theoretical relevance of distinguishing between parities is fairly negligible.

The second limitation concerns the sample size in general. Even though NKPS is a large and national panel study, consisting of 8,161 anchors in Wave 1, it includes respondents of all ages, and therefore many of them already had children or were too old to have them (approximately 6% of siblings both had children in the observed window, *N* = 418 dyad-waves). Because of the small amount of siblings that made a fertility transition, our statistical power was limited. The third limitation is as well related to the sample size. For this reason, we could not incorporate educational attainment as a categorial variable and analyze separately male and female respondents. Given the importance of education in alternating the association between age and childbearing (e.g., higher-educated women tend to prolong entry into parenthood), future research should model education using detailed categorical information on education attainment when studying this topic. Although we controlled for siblings' gender composition, it would be more ideal to distinguish between male and female fertility, by means of model stratification or interaction terms. Altogether, because of the data employed and power issues, our results are restricted by the aforementioned limitations. However, to our knowledge, there are scarce larger datasets available with (adult) sibling closeness measures to address the research question. Future research should consider replicating our study by linking register data with survey data with measures of sibling relationship quality. If richer data were made possible, it is crucial to improve the modeling of fertility schedules in all previously mentioned aspects. In addition, scholars could further explore whether similar-age siblings would have a higher probability of childbearing in a given age range.

Fourth, we applied a joint fertility approach rather than a sequential approach, which allows us to interpret of the extra category "not jumping together" more easily. Because of our sample size, this approach also enables us to model the effect of sibling quality measures more efficiently (i.e., without the need to include them as moderators). Previous research typically examined the association between siblings' fertility in a sequential manner (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010), and tested the extent to which siblings' demographic characteristics moderate the association (Kuziemko, 2006). Moreover, we believe that this alternative approach captures siblings' sequential influence in both directions and the impact of sibling relationship quality in a similar way the sequential approach does.

Fifth, the data from NKPS are not yearly data and have a gap of 3 to 4 years between each wave. Nevertheless, studies have indicated that cross-sibling effects on fertility transition are short-lived, peaking in the first year after a sibling's birth and starting to decline afterwards (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010). They are also significantly more likely to occur 0 to 3 years after a sibling's birth than when the birth occurred more than 3 years ago (Buyukkececi & Leopold, 2020; Kuziemko, 2006). Given that it naturally takes a few years for siblings to mutually influence each other to have children and that there was a 3 to 4 year interval between each wave of data collection, we were likely provided with the

necessary time for the sibling influence to occur.

Last but not least, the present study has only anchor-reported and single-item measures for sibling relationship quality. However, we were able to incorporate three measures (quality, conflict, and contact) for sibling relationship quality. Upon closer examination of a smaller sample in which both anchors and their siblings report on the relationship, a strong correlation was found between the anchor-reported and sibling-reported relationship quality. On this note, this study again calls for more measures for (non-)kin relationships in large-scale survey and over time (Felmlee & Sprecher, 2000; Raab et al., 2014).

Despite the limitations, the present study is the first to investigate the association between sibling relationship quality and siblings' decisions to have children together. Drawing from national and longitudinal survey data on 2,456 respondents and their siblings, we discover that close and non-conflictual sibling relationships are related to sibling synchronization of fertility, whereas sibling conflict is linked to sibling synchronization of non-fertility. Furthermore, the findings suggest that sibling relationship quality is more impactful than family solidarity and siblings' gender similarity in strengthening their fertility alignment.

5

Sibling transmission of relationship breakup in Belgium: Does partnership type matter?

An adapted version of this chapter is under review:

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (under review). Sibling transmission of relationship breakup in Belgium: Does partnership type matter?

Abstract

This study aims to understand cross-sibling influence on relationship breakup, including both divorce and separation, and whether sibling similarity in partnership type and demographic traits explain the social influence processes. Previous research has highlighted the impact of social network partners on individuals' attitudes and behaviors and the significant role that siblings often play in providing lifelong social and emotional support. Besides intergenerational transmission of partnership dissolution, a few studies have examined the association between siblings' divorce risks. Given the increasing prevalence of unmarried cohabitation, however, no study has yet unraveled the link between siblings' relationship breakups in general, neither has the impact of siblings' partnership type and demographic characteristics been investigated. We used longitudinal data from the Belgian population register and family fixed-effects event history analysis. Partnered individuals (N = 67,113) and their siblings were followed between 1998 and 2018. The results revealed that an individual's union dissolution was negatively associated with a sibling's and that the association was particularly pronounced among siblings belonging to the same partnership type (both married or both cohabiting) and close-in-age siblings. For instance, following a sibling's separation from a cohabitation, cohabitors were at lower odds of dissolving their union than the married, and especially when they had a small age gap. The findings indicate that accounting for the time-constant factors originated from the family context, a sibling's breakup might have a protective impact on one's own relationship status and duration. The study contributes to the growing knowledge on intragenerational transmission of partnership dissolution.

5.1 Introduction

In many Western societies, divorce rates remain unprecedentedly high (Boertien, 2020). In Belgium, for example, up to 30% of the married couples end up getting a divorce (Snoeckx et al., 2008; Statbel, 2023). Over the past decade, the country observes on average 23,000 dissolving marriages per year, with relationship duration being approximately 15 year (Statbel, 2023). However, a drop in the number of divorces can be seen in the recent figures (Statbel, 2023), which is likely to be a result of the declining marriage rate (Boertien, 2020; Van den Berg & Mortelmans, 2018; Wagner, 2020). According to previous literature, the recent birth cohorts have showed a higher incidence of longstanding unmarried cohabitation (hereafter "cohabitation"), causing the prevalence of marriage to decline (Gassen, 2023; Hiekel et al., 2014; Kiernan, 2004). As a result, the field of divorce studies has shifted towards relationship breakup instead of the end of marriages and focused on all couples who break up after having lived together for a while (Mortelmans, 2020). With regard to the union dissolution rate for cohabiting couples, studies have found that the breakup rate of cohabitation was significantly higher than that of marriage in Belgium (Pasteels & Mortelmans, 2017; Van den Berg & Mortelmans, 2018).

Research has suggested that individuals' behaviors and values may be influenced by their social network partners (Bandura, 1977; Bernardi, 2003; Cialdini & Trost, 1998). Given the crucial role siblings often play in providing social and emotional support and that sibling relationships typically span a lifetime, siblings have been a central example in this body of literature (Bernardi & Klärner, 2014; Cicirelli, 1995; Connidis, 1992). Next to the insights on intergenerational transmission of divorce risks through parental divorce (e.g., Wolfinger, 2011; Wolfinger, 2016), researchers have recently drawn attention to the influence from siblings, suggesting considerable sibling similarity in divorce risks (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006). Previous studies, however, were limited to examining the transmission of dissolving marriages, rather than partnership dissolution in general. In the present study, we focus on sibling transmission of relationship breakup and uncover whether similarity in terms of partnership type matters. Moreover, we aim to investigate whether the associations may be moderated by siblings' demographic similarities. To this end, we make use of a within-family approach to rule out influence due to spuriousness and siblings' background similarities.

With these goals, we use rich and longitudinal data from the Belgian population register. To our knowledge, this is the first to study sibling transmission of relationship breakup in general and to unravel the role of union type. It is also one of the first studies to utilize family fixed-effects model to examine cross-sibling effects. The present study contributes to the growing knowledge of social network effects by discovering and expanding the mechanisms through which sibling transmission of life course events takes place.

5.2 Explaining the association between siblings' relationship breakups

5.2.1 Social influence processes

During childhood and adolescence, siblings play a central role in each other's life due to shared environments and contact regularity (Cicirelli, 1995; McHale et al., 2012; Voorpostel, 2007). In (young) adulthood, after moving away from the parental nest and thus may not have daily and face-to-face contact, most siblings' communication becomes more voluntary and takes often place via family gathering, phone calls, and social media (Hamwey et al., 2019). Hand in hand with less sibling contact, conflicts between siblings decrease, contributing to a more stable and close relationship (Jensen et al., 2018). That said, although sibling relationship tend to be stabilized over the adult life span, it may also vary between life course stages. For instance, starting a new relationship or welcoming a new baby might decrease sibling contact, whereas experiencing a relationship dissolution can increase sibling exchange and emotional closeness (Connidis, 1992; White, 2001). Either way, it is likely that siblings have a special bond and siblingship may form the longest lasting social relationship, being supportive through a variety of life experiences (Conger & Little, 2010; Jensen et al., 2020).

Because of siblings' close ties, they may influence one another regarding a wide range of behaviors and life course decisions, such as academic performance (Bouchey et al., 2010; van Eijck, 1997), substance use (Slomkowski et al., 2001; Whiteman et al., 2014), sexual intercourse (Haurin & Mott, 1990), parental home leaving (Her et al., 2022), and union formation and dissolution (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006). The social network approach has often been used to explain these horizontal (i.e., intragenerational) transmissions, including three relevant mechanisms: *social contagion*, *social learning*, and *social support* (Bandura, 1977; Bernardi, 2003). The theoretical framework suggests that individuals observe, learn from, and are influenced by their social networks. Given that siblings often grow up together, they are salient behavioral examples and role models. Even if adult siblings no longer live together, they can still learn from and imitate each other's behaviors because of observation through other forms of exchange (Cassinat & Jensen, 2020; Hamwey et al., 2019). This may be especially true for those who have siblings whose union is dissolved. Previously cohabiting or married people are likely to turn to friends, siblings, or parents for emotional support following their relationship breakup (Kołodziej-Zaleska & Przybyła-Basista, 2016; White, 2001; Widmer et al., 2013). This, in turn, may become an occasion for contagion and modeling processes.

Despite the declining prevalence of marriage and the increasing popularity of unmarried cohabitation (Gassen, 2023; Mortelmans, 2020), in tandem with a higher dissolving rate among the cohabitors (Pasteels & Mortelmans, 2017), research has only demonstrated an association between siblings' marital disruptions (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006). Yet, the linkage between siblings' experience of ending a cohabiting union is unknown. Based on the literature and the previous empirical studies, we expect that siblings' relationship breakups in general are also positively associated.

5.2.2 Siblings' partnership type and demographic similarities

Social identification theory, a theory in social psychology, was first introduced by Tajfel (1978) and further developed by Tajfel and Turner (1979). It posits that individuals identify with a variety of social categories, such as age groups, religion groups, and professional groups. Through social categorization and group evaluation of values and attitudes, the groups individuals identify with become their *in-groups*, whereas the ones they do not feel belonging to are the *out-groups*. People often display a preference for their in-groups, exhibiting positive attitudes, and providing support or resources to their fellow group members (in-group favoritism), while viewing members of other groups as less favorable or inferior to one's own group (out-group derogation) (Trepte & Loy, 2017). The theory of social identification has been used to explain the social influence processes (Abrams & Hogg, 1990; Abrams et al., 1990; Hornsey, 2008). Because people favor uncertainty reduction and conformity (Cialdini & Goldstein, 2004), they tend to befriend with their in-groups and embody their attitudes, behaviors, and values more. They are also inclined to receive pressure to comply with their in-groups. With respect to the association between siblings' union dissolutions, there may be an in-group effect in terms of partnership type, that partnered individuals regard their siblings belonging to the same partnership type as their in-groups while the others as the out-groups.

Cross-sibling influence on relationship breakup may be stronger in the presence of matching partnership type for three additional reasons: 1) maturity, 2) attitudes, and 3) consequences concerning the nature of one's union. First, cohabiting/married siblings might find themselves at a similar stage of their relationship. Research has indicated that cohabiting and married individuals differ in terms of life stage, maturity level, and autonomy needs. Compared to the married, cohabitors are more tentative about their relationship and have more non-traditional and permissive traits, lower level of relationship stability, and higher desire for independence and freedom (Hiekel et al., 2014; Kreidl & Žilinčíková, 2021; Pelikh et al., 2022; Perelli-Harris et al., 2014; Van Houdt & Poortman, 2018). Second, cohabiting couples have more egalitarian values, gender roles, and division of labor compared to married couples (Clarkberg et al., 1995; Domínguez-Folgueras, 2013; Lesthaeghe, 2010). They also tend to believe less in the importance of marriage and family ties (Clarkberg et al., 1995; Hiekel et al., 2014; Kreidl & Žilinčíková, 2021) and have higher tolerance for infidelity (Lesthaeghe & Surkyn, 1988). Third, the consequences of union dissolution may differ between cohabiting/married individuals. Although there may be no significant differences in psychological distress following a cohabitation or marriage breakup (Tavares & Aassve, 2013), divorcees tend to suffer financially more than ex-cohabitors (Tach & Eads, 2015). The differences in economic consequences are especially severe among women (Avellar & Smock, 2005; de Regt et al., 2013), that because cohabiting couples contribute more equally to their household income and are more likely to be childless than married couples, their economic consequences diverge less by gender (Manting & Bouman, 2006).

Owing to these differences between cohabitation and marriage and the notion of social identification, siblings belonging to the same partnership type might have more similar values, be able to relate more to each other's situation, and be more alike in life course decisions. Witnessing a sibling of the same partnership type experiencing a union dissolution might as well help to overcome or deal with specific consequences. For instance, individuals who are in a cohabiting union may find a cohabiting sibling's relationship experience more relevant, compared to that of a married sibling. In a similar vein, when a sibling undergoes a divorce, those who are married may consider the event more closely related to themselves than the cohabitors.

In line with the processes of social influence and social identification, studies on cross-sibling effects have shown that sibling similarity in demographic traits may moderate and help to explain the associations between siblings' decisions and behaviors (Haurin & Mott, 1990; Her et al., 2022; Killoren & Roach, 2014; Mulder et al., 2020). That is, as siblings who are similar in age or gender may be relationally and emotionally closer to one another, they are as well a stronger source of compliance and influence (Burger et al., 2004). Research suggested that for instance, siblings are more likely to serve as role models when the age gap between them is small (Bernardi, 2003; Whiteman & Christiansen, 2008). Close-in-age siblings are as well more likely to pave the way for one another regarding parental home leaving (Her et al., 2022) and fertility (Kuziemko, 2006). Likewise, the association between siblings' behaviors can be moderated by their gender composition. Compared to opposite-gender siblings, same-gender siblings exhibit greater similarity in their family formation trajectories (Raab et al., 2014) and internal migration patterns (Mulder et al., 2020). As reported by Killoren and Roach (2014), women tend to communicate more frequently and feel more comfortable discussing relationship issues with their sisters than with their brothers. Up until now, only one study directly examined the extent to which siblings' similar demographic characteristics moderate the association between siblings' divorce transitions (de Vuijst et al., 2017). Even though they did not find a significant interaction effect, based on the aforementioned literature and studies on other life courses, we expect that siblings' demographic similarities play a role in the influence processes.

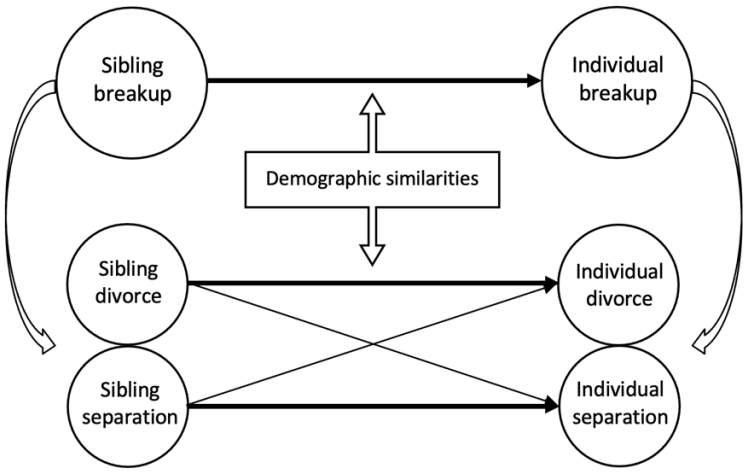
Altogether, individuals may consider siblings with identical partnership type and demographic traits their in-groups and be influenced by their relationship breakup more than the out-group siblings. The current study consists of the following hypotheses. A conceptual model is shown in Figure 5.1.

H1: For all individuals in a partnership (cohabitation or marriage), a sibling's relationship breakup is positively associated with their own breakup (a), and such association is stronger among close-in-age siblings (b) and same-gender siblings (c).

H2: For married individuals, a sibling's divorce, compared to separation is more positively associated with their divorce (a), and the divorce effect is stronger among close-in-age siblings (b) and same-gender siblings (c).

H3: For cohabiting individuals, a sibling's separation, compared to divorce is more positively associated with their separation (a), and the separation effect is stronger among close-in-age siblings (b) and same-gender siblings (c).

Figure 5.1 Illustration of the expected cross-sibling effects and interactions



5.2.3 The family context

Previous studies aiming to disentangle the social network effects, including sibling transmission of life course events have stressed the importance of considering the issues of confounding and causality (Manski, 1993, 1995). Because siblings often share the same family characteristics and household environments, their behaviors are likely clustered, and therefore difficult to separate sibling influence processes from the role of family context (Buyukkececi & Leopold, 2020; Lyngstad & Prskawetz, 2010). Moreover, full biological siblings also share a large share of genetics (50% on average), being genetically more predisposed to experience similar life course events, which may include partnership dissolution (Axinn et al., 1994; Branigan et al., 2013; McGue & Lykken, 1992). As a result, it is crucial to take their shared backgrounds into account. In most empirical analyses to date, however, the controls for siblings' family context and other shared backgrounds are limited. This study attempts to account for all time-constant differences between families and focuses on variation within a family, omitting the possibility that siblings are similar because of their family of origin.

5.3 Data and methods

5.3.1 Dataset selection and structure

This longitudinal study uses data from the Belgian population register drawn from the Crossroads Bank of Social Security (CBSS). The register data provide individual-level demographic and socioeconomic information such as age, gender, household composition, employment, and the partnership status for the Belgian population from 1998 until 2018. Our sample consisted of 30,000 randomly selected households from which one third with an oldest child born in 1980, one third in 1975 and one third with birth year 1970. The decision to use the oldest children as a selection criterion was driven by the objective of detecting transitions in union formation and dissolution. By utilizing register data, we aim to maximize the occurrence of the life course events of interest. Choosing a younger child as the sample unit could result in missing transitions of the older children, leading to an inappropriate sample.

For each selected household, all children are included in the sample, enabling us to study associations between siblings' life courses. To determine the correct number of siblings, we tracked all children from the biological mother and biological father of the target sample, provided that they had at least one sibling. If the biological mother or father had children with a new partner, and if the new partner had children from previous relationships, they were identified and included as well, as long as they lived in the same household. Adopted children cannot be identified with the national registry and therefore were excluded from the study.

The previous studies on sibling transmission of divorce risks were limited to families with two children (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017). As this method requires less complicated data handling, the results cannot be generalized to families with more than two children. In the current study, we took into account all children, either in the role of being at risk of a partnership dissolution or being the potential sibling of influence. The dataset is constructed in a longitudinal format, with each observation representing a year since the start of a child's partnership. Similar to the approach by Her et al. (2022, 2023), a four-level data structure was created, allowing to examine multiple at-risk children per family. The family level (level 4), as the highest level, clusters the at-risk children (e.g., A, B, C, D) from the same family (level 3). To model the cross-sibling effects, an intermediate sibling dyad level represents pairs of siblings, in which each child can operate either as the observed child (i.e. at risk of a partnership dissolution) or as the modeling sibling to the child at risk (level 2). For instance, when child A is at risk, children B, C, and D would be the modeling siblings, leading to sibling dyads AB, AC, and AD. Those dyads are nested in the at-risk children (e.g. all observed risk sets of child A). The bottom level (level 1), which is the time level, indicates the absence or occurrence of a partnership dissolution for the children at risk. Given that they were adult siblings, hereafter they are referred to as at-risk individuals and their siblings.

The at-risk individuals were followed from the year they started a partnership until censoring. Because our goal was to study the link between siblings' relationship breakups in general, our

study population was individuals that were in either a marital or cohabiting union. While they were required to be at least 18 years old to be included in the risk set, there was no maximum age restriction. After the selections, our data consisted of 1,772,058 dyad-periods or points of observation in time, nested in 137,802 sibling dyads, embedded in 67,113 at-risk individuals belonging to 29,344 families. Some missing values were observed in the variables included in the analysis (mostly originated from the income variable), which led to further reduction in the sample size (see next section). Descriptive statistics of the variables are presented in Table 5.1.

5.3.2 Measures

Dependent variable

Our dependent variable indicated whether or not the at-risk individuals had an event of partnership dissolution, which reflects their conditional probability of breaking up at any given time (Allison, 1984). Those at risk of a relationship breakup were either married or cohabiting prior to having an event. Cohabitors who transitioned from cohabitation to marriage were not considered to have experienced a relationship breakup. In the whole sample, 27.3% of them experienced an event. Based on the type of union they formed, we further divided our sample into two groups to test H2 and H3: the married group (62.5%) and the cohabiting group (37.5%). For the marriage analysis, the outcome reflected whether or not a divorce occurred at each given point in time, whereas for the analysis of cohabitation, it reflected the probability of dissolving a partnership in time. Among the 27.3% experiencing a dissolution, 15.4% were marital divorces while 11.9% were cohabitors who separated. In line with previous research (Pasteels & Mortelmans, 2017), proportionally, the likelihood of breaking up was higher among cohabitors.

Explanatory variables

To examine whether a sibling's relationship breakup may be transmitted to an at-risk individual, we created a time-varying and dichotomous variable at the sibling dyad level measuring whether or not the modeling sibling had a breakup. While a value of 1 indicates having a breakup, 0 as the reference category means that no breakup was observed. To distinguish between divorce and separation, we further computed a variable specifying whether the sibling had a divorce (ref = did not have a divorce) and a predictor for his or her separation from a cohabiting partner (ref = did not separate). To measure the extent to which siblings' demographic similarities moderated the cross-sibling influence, we made use of two time-invariant variables at the dyad level: age spacing and gender composition. Age spacing was a continuous variable calculating the absolute age difference between the siblings observed. Gender composition was a categorical variable accounting for siblings' gender with four groups: (1) brothers, (2) sisters, (3) an at-risk male with a female sibling, and (4) an at-risk female with a male sibling (ref). The detailed categorization allowed us to look into the gender similarity effect.

Table 5.1 Descriptive statistics

	M	*SD*	*N*	%
Parental level characteristics (*N* = 29,344)				
Sibship size	2.71	1.10		
Parental divorce (not included in the analysis)				
Yes			1,845	6.3%
No			27,499	93.7%
Individual level characteristics (*N* = 67,113)				
Event*				
Relationship breakup			18,338	27.3%
(Divorce)			(10,348)	(15.4%)
(Separation)			(7,990)	(11.9%)
No event			48,775	72.7%
Age*	38.72	6.28		
Gender				
Male			32,893	49.0%
Female			34,211	51.0%
Relationship status				
Married without premarital cohabitation			21,670	32.3%
Cohabiting			25,163	37.5%
Married with premarital cohabitation			20,280	30.2%
N children under age 18*	2.02	0.77		
Education				
High			16,815	25.1%
Middle			20,015	29.8%
Low			30,283	45.1%
Equivalized household OECD income (by €1000)*	2.73	1.73		
Labor participation*				
Full-time job			53,910	80.3%
Part-time job			5,960	8.9%
Unemployment			2,008	3.0%
Others			5,235	7.8%
Sibling level characteristics (*N* = 137,802)				
Age spacing	5.78	4.85		
Gender composition				
Female with male sibling			35,702	26.0%
Male with female sibling			32,401	23.5%
Brothers			34,210	24.9%
Sisters			35,278	25.6%
Whether sibling had a breakup*				
Yes			26,521	19.3%
No			111,281	80.7%
Whether sibling had a divorce*				
Yes			15,221	11.1%
No			122,581	88.9%
Whether sibling had a separation*				
Yes			11,300	8.2%
No			126,502	91.8%

Note: For the time-variant variables (*), we present the descriptive statistics of the last observed wave.
Source: Belgian national registers from the CBSS (1998–2018), calculations by authors.

Control and relevant variables

We modeled both linear and quadratic time specifications to control for relationship duration, which is the timing since partnership formation irrespective of partnership type. Multiple control variables were included at the individual level, as suggested by past research (Boyle et al., 2008; Kaplan & Herbst, 2015; Manning, 2004; Tzeng & Mare, 1995). Age was modeled as a continuous variable, whereas gender was a binary variable with male being the reference category. Relationship status measured the type of union formed prior to a potential event based on the individuals' cohabitation and marriage history and had three categories: (1) never-married cohabitation, (2) married without having pre-marital cohabitation, and (3) married with pre-marital cohabitation (ref). This variable was included as time constant so that the years of cohabitation before marriage for those who had pre-marital cohabitation did not add to the risk set. Number of children was included as a time-varying variable measuring the number of children aged below 18 one had.

As for socio-economic status, we accounted for the individuals' time-constant educational attainment and time-varying household income and labor force participation. Education was categorized into (1) high (ref), (2) middle, and (3) low based on their highest education level achieved. Household income measured the equivalized household OECD income each year in classes of 25 Euro. Labor force participation had four groups: (1) full-time job (ref), (2) part-time job, (3) unemployed, and (4) others. At the family level, we calculated sibship size and the proportion of parents that were divorced. Yet, because of the analytical strategy used in the study, these two pieces of information were not used in the multivariate analysis. For a majority of the variables used in the study, there was a minimal amount of missing values (less than 1.9%).[6] However, there were 13,203 missing cases for household income, which accounts for approximately 19.7% of the observations at the individual level.

5.3.3 Analytical strategy and identification of cross-sibling effects

As discussed earlier, siblings might exhibit similarity in relationship dissolution because of contextual and correlated factors, such as shared parental and environmental influence (Manski, 1993, 1995). To tackle these issues, we employed family-level fixed-effects models to control for time-constant (un)observed heterogeneity across families (Allison, 2009). The fixed-effects approach capitalizes on changes occurring within families over time and is deemed more appropriate than hierarchical regression strategies, which may reflect variations between families and impact upon the regression parameters of interest accordingly. Previous studies concerning cross-sibling effects life course transitions mostly utilized random-effects (multilevel) model (Buyukkececi & Leopold, 2020; Buyukkececi et al., 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006; Her et al., 2022; Lyngstad & Prskawetz, 2010). Although the random-effects approach may yield unbiased parameter standard errors, it is unlikely to take

[6] Age: 501 missings, gender: 11 missings, number of children: 324 missings, age spacing: 2,559 missings, gender composition: 211 missings, sibship size: 111 missings.

shared family background adequately into account, unless included explicitly as covariates in the model (Allison, 2009). To our knowledge, only one study applied family fixed effects as a robustness check to examine siblings' transitions to independent living (Her et al., 2023). In this study, the family effect is held fixed in the discrete-time event history analysis, using conditional logit models by means of PROC LOGISTIC in SAS 9.4. To apply the fixed effects, we used the family identification and created (n – 1) dummies for each family. Mathematically, the model that was estimated can be written as

$$In\frac{P(Y_{fist}=1)}{1-P(Y_{fist}=1)} = \alpha_t + \beta X_{is} + \delta Z_{ist} + \lambda M_s + \nu N_{st} + \eta_f$$

where Y_{ijt} represents the outcome variable, α_t reflect the duration baseline parameters, β and δ are parameters for time-constant and time-varying individual-level variables, λ and ν are parameters for time-constant and time-varying sibling-level variables, and η_f represents family-level fixed effects.

5.4 Results

5.4.1 Siblings' partnership dissolutions

Table 5.2 presents the regression parameters of the fixed-effects event history models. The analysis of the full sample is shown in Model 1, whereas Model 2 and 3 consider the married and cohabiting individuals respectively. All models include the baseline time specifications and relevant control variables. As illustrated in Model 1, contrary to our expectation, a sibling's breakup was negatively associated with one's own breakup (*b* = -1.179, *SE* = 0.022). In other words, when the at-risk individuals had a sibling who divorced or separated, the likelihood that they dissolved their partnership decreased. To uncover whether partnership type mattered, Model 2 and 3 distinguish between divorce and separation. Based on Model 2, the married individuals were significantly less likely to experience a divorce if the modeling sibling had a divorce (*b* = -1.643, *SE* = 0.038). However, observing a cohabiting sibling undergoing a separation did not have an effect on one's risk of ending a marriage (*b* = -0.020, *SE* = 0.061). For cohabitors (Model 3), a sibling's separation was negatively related to one's likelihood of breaking up (*b* = -1.199, *SE* = 0.044), whereas a sibling's divorce appeared to be positively associated, though to a lesser extent (*b* = 0.162, *SE* = 0.054). Despite that the above findings were not in line with H1a, H2a, and H3a, the negative connection between siblings' breakups was more pronounced when their partnership type matched.

Table 5.2 Discrete-time event history analysis predicting an individual's risk of relationship dissolution

	Model 1	Model 2	Model 3
	All partnership	Marriage	Cohabitation
Individual level characteristics			
Duration since partnership formation	0.062***	0.193***	0.125***
	(0.005)	(0.009)	(0.010)
Duration^2 since partnership formation	0.001***	-0.003***	-0.001
	(0.000)	(0.000)	(0.001)
Age	0.081***	0.071***	0.132***
	(0.003)	(0.004)	(0.005)
Female (ref: male)	-0.015	0.209***	-0.248***
	(0.020)	(0.032)	(0.041)
Relationship status (ref: married with premarital cohabitation)			
Cohabiting	0.192***		
	(0.016)		
Married without premarital cohabitation	0.293***		
	(0.014)		
N children under age 18	-2.478***	-2.700***	-1.810***
	(0.016)	(0.022)	(0.023)
Education (ref: high)			
Middle	0.194***	0.211***	0.525***
	(0.032)	(0.052)	(0.063)
Low	-0.464***	-0.401***	-0.618***
	(0.030)	(0.048)	(0.064)
Equivalized household OECD income (by €1000)	-0.164***	-0.144***	-0.215***
	(0.006)	(0.009)	(0.012)
Labor participation (ref: full-time job)			
Part-time job	0.284***	0.311***	0.290***
	(0.027)	(0.039)	(0.047)
Unemployed	-0.396***	-0.469***	-0.422***
	(0.049)	(0.072)	(0.077)
Others	-0.455***	-0.576***	-0.321***
	(0.042)	(0.060)	(0.074)
Sibling level characteristics			
Whether sibling had a breakup (ref: no)	-1.179***		
	(0.022)		
Whether sibling had a divorce (ref: no)		-1.643***	0.162**
		(0.038)	(0.054)
Whether sibling had a separation (ref: no)		-0.020	-1.199***
		(0.061)	(0.044)
N dyad-periods	1,572,045	1,084,717	487,328
N families	29,211	23,761	16,896

Note: Reference is not having a relationship breakup. Standard errors in parentheses.
* p< .05 ** p< .01 *** p< .001.
Source: Belgian national registers from the CBSS (1998–2018), calculations by authors.

Table 5.3 Discrete-time event history analysis predicting an individual's risk of relationship dissolution with interaction terms

	Model 4	Model 5	Model 6
	All partnership	Marriage	Cohabitation
Sibling level characteristics			
Whether sibling had a breakup (ref: no)	-1.671***		
	(0.036)		
Whether sibling had a divorce (ref: no)		-1.975***	-0.055
		(0.062)	(0.090)
Whether sibling had a separation (ref: no)		0.010	-1.778***
		(0.102)	(0.073)
Age spacing	-0.022***	-0.017***	-0.017***
	(0.002)	(0.003)	(0.003)
Gender composition (ref: female with male sibling)			
Male with female sibling	0.021	-0.051*	0.157***
	(0.016)	(0.024)	(0.029)
Brothers	-0.017	-0.109***	0.104**
	(0.020)	(0.029)	(0.033)
Sisters	0.007	0.116***	-0.175***
	(0.019)	(0.028)	(0.034)
Interaction terms			
Sibling breakup x age spacing	0.090***		
	(0.005)		
Sibling breakup x male with female sibling	-0.013		
	(0.037)		
Sibling breakup x brothers	-0.044		
	(0.038)		
Sibling breakup x sisters	0.026		
	(0.036)		
Sibling divorce x age spacing		0.075***	0.036**
		(0.010)	(0.011)
Sibling divorce x male with female sibling		-0.063	-0.021
		(0.066)	(0.085)
Sibling divorce x brothers		-0.017	0.076
		(0.070)	(0.094)
Sibling divorce x sisters		0.113	-0.088
		(0.059)	(0.088)
Sibling separation x age spacing		-0.003	0.101***
		(0.015)	(0.010)
Sibling separation x male with female sibling		-0.081	-0.043
		(0.110)	(0.074)
Sibling separation x brothers		-0.055	-0.095
		(0.105)	(0.074)
Sibling separation x sisters		-0.026	0.013
		(0.105)	(0.078)
N dyad-periods	1,554,846	1,073,168	481,678
N families	29,200	23,753	16,885

Note: Reference is not having a relationship breakup. Baseline and individual level covariates modeled in Table 5.2 were controlled for. Standard errors in parentheses.

* p< .05 ** p< .01 *** p< .001.

Source: Belgian national registers from the CBSS (1998–2018), calculations by authors.

5.4.2 Moderation of sibling partnership dissolution

Table 5.3 shows the regression parameters of the models testing interaction effects, by which we examined the extent to which the dissolution effects examined in Table 5.2 were moderated by siblings' demographic similarities. Model 4 pools both partnership types, while Model 5 and 6 distinguish between marriage and cohabitation. A positive interaction effect by siblings' age spacing was found in Model 4, suggesting that the larger the age gap between siblings, the less negative the association between siblings' breakups was. This indicates that one's relationship dissolution may particularly protect the his or her close-in-age siblings from ending a union, relative to siblings of wider age spacing. As shown in Model 5, we found that for the married individuals, having a close-in-age sibling encountering a divorce decreased one's own risk of divorce to a greater extent than did a distant-in-age sibling. For the cohabitors, the negative effect of a sibling's separation was also smaller when their ages were more distant. Moreover, the divorce effect of a sibling turned positive when siblings had an age gap equals to or greater than 3 (3 x (0.036-0.017) – 0.055). Based on these results, H1b, H2b, and H3b were supported. Across all three models, however, we did not find a significant moderation effect of siblings' gender composition (no support for H1c, H2c, and H3c).

5.5 Discussion

In contemporary Europe, a particular combination of low marriage rates and high divorce rates has been observed, and partners have been increasingly living together without being married (Eurostat, 2015, 2022). Importantly, the unmarried partnerships exhibit even higher dissolution risks than marriage (Pasteels & Mortelmans, 2017; Van den Berg & Mortelmans, 2018). The present study investigated the intragenerational transmission of partnership dissolution in Belgium, i.e. whether there is a between-sibling similarity in terminating a partnership. Importantly, we explored whether the association between siblings' relationship breakups is more pronounced in terms of sibling similarity in partnership type and demographic traits. As opposed to previous studies (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006), we found that a sibling's relationship breakup may in fact protect one from dissolving an union. This may be explained by the following reasons.

First, we used family fixed-effects models, which allows to take a within-family approach and, hence, to rule out confounding factors that are time-constant and related to the family of origin (Allison, 2009), compared to the other studies employing random effects (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Dronkers & Hox, 2006). While the found positive association between siblings' breakups is valid, it may be driven by influence from the shared family context. Based on the results of the within-family approach, it is likely that a sibling's partnership dissolution dissuades an at-risk individual from ending his or her union, despite siblings are overall similar in their breakup risks. It is also worth mentioning that not all existing studies on the topic found a positive association. Applying longitudinal network model and accounting for omitted factors that may drive social networks' divorce status, McDermott et

al. (2013) found that transmission of divorce occur only among friends and not among siblings, neighbors, and co-workers.

The second explanation could be attributed to the notion of sibling deidentification and the consequences of union disruption. Sibling deidentification, as an alternative process of social influence, suggests that siblings may exert themselves to become different from each other (Schachter et al., 1976). It is believed to contribute to the engagement of different activities and behaviors among siblings that allow them to be different from one another (Feinberg & Hetherington, 2000; Whiteman et al., 2007a). We argued that sibling deidentification is especially manifested with respect to relationship breakup due to the transition's adversity. The negative association could also be understood with the social learning perspective, that individuals try to learn from their siblings' adverse life experiences and seek alternative solutions in times of relationship crises. Past research has demonstrated the economic consequences associated with relationship dissolution (Avellar & Smock, 2005; de Regt et al., 2013; Kalmijn, 2005; Manting & Bouman, 2006; Poortman, 2000; Thielemans & Mortelmans, 2022). For instance, after divorce, women lose the income their husband has contributed and the alimony payments do not necessarily compensate for all the losses (Kalmijn, 2005; Poortman, 2000). Moreover, union dissolution may worsen both men's and women's employment trajectory and career prospect (Kalmijn, 2005; Poortman, 2000). The psychological costs of breaking up have also been documented, that divorce and separation often leads to intense emotional distress, as the loss of a significant relationship can trigger a range of negative emotions (Amato, 2000; Tavares & Aassve, 2013). The disruption of one's life, uncertainty about the future, and the loss of emotional support can contribute to mental health conditions such as depression and anxiety. The negative consequences may be particularly severe for parents (Kamp Dush, 2013). Some individuals might either become a sole parent or lose custody of children as a result of partnership dissolution.

When individuals receive information about the divorce or separation experience of someone close to them, such as a sibling, it may have a significant impact on their own considerations regarding partnership dissolution. This stems from the recognition of the potential negative consequences associated with it, even if they are currently not satisfied in their own relationship. By witnessing firsthand the emotional turmoil, financial strain, and social disruptions that often accompany the dissolution of a marriage or long-term relationship, individuals may become more cautious about pursuing a similar path. They might also have a glimpse into the complexities and realities of the process, such as the legal proceedings and co-parenting struggles. Altogether, such awareness can potentially act as a deterrent, leading individuals to reconsider the potential consequences and trade-offs involved in ending their own relationship.

The current study also adds to the literature by distinguishing between siblings' partnership types. We observed that the negative association between siblings' relationship breakups existed mostly when they belonged to the same partnership type. Our findings suggest that

compared to a sibling's separation, only a sibling's divorce decreases married individuals' risks of divorcing. Likewise, a separated sibling protects cohabitors from ending a relationship to a larger extent than a divorced sibling. These imply that there may be an in-group effect resulting from partnership similarity, that people are more inclined to change their behaviors in response to the in-group siblings (Abrams & Hogg, 1990; Abrams et al., 1990; Hornsey, 2008). Cohabiting/married siblings often share similarities in maturity, attitudes, and consequences related to the nature of their relationship and find themselves at a similar relationship stage (Clarkberg et al., 1995; Hiekel et al., 2014; Kreidl & Žilinčíková, 2021; Tach & Eads, 2015). While cohabitors exhibit more tentative family attitudes and non-traditional traits, married couples may hold less egalitarian values and have different perceptions of marriage and family ties (Clarkberg et al., 1995; Domínguez-Folgueras, 2013; Hiekel et al., 2014; Lesthaeghe, 2010; Perelli-Harris et al., 2014). The consequences of union dissolution, particularly in terms of financial impact, also differ between cohabiting and married individuals. Although ending a romantic relationship comes at a price irrespective of union type, the financial strain of ex-cohabitors are smaller than the previously-married (Avellar & Smock, 2005; Manting & Bouman, 2006). These differences help to explain why witnessing a sibling's union dissolution of the same partnership type may be particularly relevant and relatable. In other words, sibling deidentification is more pronounced and a sibling's breakup can better act as a protective factor against one's own union dissolution when there is a matching partnership type.

Next to partnership similarity, we found that close-in-age siblings positively moderated the association between siblings' relationship breakups but not same-gender siblings. This implies that the closer the age spacing between siblings is, the more likely an individual's decision to dissolve an union is discouraged by a sibling's. Previous studies investigating the moderating role of siblings' demographic similarities typically suggest that siblings' behaviors, including life course transitions, are "positively" associated and that the association is even more "positive" when the similarities are observed (Hauser & Wong, 1989; Her et al., 2022; Killoren & Roach, 2014; Kuziemko, 2006; Mulder et al., 2020). In this study, we observed that siblings' breakups were "negatively" associated and that the association was more "negative" among close-in-age siblings, which is in accordance with the notion of sibling deidentification, that the deidentification dynamics are more prevalent for siblings similar in age (Schachter et al., 1976). In both cases, a small age gap appears to strengthen the sibling influence found. When analyzing marriage and cohabitation separately, the moderating role of age gap was more visible when there was partnership similarity. Contrary to our expectation, compared to opposite-sex siblings, being brothers or sisters was not related to the association between siblings' relationship breakups. This implies that although the social influence processes are believed to operate better when similarities are observed, it may vary depending on the outcome of interest and study design. Moreover, as siblings' gender composition may only be a proxy for their relationship quality, support, and contact regularity, we could not directly examine if same-gender siblings indeed favor each other more and hold identical attitudes and values (de Vuijst et al., 2017).

Some limitations of the study should be addressed when interpreting the results. First, despite controlling for time-constant heterogeneity and confounders at the family level using fixed effects, and a set of time-(in)variant covariates at the individual and sibling dyad level, spuriousness may still arise from time-varying family characteristics and other variables at the lower levels that we could not account for. In particular, due to data limitation, we could not consider multiple divorces and re-partnering of the parents. Moreover, due to software limitation, clustering at the lower levels (e.g., robust standard error) were not incorporated. Second, we do not know the exact reasoning why an individual's risk of breaking up is reduced after witnessing a sibling's breakup. If a siblings' divorce/separation serves as a protective factor for one's own relationship progression, it is important to understand the underlying channels. Therefore, we highly encourage future researchers to uncover the mechanisms of the found associations, delving into why such cross-sibling influence is stronger when siblings belong to the same partnership type. Third, we only focused on the dyadic sibling influence and did not take into account the impact of multiple partnership breakups in one family among larger families. Likewise, we only examined first-time union dissolution and not subsequent ones. Finally, because of the use of register data, we could not examine the social influence from close friends and colleagues. Further research should study the social network effects more comprehensively by including those actors if possible.

To conclude, the study is the first to investigate the extent to which siblings' relationship breakups by incorporating both married and cohabiting couples. Although multiple studies have shown that siblings tend to resemble each other in terms of life course transitions, a sibling's partnership dissolution may contribute to union stability, using a within-family approach. Unlike education, leaving the parental home, marriage, and childbearing, divorce and separation are often related to adversity. When siblings exchange information and support with each other, the partnered sibling may learn from the divorced/separated sibling's adverse event, while the divorced/separated sibling might convince the partnered one not to follow his or her footsteps.

6

Conclusion

Some parts of this chapter were published in *Journal of Family Theory and Review*:

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2021). Siblings' similarities and dissimilarities: A review of theoretical perspectives and empirical insights. *Journal of Family Theory & Review, 13*(4), 447-462.

6.1 Introduction

Sibling relationships have been a subject of great interest in research due to their unique and long-lasting nature. Scholars have recognized the significance of sibling ties in providing social support, emotional connection, and shared experiences throughout different life stages (Cicirelli, 1995; Connidis, 1992). Understanding the dynamics of sibling relationships is important to uncover their potential influence on various aspects of individuals' lives, including their attitudes, behaviors, and life course trajectories (Conger & Little, 2010). While previous research has primarily focused on the transfer of experiences and behaviors from parents to their children (Amato, 1996; Kotte & Ludwig, 2011; Liefbroer & Elzinga, 2012), this dissertation delves into the reciprocal interactions among siblings. It seeks to unravel whether individuals resemble their siblings in their life course trajectories due to direct sibling effects ("like brother, like sister"), while attempting to account for the fact that their similarities may stem from shared upbringing and environments from their parents ("like parents").

Upon investigating intragenerational transmission of life course trajectories, this dissertation sheds light on the complex interplay between family dynamics and individual trajectories. It recognizes the importance of considering sibling relationships as a distinct source of social diffusion in individuals' lives, offering a deeper understanding of the mechanisms through which family ties shape individual development and life outcomes. The first contribution of the dissertation is that it studied the extent to which siblings' behaviors are connected in terms of different life course trajectories (i.e., leaving the parental home, fertility, and partnership dissolution). Second, it utilized siblings' demographic similarities to understand the circumstances in which sibling (dis)similarities are amplified. Similar to this, the dissertation addressed two under-examined sibling characteristics (i.e., personality traits and relationship closeness) that may play a role in strengthening the associations between siblings' life courses. This allows us to add new insights into the existing literature. Last but not least, the dissertation employed different methodological approaches and analytical strategies when studying the associations between siblings' demographic transitions.

In the concluding chapter of the dissertation, Section 6.2 illustrates the findings of the studies included in the dissertation. While Subsection 6.2.1 discusses the degree to which siblings' life courses are associated, Subsection 6.2.2 summarizes whether and how the associations may vary depending on different sibling characteristics. In Section 6.3, the methodological contributions (Subsection 6.3.1) and theoretical implications (Subsection 6.3.2) of the dissertation are discussed. Subsequently, Section 6.4 highlights some reflections for policy-making and interventions targeting individuals, families, and societies. Finally, Section 6.5 discusses the limitations of the dissertation and informs future studies in this field.

6.2 Summary of the findings

6.2.1 Associations between siblings' demographic transitions

Chapter 2 examined the extent to which one's decision to leave the parental home to live independently is associated with that of a sibling in the United Kingdom. The results based on discrete-time event history analysis with random effects suggest that siblings' leaving home behaviors are positively associated, that one is more likely to leave the feathered nest following a sibling's footstep. Moreover, the effect of a sibling leaving is more pronounced when it occurs within one year and weakens for a longer time span. Based on a subsample drawn from Chapter 2, the same pattern was found in Chapter 3 using the same design and methods. However, in the within-between random-effects model employed in Chapter 2 and the fixed-effects model used in Chapter 3, we observed that adjusting for time-constant family-level factors, siblings' nest-leaving transitions are observed to be negatively correlated. Such divergence in the findings may be due to the different methodological approaches, which give different interpretations (see Section 6.3 for further discussion).

Building up previous work on siblings' divorces (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; McDermott et al., 2013), Chapter 5 turns to the connection between siblings' partnership dissolution in general, including both divorce and separation from a cohabiting union. It additionally examined whether it matters if a sibling and oneself belong to the same union type. Utilizing fixed effects at the family level, the estimates from the event history analysis suggest that a sibling's relationship breakup is negatively related to one's own decision to end his or her relationship, implying that there might be a protective impact of a sibling's partnership dissolution. After considering married and cohabiting individuals separately, we found that only a sibling's divorce may prevent married individuals from divorcing and not a sibling's separation. In a similar vein, only when a sibling dissolves a cohabiting union, cohabiting individuals are less likely to do so.

6.2.2 Moderating factors of cross-sibling effects

While unraveling the occurrence of sibling similarities of life courses, a number of sibling characteristics were observed to modify the sibling effects. In Chapter 2, we found that siblings' demographic characteristics moderate the association between siblings' nest-leaving behaviors. When siblings are close in age, particularly when the age gap is three years or less, and when they belong to the same gender, especially brothers, their timing of home leaving are more inclined to align. Compared to younger siblings, older siblings may also have a higher probability of being a role model and strengthen the social learning process.

Chapter 3 showed that next to siblings' demographic similarities, being comparable in the Big Five personality traits also enhances sibling synchronization of nest leaving. It explored the moderating role of extraversion in the association between siblings' home leaving. The findings suggest that siblings who have a similar extraversion level are more likely resemble each other

in such behavior. This moderation effect is particularly pronounced for siblings who are both introverts, implying that when one is hesitant about nest leaving, having a similarly introverted sibling paving the way may be encouraging. These two chapters on parental home leaving indicate that shared demographic and personality traits may amplify the effect of a sibling's independent-living experience on one's decision to leave the parental home.

Moving to Chapter 4, the focus shifted to the association between sibling relationship quality and the likelihood of having children together. The results indicate that higher sibling relationship quality and lower sibling conflict are positively associated with the decision to have children together, compared to situations where only one sibling has children or neither sibling has children. Moreover, compared to when a sibling has a fertility transition alone, sibling relationship quality was positively associated with both having children, whereas sibling conflict was positively associated with both not having children. Being the same gender, however, is not significantly associated with fertility synchronization. Nevertheless, this chapter is the first to incorporate sibling closeness measures when studying siblings' life course transitions. It highlights the importance of positive relationship dynamics for siblings' shared parenting choices.

Finally, Chapter 5 examined whether and how the association between a sibling's relationship breakup and one's own breakup is moderated by their age and gender similarities. The findings suggest that when a sibling experiences a breakup, individuals, particularly those with a small age gap to their sibling, have a lower likelihood of going through a breakup themselves. Yet, compared to different-gender siblings, being sisters and brothers does not seem to strengthen the effect. This highlights that close-in-age siblings may specifically serve as sources of emotional support and guidance in maintaining partner relationships.

In the dissertation, siblings' demographic characteristics, personality traits, and relationship quality were often studied separately, due to primarily data availability. Overall, these moderation effects emphasize the importance of considering sibling characteristics such as age gap, gender composition, birth order, personality traits, and relationship quality in understanding the dynamic associations of siblings' life course events.

6.3 Discussion of the findings

6.3.1 Accounting for family-level characteristics and exogenous factors

Within the context of social relationships and interactions, understanding and addressing exogenous and spurious effects appropriately is crucial for accurately determining the causal impact of interpersonal influence (Manski, 1993, 1995). Exogenous effects refer to the influence that originates from outside of a particular system, whereas endogenous effects refer to the influence arising from within a network of individuals, driven by the interactions and dynamics between them (Manski, 1993, 1995). Research has suggested that when individuals within a network exhibit similar behaviors, there are a variety of confounding

factors at play (i.e., exogeneity), such as contextual effects, spuriousness, and homophily (Buyukkececi & Leopold, 2020; Manski, 1993; Shalizi & Thomas, 2011; Wood & Neels, 2019). While we are primarily interested in documenting cross-sibling associations in the timing and occurrence of life course events, several attempts are additionally made to further unpack these associations and the endogenous cross-sibling effects.

First, with respect to contextual effects, originating from external factors that shape the behaviors of individuals within the group, behavior similarities among network partners may not necessarily be driven by their direct impact but rather by shared group characteristics. For example, the family size preferences of siblings may be shaped by their common upbringing and parental influence and not necessarily by each other (Axinn et al., 1994). That is, when siblings behave similarly, it may be due to not only cross-sibling influence but also their "shared family influence."

Second, individuals may exhibit similar behavior due to spurious associations. In general, spuriousness points to the factors that are associated with both the predictor and the outcome (Simon, 1954). These effects emerge from unobservable characteristics at the group level that simultaneously affect the behavior of all members. Individuals who have undergone similar socialization experiences as a group may be independently influenced by omitted factors (McDermott et al., 2013; Shalizi & Thomas, 2011). Regarding siblings' leaving home decisions, for instance, it could be that the parents determine that their children shall all leave at age 20. In this case, if a 18-year-old child leaves two years after his or her 20-year-old sibling, there may not be a sibling effect, but rather family norms that drives them both to leave at the same age.

The third factor is homophily, which denotes the tendency of individuals to associate and form connections with others who share similar characteristics or attributes (Aral et al., 2009; Laakasuo et al., 2020). Homophily plays a significant role in helping researchers understand the dynamics of social networks, the formation of social ties, and the patterns of social interactions. Importantly, it is often confounded with social contagion (Aral et al., 2009; Shalizi & Thomas, 2011). For example, when friends decide to have babies together, it is difficult to understand whether they truly influence each other's childbearing decision or they "pre-select" their friends who share similar family beliefs and fertility intentions. Although homophily may be less applicable to siblings, as they are not chosen like friends or partners, it is important to acknowledge it when attempting to detect social influence.

Throughout the dissertation, a number of statistical methods and analytical strategies have been employed to model cross-sibling effects, as suggested by previous research. First of all, in all the studies included in the dissertation, a set of relevant control variables (e.g., individuals' age and gender, parental socioeconomic status) are included to ensure that the observed effects are not driven by the accounted time-(in)variant factors related to the outcome. These parameters cannot fully capture the confounding and contextual effects, but evidence has indicated that they are correlated with observed and unobserved characteristics

of life course trajectories (e.g., Bayrakdar & Coulter, 2018; Buyukkececi & Leopold, 2020; Holdsworth, 2000; Kotte & Ludwig, 2011; Lareau, 2011; Raab et al., 2014).

Second, the dissertation includes a series of random-effects and fixed-effects models, as well as within-between random-effects model. In multilevel modeling, the random-effects component takes into account the variation at different levels of analysis, such as individuals nested within groups or observations nested within clusters (Bell et al., 2019; Firebaugh et al., 2013). By incorporating random effects, the model considers the influence of group-level factors on the outcome variable while accounting for within-group dependencies. The random-effects term captures the unobserved or latent characteristics that are specific to each cluster. It allows variations between groups that cannot be explained by the observed variables in the model (Bell et al., 2019; Firebaugh et al., 2013). However, random effects do not directly control for specific group-level characteristics. Instead, they capture the overall effect of unobserved group-level factors on the outcome variable.

In order to explicitly control for specific group-level characteristics, it is important to turn to fixed-effects model (Allison, 2009). With respect to sibling synchronization of demographic transitions, specifically, random-effects model may generate biased estimates by not properly adjusting for unobserved family factors, which can be overcome by including family-level fixed effects. Research has documented that random- and fixed-effects models utilize different types of variation and differ in the degree to which the group-level characteristics are controlled for (Allison, 2009). Random-effects model mostly exploits variation between families, whereas fixed-effects model draws on within-family variation, in which all time-constant differences between families are controlled for. When examining cross-sibling effects, besides the mechanisms of social interactions and influence, it could be that siblings from the same family simply transition to a life course (around the same age) because they share the same parents, societal norms, environments, and contextual factors. Compared to random-effects model, in fixed-effects model, such time-invariant differences in demographic transitions between families are decreased, highlighting the variation in behaviors within a family. In other words, the unobserved and family-related factors that do not vary over time can be more explicitly controlled for using fixed effects at the family level (Allison, 2009). It is worthwhile mentioning that fixed-effects modelling also has shortcomings, that it does not account for (higher-level) time-varying characteristics. Therefore, it may still yield biased results when (crucial) time-varying factors are not modelled. Moreover, although it limits heterogeneity bias, by eliminating numerous higher-level variances, it also consumes all degrees of freedom at the higher level. Owing to this, the statistical power is reduced, leading to larger standard errors and wider confidence intervals, compared to random-effects model (Firebaugh et al., 2013).

This may be the reason why some researchers also preferred the so-called “within-between random-effects model.” Such model, designed to handle nested or clustered data structures, is a variation of the random-effects model, incorporating both within-group and between-

group random effects. It simultaneously and explicitly estimates individual-level effects (within-group variation) and group-level effects (between-group variation) and offers greater flexibility than fixed-effects model (Bell et al., 2019; Bell & Jones, 2015; Mundlak, 1978). That is, it incorporates both sources of variation, which allows for a more comprehensive understanding of the factors that influence outcomes at both the individual level (within-group) and the group level (between-group). By accounting for the additional sources of variation, the model provides more accurate estimates of the independent variables and can yield more precise inferences (Bell et al., 2019; Bell & Jones, 2015). In the study of siblings' behaviors, the between effects refer to the effects that differ between families but remain constant across sibling dyads. On the other hand, the within effects pertain to the differences between dyads after accounting for family-specific effects. Nevertheless, in spite of its flexibility and ability to display both between and within estimates, within-between random-effects model is not more efficient than fixed-effects model. Moreover, the estimates may be challenging to interpret, given the more complex data structure, especially when handling interaction effects (Schunck, 2013).

Applying random effects in Chapter 2 and fixed effects in Chapter 3 and 5, the overall findings indicate positive cross-sibling associations based on random-effects models and negative cross-sibling effects when incorporating fixed effects at the family level. The within-between random-effects model in Chapter 2 also suggests that the between-family effect is more positive than the within-family effect. Similarly, a number of previous studies adopting random effects observed that siblings' demographic behaviors are positively associated (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Kuziemko, 2006; Lyngstad & Prskawetz, 2010). All of these imply that siblings' life course decisions are positively connected. Yet, it is likely that siblings' behaviors align with each other because of the shared family surroundings and other confounding factors discussed. Further investigation is required to confirm the findings that the within-family effects are different from the between-family ones as they come closer to causality. Altogether, when the goal is to examine (descriptively) whether and how siblings' life course trajectories are associated, random-effects model is an useful method to be applied. Yet, when one attempts to test the mechanisms of sibling influence, fixed-effects model is more preferable. It is also preferable not to rely on one statistical approach, but unpack findings from different models with different assumptions, such as fixed- and random-effects model, to understand the full picture from different angles.

It is worthwhile to mention that the contrasting pattern found in the dissertation by using within-clustering and between-clustering models is not uncommon. Studies have employed fixed-effects approach to study demographic rates and contrasted fixed-effects models with the ones without it (Baizán, 2009; Kravdal, 2007; Lyngstad, 2011; Rindfuss et al., 2007). Investigating childcare availability and timing of first-birth using Norwegian register data, Rindfuss et al. (2007) found that the models with and without municipality-level fixed effects yield different results. They referred to the models without fixed effects as the "naive" models in the extent that they pretend to examine A causing B. The naive models suggest that the

availability of day care is associated with lower levels of fertility, whereas the fixed-effect approach shows that it is linked to earlier childbearing, in line with the literature (Rindfuss et al., 2007). Moreover, while aggregate education seems to be positively associated with divorce risks in the discrete-time hazard model without fixed-effects at the community level, it emerges to have a negative effect on divorce in the fixed-effects model (Lyngstad, 2011). The author thus indicated that the inclusion of the fixed-effects controls for some time-constant unobserved factors that may be positively correlated with divorce and negatively correlated with aggregate education. Examining mortality rates, Kravdal (2007) as well found that the estimates with and without municipality fixed effects differ markedly. Excluding the fixed-effects, a high proportion of divorced persons and a low proportion of never-married persons appear to increase mortality, but this is not always the case when the fixed-effects are modeled (smaller effect sizes, reversal of the effects). The difference in the estimates could mean that there may be time-invariant municipality characteristics, such as social cohesion that stimulate divorce and push mortality higher (Kravdal, 2007).

The third strategy employed to disentangle cross-sibling effects from external factors is the understanding of age norms. Research has shown that it is an important confounding factor that can influence life course transitions, especially leaving the parental home (Billari & Liefbroer, 2007; Neugarten, 1979). In order to test whether siblings' transitions to independent living are connected because of age norms within a family or a society, in Chapter 2, a falsification test was employed. This method has been used by previous researchers to differentiate the social network effects from the group-level effects (Asphjell et al., 2013; Buyukkececi, 2021; Buyukkececi et al., 2020). To do so, we conducted a matching process, taking into account specific criteria such as the demographic characteristics of individuals and their siblings. Essentially, each individual at risk of leaving was paired with an unrelated individual who closely matches their actual sibling in terms of gender, age, and educational attainment, ensuring a comparable context. This rigorous matching approach allows us to test whether the sibling effects found are spurious and whether siblings follow each other's footsteps on leaving simply because of the age norms imposed. Our results indicated that a person's nest-leaving decision is not affected by a matched individual's, suggesting the important role of siblings as social network partners and that the sibling effects are less likely to be (partly) driven by common factors between them. However, as a negative sibling effect was found in the within-between random-effects model in Chapter 2 (between–positive, within–negative) and in the fixed-effects model in Chapter 3, further exploration is required to confirm that the matching processes incorporating limited information are appropriate to estimate the within-family sibling similarity.

To conclude, the diverse methodological approaches included in the dissertation provide interesting insights into the intricate dynamics of social network effects, particularly how the sibling network shapes life course outcomes. Importantly, it is the first to investigate cross-sibling effects on life course transitions using within-between random-effects model and family fixed-effects model.

6.3.2 Theoretical implications

As shown in Chapters 2-5 and discussed in earlier sections of this chapter, the extent to which siblings' life course trajectories are associated and how the associations are moderated by different sibling characteristics can vary by study outcome, research design, and methodological strategy. In this section, the interpretation of the results is discussed in light of the theoretical frameworks, alongside the methodologies and previous studies on the topic.

Based on the studies in the dissertation, it is evident that siblings' life courses are interdependent and inextricably connected through their relationships, in line with the family systems and life course theories. In particular, adopting a between-family approach, Chapter 2 is the first to suggest that siblings' nest-leaving behaviors are positively correlated. This implies that when a family has an early nest-leaver, more early leavers may follow. Similarly, when a firstborn delays his or her transition to adulthood, there is a tendency that the other siblings may behave the same as well. Although the dissertation does not examine the direct associations between siblings' fertility behaviors and between their relationship breakups using a between-family approach, previous studies have found a positive sibling correlation in those transitions as well (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017; Kuziemko, 2006; Lyngstad & Prskawetz, 2010). As a result, independent of whether siblings' lives are linked through processes of sibling influence directly, when understanding individuals' life course decisions, it is important to realize that their actions may be embedded in the sibling subsystem, the parent-child subsystem, the family systems, and the broader social context (Bengtson & Allen, 1993; Cox & Paley, 1997; Elder, 1998; Giele & Elder, 1998). The theories are also instrumental in explaining why we did not find a significant association between unrelated dyads' home-leaving trajectories.

While the dissertation provides support for siblings' linked lives and the family systems perspective and in parts the arguments from the social network effects and social influence, the latter needs to be interpretated cautiously. Given the positive associations between siblings' life courses, it is possible that they encourage each other to behave similarly, for reasons such as social contagion, social learning, social pressure, and social support (Bernardi, 2003; Bernardi & Klärner, 2014). They could also exhibit behavioral compliance and conformity to gain social proof and to reduce information uncertainty (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998). However, as shown in Subsection 6.3.1, social interaction effects come hand in hand with multiple contextual factors (Manski, 1993, 1995), which are difficult to account for appropriately. With a within-family approach, we find no strong proof of a positive causal mechanism. Therefore, the dissertation challenges the theoretical frameworks regarding how "causal" siblings' behaviors really are. In fact, the term social contagion might be better understood as a combination of family contagion and sibling contagion, and intragenerational transmission should be interpreted in light of shared intergenerational transmission. As introduced in Section 1.3, researchers have increasingly acknowledged that siblings can influence each other in a wide range of behaviors and across life courses. Without disregarding

their efforts, it is plausible that a great deal of the observed associations between siblings is due to their shared family and social contexts. Altogether, without fully ruling out the confounding issues, one can only "suspect" that siblings "influence" each other to act in the same way.

When applying a within-family approach to study siblings' transitions to adulthood and partnership dissolution, the findings suggest that within a family (i.e., between siblings), siblings' life courses (leaving the parental home and relationship disruption) are negatively associated. As the time-constant contextual factors are better considered in this approach, it could mean that the true causal mechanisms behind siblings' behaviors are sibling deidentification and "protection." That is, a young adult might actively choose not to leave the parental home because his or her sibling had done so, in order to be different from the sibling (Schachter et al., 1976; Whiteman et al., 2007a). Individuals who undergo a divorce or separation, knowing how difficult it is, may want to be "good" influence and convince their siblings not to pursue the same path, leading to the protection mechanism. Following the same logic, an early nest leaver might want to dissuade his or her siblings not to leave as early, for the adverse consequences.

In terms of the sibling characteristics (age gap, gender composition, birth order, personality traits, and relationship closeness) that may modify sibling (dis)similarity in life course trajectories, there is a general "tendency" that siblings who are similar or have better relationships are more inclined to behave similarly. This is in accordance with the theories of social contagion and social learning (Bandura, 1977; Bernardi, 2003), as well as the previous studies (e.g., Kuziemko, 2006; Mulder et al., 2020; Raab et al., 2014). The findings also corroborate the similarity-attraction effects (Byrne, 1971) and the social influence framework (Cialdini & Goldstein, 2004; Cialdini & Trost, 1998) that people who are similar tend to have closer interpersonal relationships, which facilitate behavior alignment. Being the first to incorporate siblings' personality traits when studying their nest-leaving behaviors and to examine sibling relationship quality when studying their fertility choices, the dissertation contributes to the enhanced understanding of how sibling diffusion of life courses functions. The fact that individuals have a higher probability of following their older siblings' footsteps than their younger siblings' regarding parental home leaving could be again explained by the mechanism of social learning (Bandura, 1977). In Chapter 5, we found that siblings belonging to the same partnership type (cohabitation or marriage) are more likely to dissuade each other from ending an union, which additionally lend support to social identification theory (Tajfel & Turner, 1979; Tajfel, 1978). It could also be that cohabiting and married siblings find themselves more alike in terms of e.g., life stage, autonomy needs, and family-related attitudes and values (e.g., Hiekel et al., 2014; Kreidl & Žilinčíková, 2021; Lesthaeghe, 2010; Perelli-Harris et al., 2014).

However, it is important to acknowledge that sibling similarity does not always moderate the association between siblings' life courses and actions. For example, while we find that

compared to opposite-gender siblings, same-gender siblings are more likely to leave home simultaneously, they are not at higher odds of having children or breaking up together. In addition, even though close-in-age siblings are more similar in home leaving, those siblings are more dissimilar in union dissolution, that the previously partnered individuals try to discourage their close-in-age siblings from breaking up more than their distant-in-age siblings. Next to our findings, previous studies have also yield inconsistent results in this regard. For example, studying cross-sibling effects on divorce, de Vuijst et al. (2017) observed that only siblings' birth order moderates the association and not age gap or gender composition.

To conclude this section, the dissertation suggests that in general siblings' life courses are positively connected, reassuring the family systems and linked lives perspectives. However, the fact that they are intertwined may not mean they are causally linked. As a result, when interpreting the theories of social network effects and social influence, one needs to take into account the impact of shared environments and family characteristics. For particular adverse life events, siblings may protect one another from experiencing it, highlighting that siblings take care of and/or learn from each other in difficult times. Overall, the lives of siblings who are demographically and psychologically close are more interconnected than the distant ones. As several mechanisms underlying sibling (dis)similarities can occur simultaneously, it is important to understand the interpretation of each of them and how they operate together.

6.4 Societal and policy relevance

As discussed in Section 6.3, understanding whether siblings truly influence each other poses a challenge for both previous research and this dissertation. Nevertheless, our descriptive results offer valuable insights into the current landscape of sibling similarities and therefore provide important societal and policy relevance, as well as a critical starting point upon which further analysis can be built.

First of all, understanding the interconnectedness of siblings' life courses is crucial when examining the clustering of disadvantages and their implications. The dissertation has shown that siblings' life trajectories are interlinked, meaning that certain life events and outcomes tend to cluster within families. For instance, if one sibling experiences an early or late transition out of the parental home, it is more likely that their siblings will also follow a similar trajectory. Likewise, siblings may face challenges such as early pregnancy, limited educational opportunities, and poor health habits in a clustered manner. These interconnected life courses and behaviors contribute to the concentration of disadvantages, perpetuating patterns of inequality and disadvantage across generations, and polarization in society. Understanding this from the sibling lense is particularly valuable, as we can observe whether certain risky behaviors are diffused to only one child or multiple children in the family. Recognizing the clustering of disadvantages among siblings underscores the importance for governments and parents to address these issues collectively. Policymakers can develop targeted interventions that focus not only on individual siblings, but also on the broader family context. By providing comprehensive support and resources to underprivileged families, including access to

education, healthcare, and supportive services, it is possible to break the cycle of clustered disadvantages and promote positive outcomes for siblings. Empowering parents to create nurturing environments and equipping them with the necessary tools to address the challenges faced by their children can also play a crucial role in mitigating the impact of clustered disadvantages. By acknowledging the interconnectedness of siblings' life courses and working towards addressing the associated clustered disadvantages, we can foster a more equitable and supportive society for all individuals and their families.

Following on the first recommendation, when providing support to individuals and their siblings, it could be valuable to pay extra attention to sibling similarity and closeness. The significant effects of siblings' demographic and personality similarities as well as relationship quality on their behavior alignment highlights the meaningful sibling bond. This necessitates a more focused approach in educational and familial support systems. When speaking to individuals undergoing difficult life events, educators, parents, and counselors should prioritize identifying siblings with shared demographic characteristics, personality traits, and strong emotional bond. These siblings are likely to be the ones who would experience similar adverse behaviors. Furthermore, educational institutions and family support services should proactively involve these siblings in the support processes for individuals facing adversity. Not only could this prevent the siblings from having the same experiences, the presence of a supportive sibling can be instrumental in mitigating the effects of negative life events. By developing targeted/sibling-centered interventions and counseling programs that proactively involve siblings together, foster positive sibling relationships, and provide them with tools to navigate hardships, we can better equip families to collectively overcome adversity.

Next, the dissertation has policy implications regarding the effects of siblings on relationship dissolution. The negative association between a sibling's breakup and one's own breakup suggests a potential protective mechanism within sibling relationships. This implies that siblings may play a role in teaching and supporting each other to prevent relationship breakdown. While it is recognized that siblings' life courses are generally correlated and certain negative events may be unavoidable, the findings indicate that siblings still make efforts to mitigate the risk of relationship dissolution. These findings have significant implications for policy makers, parents, and other stakeholders involved in supporting healthy relationships. Further research and concrete interventions are needed to understand and capitalize on the protective impact of sibling relationships to promote stable unions and enhance relationship outcomes for individuals.

Given the aging society, it might be worth considering the benefits of co-locating childless and widowed siblings in elderly care centers. The unique bond between siblings, particularly in the absence of children or a spouse, can serve as a valuable source of emotional support and companionship in later life (Campbell et al., 1999). By facilitating the co-location of these siblings, elderly care centers can help to promote their overall well-being, reduce social isolation, and enhance the quality of their aging experience. As a result, elderly care centers

might want to reach out to the siblings of those who are childless, widowed, and living alone. These policy recommendations recognize the significant role that sibling relationships play across the life courses and emphasize the importance of preserving and nurturing these bonds in various care settings.

6.5 Limitations and suggestions for future research

The first limitation of the dissertation is that it did not distinguish between full-, half-, and step-siblings. Studies have indicated that the relationship quality among biological siblings are generally better than non-biological siblings (Pollet & Hoben, 2011; Sanner et al., 2018), even controlling for childhood proximity (Pollet, 2007). Individuals also have more contacts with their full-siblings than half-siblings (Tanskanen & Danielsbacka, 2014). However, while half- and step-siblings are emotionally less close than full-siblings, they also report less sibling conflict and aggression (Sanner et al., 2018; Steinbach & Hank, 2018). Additionally, children living in stepfamilies are more likely to experience trajectories such as early home leaving and early union formation, in case they have a distant or conflicted stepchild–stepparent relationship (van den Berg et al., 2021). Given that modern families, including their sibling composition, are increasingly complex (Sanner et al., 2018), it is highly important to further investigate the potential differences in sibling influence between full-siblings and step-/half-siblings, taking into account their relationship closeness and length of co-residence.

Second, despite that the dissertation examined the moderating role of siblings' demographic and psychological characteristics and unraveled some potential mechanisms in which the cross-sibling effects are more pronounced, more work is needed to understand "why" their demographic behaviors are associated. Moreover, while Chapter 4 incorporated some measures of sibling relationship quality, it is unknown whether they directly communicate on their life course decisions and intentionally try to impose sibling influence. To comprehensively understand the occurrence of cross-sibling effects, including the detailed reasons behind it, it would be highly beneficial to conduct in-depth qualitative interviews with siblings or focus group interviews with multiple sibships.

Third, as the dissertation only included data from three European countries (the United Kingdom, the Netherlands, and Belgium), we do not know the extent to which our findings are applicable to other countries and cultural contexts. Gaining insight into cultural differences on sibling (dis)similarities is thus an important avenue. According to previous research, family ties in central and northern European and north American countries are weaker than in southern European countries, that southern European siblings are emotionally closer and a stronger source of contagion (Mönkediek & Bras, 2014; Reher, 1998). Available evidence also indicated that while European and north American sibling relationships are characterized by independence and autonomy, Asian cultures emphasize more sibling interdependence, older siblings' care-taking role, and the need for younger siblings to respect older siblings (Markus & Kitayama, 1991; Nuckolls, 1993). Additionally, family bonds and sibling relationships may vary across ethnic groups within a country (Whiteman et al., 2010; Wu et al., 2018), which was

as well not accounted for in the dissertation. Given the traces of cultural differences in sibling relationships, future researchers should draw more attention on examining cross-cultural differences in cross-sibling effects on life courses.

Besides addressing these limitations, there are some additional avenues for future research. First, based on the previously discussed methodological issues, it is important to further explore within-family approaches on cross-sibling effects. For instance, as we did not apply a within-family approach in Chapter 4 studying siblings' fertility transitions, it might be worthwhile to do so and to examine whether the positive associations found between siblings' relationship quality and fertility behaviors still hold. Exploring this could help to understand whether negative associations between siblings' behaviors only occur in case of adversity, as one would expect.

Following this, it could be valuable to further unpack the positive between-family effects. For example, previous research found clustering with respect to divorce (Buyukkececi & Leopold, 2020; de Vuijst et al., 2017), which might be due to that the well-known and consistent finding of intergenerational transmission of divorce is affecting siblings simultaneously. However, it is not yet clear whether all siblings from a family are affected. That is, most studies and the chapters included in the dissertation utilized a dyadic approach. A more detailed analysis and explanation of why these positive effects occur (at the family level) is welcome.

Third, the dissertation observed that siblings might influence each other to not leave the parental home while their home-leaving transitions are positively correlated. To this end, it is important to distinguish whether the positively/negatively associated transitions are among early, on-time, or later leavers. If siblings are indeed sources of "good influence," early or late leavers should influence their siblings to not do the same, rather than on-time leavers. Disentangling this would further help to understand the role of siblings in preventing unfavorable life events. In light of earlier suggestions, it should preferably be explored with both between-clustering and within-clustering approaches.

Furthermore, next to the three life course transitions (leaving the parental home, fertility, partnership dissolution) examined in the dissertation, subsequent studies might want to investigate whether and how siblings' partnership formation and retirement trajectories are interconnected. Besides demographic transitions, it is of societal relevance to study if siblings can also support each other in promoting healthy behaviors. Previous studies have shown that siblings may influence each other on unhealthy behaviors, such as substance use and suicidal attempts during adolescence and young adulthood (Edwards et al., 2019; Slomkowski et al., 2005). Yet, it is unclear if older siblings are linked in terms of healthy lives and lifestyles, encouraging each other to engage in preventative health behaviors and grow old healthily together. When having data available to track multiple life courses and behaviors of siblings, it might be also fruitful to uncover whether cross-sibling effects are addictive or cumulative. For example, when siblings' nest-leaving trajectories align, are they also more likely to be similar in their family formation behaviors?

While both intergenerational (parent–child) and intragenerational (siblings, friends, colleagues, ex-partner) transmission of behaviors have been continuously studied (e.g., Buyukkececi, 2021; Buyukkececi et al., 2020; Dupéré et al., 2021; Liefbroer & Elzinga, 2012; Pink et al., 2014), most studies focused on one single network, with two exceptions being Buyukkececi et al. (2020) and McDermott et al. (2013). It would thus be fruitful to carry more studies that incorporate and compare the effects from different social network members. Moreover, little attention has been paid to the bottom-up intergenerational transmission. That is, parents might learn from or mimic some contemporary behaviors, if not demographic transitions, of their offspring. As it might be difficult to detect causality if their behaviors are associated, future endeavor in differentiating child-parent influence from parent-child influence and shared background influence is highly welcome. Given the growing prevalence of digital technologies and social media use, one might want to investigate if they alter or diversify the nature of social network and social interaction effects.

Last but not least, future research might want to consider some under-examined sibling characteristics. For instance, research has indicated that siblings tend to be more distant when they differ in terms of sexual orientation or in the case of siblings with mental disability (Kaminsky & Dewey, 2001; Perales & Plage, 2020). Future studies could take these into consideration and study if patterns of siblings' linked lives differ among sibling dyads marked with diversity and special needs.

7

References

Aarts, H., Gollwitzer, P. M., & Hassin, R. R. (2004). Goal contagion: Perceiving is for pursuing. *Journal of Personality and Social Psychology*, *87*(1), 23-37.

Aassve, A., Arpino, B., & Billari, F. C. (2013). Age Norms on Leaving Home: Multilevel Evidence from the European Social Survey. *Environment and Planning A: Economy and Space*, *45*(2), 383-401.

Aassve, A., Billari, F. C., Mazzuco, S., & Ongaro, F. (2002). Leaving home: a comparative analysis of ECHP data. *Journal of European Social Policy*, *12*(4), 259-275.

Aassve, A., Davia, M. A., Iacovou, M., & Mazzuco, S. (2007). Does leaving home make you poor? Evidence from 13 European countries. *European Journal of Population/Revue Européenne de Démographie*, *23*(3-4), 315-338.

Aassve, A., Iacovou, M., & Mencarini, L. (2006). Youth poverty and transition to adulthood in Europe. *Demographic Research*, *15*, 21-50.

Aassve, A., Mencarini, L., & Sironi, M. (2015). Institutional change, happiness, and fertility. *European Sociological Review*, *31*(6), 749-765.

Abrams, D., & Hogg, M. A. (1990). Social identification, self-categorization and social influence. *European Review of Social Psychology*, *1*(1), 195-228.

Abrams, D., Wetherell, M., Cochrane, S., Hogg, M. A., & Turner, J. C. (1990). Knowing what to think by knowing who you are: Self-categorization and the nature of norm formation, conformity and group polarization. *British Journal of Social Psychology*, *29*(2), 97-119.

Adler, A. (1928). Characteristics of the first, second, and third child. *Children*, *3*(5), 14.

Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics letters*, *80*(1), 123-129.

Allison, P. D. (1982). Discrete-time methods for the analysis of event histories. *Sociological Methodology*, *13*, 61-98.

Allison, P. D. (1984). *Event history analysis: Regression for longitudinal event data*. Sage.

Allison, P. D. (2009). *Fixed effects regression models*. SAGE publications.

Alwin, D. F., Felmlee, D. H., & Kreager, D. A. (2018). Together through time–Social networks and the life course. In D. F. Alwin, D. H. Felmlee, & D. A. Kreager (Eds.), *Social networks and the life course. Frontiers in Sociology and Social Research* (Vol. 2, pp. 3-26).

Amato, P. R. (1996). Explaining the intergenerational transmission of divorce. *Journal of Marriage and Family*, 628-640.

Amato, P. R. (2000). The consequences of divorce for adults and children. *Journal of Marriage and Family*, *62*(4), 1269-1287.

Andersson, G., Thomson, E., & Duntava, A. (2017). Life-table representations of family dynamics in the 21st century. *Demographic Research*, *37*, 1081-1230.

Aral, S., Muchnik, L., & Sundararajan, A. (2009). Distinguishing influence-based contagion from homophily-driven diffusion in dynamic networks. *Proceedings of the National Academy of Sciences*, *106*(51), 21544-21549.

Armstrong-Carter, E., Trejo, S., Hill, L. J., Crossley, K. L., Mason, D., & Domingue, B. W. (2020). The earliest origins of genetic nurture: The prenatal environment mediates the association between maternal genetics and child development. *Psychological Science*, *31*(7), 781-791.

Arnett, J. J. (2014). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.

Arnett, J. J., Žukauskienė, R., & Sugimura, K. (2014). The new life stage of emerging adulthood at ages 18–29 years: implications for mental health. *The Lancet Psychiatry*, *1*(7), 569-576.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, *193*(5), 31-35.

Asphjell, M. K., Hensvik, L., & Nilsson, J. P. (2013). *Businesses, buddies, and babies: Fertility and social interactions at work* (Working Paper Series, Center for Labor Studies 2013:8). Uppsala University, Department of Economics.

Avellar, S., & Smock, P. J. (2005). The economic consequences of the dissolution of cohabiting unions. *Journal of Marriage and Family*, *67*(2), 315-327.

Avery, R., Goldscheider, F., & Speare, A. (1992). Feathered nest/gilded cage: Parental income and leaving home in the transition to adulthood. *Demography*, *29*(3), 375-388.

Axinn, W. G., Clarkberg, M. E., & Thornton, A. (1994). Family influences on family size preferences. *Demography*, *31*(1), 65-79.

Baizán, P. (2009). Regional child care availability and fertility decisions in Spain. *Demographic Research*, *21*, 803-842.

Balbo, N., & Mills, M. (2011a). The effects of social capital and social pressure on the intention to have a second or third child in France, Germany, and Bulgaria, 2004–05. *Population Studies*, *65*(3), 335-351.

Balbo, N., & Mills, M. (2011b). The influence of the family network on the realisation of fertility intentions. *Vienna Yearbook of Population Research*, *9*, 179-205.

Bandura, A. (1977). *Social learning theory*. Prentice Hall.

Barban, N., Jansen, R., De Vlaming, R., Vaez, A., Mandemakers, J. J., Tropf, F. C., Shen, X., Wilson, J. F., Chasman, D. I., & Nolte, I. M. (2016). Genome-wide analysis identifies 12 loci influencing human reproductive behavior. *Nature Genetics*, *48*(12), 1462-1472.

Barber, J. S. (2001). The intergenerational transmission of age at first birth among married and unmarried men and women. *Social Science Research*, *30*(2), 219-247.

Bayrakdar, S., & Coulter, R. (2018). Parents, local house prices, and leaving home in Britain. *Population, Space and Place*, *24*(2), e2087.

Bayrakdar, S., Coulter, R., Lersch, P., & Vidal, S. (2019). Family formation, parental background and young adults' first entry into homeownership in Britain and Germany. *Housing Studies*, *34*(6), 974-996.

Beaujouan, E. (2020). Latest-late fertility? Decline and resurgence of late parenthood across the low-fertility countries. *Population and Development Review*, *46*(2), 219-247.

Bell, A., Fairbrother, M., & Jones, K. (2019). Fixed and random effects models: making an informed choice. *Quality & Quantity*, *53*(2), 1051-1074.

Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, *3*(1), 133-153.

Belsky, D. W., Moffitt, T. E., Corcoran, D. L., Domingue, B., Harrington, H., Hogan, S., Houts, R., Ramrakha, S., Sugden, K., Williams, B. S., Poulton, R., & Caspi, A. (2016). The Genetics

of Success: How Single-Nucleotide Polymorphisms Associated With Educational Attainment Relate to Life-Course Development. *Psychological Science*, *27*(7), 957-972.

Bengtson, V. L., & Allen, K. R. (1993). The life course perspective applied to families over time. In P. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 469-504). Springer.

Benin, M. H., & Johnson, D. R. (1984). Sibling Similarities in Educational Attainment: A Comparison of Like-Sex and Cross-Sex Sibling Pairs. *Sociology of Education*, *57*(1), 11-21.

Benson, J. E., & Furstenberg, F. F. (2006). Entry into adulthood: Are adult role transitions meaningful markers of adult identity? *Advances in Life Course Research*, *11*, 199-224.

Bernardi, L. (2003). Channels of social influence on reproduction. *Population Research and Policy Review*, *22*(5-6), 527-555.

Bernardi, L., Huinink, J., & Settersten Jr, R. A. (2019). The life course cube: A tool for studying lives. *Advances in Life Course research*, *41*, 100258.

Bernardi, L., & Klärner, A. (2014). Social networks and fertility. *Demographic Research*, *30*, 641-670.

Billari, F. C., & Liefbroer, A. C. (2007). Should I stay or should I go? The impact of age norms on leaving home. *Demography*, *44*(1), 181-198.

Billari, F. C., & Liefbroer, A. C. (2010). Towards a new pattern of transition to adulthood? *Advances in Life Course Research*, *15*(2-3), 59-75.

Billari, F. C., Rosina, A., Ranaldi, R., & Clelia Romano, M. (2008). Young Adults Living Apart and Together (LAT) with Parents: A Three-level Analysis of the Italian Case. *Regional Studies*, *42*(5), 625-639.

Björklund, A., & Jäntti, M. (2012). How important is family background for labor-economic outcomes? *Labour Economics*, *19*(4), 465-474.

Blaauboer, M., & Mulder, C. H. (2010). Gender differences in the impact of family background on leaving the parental home. *Journal of Housing and the Built Environment*, *25*(1), 53-71.

Black, S. E., Grönqvist, E., & Öckert, B. (2018). Born to lead? The effect of birth order on noncognitive abilities. *Review of Economics and Statistics*, *100*(2), 274-286.

Blake, J. (1981). Family size and the quality of children. *Demography*, *18*(4), 421-442.

Blake, J. (1985). Number of siblings and educational mobility. *American Sociological Review*, 84-94.

Bleidorn, W., Schwaba, T., Zheng, A., Hopwood, C. J., Sosa, S. S., Roberts, B. W., & Briley, D. A. (2022). Personality stability and change: A meta-analysis of longitudinal studies. *Psychological Bulletin*, *148*(7-8), 588-619.

Boertien, D. (2020). The Conceptual and Empirical Challenges of Estimating Trends in Union Stability: Have Unions Become More Stable in Britain? In D. Mortelmans (Ed.), *Divorce in Europe: New Insights in Trends, Causes and Consequences of Relation Break-ups* (pp. 17-36). Springer International Publishing.

Borghuis, J., Denissen, J. J. A., Oberski, D., Sijtsma, K., Meeus, W. H. J., Branje, S., Koot, H. M., & Bleidorn, W. (2017). Big Five personality stability, change, and codevelopment across adolescence and early adulthood. *Journal of Personality and Social Psychology*, *113*(4), 641-657.

Bouchey, H. A., Shoulberg, E. K., Jodl, K. M., & Eccles, J. S. (2010). Longitudinal links between older sibling features and younger siblings' academic adjustment during early adolescence. *Journal of Educational Psychology*, *102*(1), 197.

Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). Greenwood.

Boyle, M. H., Sanford, M., Szatmari, P., Merikangas, K., & Offord, D. R. (2001). Familial influences on substance use by adolescents and young adults. *Canadian Journal of Public Health*, *92*(3), 206-209.

Boyle, P. J., Kulu, H., Cooke, T., Gayle, V., & Mulder, C. H. (2008). Moving and union dissolution. *Demography*, *45*(1), 209-222.

Branigan, A. R., McCallum, K. J., & Freese, J. (2013). Variation in the heritability of educational attainment: An international meta-analysis. *Social Forces*, *92*(1), 109-140.

Bras, H., Van Bavel, J., & Mandemakers, K. (2013). Unraveling the intergenerational transmission of fertility: Genetic and shared-environment effects during the demographic transition in the Netherlands, 1810–1910. *The History of the Family*, *18*(2), 116-134.

Briley, D. A., Livengood, J., & Derringer, J. (2018). Behaviour genetic frameworks of causal reasoning for personality psychology. *European Journal of Personality*, *32*(3), 202-220.

Briley, D. A., Livengood, J., Derringer, J., Tucker-Drob, E. M., Fraley, R. C., & Roberts, B. W. (2019). Interpreting behavior genetic models: seven developmental processes to understand. *Behavior Genetics*, *49*, 196-210.

Brody, G. H. (1998). Sibling relationship quality: Its causes and consequences. *Annual Review of Psychology*, *49*(1), 1-24.

Buck, N., & Scott, J. (1993). She's leaving home: But why? An analysis of young people leaving the parental home. *Journal of Marriage and Family*, 863-874.

Bühler, C., & Philipov, D. (2005). Social capital related to fertility: Theoretical foundations and empirical evidence from Bulgaria. *Vienna Yearbook of Population Research*, 53-81.

Buist, K. L., Deković, M., & Prinzie, P. (2013). Sibling relationship quality and psychopathology of children and adolescents: A meta-analysis. *Clinical Psychology Review*, *33*(1), 97-106.

Burger, J. M., Messian, N., Patel, S., Del Prado, A., & Anderson, C. (2004). What a coincidence! The effects of incidental similarity on compliance. *Personality and Social Psychology Bulletin*, *30*(1), 35-43.

Burt, R. S. (1982). *Toward a structural theory of action*. Academic Press.

Burt, R. S., & Janicik, G. A. (1996). Social contagion and social structure. In D. Iacobucci (Ed.), *Networks in marketing* (pp. 32-49). SAGE.

Buyukkececi, Z. (2021). Does re-partnering behavior spread among former spouses? *European Journal of Population*, *37*(4), 799-824.

Buyukkececi, Z., & Leopold, T. (2020). Sibling influence on family formation: A study of social interaction effects on fertility, marriage, and divorce. *Advances in Life Course Research*, 100359.

Buyukkececi, Z., Leopold, T., van Gaalen, R., & Engelhardt, H. (2020). Family, firms, and fertility: A study of social interaction effects. *Demography*, *57*(1), 243-266.

Byrne, D. (1971). *The attraction paradigm*. Academic Press.

Cacioppo, J. T., Fowler, J. H., & Christakis, N. A. (2009). Alone in the crowd: The structure and spread of loneliness in a large social network. *Journal of Personality and Social Psychology*, *97*(6), 977-991.

Campbell, L. D., Connidis, I. A., & Davies, L. (1999). Sibling ties in later life: A social network analysis. *Journal of Family Issues*, *20*(1), 114-148.

Cassinat, J. R., & Jensen, A. C. (2020). Following in your sibling's steps: Sibling influence and young adults' marital attitudes. *Journal of Social and Personal Relationships*, *37*(3), 885-905.

Cheng, C., Bond, M. H., & Chan, S. C. (1995). The perception of ideal best friends by Chinese adolescents. *International Journal of Psychology*, *30*(1), 91-108.

Chiuri, M. C., & Del Boca, D. (2010). Home-leaving decisions of daughters and sons. *Review of Economics of the Household*, *8*(3), 393-408.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, *55*, 591-621.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, pp. 151-192). McGraw-Hill.

Cicirelli, V. G. (1991). Sibling relationships in adulthood. *Marriage & Family Review*, *16*(3-4), 291-310.

Cicirelli, V. G. (1995). *Sibling relationships across the life span*. Springer.

Clarkberg, M., Stolzenberg, R. M., & Waite, L. J. (1995). Attitudes, values, and entrance into cohabitational versus marital unions. *Social Forces*, *74*(2), 609-632.

Coale, A. J., & Watkins, S. C. (Eds.). (1986). *The decline of fertility in Europe*. Princeton University Press.

Conger, K. J., & Little, W. M. (2010). Sibling Relationships during the Transition to Adulthood. *Child Dev Perspect*, *4*(2), 87-94.

Conley, D., & Glauber, R. (2008). All in the family?: Family composition, resources, and sibling similarity in socioeconomic status. *Research in Social Stratification and Mobility*, *26*(4), 297-306.

Connidis, I. A. (1989). Siblings as friends in later life. *American behavioral scientist*, *33*(1), 81-93.

Connidis, I. A. (1992). Life transitions and the adult sibling tie - A qualitative study. *Journal of Marriage and Family*, *54*(4), 972-982.

Cook, W. L. (2001). Interpersonal influence in family systems: A social relations model analysis. *Child Development*, *72*(4), 1179-1197.

Costa, P. T. J., & McCrae, R. R. (1997). Longitudinal stability of adult personality In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 269-290). Academic Press.

Cote, J. E. (2006). Emerging adulthood as an institutionalized moratorium: Risks and benefits to identity formation. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 85–116). American Psychological Association.

Cox, M. J. (2010). Family systems and sibling relationships. *Child Development Perspectives*, *4*(2), 95-96.

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual review of psychology*, *48*(1), 243-267.

Cross, D., & Barnes, A. (2014). Using systems theory to understand and respond to family influences on children's bullying behavior: Friendly schools friendly families program. *Theory into Practice*, *53*(4), 293-299.

Cumberland-Li, A., Eisenberg, N., & Reiser, M. (2004). Relations of young children's agreeableness and resiliency to effortful control and impulsivity. *Social Development*, *13*(2), 193-212.

Cuperman, R., & Ickes, W. (2009). Big Five predictors of behavior and perceptions in initial dyadic interactions: Personality similarity helps extraverts and introverts, but hurts "disagreeables". *Journal of Personality and Social Psychology*, *97*(4), 667-684.

Dahlberg, J. (2013). Family influence in fertility: A longitudinal analysis of sibling correlations in first birth risk and completed fertility among Swedish men and women. *Demographic Research*, *29*, 233-246.

Dahlberg, J., & Kolk, M. (2018). Explaining Swedish sibling similarity in fertility: Parental fertility behavior vs. social background. *Demographic Research*, *39*, 883-896.

de Regt, S., Mortelmans, D., & Marynissen, T. (2013). Financial consequences of relationship dissolution: A longitudinal comparison of formerly married and unmarried cohabiting men and women. *Sociology*, *47*(1), 90-108.

De Vries, J., Kalmijn, M., & Liefbroer, A. C. (2009). Intergenerational transmission of kinship norms? Evidence from siblings in a multi-actor survey. *Social Science Research*, *38*(1), 188-200.

de Vuijst, E., Poortman, A., Das, M., & van Gaalen, R. (2017). Cross-sibling effects on divorce in the Netherlands. *Advances in Life Course Research*, *34*, 1-9.

Domínguez-Folgueras, M. (2013). Is cohabitation more egalitarian? The division of household labor in five European countries. *Journal of Family Issues*, *34*(12), 1623-1646.

Dronkers, J., & Hox, J. (2006). The importance of the common family background for the similarity of divorce risks of siblings: A multi-level event history analysis. In F. J. Yammarino & F. Dansereau (Eds.), *Multilevel issues in social systems* (Vol. 5, pp. 217-238). Emerald Group Publishing Limited.

Dunifon, R., Fomby, P., & Musick, K. (2017). Siblings and children's time use in the United States. *Demographic Research*, *37*, 1611-1624.

Dunn, J., & Plomin, R. (1991). Why are siblings so different? The significance of differences in sibling experiences within the family. *Family process*, *30*(3), 271-283.

Dupéré, V., Dion, E., Cantin, S., Archambault, I., & Lacourse, E. (2021). Social contagion and high school dropout: The role of friends, romantic partners, and siblings. *Journal of Educational Psychology*, *113*(3), 572-584.

Dykstra, P. A., Kalmijn, M., Knijn, T. C., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2005). Codebook of the Netherlands Kinship Panel Study, a multi-actor, multi-method panel study on solidarity in family relationships. *Wave 1* (NKPS Working Paper No. 4), The Netherlands Interdisciplinary Demographic Institute.

Dykstra, P. A., Kalmijn, M., Knijn, T. C., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2007). *Codebook of the Netherlands Kinship Panel Study Wave 2*. The Netherlands Interdisciplinary Demographic Institute.

East, P. L. (1996). Do adolescent pregnancy and childbearing affect younger siblings? *Family Planning Perspectives*, 148-153.

East, P. L. (1998). Impact of adolescent childbearing on families and younger sibling: Effects that increase younger siblings' risk for early pregnancy. *Applied Developmental Science*, *2*(2), 62-74.

Eckstein, D., & Kaufman, J. A. (2012). The role of birth order in personality: An enduring intellectual legacy of Alfred Adler. *Journal of Individual Psychology*, *68*(1), 60-74.

Edwards, A. C., Ohlsson, H., Mościcki, E. K., Sundquist, J., Sundquist, K., & Kendler, K. S. (2019). Geographic proximity is associated with transmission of suicidal behaviour among siblings. *Acta Psychiatrica Scandinavica*, *140*(1), 30-38.

Elder, G. H. (1998). The life course as developmental theory. *Child Development*, *69*(1), 1-12.

Emirbayer, M., & Mische, A. (1998). What is agency? *American Journal of Sociology*, *103*(4), 962-1023.

Engfer, A. (1988). The interrelatedness of marriage and the mother-child relationship. In R. A. Hinde & J. Stevenson-Hinde (Eds.), *Relationships within families: Mutual influences* (Vol. 7, pp. 104-118). Clarendon.

Eriksson, K. H., Hjalmarsson, R., Lindquist, M. J., & Sandberg, A. (2016). The importance of family background and neighborhood effects as determinants of crime. *Journal of Population Economics*, *29*(1), 219-262.

Eurostat. (2015). *Demography report.* Publications Office of the European Union.

Eurostat. (2022). *Crude marriage rate and crude divorce rate* [Data set]. https://ec.europa.eu/eurostat/databrowser/product/view/DEMO_NDIVIND

Feinberg, M. E., & Hetherington, E. M. (2000). Sibling differentiation in adolescence: Implications for behavioral genetic theory. *Child development*, *71*(6), 1512-1524.

Feinberg, M. E., Neiderhiser, J. M., Simmens, S., Reiss, D., & Hetherington, E. M. (2000). Sibling comparison of differential parental treatment in adolescence: Gender, self-esteem, and emotionality as mediators of the parenting-adjustment association. *Child development*, *71*(6), 1611-1628.

Feinberg, M. E., Solmeyer, A. R., & McHale, S. M. (2012). The third rail of family systems: Sibling relationships, mental and behavioral health, and preventive intervention in childhood and adolescence. *Clinical Child and Family Psychology Review*, *15*(1), 43-57.

Felmlee, D., & Sprecher, S. (2000). Close relationships and social psychology: Intersections and future paths. *Social Psychology Quarterly*, *63*(4), 365-376.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*(2), 117-140.

Festinger, L. (1957). *A Theory of cognitive dissonance*. Stanford University Press.

Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups: A study of human factors in housing*. Harper.

Firebaugh, G., Warner, C., & Massoglia, M. (2013). Fixed effects, random effects, and hybrid models for causal analysis. In *Handbook of causal analysis for social research* (pp. 113-132). Springer.

Fowler, J. H., & Christakis, N. A. (2008). Dynamic spread of happiness in a large social network: Longitudinal analysis over 20 years in the Framingham Heart Study. *British Medical Journal 337*, a2338.

Freeman, L. (2004). *The development of social network analysis: A study in the sociology of science*. Empirical Press.

Frejka, T., & Sobotka, T. (2008). Fertility in Europe: Diverse, delayed and below replacement. *Demographic Research*, *19*, 15-46.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the qualities of sibling relationships. *Child Development*, 448-461.

Furstenberg, F. F., Kennedy, S., McLoyd, V. C., Rumbaut, R. G., & Settersten, R. A. (2004). Growing up is harder to do. *Contexts*, *3*(3), 33-41.

Gassen, N. S. (2023). Increasing cohabitation and decreasing marriage: Explanations. In M. Daly, B. Pfau-Effinger, N. Gilbert, & D. J. Besharov (Eds.), *The Oxford handbook of family policy over the life course* (pp. 419-436). Oxford University Press.

Gauthier, A. H. (2007). Becoming a young adult: An international perspective on the transitions to adulthood. *European Journal of Population*, *23*, 217-223.

Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: development of a scale of social comparison orientation. *Journal of Personality and Social Psychology*, *76*(1), 129.

Gibbs, B. G., Workman, J., & Downey, D. B. (2016). The (conditional) resource dilution model: State-and community-level modifications. *Demography*, *53*(3), 723-748.

Giele, J. Z., & Elder, G. H. (Eds.). (1998). *Methods of life course research: Qualitative and quantitative approaches*. Sage.

Gierveld, J. D. J., Liefbroer, A. C., & Beekink, E. (1991). The effect of parental resources on patterns of leaving home among young adults in the Netherlands. *European Sociological Review*, *7*(1), 55-71.

Gilligan, M., Karraker, A., & Jasper, A. (2018). Linked lives and cumulative inequality: A multigenerational family life course framework. *Journal of Family Theory & Review*, *10*(1), 111-125.

Gilligan, M., Stocker, C. M., & Jewsbury Conger, K. (2020). Sibling relationships in adulthood: Research findings and new frontiers. *Journal of Family Theory & Review*, *12*(3), 305-320.

Glass, J., Bengtson, V. L., & Dunham, C. C. (1986). Attitude similarity in three-generation families: Socialization, status inheritance, or reciprocal influence? *American Sociological Review*, *51*(5), 685-698.

Goldberg, L. R. (1990). An alternative" description of personality": the big-five factor structure. *Journal of Personality and Social Psychology*, *59*(6), 1216-1229.

Goldscheider, F., & Goldscheider, C. (1999). *The changing transition to adulthood: Leaving and returning home*. Sage Publications.

Goldscheider, F. K., & DaVanzo, J. (1989). Pathways to independent living in early adulthood: Marriage, semiautonomy, and premarital residential independence. *Demography*, *26*(4), 597-614.

Gözü, H., & Newman, J. (2019). Associations between personality traits and the quality of sibling relationships. *International Journal of Human and Behavioral Science*, *4*(2), 22-31.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, *91*(3), 481-510.

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, *78*(6), 1360-1380.

Grätz, M., Barclay, K. J., Wiborg, Ø. N., Lyngstad, T. H., Karhula, A., Erola, J., Präg, P., Laidley, T., & Conley, D. (2021). Sibling similarity in education across and within societies. *Demography*, *58*(3), 1011-1037.

Grebenik, E., & Mackensen, R. (1989). *Later phases of the family cycle: Demographic aspects*. Oxford University Press, USA.

Grusec, J. E., Goodnow, J. J., & Kuczynski, L. (2000). New directions in analyses of parenting contributions to children's acquisition of values. *Child Development*, *71*(1), 205-211.

Haas, B. W., Omura, K., Constable, R. T., & Canli, T. (2007). Emotional conflict and neuroticism: personality-dependent activation in the amygdala and subgenual anterior cingulate. *Behavioral Neuroscience*, *121*(2), 249-256.

Hamwey, M. K., Rolan, E. P., Jensen, A. C., & Whiteman, S. D. (2019). “Absence makes the heart grow fonder”: A qualitative examination of sibling relationships during emerging adulthood. *Journal of Social and Personal Relationships*, *36*(8), 2487-2506.

Hamwey, M. K., & Whiteman, S. D. (2020). Jealousy links comparisons with siblings to adjustment among emerging adults. *Family Relations, 70*(2), 483-497.

Hank, K., & Steinbach, A. (2022). Sibling estrangement in adulthood. *Journal of Social and Personal Relationships*, 02654075221127863.

Harris, K., & Vazire, S. (2016). On friendship development and the Big Five personality traits. *Social and Personality Psychology Compass*, *10*(11), 647-667.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. Cambridge Press.

Haurin, R. J., & Mott, F. L. (1990). Adolescent sexual activity in the family context: The impact of older siblings. *Demography*, *27*(4), 537-557.

Hauser, R. M., & Wong, R. S. (1989). Sibling resemblance and intersibling effects in educational attainment. *Sociology of Education*, 149-171.

Heine, S. J., Foster, J. A. B., & Spina, R. (2009). Do birds of a feather universally flock together? Cultural variation in the similarity-attraction effect. *Asian Journal of Social Psychology*, *12*(4), 247-258.

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2022). Nest leaver or home stayer? Sibling influence on parental home leaving in the United Kingdom. *Advances in Life Course Research*, *52*, 100464.

Her, Y.-C., Vergauwen, J., & Mortelmans, D. (2023). Do birds of a feather leave the nest together? The role of sibling personality similarity in the transition to adulthood. *PLoS One*, *18*(5), e0284808.

Her, Y. C., Batur, Z. Z., Vergauwen, J., & Mortelmans, D. (2021). Siblings' similarities and dissimilarities: A review of theoretical perspectives and empirical insights. *Journal of Family Theory & Review*, *13*(4), 447-462.

Hernes, G. (1972). The process of entry into first marriage. *American Sociological Review*, 173-182.

Hiekel, N., Liefbroer, A. C., & Poortman, A.-R. (2014). Understanding diversity in the meaning of cohabitation across Europe. *European Journal of Population*, *30*(4), 391-410.

Hogan, D. P., & Kitagawa, E. M. (1985). The impact of social-status, family-structure, and neighborhood on the fertility of black-adolescents. *American Journal of Sociology*, *90*(4), 825-855.

Hogerbrugge, M. J., De Hoon, S., Dykstra, P. A., Komter, A., Liefbroer, A., & Mulder, C. H. (2015). *Codebook of the Netherlands Kinship Panel Study Wave 4*. The Netherlands Interdisciplinary Demographic Institute.

Holdsworth, C. (2000). Leaving Home in Britain and Spain. *European Sociological Review*, *16*(2), 201-222.

Horner, P., Andrade, F., Delva, J., Grogan-Kaylor, A., & Castillo, M. (2012). The Relationship of Birth Order and Gender with Academic Standing and Substance Use Among Youth in Latin America. *Journal of Individual Psychology (1998)*, *68*(1), 19-37.

Hornsey, M. J. (2008). Social identity theory and self-categorization theory: A historical review. *Social and Personality Psychology Compass*, *2*(1), 204-222.

Hornstra, M., & Maas, I. (2021). Does the impact of the family increase or decrease over the life course? Sibling similarities in occupational status across different career points. *Research in Social Stratification and Mobility*, *75*, 100643.

Howe, N., Rinaldi, C. M., Jennings, M., & Petrakos, H. (2002). "No! The lambs can stay out because they got cozies": Constructive and destructive sibling conflict, pretend play, and social understanding. *Child Development*, *73*(5), 1460-1473.

Hughes, C., Ronchi, L., Foley, S., Dempsey, C., Lecce, S., & Consortium, I. F. C. (2023). Siblings in lockdown: International evidence for birth order effects on child adjustment in the Covid19 pandemic. *Social Development*, 1-19.

Huston, T. L. (1983). Power. In H. H. Kelley, E. Berschied, A. Christensen, J. Harvey, T. L. Huston, G. Loevinger, E. MCClintock, L. A. Peplau, & D. R. Peterson (Eds.), *Close relationships* (pp. 169-219). Freeman.

Jæger, M. M. (2009). Sibship size and educational attainment. A joint test of the confluence model and the resource dilution hypothesis. *Research in Social Stratification and Mobility*, *27*(1), 1-12.

Jayakody, R., Thornton, A., & Axinn, W. G. (Eds.). (2008). *International family change: Ideational perspectives*. Routledge.

Jensen, A. C., Killoren, S. E., Campione-Barr, N., Padilla, J., & Chen, B.-B. (2023). Sibling relationships in adolescence and young adulthood in multiple contexts: A critical review. *Journal of Social and Personal Relationships*, *40*(2), 384-419.

Jensen, A. C., Nielson, M. K., & Yorgason, J. B. (2020). The longest-lasting relationship: Patterns of contact and well-being among mid-to later-life siblings. *The Journals of Gerontology: Series B*, *75*(10), 2240-2249.

Jensen, A. C., Pond, A. M., & Padilla-Walker, L. M. (2015). Why can't I be more like my brother? The role and correlates of sibling social comparison orientation. *Journal of Youth and Adolescence*, *44*(11), 2067-2078.

Jensen, A. C., Whiteman, S. D., & Fingerman, K. L. (2018). "Can't live with or without them:" Transitions and young adults' perceptions of sibling relationships. *Journal of Family Psychology*, *32*(3), 385.

Jensen-Campbell, L. A., & Graziano, W. G. (2001). Agreeableness as a moderator of interpersonal conflict. *Journal of Personality*, *69*(2), 323-362.

Jokela, M. (2012). Birth-cohort effects in the association between personality and fertility. *Psychological Science*, *23*(8), 835-841.

Jones, G. (1995). *Leaving home*. Open University Press Buckingham.

Jones, N. (2021, March 24). *UK House Price Index: January 2021*. Office for National Statistics. https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/housepriceindex/january2021

Jonkmann, K., Thoemmes, F., Lüdtke, O., & Trautwein, U. (2014). Personality traits and living arrangements in young adulthood: Selection and socialization. *Developmental Psychology*, *50*(3), 683.

Kalmijn, M. (2005). The effects of divorce on men's employment and social security histories. *European Journal of Population*, *21*(4), 347-366.

Kalmijn, M., & Leopold, T. (2019). Changing sibling relationships after parents' death: The role of solidarity and kinkeeping. *Journal of Marriage and Family*, *81*(1), 99-114.

Kalmijn, M., & van de Werfhorst, H. G. (2016). Sibship size and gendered resource dilution in different societal contexts. *PLoS One*, *11*(8), e0160953.

Kaminsky, L., & Dewey, D. (2001). Siblings Relationships of Children with Autism. *Journal of Autism and Developmental Disorders*, *31*(4), 399-410.

Kamp Dush, C. M. (2013). Marital and cohabitation dissolution and parental depressive symptoms in fragile families. *Journal of Marriage and Family*, *75*(1), 91-109.

Kandler, C., & Papendick, M. (2017). Behavior genetics and personality development: A methodological and meta-analytic review. In J. Specht (Ed.), *Personality development across the lifespan* (pp. 473-495). Elsevier.

Kandler, C., Waaktaar, T., Mõttus, R., Riemann, R., & Torgersen, S. (2019). Unravelling the interplay between genetic and environmental contributions in the unfolding of personality differences from early adolescence to young adulthood. *European Journal of Personality*, *33*(3), 221-244.

Kaplan, A., & Herbst, A. (2015). Stratified patterns of divorce: Earnings, education, and gender. *Demographic Research*, *32*, 949-982.

Karaca-Mandic, P., Norton, E. C., & Dowd, B. (2012). Interaction terms in nonlinear models. *Health Services Research*, *47*(1pt1), 255-274.

Karhula, A., Erola, J., Raab, M., & Fasang, A. (2019). Destination as a process: Sibling similarity in early socioeconomic trajectories. *Advances in Life Course Research*, *40*, 85-98.

Karlson, K. B., & Birkelund, J. F. (2022). Family background, educational qualifications, and labour market attainment: Evidence from Danish siblings. *European Sociological Review*, *38*(6), 988-1000.

Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban health*, *78*(3), 458-467.

Keim, S., Klärner, A., & Bernardi, L. (2009). Qualifying social influence on fertility intentions: Composition, structure and meaning of fertility-relevant social networks in Western Germany. *Current Sociology*, *57*(6), 888-907.

Keim, S., Klärner, A., & Bernardi, L. (2013). Tie strength and family formation: Which personal relationships are influential? *Personal Relationships*, *20*(3), 462-478.

Kiernan, K. (2004). Unmarried cohabitation and parenthood in Britain and Europe. *Law & Policy*, *26*(1), 33-55.

Kiernan, K. E., & Cherlin, A. J. (1999). Parental divorce and partnership dissolution in adulthood: Evidence from a British cohort study. *Population Studies*, *53*(1), 39-48.

Killoren, S. E., & Roach, A. L. (2014). Sibling conversations about dating and sexuality: Sisters as confidants, sources of support, and mentors. *Family Relations*, *63*(2), 232-243.

Kołodziej-Zaleska, A., & Przybyła-Basista, H. (2016). Psychological well-being of individuals after divorce: The role of social support. *Current Issues in Personality Psychology*, *4*(4), 206-216.

Kotte, M., & Ludwig, V. (2011). Intergenerational transmission of fertility intentions and behaviour in Germany: The role of contagion. *Vienna Yearbook of Population Research*, *9*, 207-226.

Kowal, A., & Kramer, L. (1997). Children's understanding of parental differential treatment. *Child Development*, *68*(1), 113-126.

Kravdal, Ø. (2007). A fixed-effects multilevel analysis of how community family structure affects individual mortality in Norway. *Demography*, *44*(3), 519-537.

Kravdal, Ø., & Rindfuss, R. R. (2008). Changing relationships between education and fertility: A study of women and men born 1940 to 1964. *American Sociological Review*, *73*(5), 854-873.

Kreidl, M., & Žilinčíková, Z. (2021). How does cohabitation change people's attitudes toward family dissolution? *European Sociological Review*, *37*(4), 541-554.

Kuziemko, I. (2006). *Is having babies contagious? Estimating fertility peer effects between siblings* [Unpublished manuscript]. Graduate Business School, Columbia Business School, New York, NY.

Laakasuo, M., Rotkirch, A., van Duijn, M., Berg, V., Jokela, M., David-Barrett, T., Miettinen, A., Pearce, E., & Dunbar, R. (2020). Homophily in personality enhances group success among real-life friends. *Frontiers in Psychology*, *11*(710).

Lanthier, R. P. (2007). Personality traits and sibling relationships in emerging adults. *Psychological Reports*, *100*(2), 672-674.

Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. University of California Press.

Le Blanc, D., & Wolff, F. (2006). Leaving home in Europe: The role of parents' and children's incomes. *Review of Economics of the Household*, *4*(1), 53-73.

Lee, K. O., & Painter, G. (2013). What happens to household formation in a recession? *Journal of Urban Economics*, *76*, 93-109.

Lee, T. R., Mancini, J. A., & Maxwell, J. W. (1990). Sibling Relationships in Adulthood: Contact Patterns and Motivations. *Journal of Marriage and Family*, *52*(2), 431-440.

Leopold, T. (2012). The legacy of leaving home: Long-term effects of coresidence on parent–child relationships. *Journal of Marriage and Family*, *74*(3), 399-412.

Lesthaeghe, R. (2010). The unfolding story of the second demographic transition. *Population and Development Review*, *36*(2), 211-251.

Lesthaeghe, R., & Surkyn, J. (1988). Cultural dynamics and economic theories of fertility change. *Population and Development Review*, *14*(1), 1-45.

Liefbroer, A. C., & Elzinga, C. H. (2012). Intergenerational transmission of behavioural patterns: How similar are parents' and children's demographic trajectories? *Advances in Life Course Research*, *17*(1), 1-10.

Liefbroer, A. C., & Toulemon, L. (2010). Demographic perspectives on the transition to adulthood: An introduction. *Advances in Life Course Research*, *15*(2-3), 53-58.

Lin, N. (1999). Building a network theory of social capital. *Connections*, *22*(1), 28-51.

Litt, D. M., Stock, M. L., & Gibbons, F. X. (2015). Adolescent alcohol use: Social comparison orientation moderates the impact of friend and sibling behaviour. *British Journal of Health Psychology*, *20*(3), 514-533.

Lönnqvist, J.-E., & Itkonen, J. V. (2016). Homogeneity of personal values and personality traits in Facebook social networks. *Journal of Research in Personality*, *60*, 24-35.

Luo, S., Chen, H., Yue, G., Zhang, G., Zhaoyang, R., & Xu, D. (2008). Predicting marital satisfaction from self, partner, and couple characteristics: Is it me, you, or us? *Journal of Personality*, *76*(5), 1231-1266.

Lyngstad, T. H. (2011). Does community context have an important impact on divorce risk? A fixed-effects study of twenty Norwegian first-marriage cohorts. *European Journal of Population*, *27*(1), 57-77.

Lyngstad, T. H., & Prskawetz, A. (2010). Do siblings' fertility decisions influence each other? *Demography*, *47*(4), 923-934.

Manning, W. D. (2004). Children and the stability of cohabiting couples. *Journal of Marriage and Family*, *66*(3), 674-689.

Manski, C. F. (1993). Identification of endogenous social effects: The reflection problem. *The Review of Economic Studies*, *60*(3), 531-542.

Manski, C. F. (1995). *Identification problems in the social sciences*. Harvard University Press.

Manting, D., & Bouman, A. M. (2006). Short-and long-term economic consequences of the dissolution of marital and consensual unions. The example of the Netherlands. *European Sociological Review*, *22*(4), 413-429.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*(2), 224.

Marynissen, L., Neels, K., Wood, J., & Van de Velde, S. (2020). Ready for parenthood? Dual earners' relative labour market positions and entry into parenthood in Belgium. *Demographic Research*, *42*, 901-932.

Massen, J. J., & Koski, S. E. (2014). Chimps of a feather sit together: Chimpanzee friendships are based on homophily in personality. *Evolution and Human Behavior*, *35*(1), 1-8.

McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin*, *120*(3), 323-337.

McCrae, R. R., & Costa, P. T., Jr. (1994). The stability of personality: Observations and evaluations. *Current Directions in Psychological Science*, *3*(6), 173-175.

McDermott, R., Fowler, J. H., & Christakis, N. A. (2013). Breaking up is hard to do, unless everyone else is doing it too: Social network effects on divorce in a longitudinal sample. *Social Forces*, *92*(2), 491-519.

McGue, M., & Lykken, D. T. (1992). Genetic influence on risk of divorce. *Psychological Science*, *3*(6), 368-373.

McGuire, S., McHale, S. M., & Updegraff, K. (1996). Children's perceptions of the sibling relationship in middle childhood: Connections within and between family relationships. *Personal Relationships*, *3*(3), 229-239.

McHale, S. M., Bissell, J., & Kim, J.-Y. (2009). Sibling relationship, family, and genetic factors in sibling similarity in sexual risk. *Journal of Family Psychology*, *23*(4), 562-572.

McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling relationships and influences in childhood and adolescence. *Journal of Marriage and Family*, *74*(5), 913-930.

McKinney, C., & Renk, K. (2008). Differential parenting between mothers and fathers: Implications for late adolescents. *Journal of Family Issues*, *29*(6), 806-827.

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*(1), 415-444.

Mencarini, L., Vignoli, D., Zeydanli, T., & Kim, J. (2018). Life satisfaction favors reproduction. The universal positive effect of life satisfaction on childbearing in contemporary low fertility countries. *PLoS One*, *13*(12), e0206202.

Merz, E.-M., Dykstra, P. A., Hogerbrugge, M. J., Komter, A. E., Liefbroer, A. C., & Mulder, C. H. (2012). *Codebook of the Netherlands Kinship Panel Study Wave 3*. The Netherlands Interdisciplinary Demographic Institute.

Merz, E. M., & Liefbroer, A. C. (2012). The attitude toward voluntary childlessness in Europe: Cultural and institutional explanations. *Journal of Marriage and Family*, *74*(3), 587-600.

Milevsky, A. (2005). Compensatory patterns of sibling support in emerging adulthood: Variations in loneliness, self-esteem, depression and life satisfaction. *Journal of Social and Personal Relationships*, *22*(6), 743-755.

Milevsky, A., Smoot, K., Leh, M., & Ruppe, A. (2005). Familial and contextual variables and the nature of sibling relationships in emerging adulthood. *Marriage & Family Review*, *37*(4), 123-141.

Miller, N. E., & Dollard, J. (1941). *Social learning and imitation*. Yale University Press.

Mills, M., Rindfuss, R. R., McDonald, P., Te Velde, E., & ESHRE Reproduction and Society Task Force. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update*, *17*(6), 848-860.

Minuchin, S. (1974). *Families and family therapy*. Harvard University Press.

Mischel, W. (1966). A social learning view of sex differences in behavior. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 57-81). Stanford University Press.

Mitchell, B. A., Wister, A. V., & Burch, T. K. (1989). The family environment and leaving the parental home. *Journal of Marriage and Family*, 605-613.

Mönkediek, B., & Bras, H. (2014). Strong and weak family ties revisited: Reconsidering European family structures from a network perspective. *The History of the Family*, *19*(2), 235-259.

Montoya, R. M., Horton, R. S., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, *25*(6), 889-922.

Mortelmans, D. (Ed.). (2020). *Divorce in Europe: new insights in trends, causes and consequences of relation break-ups*. Springer Nature.

Mulder, C. H. (2013). Family dynamics and housing: Conceptual issues and empirical findings. *Demographic Research*, *29*(14), 355-378.

Mulder, C. H., & Clark, W. A. (2000). Leaving home and leaving the state: Evidence from the United States. *International Journal of Population Geography*, *6*(6), 423-437.

Mulder, C. H., Lundholm, E., & Malmberg, G. (2020). Young adults' migration to cities in Sweden: Do siblings pave the way? *Demography*, *57*(6), 2221-2244.

Mundlak, Y. (1978). On the pooling of time series and cross section data. *Econometrica: journal of the Econometric Society*, 69-85.

Murphy, M. (1999). Is the relationship between fertility of parents and children really weak? *Social biology*, *46*(1-2), 122-145.

Neugarten, B. L. (1979). Time, age, and the life cycle. *The American Journal of Psychiatry*, *136*(7), 887-894.

Newcomb, T. M. (1956). The prediction of interpersonal attraction. *American Psychologist*, *11*(11), 575-586.

Nilsson, K., & Strandh, M. (1999). Nest leaving in Sweden: The importance of early educational and labor market careers. *Journal of Marriage and Family*, 1068-1079.

Noller, P., Conway, S., & Blakeley-Smith, A. (2008). Sibling relationships in adolescent and young adult twin and nontwin siblings: Managing competition and comparison. In J.

P. Forgas & J. Fitness (Eds.), *Social relationships: Cognitive, affective, and motivational processes* (pp. 235-252). Psychology Press.

Nuckolls, C. W. (1993). *Siblings in South Asia: Brothers and sisters in cultural context*. Guilford Press.

Ozbay, Y., & Aydogan, D. (2020). Cumulative risk factors and family relationship quality in understanding Turkish emerging adults' resilience. *Journal of Adult Development*, *27*(2), 95-107.

Pasteels, I., & Mortelmans, D. (2017). The socioeconomic determinants of repartnering after divorce or separation in Belgium. *Demographic Research*, *36*, 1785-1812.

Pelikh, A., Mikolai, J., & Kulu, H. (2022). Make up or break up? Partnership transitions among young adults in England and Wales. *Advances in Life Course Research*, *52*, 100475.

Perales, F., & Plage, S. (2020). Sexual orientation, geographic proximity, and contact frequency between adult siblings. *Journal of Marriage and Family*, *82*(5), 1444-1460.

Perelli-Harris, B., Mynarska, M., Berrington, A., Berghammer, C., Evans, A., Isupova, O., Keizer, R., Klärner, A., Lappegård, T., & Vignoli, D. (2014). Towards a new understanding of cohabitation: Insights from focus group research across Europe and Australia. *Demographic Research*, *31*, 1043-1078.

Pew Research Center. (2012). The boomerang generation: Feeling OK about living wtih mom and dad. http://www.pewsocialtrends.org/files/2012/03/PewSocialTrends-2012-BoomerangGeneration.pdf

Pink, S., Leopold, T., & Engelhardt, H. (2014). Fertility and social interaction at the workplace: Does childbearing spread among colleagues? *Advances in Life Course Research*, *21*, 113-122.

Plamondon, A., Bouchard, G., & Lachance-Grzela, M. (2021). Family dynamics and young adults' well-being: The mediating role of sibling bullying. *Journal of Interpersonal Violence*, *36*(9-10), NP5362-NP5384.

Plomin, R., Asbury, K., & Dunn, J. (2001). Why are children in the same family so different? Nonshared environment a decade later. *The Canadian Journal of Psychiatry*, *46*(3), 225-233.

Pollet, T. V. (2007). Genetic relatedness and sibling relationship characteristics in a modern society. *Evolution and Human Behavior*, *28*(3), 176-185.

Pollet, T. V., & Hoben, A. D. (2011). An evolutionary perspective on siblings: Rivals and resources. In C. Salmon & T. K. Shackelford (Eds.), *The Oxford handbook of evolutionary family psychology* (pp. 128-148). Oxford University Press.

Poortman, A.-R. (2000). Sex differences in the economic consequences of separation: A panel study of the Netherlands. *European Sociological Review*, *16*(4), 367-383.

Raab, M., Fasang, A. E., Karhula, A., & Erola, J. (2014). Sibling similarity in family formation. *Demography*, *51*(6), 2127-2154.

Rauer, A. J., & Volling, B. L. (2007). Differential parenting and sibling jealousy: Developmental correlates of young adults' romantic relationships. *Personal Relationships*, *14*(4), 495-511.

Reher, D. S. (1998). Family ties in Western Europe: persistent contrasts. *Population and Development Review*, 203-234.

Riggio, H. R. (2000). Measuring attitudes toward adult sibling relationships: The lifespan sibling relationship scale. *Journal of Social and Personal Relationships*, *17*(6), 707-728.

Rindfuss, R. R., Guilkey, D., Morgan, S. P., Kravdal, Ø., & Guzzo, K. B. (2007). Child care availability and first-birth timing in Norway. *Demography*, *44*(2), 345-372.

Riswick, T., & Engelen, T. (2018). Siblings and life transitions: investigating the resource dilution hypothesis across historical contexts and outcomes. *The History of the Family*, *23*(4), 521-532.

Rossier, C., & Bernardi, L. (2009). Social Interaction Effects on Fertility: Intentions and Behaviors. *European Journal of Population*, *25*, 467-485.

Rowe, D. C., & Gulley, B. L. (1992). Sibling effects on substance use and delinquency. *Criminology*, *30*(2), 217-234.

Sanner, C., Russell, L. T., Coleman, M., & Ganong, L. (2018). Half-sibling and stepsibling relationships: A systematic integrative review. *Journal of Family Theory & Review*, *10*(4), 765-784.

Savelieva, K., Jokela, M., & Rotkirch, A. (2023). Reasons to postpone childbearing during fertility decline in Finland. *Marriage & Family Review*, *59*(3), 253-276.

Schachter, F. F., Shore, E., Feldman-Rotman, S., Marquis, R. E., & Campbell, S. (1976). Sibling deidentification. *Developmental Psychology*, *12*(5), 418.

Schoen, R., Astone, N. M., Kim, Y. J., & Nathanson, C. A. (1999). Do fertility intentions affect fertility behavior? *Journal of Marriage and Family*, *61*(3), 790-799.

Schoen, R., Kim, Y. J., Nathanson, C. A., Fields, J., & Astone, N. M. (1997). Why do Americans want children? *Population and Development Review*, *23*(2), 333-358.

Schröder, H., & Ganzeboom, H. B. (2014). Measuring and modelling level of education in European societies. *European Sociological Review*, *30*(1), 119-136.

Schunck, R. (2013). Within and between estimates in random-effects models: Advantages and drawbacks of correlated random effects and hybrid models. *The Stata Journal*, *13*(1), 65-76.

Schwanitz, K. (2017). The transition to adulthood and pathways out of the parental home: A cross-national analysis. *Advances in Life Course Research*, *32*, 21-34.

Schwanitz, K., Mulder, C. H., & Toulemon, L. (2017). Differences in leaving home by individual and parental education among young adults in Europe. *Demographic Research*, *37*, 1975-2010.

Seiffe-Krenke, I. (2006). Leaving home or still in the nest? Parent-child relationships and psychological health as predictors of different leaving home patterns. *Developmental Psychology*, *42*(5), 864.

Seiffge-Krenke, I. (2009). Leaving-home patterns in emerging adults: The impact of earlier parental support and developmental task progression. *European Psychologist*, *14*(3), 238-248.

Seiffge-Krenke, I. (2010). Predicting the timing of leaving home and related developmental tasks: Parents' and children's perspectives. *Journal of Social and Personal Relationships*, *27*(4), 495-518.

Seiffge-Krenke, I. (2013). "She's Leaving Home..." Antecedents, Consequences, and Cultural Patterns in the Leaving Home Process. *Emerging Adulthood*, *1*(2), 114-124.

Selfhout, M., Burk, W., Branje, S., Denissen, J., Van Aken, M., & Meeus, W. (2010). Emerging late adolescent friendship networks and Big Five personality traits: A social network approach. *Journal of Personality*, *78*(2), 509-538.

Selfhout, M. H., Branje, S. J., & Meeus, W. H. (2007). Similarity in adolescent best friendships: The role of gender. *Netherlands Journal of Psychology*, *63*(2), 42-48.

Serra Poirier, C., Brendgen, M., Vitaro, F., Dionne, G., & Boivin, M. (2017). Contagion of anxiety symptoms among adolescent siblings: A twin study. *Journal of Research on Adolescence*, *27*(1), 65-77.

Settersten, R. A. (1998). A Time to Leave Home and a Time Never to Return? Age Constraints on the Living Arrangements of Young Adults. *Social Forces*, *76*(4), 1373-1400.

Settersten, R. A., Jr., & Hägestad, G. O. (1996). What's the Latest? Cultural Age Deadlines for Family Transitions. *The Gerontologist*, *36*(2), 178-188.

Shalizi, C. R., & Thomas, A. C. (2011). Homophily and contagion are generically confounded in observational social network studies. *Sociological methods & research*, *40*(2), 211-239.

Shanahan, M. J. (2000). Pathways to adulthood in changing societies: Variability and mechanisms in life course perspective. *Annual Review of Sociology*, *26*(1), 667-692.

Simon, H. A. (1954). Spurious correlation: A causal interpretation. *Journal of the American Statistical Association*, *49*(267), 467-479.

Slomkowski, C., Rende, R., Conger, K. J., Simons, R. L., & Conger, R. D. (2001). Sisters, brothers, and delinquency: Evaluating social influence during early and middle adolescence. *Child Development*, *72*(1), 271-283.

Slomkowski, C., Rende, R., Novak, S., Lloyd-Richardson, E., & Niaura, R. (2005). Sibling effects on smoking in adolescence: Evidence for social influence from a genetically informative design. *Addiction*, *100*(4), 430-438.

Snoeckx, L., Dronkers, J., & Mortelmans, D. (2008). Cross-regional divorce risks in Belgium. *Paper presented at the Fifth Meeting of the European Network for the Sociological and Demographic Study of Divorce, London, UK*.

Spikic, S., & Mortelmans, D. (2021). A preliminary meta-analysis of the Big Five personality traits' effect on marital separation. *Journal of Divorce & Remarriage*, *62*(7), 551-571.

Statbel. (2023). *Decrease in divorce rate and children's residence more often with the second ex-spouse* [Data set]. https://statbel.fgov.be/en/themes/population/partnership/divorces

Steelman, L. C., Powell, B., Werum, R., & Carter, S. (2002). Reconsidering the effects of sibling configuration: Recent advances and challenges. *Annual Review of Sociology*, *28*(1), 243-269.

Steinbach, A., & Hank, K. (2018). Full-, Half-, and Step-Sibling Relations in Young and Middle Adulthood. *Journal of Family Issues*, *39*(9), 2639-2658.

Stoeber, J., Otto, K., & Dalbert, C. (2009). Perfectionism and the Big Five: Conscientiousness predicts longitudinal increases in self-oriented perfectionism. *Personality and Individual Differences*, *47*(4), 363-368.

Stone, J., Berrington, A., & Falkingham, J. (2011). The changing determinants of UK young adults' living arrangements. *Demographic Research*, *25*, 629-666.

Sulloway, F. J. (1996). *Born to rebel: Birth order, family dynamics, and creative lives*. Pantheon Books.

Sulloway, F. J. (1999). Birth order. In S. R. Pritzker (Ed.), *Encyclopedia of creativity* (pp. 189-202). Elsevier.

Tach, L. M., & Eads, A. (2015). Trends in the economic consequences of marital and cohabitation dissolution in the United States. *Demography*, *52*(2), 401-432.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In J. A. Williams & S. Worchel (Eds.), *The Social Psychology of Intergroup Relations* (pp. 33-47). Wadsworth.

Tajfel, H. E. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. Academic Press.

Tanskanen, A. O., & Danielsbacka, M. (2014). Genetic relatedness predicts contact frequencies with siblings, nieces and nephews: Results from the Generational Transmissions in Finland surveys. *Personality and Individual Differences*, *69*, 5-11.

Tanskanen, A. O., & Danielsbacka, M. (2021). Brothers and sisters across the life course: Eleven factors shaping relationship quality in adult siblings. In A. Buchanan & A. Rotkirch (Eds.), *Brothers and sisters: Sibling relationships across the life course* (pp. 25-40). Palgrave Macmillan.

Tavares, L. P., & Aassve, A. (2013). Psychological distress of marital and cohabitation breakups. *Social Science Research*, *42*(6), 1599-1611.

Thielemans, G., & Mortelmans, D. (2022). Poverty Risks after Relationship Dissolution and the Role of Children: A Contemporary Longitudinal Analysis of Seven OECD Countries. *Social Sciences*, *11*(3), 138.

Tippett, N., & Wolke, D. (2015). Aggression between siblings: Associations with the home environment and peer bullying. *Aggressive Behavior*, *41*(1), 14-24.

Titus, S. L. (1980). A Function of Friendship - Social Comparisons as a Frame of Reference for Marriage. *Human Relations*, *33*(6), 409-431.

Tosi, M. (2017). Age norms, family relationships, and home leaving in Italy. *Demographic Research*, *36*(9), 281-306.

Trepte, S., & Loy, L. S. (2017). Social identity theory and self-categorization theory. *The international encyclopedia of media effects*, 1-13.

Trim, R. S., Leuthe, E., & Chassin, L. (2006). Sibling influence on alcohol use in a young adult, high-risk sample. *Journal of Studies on Alcohol*, *67*(3), 391-398.

Tucker, C. J., Barber, B. L., & Eccles, J. S. (1997). Advice about life plans and personal problems in late adolescent sibling relationships. *Journal of Youth and Adolescence*, *26*(1), 63-76.

Tzeng, J. M., & Mare, R. D. (1995). Labor market and socioeconomic effects on marital stability. *Social Science Research*, *24*(4), 329-351.

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social relationships and health behavior across the life course. *Annual Review of Sociology*, *36*, 139-157.

University of Essex. (2020). Understanding Society: Waves 1-9, 2009-2019 and Harmonised BHPS: Waves 1-18, 1991-2009. [data collection]. 12th Edition. UK Data Service. SN: 6614.

Updegraff, K. A., McHale, S. M., & Crouter, A. C. (2002). Adolescents' sibling relationship and friendship experiences: Developmental patterns and relationship linkages. *Social Development*, *11*(2), 182-204.

van den Berg, L., Kalmijn, M., & Leopold, T. (2021). Stepfamily Effects on Early Home-Leaving: The Role of Conflict and Closeness. *Journal of Marriage and Family*, *83*(2), 305-321.

Van den Berg, L., & Mortelmans, D. (2018). De Onzichtbare Scheidingsgolf: Een analyse van relatieontbinding van samenwonenden en gehuwden in België. *Relaties en Nieuwe Gezinnen*, *8*(1), 1-31.

van der Vleuten, M., Weesie, J., & Maas, I. (2020). Sibling influence in field of study choices. *Research in Social Stratification and Mobility*, *68*, 100525.

Van Dijk, M. P., Hale III, W. W., Hawk, S. T., Meeus, W., & Branje, S. (2020). Personality development from age 12 to 25 and its links with life transitions. *European Journal of Personality*, *34*(3), 322-344.

van Eijck, K. (1997). The impact of family background and educational attainment on cultural consumption: A sibling analysis. *Poetics*, *25*(4), 195-224.

van Eijck, K., & de Graaf, P. M. (1995). The effects of family structure on the educational attainment of siblings in Hungary. *European Sociological Review*, *11*(3), 273-292.

Van Houdt, K., & Poortman, A.-R. (2018). Joint lifestyles and the risk of union dissolution: Differences between marriage and cohabitation. *Demographic Research*, *39*, 431-458.

Vauhkonen, T., Kallio, J., Kauppinen, T. M., & Erola, J. (2017). Intergenerational accumulation of social disadvantages across generations in young adulthood. *Research in Social Stratification and Mobility*, *48*, 42-52.

Volkom, M. V. (2006). Sibling relationships in middle and older adulthood: A review of the literature. *Marriage & Family Review*, *40*(2-3), 151-170.

Voorpostel, M. (2007). *Sibling support: The exchange of help among brothers and sisters in the Netherlands*. Utrecht University.

Voorpostel, M., van der Lippe, T., Dykstra, P. A., & Flap, H. (2007). Similar or Different? The Importance of Similarities and Differences for Support Between Siblings. *Journal of Family Issues*, *28*(8), 1026-1053.

Vukasović, T., & Bratko, D. (2015). Heritability of personality: A meta-analysis of behavior genetic studies. *Psychological Bulletin*, *141*(4), 769-785.

Wagner, M. (2020). On Increasing Divorce Risks. In D. Mortelmans (Ed.), *Divorce in Europe: New Insights in Trends, Causes and Consequences of Relation Break-ups* (pp. 37-61). Springer International Publishing.

Wagner, M., Huinink, J., & Liefbroer, A. C. (2019). Running out of time? Understanding the consequences of the biological clock for the dynamics of fertility intentions and union formation. *Demographic Research*, *40*, 1-26.

Wang, M.-T., Degol, J. L., & Amemiya, J. L. (2019). Older Siblings as Academic Socialization Agents for Younger Siblings: Developmental Pathways across Adolescence. *Journal of Youth and Adolescence*, *48*(6), 1218-1233.

Watkins, S. C. (1995). Social networks and social science history. *Social Science History*, *19*(3), 295-311.

Weaver, S. E., Coleman, M., & Ganong, L. H. (2003). The sibling relationship in young adulthood: Sibling functions and relationship perceptions as influenced by sibling pair composition. *Journal of Family Issues*, *24*(2), 245-263.

White, L. (2001). Sibling relationships over the life course: A panel analysis. *Journal of Marriage and Family*, *63*(2), 555-568.

White, N. R. (2002). "Not under my roof!" Young people's experience of home. *Youth & Society*, *34*(2), 214-231.

Whiteman, S. D., Bernard, J. M. B., & McHale, S. M. (2010). The nature and correlates of sibling influence in two-parent African American families. *Journal of Marriage and Family*, *72*(2), 267-281.

Whiteman, S. D., & Christiansen, A. (2008). Processes of sibling influence in adolescence: Individual and family correlates. *Family Relations*, *57*(1), 24-34.

Whiteman, S. D., Jensen, A. C., & Maggs, J. L. (2014). Similarities and differences in adolescent siblings' alcohol-related attitudes, use, and delinquency: Evidence for convergent and divergent influence processes. *Journal of Youth and Adolescence*, *43*(5), 687-697.

Whiteman, S. D., McHale, S. M., & Crouter, A. C. (2007a). Competing processes of sibling influence: Observational learning and sibling deidentification. *Social Development*, *16*(4), 642-661.

Whiteman, S. D., McHale, S. M., & Crouter, A. C. (2007b). Explaining sibling similarities: Perceptions of sibling influences. *Journal of Youth and Adolescence*, *36*(7), 963-972.

Whiteman, S. D., McHale, S. M., & Crouter, A. C. (2011). Family relationships from adolescence to early adulthood: Changes in the family system following firstborns' leaving home. *Journal of Research on Adolescence*, *21*(2), 461-474.

Whiteman, S. D., McHale, S. M., & Soli, A. (2011). Theoretical Perspectives on Sibling Relationships. *Journal Family Theory & Review*, *3*(2), 124-139.

Whittington, L. A., & Peters, H. E. (1996). Economic incentives for financial and residential independence. *Demography*, *33*(1), 82-97.

Widmer, E. D., Aeby, G., & Sapin, M. (2013). Collecting family network data. *International Review of Sociology*, *23*(1), 27-46.

Wolfinger, N. H. (1999). Trends in the intergenerational transmission of divorce. *Demography*, *36*(3), 415-420.

Wolfinger, N. H. (2011). More Evidence for Trends in the Intergenerational Transmission of Divorce: A Completed Cohort Approach Using Data From the General Social Survey. *Demography*, *48*(2), 581-592.

Wolfinger, N. H. (2016). Beyond the Intergenerational Transmission of Divorce. *Journal of Family Issues*, *21*(8), 1061-1086.

Wood, J., & Neels, K. (2017). First a job, then a child? Subgroup variation in women's employment-fertility link. *Advacnes in Life Course Research*, *33*, 38-52.

Wood, J., & Neels, K. (2019). Local childcare availability and dual-earner fertility: Variation in childcare coverage and birth hazards over place and time. *European Journal of Population*, *35*(5), 913-937.

Wood, J., Neels, K., & Kil, T. (2014). The educational gradient of childlessness and cohort parity progression in 14 low fertility countries. *Demographic Research*, *31*, 1365-1416.

Wood, J. T., & Inman, C. C. (1993). In a different mode: Masculine styles of communicating closeness. *Journal of Applied Communication Research*, *21*(3), 279-295.

Workman, J. (2017). Sibling additions, resource dilution, and cognitive development during early childhood. *Journal of Marriage and Family*, *79*(2), 462-474.

Wu, K., Kim, J. H., Nagata, D. K., & Kim, S. I. (2018). Perception of sibling relationships and birth order among Asian American and European American emerging adults. *Journal of Family Issues*, *39*(13), 3641-3663.

Declaration of co-authors' contributions

Chapter 2: Nest leaver or home stayer? Sibling influence on parental home leaving in the United Kingdom
Chapter 2 has been published in *Advances in Life Course Research* in June 2022.

Conceptualization: Yu-Chin Her. Co-authors Dimitri Mortelmans and Jorik Vergauwen provided support in developing the research questions, hypotheses, and structure.
Methodology and formal analysis: Yu-Chin Her performed all the multivariate analyses. Dimitri Mortelmans provided support in data preparation. Dimitri Mortelmans and Jorik Vergauwen provided support in model specifications.
Drafting the manuscript: Yu-Chin Her
Critically revising the manuscript: Jorik Vergauwen and Dimitri Mortelmans
Revision for *Advances in Life Course Research*: Yu-Chin Her, Jorik Vergauwen, and Dimitri Mortelmans
Finalizing manuscript in its final form: Yu-Chin Her

Chapter 3: Do Birds of a Feather Leave the Nest Together? The Role of Sibling Personality Similarity in the Transition to Adulthood
Chapter 3 has been published in *PLOS ONE* in May 2023.

Conceptualization: Yu-Chin Her. Co-authors Dimitri Mortelmans and Jorik Vergauwen provided support in developing the research questions, hypotheses, and structure.
Methodology and formal analysis: Yu-Chin Her performed all the multivariate analyses. Dimitri Mortelmans provided support in data preparation. Dimitri Mortelmans and Jorik Vergauwen provided support in model specifications.
Drafting the manuscript: Yu-Chin Her
Critically revising the manuscript: Jorik Vergauwen and Dimitri Mortelmans
Revision for *PLOS ONE*: Yu-Chin Her, Jorik Vergauwen, and Dimitri Mortelmans
Finalizing manuscript in its final form: Yu-Chin Her

Chapter 4: Jumping together or not? Associations between siblings' relationship quality and fertility transitions
Chapter 4 is under review

Conceptualization: Yu-Chin Her. Co-authors Matthijs Kalmijn provided support in developing the research questions, hypotheses, and structure.
Methodology and formal analysis: Yu-Chin Her prepared the data and performed all the multivariate analyses. Matthijs Kalmijn provided support in model specifications.
Drafting the manuscript: Yu-Chin Her
Critically revising the manuscript: Matthijs Kalmijn
Finalizing manuscript in its final form: Yu-Chin Her

Chapter 5: Sibling transmission of relationship breakup in Belgium: Does partnership type matter?
Chapter 5 is under review

Conceptualization: Yu-Chin Her. Co-authors Dimitri Mortelmans and Jorik Vergauwen provided support in developing the research questions, hypotheses, and structure.
Methodology and formal analysis: Yu-Chin Her performed all the multivariate analyses. Dimitri Mortelmans provided support in data preparation. Dimitri Mortelmans and Jorik Vergauwen provided support in model specifications.
Drafting the manuscript: Yu-Chin Her
Critically revising the manuscript: Jorik Vergauwen and Dimitri Mortelmans
Finalizing manuscript in its final form: Yu-Chin Her

Introduction and Conclusion: Some parts of these two chapters have been published in the *Journal of Family Theory & Review* in October 2021: **Siblings' similarities and dissimilarities: A review of theoretical perspectives and empirical insights**

Conceptualization: Yu-Chin Her, together with Zeynep Zümer Batur. Co-authors Dimitri Mortelmans and Jorik Vergauwen provided support in developing the research questions, hypotheses, and structure.
Drafting the manuscript: Yu-Chin Her and Zeynep Zümer Batur.
Critically revising the manuscript: Jorik Vergauwen and Dimitri Mortelmans
Revision for Journal of Family Theory and Review: Yu-Chin Her, Zeynep Zümer Batur, Jorik Vergauwen, and Dimitri Mortelmans
Finalizing manuscript in its final form: Yu-Chin Her

Nederlandse samenvatting

Inleiding

Mensen groeien vaak op met één of meer broers en zussen in verschillende contexten over de hele wereld. Relaties tussen broers en zussen zijn van groot belang vanwege hun unieke en langdurige aard. De emotionele band tussen broers en zussen, inclusief het gevoel van gedeelde ervaringen, vertrouwen en samenhorigheid, is een belangrijke factor tijdens de kindertijd en adolescentie die veel mensen delen. In tegenstelling tot de ouders-kind relatie zijn broers en zussen vaak leeftijdsgenoten, waardoor hun relaties meer egalitair en minder hiërarchisch zijn. Relaties tussen broers en zussen zijn gemiddeld ook de langstdurende sociale relaties. Het is dus niet verrassend dat broers en zussen, die worden beschreven als metgezellen, rolmodellen, vertrouwelingen en mentoren, al lang worden erkend als sleutelspelers in het leven van individuen.

De aanhoudende demografische verschuivingen, zoals een langere levensduur, een langere overgang naar volwassenheid, uitgestelde huwelijken of onthoudingen van huwelijken, stijgende aantallen echtscheidingen en afnemende vruchtbaarheid zullen naar verwachting de banden met familieleden aanzienlijk beïnvloeden. Tegelijkertijd hebben demografen en sociologen voortdurend het belang erkend van familieleden bij het vormgeven van elkaars gedrag en levenslooptransities. De meeste onderzoeken concentreerden zich echter op de manier waarop levenslooppatronen worden overgedragen van ouders op nakomelingen, waarbij andere mogelijke familieroutes minder aandacht kregen. Hoewel er stilaan interesse komt voor de mogelijkheid van horizontale, intragenerationele associaties van levensloopgedrag, is empirisch bewijs beperkt vergeleken met de inzichten over de verticale, intergenerationele overdracht.

Gezien het belang en de dynamiek van relaties tussen broers en zussen, hebben broers en zussen het potentieel om op elkaar te lijken met betrekking tot verschillende levensaspecten, inclusief levenslooptransities. Als resultaat hiervan verdiept dit proefschrift zich in de wederzijdse interacties tussen broers en zussen. De centrale onderzoeksvraag luidt: “Wanneer een individu een levenslooptransitie maakt, wat is dan de kans dat een broer of zus zijn of haar voetstappen (niet) zal volgen, en is dit afhankelijk van bepaalde kenmerken van broers en zussen?”. Bovendien, omdat broers en zussen vaak samen opgroeien, dezelfde opvoeding delen en een behoorlijke hoeveelheid sociale achtergrond en contexten gemeen hebben, probeert het proefschrift ook na te gaan of individuen op hun broers en zussen lijken in hun levensloop (“zo broer, zo zus”), rekening houdend met het feit dat hun overeenkomsten kunnen voortvloeien uit de gedeelde opvoeding en omgeving van hun ouders (“zoals ouders”).

Door de intragenerationele overdracht van levenslooptrajecten te onderzoeken, waaronder het verlaten van het ouderlijk huis, het krijgen van kinderen en het ontbinden van een

partnerschap, werpt dit proefschrift licht op de complexe wisselwerking tussen gezinsdynamiek en individuele trajecten. Het erkent het mogelijke belang van het beschouwen van relaties tussen broers en zussen als een afzonderlijke bron van sociale verspreiding in de levens van individuen, en biedt een dieper inzicht in de mechanismen waarmee familiebanden de individuele ontwikkeling en levensresultaten vormgeven.

Samenvatting van de bevindingen

Zijn de levenslooptransities van broers en zussen met elkaar verbonden?

Hoofdstuk 2 onderzocht de mate waarin iemands beslissing om het ouderlijk huis te verlaten om zelfstandig te gaan wonen verband houdt met die van een broer of zus. De resultaten van een tussen-familie (between-family) analyse van de gegevens uit Understanding Society: The U.K. Household Longitudinal Study (UKHLS) suggereren dat het gedrag van broers en zussen om het huis uit te gaan positief geassocieerd is: het is waarschijnlijker dat iemand het ouderlijke nest verlaat in de voetsporen van een broer of zus. Dit impliceert dat wanneer een gezin een vroege nestverlater heeft, er mogelijk meer vroege verlaters volgen. Op dezelfde manier bestaat er, wanneer een eerstgeborene zijn of haar overgang naar volwassenheid uitstelt, de neiging dat de andere broers en zussen zich ook hetzelfde gedragen. Bovendien is het effect van het vertrek van een broer of zus groter wanneer dit binnen een jaar plaatsvindt en wordt het over een langere periode zwakker, wat erop wijst dat er voornamelijk sprake is van een onmiddellijk effect. Gebaseerd op een substeekproef uit Hoofdstuk 2, werd hetzelfde patroon gevonden in Hoofdstuk 3 wanneer we gebruik maakten van een gelijkaardige methodologische aanpak. Wanneer we echter beter rekening hielden met de tijdconstante variatie op familieniveau, ontdekten we dat de overgangen naar het verlaten van het nest van broers en zussen negatief gecorreleerd zijn. Wat het belang van de bredere familiecontext in de associatie tussen het verlaten van het ouderlijke huis onderlijnt.

Hoofdstuk 5 bouwt voort op beschikbaar onderzoek naar echtscheidingen en richt zich op het verband tussen de ontbinding van partnerschappen in het algemeen, inclusief zowel echtscheiding als scheiding uit een samenwonende verbintenis. Daarnaast werd onderzocht of het uitmaakt of broers of zussen tot hetzelfde type verbintenis behoren. Door gebruik te maken van registergegevens uit België en een binnen-familie (within-family) benadering geven de resultaten aan dat het verbreken van de relatie van een broer of zus negatief gerelateerd is aan de eigen beslissing om zijn of haar relatie te beëindigen, wat impliceert dat er een beschermende impact kan zijn van de ontbinding van het partnerschap van een broer of zus. Bij de afzonderlijke analyse van gehuwde en samenwonende individuen, ontdekten we dat een echtscheiding van broers en zussen sterker gerelateerd is aan de scheiding van gehuwde individuen, en niet de ontbinding van een samenwonende verbintenis van broers en zussen. Op dezelfde manier is het minder waarschijnlijk dat samenwonende personen dit zullen doen als een broer of zus de samenwonende verbintenis ontbindt.

Hoewel het proefschrift ondersteuning biedt voor de verbonden levens van broers en zussen en gedeeltelijk de argumenten vanuit de sociale netwerkeffecten en sociale invloed bevestigt, moet dit laatste voorzichtig worden geïnterpreteerd. Gezien de positieve associaties tussen de levensloop van broers en zussen, waarbij gebruik wordt gemaakt van een benadering tussen families (between-family), is het mogelijk dat zij elkaar aanmoedigen om zich op dezelfde manier te gedragen, om redenen zoals sociale besmetting, sociaal leren, sociale druk en sociale steun. Ze kunnen zich ook confirmeren aan gedrag om sociaal acceptatie te verkrijgen en informatieonzekerheid te verminderen. De effecten van sociale interactie gaan echter hand in hand met meerdere contextuele factoren, die methodologisch moeilijker in rekening kunnen worden gebracht. Bij een binnen-familie (within-family) benadering vinden we geen sterk bewijs voor dit soort mechanismen. Daarom daagt het proefschrift de bestaande theorie uit over hoe 'causaal' gedrag van broers en zussen werkelijk is. In feite kan de term 'sociale besmetting' beter worden begrepen als een combinatie van besmetting binnen het gezin en besmetting tussen broers en zussen, en kan intragenerationele overdracht ook worden geïnterpreteerd in het licht van gedeelde intergenerationele overdracht. Het is aannemelijk dat een groot deel van de waargenomen associaties tussen broers en zussen te wijten zijn aan hun gedeelde familiale en sociale context. Alles bij elkaar genomen, en dus door andere intermediaire factoren niet uit te sluiten, kan men enkel vermoeden dat broers en zussen elkaar 'beïnvloeden' om op dezelfde manier te handelen.

Wanneer de analyse familiecontext expliciet in rekening brengt, suggereren de bevindingen dat de twee onderzochte levenslooptransities (het ouderlijk huis verlaten en relatieverstoring) van broers en zussen negatief samenhangen. Dit zou kunnen betekenen dat de mechanismen achter de correlatie tussen het gedrag van broers en zussen de-identificatie en 'bescherming' van broers en zussen zijn. Individuen die bijvoorbeeld een echtscheiding of samenwoonscheiding ervaren, wetende hoe moeilijk het is, willen misschien een 'goede' invloed hebben en hun broers en zussen bewust of onbewust ervan overtuigen niet hetzelfde pad te volgen, wat naar het beschermingsmechanisme leidt. Volgens dezelfde logica zou een vroege nestverlater zijn of haar broers en zussen willen ontmoedigen om niet zo vroeg te vertrekken, vanwege mogelijke nadelige gevolgen.

Wat maakt broers en zussen meer (on)gelijk?

In de overeenkomsten tussen broers en zussen in levenslooptrajecten, werden een aantal kenmerken van broers en zussen waargenomen die aan de broers en zusseneffecten relateren. In Hoofdstuk 2 hebben we ontdekt dat de demografische kenmerken van broers en zussen de associatie tussen het nestverlaatgedrag van broers en zussen modereren. Als broers en zussen ongeveer even oud zijn, vooral als het leeftijdsverschil drie jaar of minder bedraagt, en als ze tot hetzelfde geslacht behoren, vooral broers, is de timing van het vertrek uit het huis eerder gelijkaardig. Vergeleken met jongere broers en zussen hebben oudere broers en zussen mogelijk ook een grotere kans om een rolmodel te zijn.

Hoofdstuk 3 liet zien dat naast de demografische overeenkomsten tussen broers en zussen, het vergelijkbaar zijn in de Big Five-persoonlijkheidskenmerken ook de synchronisatie bij het verlaten van het ouderlijk nest verbetert. Het onderzocht de modererende rol van extraversie in de relatie tussen het vertrek van broers en zussen. De bevindingen suggereren dat broers en zussen met een vergelijkbaar extraversieniveau waarschijnlijker op elkaar lijken. Dit moderatie-effect is vooral uitgesproken bij broers en zussen die allebei introverte mensen zijn, wat impliceert dat als iemand aarzelt om het nest te verlaten, het bemoedigend kan zijn dat een eveneens introverte broer of zus de weg vrijmaakt. Deze twee hoofdstukken over het verlaten van het ouderlijk huis geven aan dat gedeelde demografische en persoonlijkheidskenmerken het effect van de onafhankelijke woonervaring van een broer of zus op iemands beslissing om het ouderlijk huis te verlaten, kunnen versterken.

In hoofdstuk 4 verschoof de focus naar het verband tussen de kwaliteit van de relaties tussen broers en zussen en de waarschijnlijkheid dat ze tegelijk kinderen krijgen, waarbij gebruik werd gemaakt van paneldata uit Nederland. De resultaten geven aan dat een hogere kwaliteit van de broer-zus relatie en een lagere mate van broer-zus conflict positief geassocieerd zijn met de beslissing om tegelijk kinderen te krijgen, vergeleken met situaties waarin slechts één broer of zus kinderen heeft of geen van beide broer of zus kinderen krijgt. Bovendien was, vergeleken met wanneer een broer of zus alleen een vruchtbaarheidstransitie heeft, de kwaliteit van de relatie tussen broers en zussen positief geassocieerd met het krijgen van kinderen, terwijl conflicten tussen broers en zussen positief geassocieerd waren met het feit dat beiden geen kinderen kregen. Hetzelfde geslacht hebben is echter niet significant geassocieerd met vruchtbaarheidssynchronisatie. Niettemin is dit hoofdstuk het eerste waarin maatstaven voor de nabijheid van broers en zussen zijn opgenomen bij het bestuderen van de levenslooptransities van broers en zussen. Het benadrukt het belang van een positieve relatiedynamiek voor de gedeelde vruchtbaarheidskeuzes van broers en zussen.

Ten slotte onderzocht Hoofdstuk 5 of en hoe de associatie tussen het verbreken van de relatie van een broer of zus en het verbreken van de eigen relatie wordt gemodereerd door hun leeftijds- en geslachtsovereenkomsten. De bevindingen suggereren dat wanneer een broer of zus een breuk meemaakt, individuen, vooral degenen met een klein leeftijdsverschil met hun broer of zus, een kleinere kans hebben om zelf een breuk door te maken. Vergeleken met broers en zussen van verschillend geslacht, is er geen effect voor broers en zussen van hetzelfde geslacht. Dit benadrukt dat broers en zussen die dichtbij de leeftijd zijn, specifiek kunnen dienen als bronnen van emotionele steun en begeleiding bij het onderhouden van partnerrelaties.

Over het geheel genomen is er, in termen van de kenmerken van broers en zussen (leeftijdskloof, geslachtssamenstelling, geboortevolgorde, persoonlijkheidskenmerken en hechtheid van relaties) die de overeenstemming tussen broers en zussen in levenslooptrajecten kunnen wijzigen, een algemene tendens dat broers en zussen die op elkaar lijken of betere relaties hebben, eerder geneigd zijn zich op dezelfde manier te gedragen.

Dit is in overeenstemming met de theorieën over sociale besmetting, sociaal leren en gelijkenis-aantrekkingseffecten, evenals met eerdere onderzoeken dat mensen die op elkaar lijken doorgaans nauwere interpersoonlijke relaties hebben, wat de afstemming van gedrag vergemakkelijkt. De bevinding dat individuen een grotere kans hebben om in de voetsporen van hun oudere broers en zussen te treden dan hun jongere broers en zussen wat betreft het verlaten van het ouderlijk huis, zou opnieuw kunnen worden verklaard door het mechanisme van sociaal leren. In Hoofdstuk 5 ontdekten we dat broers en zussen die tot hetzelfde partnerschapstype behoren (samenwonen of trouwen) elkaar eerder ervan weerhouden een relatie te beëindigen, wat bovendien steun verleent aan de sociale identificatietheorie. Het zou ook kunnen zijn dat samenwonende en gehuwde broers en zussen meer op elkaar lijken wat betreft bijvoorbeeld de levensfase, de behoefte aan autonomie en gezinsgerelateerde attitudes en waarden. Het is echter belangrijk om te erkennen dat de gelijkenis tussen broers en zussen niet altijd de associatie tussen de levensloop en acties van broers en zussen modereert. Hoewel we bijvoorbeeld vaststellen dat broers en zussen van hetzelfde geslacht, in vergelijking met broers en zussen van verschillend geslacht, eerder het huis verlaten, lopen ze geen grotere kans om kinderen te krijgen of samen uit elkaar te gaan.

Conclusie

Concluderend suggereert het proefschrift dat, in lijn met bestaande literatuur, verscheidene levenslooptransities van broers en zussen gerelateerd zijn. Het feit dat ze met elkaar verweven zijn betekent echter niet dat ze causaal met elkaar verbonden zijn. Als gevolg hiervan moet men bij het interpreteren van de theorieën over sociale netwerkeffecten en sociale invloed rekening houden met de impact van gedeelde omgevingen en gezinskenmerken. Bij ongunstige levensgebeurtenissen kunnen broers en zussen elkaar beschermen tegen het ervaren ervan, waarbij broers en zussen in moeilijke tijden mogelijk voor elkaar zorgen en/of van elkaar leren. Over het geheel genomen zijn de levens van broers en zussen die demografisch en psychologisch dichtbij elkaar staan, meer met elkaar verbonden dan de levens van broers en zussen die verder af staan. Omdat verschillende mechanismen die ten grondslag liggen aan de (verschillen)overeenkomsten tussen broers en zussen tegelijkertijd kunnen voorkomen, is het belangrijk om de interpretatie van elk van deze mechanismen te begrijpen en hoe ze samen werken.

Op basis van de resultaten heeft het proefschrift een aantal belangrijke maatschappelijke en beleidsrelevante aspecten. Allereerst is het begrijpen van de onderlinge verbondenheid van de levensloop van broers en zussen van cruciaal belang bij het onderzoeken van de clustering van nadelen. Als een broer of zus bijvoorbeeld een vroege of late overgang uit het ouderlijk huis meemaakt, is de kans groter dat hun broers en zussen ook een soortgelijk traject zullen volgen. Op dezelfde manier kunnen broers en zussen op een geclusterde manier te maken krijgen met uitdagingen zoals een vroege zwangerschap, beperkte onderwijsmogelijkheden en slechte gezondheidsgewoonten. Het onderkennen van de clustering van nadelen onder broers en zussen onderstreept het belang voor overheden en ouders om deze problemen gezamenlijk

aan te pakken. Beleidsmakers kunnen gerichte interventies ontwikkelen die zich niet alleen richten op individuele broers en zussen, maar ook op de bredere gezinscontext, om mogelijk de cyclus van geclusterde nadelen te doorbreken en positieve resultaten voor broers en zussen te bevorderen. Bij het bieden van steun aan individuen en hun broers en zussen kan het ook waardevol zijn om extra aandacht te besteden aan de gelijkenis en nabijheid van broers en zussen. Dat wil zeggen dat opvoeders, ouders en hulpverleners bij gesprekken met individuen die moeilijke levensgebeurtenissen doormaken, prioriteit moeten geven aan het identificeren van broers en zussen met gedeelde demografische kenmerken, persoonlijkheidskenmerken en een sterke emotionele band. Deze broers en zussen zijn meer waarschijnlijk in het stellen van gelijkaardig gedrag. De negatieve associatie tussen relatiebreuken van broers en zussen duidt mogelijk op beschermende intragenerationale mechanismen, namelijk dat broers en zussen zich inspannen om het risico op ontbinding van de relatie te verkleinen. Belanghebbenden die betrokken zijn bij het ondersteunen van gezonde relaties zouden concrete interventies kunnen ontwikkelen om de beschermende impact van relaties tussen broers en zussen te begrijpen en te benutten om stabiele relaties te bevorderen en de relatieresultaten voor individuen te verbeteren.

Bovendien biedt het proefschrift enkele mogelijkheden voor toekomstig onderzoek. Het proefschrift richt zich op biologische broers en zussen, maar gezien de toenemende prevalentie van nieuw samengestelde gezinnen, zou het voor verder onderzoek naar de gelijkenissen tussen broers en zussen belangrijk zijn om onderscheid te maken tussen volle -, half- en stiefbroers en -zussen, terwijl rekening wordt gehouden met de nabijheid en lengte van hun relatie. Meer kwalitatief werk is ook welkom om te begrijpen ‘waarom’ het demografische gedrag van broers en zussen met elkaar samenhangt. Bovendien weten we niet in hoeverre onze bevindingen toepasbaar zijn op andere landen en culturele contexten, omdat alleen gegevens uit drie Europese landen (het Verenigd Koninkrijk, Nederland en België) zijn opgenomen. Het verkrijgen van inzicht in culturele verschillen op het gebied van verschillen en overeenkomsten tussen broers en zussen vormt dus een belangrijk punt. Tenslotte is een meer gedetailleerde analyse en verklaring van waarom deze effecten optreden (op gezinsniveau) welkom, aangezien de meeste onderzoeken in het proefschrift een dyadische benadering hanteren.

About the author

Yu-Chin Her was born in Taipei City, Taiwan (R.O.C.), on February 3, 1994. In 2017, she obtained the International Bachelor in Arts and Culture Studies from the Erasmus University Rotterdam. In 2019, she graduated from the Research Master in the Sociology of Culture, Media and the Arts (Media Studies) from the same university, during which she wrote a master thesis on the associations between online dating and the users' mental well-being.

In October 2019, Yu-Chin made a shift from cultural/media sociology to family sociology. She worked as a PhD candidate at the Centre for Population, Family, and Health (CPFH) and the Department of Sociology of the University of Antwerp. Her main research interests are in the fields of family relationship, life course research, and demographic change, and she mainly uses quantitative methods to study these topics. Her research was featured in national and international media and she was also involved in grant writing. While working on her dissertation, Yu-Chin obtained a second Master in Statistics and Data Science (cum laude) from KU Leuven. Between January and April 2023, Yu-Chin visited the Netherlands Interdisciplinary Demographic Institute (NIDI) in Den Haag to work on Chapter 4 of this dissertation.

As of October 2023, Yu-Chin works as a postdoctoral researcher at the Sociology Department of the University of Copenhagen.