



UMEÅ UNIVERSITY

Shared practices

Social networks and fertility decline during the Swedish demographic transition, 1850-1950

Johan Junkka

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Till Isak, William och Elis

Abstract

This thesis studies how social interactions influenced the fertility decline during the Swedish demographic transition between 1850 and 1950. This, to gain insights into how and why norms and values affected married couples' birth control practices, and how this shaped the fertility decline. Social interaction effects are studied in two different networks, voluntary associations and spatial communities using regression-based methods, in four research papers. The relationship between social interactions and fertility, in turn, is studied at different levels of society, on a macro-, meso- and micro-level. The results show that married couples reproductive practices were affected by social interactions during the whole study period. Members of unions, free churches and temperance associations had, in general, lower fertility than others. Additionally, couples living near a union or a free-church was also more inclined to limit their fertility. Finally, the results show significant spatial autocorrelations in fertility of neighbours and couples in adjacent neighbourhoods. These results suggest that increased use of birth control was diffused within social networks through social interaction mechanisms and collective action. However, the most substantial effects are seen during the fertility transition. This was a time of large-scale societal changes, which made the perceived net benefits of childbearing more uncertain. The results of this thesis indicate that couples drew upon the experiences of others to make more informed decisions. Over time, these new shared practices were formed into social norms, connecting ideas of respectability with family limitation, diffused within social networks.

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List of research papers

- I Junkka, J. (2018). Voluntary associations and net fertility during the Swedish demographic transition. *European Journal of Population*.
doi:10.1007/s10680-018-9465-5
- II Junkka, J., & Edvinsson, S. (2016). Gender and fertility within the free churches in the Sundsvall region, Sweden, 1860–1921. *The History of the Family: An International Quarterly*, 21(2).
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- III Junkka, J (2018). The influence of voluntary associations on fertility during the Swedish demographic transition, 1880-1949. Under review.
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Chapter 1

Introduction

From 1870 to 1930, fertility declined from around 4.5 children per women to 1.8 in Sweden (Hofsten & Lundström, 1976). This fertility transition irreversibly transformed society and family life; fertility has never risen to the same levels ever again. The transition from high to low fertility was not limited to Sweden, but most of western Europe experienced the same process at approximately the same time. In the decades after World War II, the rest of the world followed suit, and by 2017 fertility had declined or had at least started to decline in most of the world's populations. Fertility decline was accompanied by falling mortality, increased life expectancy and rapid population growth; a transformation of human populations entitled the demographic transition.

This demographic transition is central to a number of global issues: the rapid growth in world populations and perceptions of overpopulation (Notestein, 1953), being essential to economic growth (Galor & Weil, 2000), climate change and environmental dilution (O'Neill et al., 2005; Scovronick et al., 2017), national political stability, global resource distribution and an ageing population (Malmberg & Sommestad, 2000). Because of this, predicting future developments is of great interest to policymakers, predictions that depend on knowledge of the past. Understanding historical fertility transitions are thus of utmost importance.

Fertility decline has been explained by structural changes such as industrialisation, urbanisation, socioeconomic development, mortality decline, secularisation and individualisation. However, the root cause is men and women's decisions to use birth control to a higher degree than ever before. The question is what causes people to change their behaviours? Was it an adaptation to new economic and demographic circumstances, where people merely acted rationally according to economic structures, or did fertility become a rational choice through individualisation, where the decision making was transferred from society to the individual couple. Both of these explanations assume that low fertility was achieved by independent actors,

deciding in accordance with their own interests. These perspectives overlook the importance of others, and how individuals' attitudes and behaviours are affected by the attitudes and behaviours of others. Fertility is not only a biological act of reproduction, it is also an act of cultural reproduction, a way of positioning oneself within a specific context of social relations.

It is assumed in this thesis that fertility rates are quantitative representations of social practice (Johnson-Hanks, 2007), a practice that is enabled and limited by the context which it is performed within (Burt, 1982). The hypothesis is that behaviours change as these contexts shifts. Thus, the transition would be affected by changes (not only in the economic and demographic context, but also) in social interactions, specifically, which social networks that individuals were a part of, the structure of these networks, and the ideas and values existing within them. Susan Cotts Watkins puts it eloquently:

[...] I assume that in the end it is individuals who act in the privacy of their bedroom; I propose, however, that even when the couple is literally alone in the bedroom, the echoes of conversations with kin and neighbors influence their actions.

— Watkins (1990: 242)

Watkins acknowledges that people talk with others about the meaning of childbearing, that they are not independent actors who perform rational actions. However, the influence of others is limited not only to direct conversations, but includes values and norms that are mediated through the observation of others, social pressures and obligations, and by the social support of others. People act according to what they perceive as appropriate behaviour, in relation to the structural environment they live in. This process of influence is referred to as *social interaction*.

Kohler (2001) argues that social interaction comes into effect when there is an uncertainty of demographic behaviours, such as in late 19th century Europe. Depending on timing, at specific points in the demographic process social network mechanisms, together with collective action, can induce a fertility decline, shaping the pace of the transition. In Sweden, the fertility transition not only co-occurred with industrialisation, mortality decline and secularisation but also with a shift in the landscape of social relations. The growth of the Swedish voluntary associations from the 1870s, which included the workers' organisations, free churches and temperance associations, was a manifestation of this process. The history of Swedish demographic and social transformation provides an opportunity to investigate the role that social networks and social interactions played in the fertility decline.

Fertility and social interactions

From a demographic perspective, fertility is the number of children born in a society rather than the capability to reproduce. It refers to an aggregate measure of the number of children born per woman within a specific time span, the rate between events and exposure – a fertility rate. During the fertility transition, the fertility rate shifts from one level to another. The fertility transition that occurred in Western Europe during the late 19th and early 20th century had a distinct pattern of fertility change. Before the 1880s fertility rates varied between 4 and 6 in Europe including Sweden, as shown in Figure 1.1. The fertility transition was rapid, over the course of 50 years from one generation to another, couples started to reduce their fertility to a greater extent than ever before, and fertility declined to around two children per women. It also occurred at approximately the same time under a wide variety of circumstances. Although there were variations in fertility after the transition, they never reached the same pre-transitional level ever again.

A fundamental difference in behaviour was that many couples stopped having children before the end of their childbearing age. This is seen at an aggregate level as fertility starts to decline first among the older age groups, as shown in Figure 1.2. The transition was thus an effect of couples deciding to stop having children when they reached a family size that was smaller than their parents had, in general (Alter, 1992).

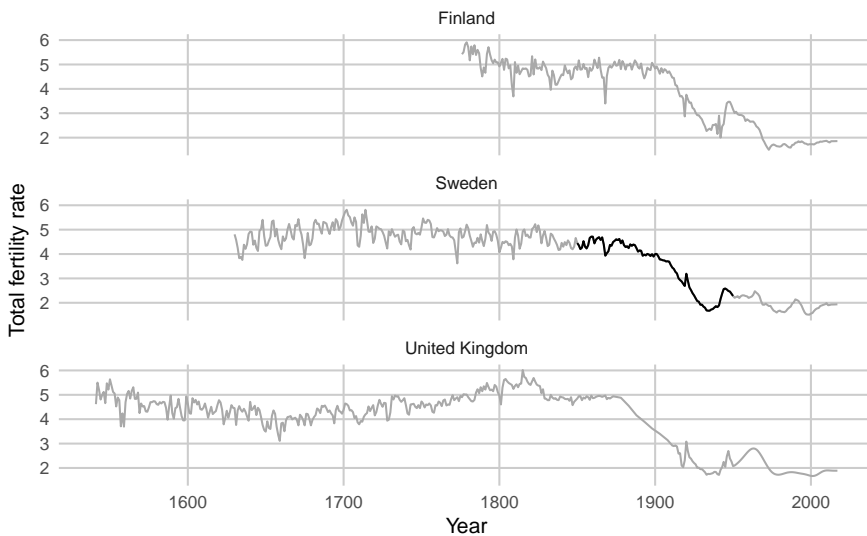


FIGURE 1.1: Total fertility rates in Sweden, Great Britain and Finland, 1541-2017. Fertility during the period 1850 to 1950 in Sweden is coloured black. Source: Mitchell (2013); United Nations Population Division (2017).

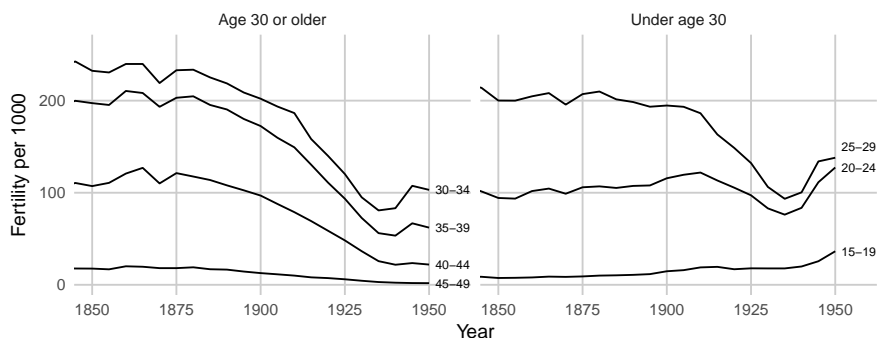


FIGURE 1.2: Age specific fertility rates in Sweden between 1850 and 1950. Source: Hofsten & Lundström (1976).

A *fertility transition* is defined by Guinnane et al. (1994: 3) as a “sustained increase in the use of fertility control methods”. This definition fits well with the overall aim of this thesis, as it places the focus on the patterns of individual practice rather than on aggregate fertility levels. There is a fine line between birth control and contraceptives. Hereafter, *contraceptive* refers to any appliance used to limit fertility, such as condoms and diaphragms, but also abortion whereas *birth control* refers to all practices used to limit fertility, such as withdrawal, abstinence and the use of contraceptives. These practices are used within heterosexual unions to limit the number of births; however, fertility can also be reduced by limiting exposure to pregnancies. Biologically, exposure is limited to the time between puberty and menopause (Livi-Bacci, 2017). However, as reproduction was strongly associated with marital life in historical populations (Carlsson, 1966; Coale & Watkins, 1986), the age of marriage and the proportion of never-married people affect the proportion of time that was used for reproduction.

Although most couples continued to have children throughout their childbearing ages before the transition, fertility did vary across populations. High fertility does not necessarily mean uncontrolled fertility. Behaviours that determine completed fertility can be categorised into three types: starting, stopping and spacing. Fertility levels in pre-transitional populations were strongly affected by *starting behaviours*, which refers to the age of marriage and the proportion of the population who married. However, fertility was also limited within marriage by the spacing of births, either through cultural practices such as the length of breastfeeding and postpartum abstinence (Henry, 1961; Knodel, 1978) or through birth-control practices where couples postponed the birth of another child, a practice referred to as *spacing behaviours* (Knodel, 1978). *Stopping behaviours*, the act of refraining from having another child before the childbearing age ended, was very uncommon in pre-transitional populations (Bavel, 2003). Post-transitional

fertility behaviours are characterised by parity-specific stopping behaviours, as couples stopped having children at a given family size. As the behaviour was uncommon before the transition, stopping has been argued to be an innovation diffused through social interactions that induced the fertility transition (Cleland & Wilson, 1987; Knodel & van de Walle, 1979; Watkins, 1986).

This sharp contrast between post-transitional and pre-transitional societies has been criticised. McLaren (1990) argues that the increased use of birth control during the transition should instead be seen as a continuation of existing practices. People have always been interested in ways of preventing births. People in ancient Greece and the Roman Empire used toxic beverages, poultice, perforation or infanticide. It was through the Christianisation of Europe that birth control became a moral issue, condemned by religious authorities. Studies of pre-transitional populations show that couples did use birth control, such as abstinence and withdrawal, perhaps in order to achieve a target living standard or in response to coming economic hardship (Bengtsson & Dribe, 2006; Hammel & Galloway, 2000; Van Bavel, 2004a). The European fertility decline occurred before the widespread use of contraceptive appliances, and, in line with McLaren (1978) and others (Santow, 1993; Woycke, 1988), Szreter (1996) argues that the initial decline in fertility was achieved using traditional methods, such as withdrawal and abstinence. The spacing of births has also been shown to have been important for the decline among specific religious groups (Anderton & Bean, 1985).

Whether the methods used to limit fertility were new or extensions of established practices, whether the decline was caused by spacing or stopping behaviours, we can conclude that the decline was a result of married couples irreversibly changing their behaviours and adopting an increased use of birth control. The question is to what extent these decisions were influenced by the attitudes and behaviours of others. It should be noted that the term *others* is used here to describe everyone who is not the ego, rather than *othering*, the act of viewing others as different from oneself. The European fertility decline did not always accompany economic and social development, but rather followed along cultural boundaries (Goldstein & Klüsener, 2014; Watkins, 1986, 1990). Couples belonging to specific types of social networks such as religious groups or voluntary association have also been shown to be more likely to limit their fertility (Anderton & Bean, 1985; Hacker, 1999; Poppel & Derosas, 2006; Szreter, 1996). These patterns of social and spatial clustering have been interpreted as evidence for the role of normative changes and social interaction mechanisms. A number of studies have also shown that the fertility of couples was associated with the composition of their social networks, such as the social composition of neighbours or the age composition of baptism witnesses (Bras, 2014; Van Bavel, 2004b). Studies of contemporary, transitional populations have shown that knowledge about birth control is diffused within networks (Barber et al., 2002; Montgomery

& Casterline, 1993; Valente et al., 1997). Additionally, using social network data, studies of post-industrialised populations have shown that individuals' fertility decisions are influenced by the actions of friends and peers (Balbo & Mills, 2011; Balbo & Barban, 2014; Bernardi et al., 2007; Lois & Arránz Becker, 2014; Lois, 2016).

Palloni (2001) argues that social interactions affect fertility as individuals re-evaluate their decisions in light of others' attitudes and behaviours, rather than the alterations of preferences due to a change in the social position of the individual (such as their socioeconomic status) or changes in resources associated with the positions that they occupy. Bernardi & Klaerner (2014) extend this perspective; building upon social network theory, they argue that fertility practices, as any form of action, are embedded in systems of social relations – social networks. These structures enable and limit actions and influence how actors perceive the net benefits of a set of actions, such as the decision to use birth control or have another child. Social network theory proposes that individuals are connected to economic, social and cultural structures through networks of social relations. The effect of these interactions is in turn dependent on the structure of the network, the type of relations individuals have with others in the network, and the positions people hold within them. One of the main research problems is to separate social interaction effects from selection bias. People tend to cluster together with similar people (McPherson et al., 2001); thus, it is essential to separate the effects of interactions from the effects of individual and contextual similarities. Although the application of social network perspectives in analyses of fertility in post-transitional societies has yielded insights into the dynamics of fertility decisions, the role of others in the historical European fertility transition is underexplored.

The hypothesis in the current thesis is that attitudes and behaviours are spread by social interactions through social networks. These practices form social norms of ideal family formation behaviours that incentivise an increased use of birth control. One such norm is the idea of respectability, which has been shown to be associated with small families. According to Kling (2007), the idea of respectability was shaped within the middle class and the working class in ways that encouraged the use of birth control. The gendered identities of married couples became connected with their family size, and a respectable family became associated with a small family during the Swedish fertility transition. This idea was particularly strong within the Swedish voluntary associations; however, it took different forms within the different associations: the workers' movement, the temperance associations and the free churches (Ambjörnsson, 1993; Horgby, 1993; Lundkvist, 1980; Pasture & Art, 2012; Kling, 2007). These associations, or networks, had different structural conditions; they worked for different ideational goals and were composed of members from different social groups. Thus, what constituted respectability and what role fertility had in achieving a respectable life took different forms in the different associations.

Aim and delimitations

The aim of this thesis is to investigate how social interactions influenced the fertility decline during the Swedish demographic transition between 1850 and 1950. This is done by studying the relationship between fertility and social interactions in two different social networks: formal networks, in the form of voluntary associations, and informal networks, in the form of spatial communities. The relationship, in turn, is studied at multiple scales, national and local, and at different levels, as a contextual-level, family-level and individual-level effect. The goal of this thesis is to answer the following questions:

- How did voluntary association activity affect marital fertility on a national and local level?
- How did voluntary association membership affect married couples' fertility?
- How did the reproductive practices of neighbours affect married couples' fertility?
- How did the structure of the network affect social interaction effects?
- How did social interaction effects differ by gender and over time?
- How was social interaction effects related to structural changes, such as secularisation and the idea of respectability?

By focusing on social interactions and social networks, this thesis can give insight into how and why norms and values affected fertility. However, the purpose is not to look at the particulars, that is, why individuals take certain actions, but rather the patterns that emerge from shared practice. Rather than understanding why fertility changed in a given context by the specific culture of fertility, the goal of this thesis is to study the patterns of fertility change that allow both for a diversity of fertility decline and a simultaneousness of the timing. The purpose is neither to identify the determinants of the fertility transition nor to explain it fully. Although mortality decline, industrialisation, urbanisation and socioeconomic development are all important determinants of fertility decline, these structural factors are not the focus of this thesis. Instead, the thesis focuses on one specific issue, the role of social interactions and social networks, to gain deeper knowledge about an important aspect of human fertility, cultural norms and social relations, which provides new insights into why fertility starts to decline in one sub-population and not in another, even when they live under the same economic and social conditions.

The overall strategy is to capture social interaction effects through proxies, either (1) by using spatial proximity as a proxy for social ties or (2) by connecting individuals to delimited social networks through voluntary association membership and proximity to an association. These networks, voluntary associations and spatial communities, by no means represent the

total network relevant for fertility decisions. Instead, they function, in this thesis, as examples of social networks, distinct and therefore useful examples when studying social interactions. Furthermore, to enable comparisons of social interaction effects before, during and after the fertility transition, the study encompasses the period 1850-1950. One of the main research problems is to separate social interaction effects from selection bias. People tend to cluster together with similar people (McPherson et al., 2001); thus, it is important to separate the effect of interactions from the effect of individual and contextual similarities. Another strategy is, therefore, to measure the effects of social interactions on fertility using regression-based methods to account for different forms of selection bias.

The results of this thesis contribute to the explanations of the European historical fertility transition. This is one of the first comprehensive studies that take into account networks external to kin and family, on an individual level. Intra-generational transmission of fertility from parents to children is well known, especially in contemporary populations; however, the fertility transition, by definition, breaks this process. Therefore, it is essential to look beyond that which was abandoned, the fertility behaviours of parents, to new forms of social networks where low fertility was experienced. This thesis also contributes to the study of social networks and fertility in general. Most of the research on the relationship between social interactions and fertility has been performed on contemporary populations. Thus, the historical context of these mechanisms is underexplored. In addition, the results of this thesis contribute to our understanding of social networks, by providing insight into demographic effects, rather than only the political or social effects.

Disposition

The thesis is organised into eight chapters and four research papers. In the second chapter, I discuss how social network perspectives have been applied to the study of fertility transitions in relation to cultural and economic perspectives and its critiques. The third chapter discusses the theoretical perspectives applied in the thesis research papers and how they relate to the overarching theoretical framework of this thesis – social network theory. The fourth chapter gives a brief overview of the history of social networks focusing on voluntary associations, their views on birth control, and the perceptions of family and fertility existing within them. The fifth chapter introduces the overall research design and discusses the strengths and limitations of the four research papers accompanying this manuscript, in terms of study design, setting, sources and analytical approaches. The sixth chapter summarises these four research papers, and the seventh and final chapter discusses the findings of the papers by applying a social network perspective.

Chapter 2

Previous research

Within the field of demographic theory, fertility transition theory is part of the explanation of the demographic transition. Although demographic changes were noted by contemporary scholars in the 19th century, it was the formulation of demographic transition theory by the American demographers Notestein and Davis in the mid-1940s that set in motion the popularisation of the concept. The popularisation of the term *demographic transition* can be seen by the increase in frequency of the term in the Google N-gram corpus after 1945 and the sharp increase after 1965 (see Figure 2.1). The terms *fertility transition* and *mortality transition* are not used in the corpus until around 1970, reflecting the timing of the decomposition of demographic transition theory. Building upon works of early 20th century demographers such as Thompson (1929), Notestein (1945) and Davis (1945) not only creates an empirical schema for the different stages of the transition but also gives an explanation of the transition. According to the theory, mortality declined because of an increase in the production of food due to the

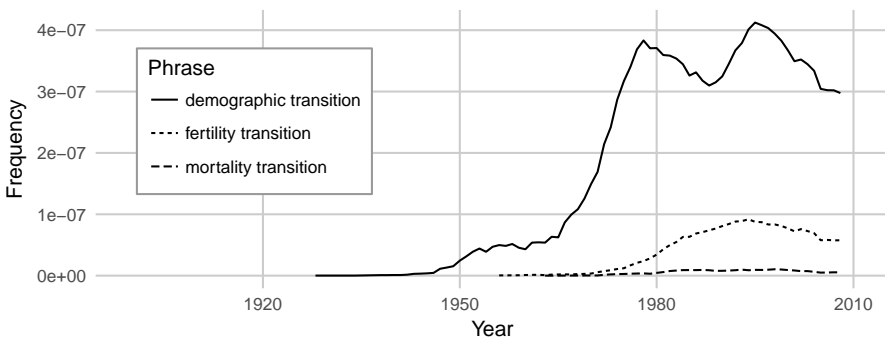


FIGURE 2.1: Frequency of the terms in the Google N-gram English corpus, 1900-2008, collected via a case-insensitive search. Source: Michel et al. (2011).

agrarian revolution, urbanisation and industrialisation. Fertility decline was explained as a lagged adaptation to the new demographic regime, which included more surviving children.

The theory was formulated based upon scarce evidence about national-level rates and their correlations with the social and economic transformations that co-occurred in the 19th and 20th centuries. In addition, the theory has a strong Eurocentric evolutionary perspective, binding demographic transition to a Western style of modernisation.

Cultural perspectives

In the 1960s, the Princeton European Fertility Project (EFP) set in motion to test the assumptions of classical demographic transition theory by utilising regional-level data for most of western Europe and regression-based methods (Coale, 1986). The EFP found no strong evidence for either modernisation or mortality decline as causes for fertility transition. Although industrialised urban regions were forerunners of the fertility transition, most neighbouring regions followed suit before they experienced any substantial modernisation. Instead, fertility transition patterns followed cultural boundaries – national or linguistic – leading the researchers to conclude that culture and diffusion processes were vital for the transition, independent of infant mortality decline and socioeconomic conditions (Knodel & van de Walle, 1979; Watkins, 1986). More specifically, Knodel & van de Walle (1979) argue that it was the diffusion of perceptions of and knowledge about contraceptives that was the primary factor for the decline, inhibited or enabled by cultural restraints.

In 1976, the director of the project, Ansley Coale, put forth a new framework for the explanation of the fertility transition. Fertility decline is dependent on three preconditions: ready, able and willing. *Ready* means that fertility control must be advantageous, that is, that social and economic circumstances must incentivise small families. *Willing* means that fertility needs to be “within the calculus of conscious choice”. Fertility control must be seen as an acceptable behaviour legitimised by social and cultural systems. *Able* means that the techniques for fertility control must be available (Coale, 1976: 65). The theory labelled as the RWA framework can be seen as an alternative to classical demographic transition theory. However, in the following decades, the conclusions of the EFP were further tested, criticised and contradicted, leading to a plethora of conflicting, often dichotomous, theories.

Cleland & Wilson (1987) draw upon the EFP findings further; they argue that economic modernisation was not a precondition for the fertility transition at all. Observing that the rate of change in fertility outpaced economic and social modernisation, they argue that economic development was not a precondition for fertility decline. Control is better seen as an inno-

vation, and change occurred through the diffusion of new ideas. Variations between regions were solely due to the ability of individuals to turn desires into action – dependent on social norms. Analysis of the Swedish transition in the late 19th century by Lockridge (1983) and Larsson (1984) supports the diffusion explanation. On an aggregate level, there was no direct relation to either socioeconomic structure or infant mortality decline; instead, regions where the Lutheran state church was strong showed the highest fertility, while regions with many free churches or weak state churches showed the sharpest decline in fertility. The diffusion of innovation model is developed further by Casterline and collaborators (Montgomery & Casterline, 1993; Rosero-Bixby & Casterline, 1993). Their analysis of the fertility transition in 20th-century Taiwan suggests that it was not only knowledge about birth control that diffused, but also the perceptions of economic and social advantages.

The diffusion perspective has been applied to explain individual-level fertility in late 19th century Belgium. Matthys (2011; Vanhaute & Matthys, 2007) suggests that diffusion was enabled by social learning in an analysis of female urban domestic servants. By observing the behaviour of their employers, domestic servants learned middle-class ideals and birth-control techniques, leading to social diffusion of low fertility. In addition, Van Bavel (2004b) shows that individuals who lived in locations dominated by specific linguistic groups, or in areas with a high proportion of middle-class people, were less likely than others to have another child, a pattern of social diffusion that suggests that birth control was spread through social learning and face-to-face interactions. Although the diffusion hypothesis suggests that fertility is dependent on the practices of peers, none of the studies measures the fertility of peers; diffusion remains an explanation for contextual-level relations.

Lesthaeghe, together with collaborators (1983; Lesthaeghe & Wilson, 1986; 1980; Lesthaeghe & Lopez-Gay, 2013; Lesthaeghe & Surkyn, 1988), takes a more inclusive approach, more related to the RWA framework, by arguing for the intra-dependence between socioeconomic effects and ideational effects. By ideational effects, Lesthaeghe is referring to individualisation, mediated through secularisation. Secularisation is seen as a process that breaks down the traditional normative systems that kept fertility control at a societal level, controlled through marriage or breastfeeding customs, leading to individualisation of fertility decisions, enabling fertility limitation. Socioeconomic development changes the incentives for fertility. However, these economic changes are given meaning by a normative system. On an aggregate level, fertility levels are connected to different indicators of secularisation, such as the proportion of votes for socialist parties or the frequency of marriages during Lent.

Religious denomination has a substantial effect on fertility behaviours. The urban European Jewish population was among the first to experience fertility decline. These were communities with strong social control and

much pressure to conform to social and religious norms, where large investments in children have been suggested to have incentivised low fertility (Derosas, 2006; Knodel, 1974; Livi-Bacci, 1986). The earlier decline in fertility for Lutheran populations compared to Catholics has been attributed to differences in social control, and degrees of secularisation and the relationship between gender and sexuality that the priest advocated (McQuillan, 1999, 2006; Schellekens & Poppel, 2006; Praz, 2009). However, even within religious groups with strong resistance to contraceptives, fertility was controlled through abstinence and spacing of births (Anderton & Bean, 1985; Heaton, 1986).

Economic perspectives

In contrast to the conclusions of the EFP, Easterlin (1975) builds upon the modernisation theory by drawing upon theories of microeconomics, to formulate a more concise theory of fertility change. The relationship to modernisation is reduced to three core components: (1) the *supply* of children, referring to the maximum number of children a couple would have without fertility control, dependent on the survival of children and proximate determinants of fertility, except the use of birth control; (2) the *demand* for children, which represents desired family size if birth control was free, depends on tastes, income and returns from children; and (3) the *cost of fertility regulation*, which encompasses both subjective views of birth-control methods as well as physical availability and economic costs (see also Easterlin & Crimmins, 1985).

Supply is in an economic sense the production of children to adulthood, dependent on infant mortality and natural fertility, which in turn varies by proximate fertility determinants, as described by Bongaarts (1978). Mason (1997) argues that the role of increased child survival is an overlooked aspect of the fertility transition. Reher et al. (2017) further argue that falling mortality was a necessary precondition for the transition, as it disrupted the pre-transitional demographic regime. The determinants of demand in Easterlin's model are derived from Becker (1960), whose household economic theory views children as it does any other economic goods. Thus, couples balance taste for goods with the constraints of price and income to maximise satisfaction. An increase in prices would lead to a substitution between the number of children and the quality of children. Quality is referred to as the preferred standard of childcare, often measured as child health or education. The transition is, therefore, a product of an increase in the cost of raising children combined with a shift in child preferences among parents. Motivations for fertility limitation are determined jointly by supply and demand, which in turn are weighted against the cost of regulation.

With industrialisation followed an expansion of the education system, which increased the cost of childrearing and thereby reduced parents' de-

sires for additional children (Becker, 1960; Guinnane, 2011). This, in turn, lowered the value of child labour, which also reduced the demand for children. Additionally, state educational demands and child labour laws often followed hand in hand in Europe. The substitution effect would increase with income, as the higher classes would have greater means to invest in children (Guinnane, 2011). This is seen as an explanation of a common pattern among world populations, the reversal in socioeconomic differences in fertility during the transition (Galloway et al., 1994; Guinnane, 2011). Before the transition, fertility was positively correlated with higher socioeconomic status, while after the transition the patterns were reversed (Skirbekk, 2008). The higher classes were also forerunners in the transition in Sweden (Dribe & Scalone, 2014; Molitoris & Dribe, 2016) as well as in most of the Western world during the 19th and early 20th centuries (Dribe et al., 2017). Fertility decline was also associated with women's workforce participation. The lower that the gender income gap was in Sweden, the lower fertility was, interpreted by Schultz (1985; 2001) as evidence that women's increased workforce participation raised the opportunity cost of women's time.

Such economic and cultural explanations are often set into a dichotomous relationship. In an influential article by Carlsson (1966), the fertility transition is explained as either an adaptation to new economic and social developments or as an effect of the diffusion of innovations. A number of studies have compared adaptation and innovation effects during the European fertility transition (Brown & Guinnane, 2007; Dribe & Scalone, 2014; Galloway et al., 1994), and although these studies see innovation and adaptation as complementary explanations, they find adoption factors to have greater impact than innovation.

Caldwell proposes another perspective on the relationship between economic theory and fertility transition, arguing that there exist only two stable demographic regimes dependent on the direction of the flow of wealth between children and parents. In the pre-transitional regime, wealth (in the form of social capital, cultural capital or labour) was transmitted from children to the parents. When the direction was reversed, when parents invested more time and resources in their children, fertility declined, leading to the post-transitional regime. The underlying factor for the direction of wealth flow Caldwell finds in the structure of family systems, and the social position its members hold within it, which in turn determines what they perceive to be rational reproductive behaviours. Simplified, the transition was thus a transition from extended family systems to a nuclear family system (1976; 1981; 1982).

Critiques

These dominant narratives of demographic transition research (Kaa, 1996) have been criticised by scholars from economics (Guinnane, 2011), femi-

nist studies (Mackinnon, 1995), history (Szreter, 1993), social anthropology (Greenhalgh, 1995, 1996) and evolutionary biology (Sear, 2015). Primarily, it is the lingering use of modernisation theory that is seen to have limited the field both theoretically and empirically.

Rationality is central to the idea of modernity and thus is also central to microeconomic theory, as well as diffusion and ideational theory. According to microeconomic theory, people are always rational: fertility declines because economic conditions change. Basically, they adapt to new circumstances. According to diffusion and ideational theory, fertility declines as reproductive decisions are transferred from society to the individual, thus allowing for rational choice (Johnson-Hanks, 2008). However, high fertility does not necessarily entail uncontrolled fertility. An increasing body of empirical studies shows that fertility was intentionally limited by pre-transitional populations (Bengtsson & Dribe, 2006; Kolk, 2011; Reher et al., 2017; Van Bavel, 2004a). According to the micro-economic perspective, having a child is no different from buying breakfast or hiring a servant (Becker, 1960). However, as Johnson-Hanks (2008) argues, people are not always intentional when they have a child, even in post-transitional societies, and even when they are, biology plays a role in limiting a couple's ability to conceive. In addition, intentions predict outcomes relatively poorly. More specifically, there are large discrepancies between the desired number of children and achieved family size (Miller, 2011), a difference argued to be affected by social network mechanisms (Rossier & Bernardi, 2009). Thus, it can be argued that fertility has never been entirely in the calculus of conscious choice.

The perception of a transfer of fertility decisions from society to the individual couple, in turn, assumes an evolutionary development to a Western form of modernity and prosperity. From this point of view, fertility limitation was a Western innovation that was diffused to the third world. However, development induced by European interference in non-European countries has not necessarily produced development, but rather non-development, and it has perpetuated inequality between different parts of the world (Greenhalgh, 1995, 1996). Instead, Greenhalgh (1996) suggests that to understand fertility transitions one needs to take a holistic perspective, that is, to study whole demographies. According to this anthropological perspective, fertility decline is a product of the context in which it is embedded: the political system, the social hierarchies, the economic structure, gender relations and cultural perceptions. By situating fertility and studying the particular, we would arrive at a better understanding of the diversity of transitions that is characteristic of demographic transitions.

Greenhalgh's (1996) perspective is in line with a number of historical demographers who argue that the European fertility transition cannot be understood as one transition, but as many with their own unique histories (Szołtysek, 2007; Szreter, 2011; Gillis et al., 1992b). Studies that apply a holistic approach have also yielded great insights into the particular

dynamics of fertility decline in delimited populations. Alter (1988) work on the female life course in 19th-century Verviers is an excellent example of this, showing how the interplay between gender, economic structures and social status affects the lives of women, including fertility, across their life courses. Janssens' (2014) reconstruction of the social, economic and demographic context of women in the Netherlands between 1880 and 1960 shows how families' fertility decisions were confined by the environment of which they were part. Spacing and stopping behaviours were applied by different cultural and social groups at different points in time, in accordance with the ideas and values that persisted within their society. By situating fertility, historical demographers have shown how gender, religion, social, cultural and economic conditions interact to form unique cultures of birth-control practices, specific to a subpopulation, region or country (see for example McQuillan, 1999; Praz, 2009; Schneider & Schneider, 1992; Warg, 2002).

Although this approach has yielded profound insights and is better at explaining fertility within a given context, the knowledge gained is difficult to apply in other contexts. Thus, situating fertility makes it difficult to produce generalisations or connect individual actions to larger structural changes (Bernardi & Hutter, 2007; Coast et al., 2007). However, the critique by Johnson-Hanks and Greenhalgh provides some intriguing proposals upon which this thesis builds. It is assumed in the current thesis that the transition was not a product of a transfer of "[...] reproduction from the domain of values to the domain of rational calculation" (Johnson-Hanks, 2008: 308), but rather a change in the context of actions, diffused by social interactions.

Social network perspectives

The shortcomings of diffusion and ideational theory to connect individual actions to structural changes led scholars to draw upon social network theory, specifically the role of social relations and the structure of networks in the effectiveness of social interactions.

Watkins (1990; 1992) connects the spatial patterns of diffusion of low fertility to 19th-century European state-building processes, the growth of nationalism and capitalistic market integration. What distinguishes the European fertility transition was not the transition of birth-control decisions from society to the individual, but rather an extension of the community from local to national, which in turn facilitated diffusion, resulting in a greater homogeneity of fertility within countries. Economic development through market integration not only changed prices and raised incomes, it also extended personal networks through the increased spatial movement of goods and people. Linguistic diversity decreased due to the nationalistic nation-building process, spurred by expanded education and the spread of newspapers. This, in turn, created "imagined communities" by extending

personal networks beyond that of local communities (Anderson, 2006). On an individual level, Watkins emphasises the role of intrapersonal communications in this change, especially that of women's gossip. Watkins argues that fertility declined due to a transformation of the structure of social networks, from dense local communities to sparse national ones; she also maintains that the attitudes and behaviours of others were important both before the transition as well as after in modern societies.

The role of women's communication networks is further explored by Watkins & Danzi (1995) in their analysis of Jewish woman's fertility behaviours in the U.S. in the early 20th century. The social network of Jewish women was more heterogeneous than the network of other women. The combination of strong social ties between these women and a diverse social composition facilitated diffusion of fertility limitation both within the group as well as to external networks.

However, adoption of fertility limitation was not necessarily dependent on the diversity of networks; homogenous networks have also been associated with early adoption. Bras (2014) takes the structure of personal networks into account in an analysis of the Dutch fertility transition between 1870 and 1940. Compositional differences in ego-centred networks were reconstructed from the age and kin relationships of baptism witnesses at the births of married couples' children. Couples with age-homogenous networks or with networks dominated by lateral kin were more inclined to reduce their fertility than others. Bras suggests that in addition to socioeconomic structural changes, changes in the structure of personal networks affected fertility decline. Network structures shifted from kin-centred horizontal networks, where decision making was influenced by parents, to peer-centred ones. This lateralisation of social relations made the adoption of fertility limitation easier. However, the question remains: What in these new lateral networks made low fertility more attractive, other than the independence of parental influence?

More qualitative research on the Swedish fertility decline has highlighted differences in the context of low fertility, and how it was perceived and incorporated into class-bound gendered identities. Through analysis of public debates in newspapers, prescriptive literature, contraceptive propaganda and letters written seeking advice on birth control, Kling (2007) shows how the construction of respectability within the middle class and working class during the late 19th and early 20th centuries came to include small families. The link between small families, femaleness and manliness took different forms in different contexts. Middle-class ideals about respectability found within Christian associations and the bourgeois women's emancipation movement emphasised woman's moral superiority in regards to issues of sexuality. Women's power was conditioned by sexual restraint, and it was her task to lift her husband to the same moral standards that she had. Working-class respectability was constructed in relation to middle-class respectability, where large families became associated with a stigma symbol-

ising sexual decadence, poverty and irresponsibility. A respectable worker took responsibility not only for his work but also for the welfare of his wife, and collective responsibility for the working class, by not having too many children. Small families became associated with respectable families, and birth control became a way of conforming to this ideal.

The relationship between class and gender is also shown by Warg (2002) in an analysis of fertility in a mining community in northern Sweden during the fertility transition. The relatively early decline in fertility among the working class was related to the construction of gender. In line with the earlier analysis of the workers' movement, Warg emphasises the way in which conscientiousness was constructed in relation to manliness and family life (Horgby, 1993; Ambjörnsson, 1998). Being a conscientious worker entailed investing in family life and practising fertility limitation. In addition, women within the mining community were active promoters of family planning, and through collective action in local women's organisations they were able to affect family norms in their working-class community.

In a modern context, social networks have been more extensively used to analyse fertility behaviours. In an analysis of fertility decline in developing countries Bongaarts & Watkins (1996) suggests that the primary force for change is economic development, which changes the cost of childbearing. However, the perception of this cost is created within social networks through social interactions, in relation to structural circumstances. They propose that social interaction occurs on three levels: personal, national and global. Social interactions provide an exchange of information such as ideas about birth control; the effectiveness of this diffusion is dependent on the homogeneity of the network. Thus, fertility often displays social patterns, as networks are defined by spatial proximity (a village or region) or by social proximity (by ethnicity, education or occupation). In addition, new knowledge is evaluated and given meaning in a particular context, in relation to cultural discourses of race, class and gender. On a national level, knowledge is spread through government programs, education and mass communication, for example, in the form of local soap operas on TV.

Although the reasoning of Watkins and her collaborators suggests multiple forms of social interaction mechanisms, social learning, social pressure and social support, the emphasis is on social learning and the diffusion of contraceptive knowledge in developing countries, in line with many other studies (Behrman et al., 2002; Montgomery & Casterline, 1993). However, analysis of post-transitional populations suggests a more diverse set of mechanisms. Qualitative studies, drawing upon social network theory, have revealed that the diffusion of reproductive behaviours works through a number of mechanisms, including social learning, social pressure, social support, social obligations and contagion. The effectiveness of these mechanisms, in turn, is dependent on the structure of the networks (Bernardi, 2003; Keim et al., 2009). Using survey data or structured interviews, studies of contemporary populations can reconstruct social networks and measure the

strength of these mechanisms. The literature shows how social learning diffuses fertility behaviours in networks of friends (Balbo & Barban, 2014; Lois & Arránz Becker, 2014; Bernardi et al., 2007) and networks of kin (Kolk, 2014, 2015) in western Europe, as well as in voluntary associations in developing countries (Valente et al., 1997; Barber et al., 2002); how the composition of ego-centred networks affects fertility (Lois, 2016); how differences in social pressure and social capital within people's networks between countries affect fertility (Balbo & Mills, 2011); and how social mechanisms work to mediate economic and cultural effects on an individual level (Kohler, 2001). However, social interactions and social networks are primarily related to the link between individual actions and normative social structures (Keim, 2011). By utilising rich datasets, this body of literature has been able to show the impact of social interactions in contemporary societies. Even though historical datasets do not retain information as detailed as this, the application of social network perspectives has resulted in some insightful findings.

The social network perspective on fertility is closely related to Szreter's concept of *communication communities*. By communication communities, Szreter is referring to networks that share the same "sociocultural environment of language, values, and roles" – a term closely related to networks, which Szreter also acknowledges (Szreter, 2015: 177). The term is used to capture contextual factors such as values, norms and practices that influence demographic outcomes and are shared within a community. Within a British context, Szreter argues, the primary network consisted of a combination of class and neighbourhoods, often, but not always, represented in residential patterns. Individuals are, from childhood, socialised into two networks: the family and the neighbourhood, the latter being the community of the streets outside the home. Growing up, they participate in these networks, and learn the social status codes and behaviours that form their identities. At the same time, their actions create the network and influence the meaning of shared identities. As they get older, they participate in other networks – the church, school, local forums, associations, mass media and places of work – all with their own identities and hierarchies, represented by a shared language. By language, Szreter does not refer to words but to a symbolic system of representing differences, in line with a post-structuralist perspective. Szreter argues that the perceived relative cost of childrearing changes as a response to changes in the ways parenthood and parental relations are symbolised within networks. These communication communities are sometimes bound together by common discourses, among the middle class, through the ideas of separate spheres, or within the working class, through the male breadwinner model. Such discourses and identities have always been created in relation to each other, to distinguish one's identity from others, and to establish the relationships of power between them (Szreter, 1996).

As illustrated, the two main explanations for the fertility transition, the

economic hypothesis and the cultural hypothesis, have accumulated a large body of evidence on the connections to structural level changes, such as economic development, mortality decline, ideational change and individualisation. However, connecting these to individual-level decision making has been predominantly limited to economic theory. On the other hand, progress in studies of post-transitional contemporary populations has shown the effect of social influence on fertility; however, the historical evidence for social interactions is scarce. Although not applied directly, many studies of historical populations have shown how fertility is dependent on norms and values in a specific context (Poppel & Derosas, 2006; Gillis et al., 1992a; Warg, 2002; Watkins & Danzi, 1995; Janssens, 2007b). However, these studies seldom take into account network structures or social mechanisms, and the situatedness of these studies makes generalisations problematic. The most intriguing evidence for social interaction effects comes from Watkins' (1990; 1992) macro-level analysis and Szreter's (1996; 2015) concept of communication communities. More direct evidence for social interaction mechanisms has been provided by Bras (2014), Matthys (2011; Vanhaute & Matthys, 2007) and Van Bavel (2004b), which shows that fertility outcomes were dependent on social network mechanisms and the structure of networks during the European fertility transition.

Chapter 3

Theory

Culture is described by Bachrach (2014) as the reluctant bedfellow of demography. Demographers' preoccupation with the quantification of human behaviour often limits them to what can be easily measured, socioeconomic and demographic factors, while culture has been relegated to explaining the variation that remains. Several theoretical perspectives have been applied to explain the effect of norms, context and attitudes on fertility decline. In this chapter, I will discuss the theoretical perspectives applied in the thesis research papers, their limitations and strength, and how they relate to social network theory, the overarching theoretical framework of this thesis.

Social network theory

The use of social network theory within fertility transition research originates from the assertion that fertility change is not solely an adaptation to new economic, demographic and social structures, but also a reflection of the spread of certain attitudes and behaviours (Casterline, 2001). Social network theory attempts to explain social phenomena by the nature of the social interactions that constitute society (Simmel et al., 2009). Granovetter (1985) argues that individuals are context-bound; they do not act in isolation but are embedded in networks of social relations. Thus, social network theory tries to capture the relationship between society and individual action. This, in turn, is used to explain the causal link between structural changes, such as capitalism and the Reformation, while at the same time explaining individual actions (Coleman, 1986), or in relation to demography, the link between secularisation to fertility decline and individual reproductive behaviour. Burt (1982) has formulated a "structural theory of action" to explain how actors depend on the structural environment but are at the same time capable of changing the structure (see Figure 3.1).

According to Burt (1982), the structure builds the context of action,

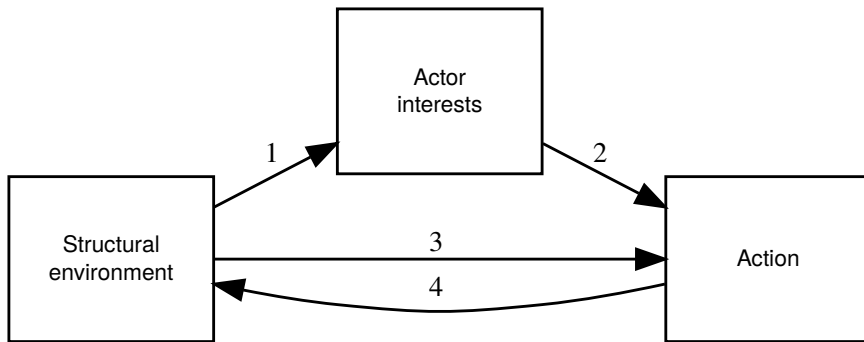


FIGURE 3.1: Components in a structural theory of action. Adaption of Burt's model, see Burt (1982: 9).

which enables and limits actions (3). The structure affects interest (1) by shaping how actors perceive the net benefits of a set of alternative actions. Interest, in turn, affects individual action (2), which also can change the structural environment (4).

The theory is interesting for the understanding of fertility dynamics as it connects structural factors (such as economic development or secularisation) to outcomes on an individual level (timing of another birth or number of children born) through social interactions. At the same time, the structure does not fully determine individual actions, allowing for individual agency. Agency, in turn, can be used to affect the structure, such as norms about birth control or prevalence of education (Palloni, 2001).

Network analysis separates two forms of networks, total and partial. Total networks are the sum of all relationships in society. For a meaningful analysis, one needs to select a subsection of the total network. Partial networks are either centred around an ego or a specific part of social life, delimited by, for example a specific location, political activity or voluntary association (Marsden, 1990).

Social networks are also seen as crucial for socialisation processes. *Socialisation* refers to how individuals form an identity and integrate into society by learning social norms and behaviours appropriate for their social position. This can be seen as a long-term social network effect; through an individual's lifetime they are socialised into a number of social networks. First, children are socialised into a family, then into a neighbourhood and school, and then to the networks of adult life, such as their workplace, church or associations (Mortimer & Simmons, 1978; Szreter, 1996). The socialisation effect on fertility is especially strong within families in post-transitional societies. Size of sibset is a strong predictor for one's achieved fertility, an effect that is independent of socioeconomic or demographic factors. This is also one of the most persistent features of post-transitional

demographics. The interpretation of this pattern is that children adopt norms and values concerning the appropriate timing of births or the ideal family size through intra-family socialisation (Kolk, 2015, 2014; Murphy & Knudsen, 2002; Bernardi, 2016).

However, from a social network perspective, the influence of peers on actors depends not only on their social position but also on the nature of the relationship between them, how frequently they interact, what resources are exchanged between them, the density of the networks, and the normative pressures produced within them (Coleman, 1986; Keim, 2011; Bernardi & Klaerner, 2014).

Network structure

The prime focus of social network analysis is thus the nature of social relations, which can explain individual actions and society. The unit of analysis is then a collection of individuals and the linkages among them, a network of social relations that form regular patterns, referred to as network structures, which can be measured in terms of their size, density, diversity and multiplexity (Wasserman & Faust, 1994).

Size refers to the number of actors (nodes) in the network; *density* is the strength of the relationship (ties or edges) between nodes, often measured in terms of the number of direct and indirect ties between nodes and the sum of the strength of each of these ties. *Diversity* refers to the composition of the network members, such as distribution in age, education or social status, and *multiplexity* to the diversity of the relationships, in the form of the type of relationship or the type of exchange (Wasserman & Faust, 1994).

However, the nature of the relations is not the prime focus of this thesis. Instead, social network theory provides (1) a framework for analysing reproductive practices in context of social networks, (2) a way of accounting for the structure of the network and (3) hypothetical links between social structures and individual reproductive practices through social network mechanisms.

Social network mechanisms

The influence of others on an actor can be intentional, as in formal education, or unintentional, through observation and emulation of peer behaviours. Three forms of social interaction, relevant to the subject of fertility, have been identified by Bernardi (2003), Bernardi & Klaerner (2014) and Keim (2011), which they refer to as social network mechanisms.

Social learning can diffuse knowledge and practices directly through communication or education, or indirectly through observation and the modelling of behaviours. Actors learn the perceived cost and benefits of a child and evaluate the information before deciding to adopt or reject the practice (Bernardi & Klaerner, 2014; Keim, 2011). This mechanism is seen as

having been the prime driver of the diffusion of birth-control knowledge during the fertility transition (Knodel & van de Walle, 1979; Montgomery & Casterline, 1993). The efficiency of social learning depends on the structure of the network, primarily the *strength of weak ties*, a term coined by Granovetter (1973). Granovetter argues that ties between individuals from different socially divergent networks are often weak. However, with many weak connections one is more likely to be exposed to new attitudes and behaviours; thus, many weak social ties create many bridges for social learning (Granovetter, 1983). Watkins & Danzi (1995) attribute the low fertility among Jews in the U.S. in the early 20th century to differences in network diversity between Jewish women and others. The heterogeneous networks of Jewish women created weak ties across social boundaries, which worked as a bridging function for social learning and the diffusion of birth-control knowledge. Helleringer & Kohler (2007) have also shown an association between varied social networks and the diffusion of positive attitude toward HIV prevention in Malawi in the late 20th century.

Social pressure refers to an actor's tendency to conform to accepted social norms, either to avoid sanctions from peers or from a sense of social obligation to gain approval from peers (Bernardi, 2003). The mechanism is strongest in networks with dense connections and strong social ties (Coleman, 1988; Granovetter, 1983). Social control plays an important role for the mechanisms when members of the network systemise control of one another, such as in small free-church congregations, where the pressure to conform to acceptable norms is high (Kennerberg, 1996; Lesthaeghe, 1980). The social pressure effect also depends on the number of adopters in the network, which in turn affects what is seen as acceptable behaviour. This has been shown in contemporary Europe, where women in networks with many pregnancies are more likely to become pregnant themselves (Bernardi et al., 2007).

Social support restrains or incentivises birth-control practices through the resources that the network creates. This is primarily seen as a factor for high fertility, where kin-centred networks provide support for childrearing, thus lowering the perceived cost of having a child (Mason, 1987). However, it is easy to deduce that networks can also provide support that makes fertility limitation easier, by providing substitute resources that a large family once provided (McDonald, 2000). This can be support in the form of elderly care or economic security, which should then lower the perceived economic net-benefits of children (Becker, 1960).

The resources created by the networks are closely related to concept of *social capital*. Through social interactions, people create and accumulate social capital, arising from the knowledge of the network and the social position of the actor within the network. This social capital can then be used to legitimise and enable action; yet, as social capital is part of the structure that builds the context of action, it also restrains individual action (Coleman, 1988; Bourdieu, 2011).

Collective action

However, it should be stressed that as is the case of any form of action, reproductive practices do not only result in demographic outcomes, they are part of the construction of the social fabric in which they are embedded. Thus, the causal link never goes in one direction from context to individual to fertility; rather, it is part of a feedback loop that is constantly in flux influencing one another. These so-called endogeneity effects need to be part of the explanation (Palloni, 2001; Bystrov, 2014a,b). *Collective action* refers to actions taken by a group of people to achieve some common goal (Marwell & Oliver, 1993; Oberschall, 1973). Through the collective action of formal networks such as voluntary associations, people are able to affect their structural environment. For example, in the past the collective actions of unions raised the average income of workers (Åmark, 1986), and the actions of temperance associations led to stricter alcohol regulation (Kettil & Frånberg, 1985). Social movements across Europe, including Sweden, worked to promote education, social welfare and the public discourses on morality and respectability (Tilly, 2004). By working together, people were able to change their structural environment (Lundkvist, 1980), an environment that shaped the perceived benefits of a set of alternative actions, such as deciding to have another child or use birth control (Bernardi & Klaerner, 2014).

Diffusion

In fertility transition research, the role of social networks has been explored in the context of diffusion. The idea that fertility limitation is an effect of a diffusion process draws upon the theory of diffusion of innovations, as formulated by Rogers (2003). *Diffusion* refers to a process where prior adoption in a population affects the probability of adoption by the rest of the population. The theory has been applied to explain the diffusion of technological innovation (Brown, 1981; Hägerstrand, 1967) or the spread of voluntary associations (Sandell & Stern, 1998; Sandell, 1999; Stern, 1999; Hedström, 1994).

In demography, diffusion of innovations is used to explain why patterns of fertility decline followed linguistic and cultural boundaries (Knodel & van de Walle, 1979; Watkins, 1986). The use of birth control is viewed as an innovation, which was unknown or at least not applied by pre-transitional populations (Henry, 1961; Watkins, 1986). Fertility declined because of cultural diffusion; through a process of secularisation and individualisation (Lesthaeghe & Wilson, 1986), birth control came to be, as Coale (1976: 65) puts it, “within the calculus of conscious choice”. Diffusion would have affected population-level fertility, independently of any demographic or economic effects. On an aggregate level, the diffusion of innovations creates

spatial patterns (Sandell & Stern, 1998; Hägerstrand, 1967). This is based on the assumption that proximity increases the probability that individuals have face-to-face meetings (Hedström, 1994; Marsden & Friedkin, 1994). Distance is also one of the best predictors of whether or not individuals know each other (Marsden & Friedkin, 1994; Zhang & Pang, 2015).

On an individual level, the effect of diffusion is contrasted to structural effects by Palloni (2001). Changes in fertility decisions are made due to alterations of preferences. Structural effects (e.g. economic or ideational effects) affect the individual through their social position, either through social mobility, when an individual moves within the social strata, or through a change of resources associated with the position. Members of the elite were, therefore, forerunners in the transition because their resources were the first to be affected by economic development. Fertility among the working class declined either because the position in society of its members changed or their resources changed through a shift in the modes of production. We would thus expect certain behaviour from a given social position. A change in behaviour that was independent of structural changes (without changes in position or resources) occurred as individuals re-evaluated their own choices in light of the behaviours and attitudes of others and adopted the innovation of fertility limitation.

The field thus combines two separate mechanisms: (1) diffusion, the spread of behaviours and attitudes; and (2) innovation, the content of diffusion that focuses on either birth-control knowledge or ideas and values that promote low fertility (Casterline, 2001).

However, the diffusion perspective has been criticised. First, there is an increasing body of evidence showing the existence of continuous fertility limitation in pre-transitional populations (Bengtsson & Dribe, 2006; Kolk, 2011; Reher et al., 2017; Van Bavel, 2004a). Fertility limitation was not unthinkable before the transition, and people were both willing and able to control their fertility when they wanted to, for example, in anticipation of economic hardship (Bengtsson & Dribe, 2006). Second, aggregate-level patterns of diffusion have been shown to hide micro-economic effects on fertility on an individual level (Brown & Guinnane, 2007), leading to researchers drawing the wrong conclusions from aggregate-level patterns.

The limitations of diffusion theory have led researchers to adopt explanations from social network theory (Bongaarts & Watkins, 1996; Kohler, 2001; Montgomery & Casterline, 1993; Watkins, 1990), especially to explain relationships between structural changes and individual actions better. In social network theory, ideational factors and knowledge about birth control are part of the structural environment, together with socioeconomic conditions, which set the context of action. As previously mentioned, pre-transitional populations did have both the willingness and the ability to control fertility. More specifically, abstinence was practised by a third of the adult population in Europe (Szreter, 1996); thus, we can assume that pre-transitional populations did know how to regulate fertility.

Ideational theory

Ideational theory provides a framework for understanding the content of diffusion, the cultural innovation, or, according to the social network perspective applied in this thesis, the context of social interaction. The strongest advocate for the importance of ideational factors in the fertility transition is Lesthaeghe, who together with collaborators, has argued for the importance of secularisation (Lesthaeghe, 1980, 1983; Lesthaeghe & Surkyn, 1988; Lesthaeghe, 2010; Surkyn & Lesthaeghe, 2004). The primary force for ideational change is individualisation, working on a structural level through secularisation. Modernisation is seen as the root cause, and ideational factors and economic factors represent decomposition of the modernisation process. The main theme of the ideational factors is that they represent the abandonment of traditional value systems, replacing them with individualism, openness and tolerance (Lesthaeghe, 1983). Ideational factors are in a sense cultural innovations leading to individualisation and fertility decline.

By secularisation, Lesthaeghe is referring to a process of de-Christianisation or a decline in adherence to organised religion (Lesthaeghe & Surkyn, 1988; Lesthaeghe & Lopez-Gay, 2013). This conceptualisation of secularisation is in line with modernisation theory; it adheres to a single momentum of change leading to a 20th-century Western-style society. Individuals are freed from societal restraints legitimised and upheld by the community, the state and the church, and can thus act according to their own preferences: they are individualised and can choose to have fewer children in their strive for individualised ideational goals of self-fulfilment. This concept is problematic, as it assumes a deterministic Eurocentric process; it assumes that context mattered only before the transition and not after, by focusing on the absence of cultural restraints (secularisation), rather than focusing on the context of action (Johnson-Hanks, 2008). It also lacks the connection between normative structures and individual behaviours that social network theory provides.

Instead of viewing secularisation as a decline in organised religion, secularisation represents a process where the meaning of religion was challenged and changed. Religion is not a static object that contains certain attributes; it is a social construction. Secularisation is viewed by Beckford (2003) as a process where the meaning of religion was disputed, constructed and debated, which, according to McLeod (2000), makes room for other interpretations including rationality, deism and alternative forms of Christian associations, such as the free churches of the late 19th century. In this sense, secularisation refers to a process of increased cultural competition, where the focus shifts from structural changes to how reproductive practices were performed and perceived by different religious and secular groups. The link between normative structural changes and reproductive practices in both secular and religious groups can be understood through the idea of

respectability.

Respectability

According to Kling (2007), *respectability* sits in the nexus of class and gender, a way of behaving and of positioning oneself as a man or women within a certain social group (see also Skeggs, 1997). Reproductive practices were integral to respectability; however, this relationship took different forms in different contexts. Skeggs (1997; 2011) argues that respectability was a fundamental part of the construction of class during the 20th century, and it was most important for those where it was not given or “natural”, that is, the working class. The family was an essential part of middle-class respectability discourse, upheld by the gender division of labour between spouses. The spouses acted within separate spheres where men provided for the family in the public, while women served the family in the private (Davidoff & Hall, 1987; Skeggs, 1997). Without the resources to employ servants, or by having separate bedrooms, it was much harder for working-class couples to uphold a respectable home; however, this also meant that it was much more important for their identities to do so (Skeggs, 1997; Kling, 2007).

Working-class male respectability was defined through work, which was physical in contrast to the work of middle-class men. Working-class women earned respectability through their position in relation to a man, as a wife or as a mother (Skeggs, 1997). Through her analysis of late 19th and early 20th century prescriptive literature, Kling (2007) shows that women achieved femaleness by giving in to nature, which entailed motherhood and marriage. The man, on the other hand, achieved manliness through civilisation. The natural man was brutal and had an uncontrollable sexuality, a nature that needed to be tamed. It was up to the wife to help her husband control himself, to be civilised and respectable. Sex was not a male right, although it was his responsibility, which entailed being respectful of his wife’s rights and health. Female sexuality was similarly seen as a threat, not against society but to herself, her health. A respectable woman had a lower sex drive than her husband, and a respectable husband could curb his sexuality. A small family was therefore seen as a respectable family.

These norms were also strong within the secularisation process. Through secularisation, religion was transferred from the public sphere to the private, from the domain of men to that of women. In this sense, religion was feminised, and women came to dominate the participation in church activities, while male activity declined. Also, femininity became associated with piety, a reversal of previous representations of piety and sin, and the man was then seen as more easily corrupted by sin (Brown, 2009). Although men were seen as more easily corrupted by sin, it was the responsibility of the wife to control her husband’s behaviours. It was her role to take care of the salvation of her family and kin. This was a moral

power that was accompanied by requirements of sexual restraint (Pasture & Art, 2012). Birth control was thus a part of the identity creating process within religious movements, an important tool for achieving respectability.

However, the use of contraceptives was not condoned by the Christian discourse of respectability, as some members of the church believed that it would encourage immoral behaviour. Respectability was not only achieved through small families; it was achieved through sexual restraint and abstinence. On this question, the Christian view of respectability and fertility was in line with the liberal women's movement. Women's emancipation was seen to be dependent on a strengthening of morality in society that would be achieved through the expansion of women's rights and the motherly obligation to care for others in the society at large. Free sexuality and contraceptives were, from this perspective, a threat to the emancipation process (Kling, 2007: 67-68).

Sexual restraint was not as central to respectability within the workers' movement. Instead, moral values emerged in relation to large and small families. Large working-class families became associated with filth, chaos, poverty and uncontrollability. Those who had large families were, therefore, seen to be responsible for their poverty (Kling, 2007). Horgby (1993) and Ambjörnsson (1993) use the term conscientiousness to describe how respectability was constructed in working-class culture. *Conscientiousness* refers to a consciously controlled life, a life of orderliness, diligence, honesty, sobriety, dependability and steadiness (Ambjörnsson, 1993). By appropriating middle-class ideals and filling them with their own interpretations, conscientiousness became a way of separating oneself from the "others": the middle-class and a part of the working-class political consolidation. Respectability was constructed within the working class in contrast to the idea of *wilfulness*, to be disobedient as a worker in contrast to "well-behaved" as a father and a breadwinner. Wilfulness was associated with male working-class youth culture, and the act of marrying and forming a family was seen as an important part of being conscientious (Horgby, 1993). Respectability was not only a way for working-class couples to position themselves against the middle class but also to position themselves within the working class – distinguishing a good worker from a disobedient worker.

It must be emphasised that respectability is, as it has been described here, a norm, an ideal image of behaviours. In reality, men and women struggled to be respectable to live up to an unachievable ideal. Yet, due to limited resources, especially for working-class couples, they were never able to achieve this goal. The concept of respectability is used in this thesis to analyse why individual reproductive practices would be affected by associating with formal social networks in the form of voluntary associations. Respectability is thus seen as a part of the structural environment that limits and enables action, together with people's economic situations. How to achieve respectability is embedded in the networks within which actors operate, in their neighbourhoods, networks of friends and associational life.

In summary, this thesis draws upon multiple theoretical perspectives seen as layered, contributing interpretations and tools for the analysis of how individual behaviours and macro-level structural changes are connected. Respectability and ideational theory provide a framework for understanding how reproductive practices came to be a part of individual gendered identities during the fertility transition. An identity creating process dependent on the attitudes and behaviours of others is in line with how Gillis et al. describe fertility, as illustrated below.

When people decide how many children they wish to have they are simultaneously deciding how they understand themselves and how they wish to represent themselves to the world. [...] Childbearing and child raising remains one of modern Europeans' most important symbolic activities, contributing to the way they think about themselves, communicate with one another, and construct their gender, class, and communal identities.

— Gillis et al. (1992b: 8)

Having a child is not only a biological act of reproducing oneself but also an act of cultural reproduction, an act embedded in networks of others. Social network theory functions as a middle range theory, that provides the link between individual reproductive practices and gender, communal and associational identities, through social interaction mechanisms operating within social networks.

Chapter 4

A brief history of social networks

Nineteenth-century Sweden experienced not only great demographic and economic changes but also a shift of social relations, which can be described by Tönnies ([1887] 1988) dichotomous ideal types *Gemeinschaft* and *Gesellschaft*. There was a shift from an old to a new society where *Gemeinschaft* represents vertical relations within a rural collective community, for example, between father and son, subject and ruler. *Gesellschaft* represents horizontal relations, where the family relations model was broken, and relationships were entered into voluntarily, based on occupational, religious or civic interest and identities. These are, of course extreme simplifications; people were not solely bound by family structures in agrarian societies, and the family did not lose its importance in a modern society. These structures were layered on top of each other, coexisting and changing throughout history. However, these ideal types function here as a basis for comparing and describing social change in Sweden during the 19th and 20th centuries from a social network perspective. Gaunt (1996) argues that there were large variations in the social networks of local communities in pre-industrial Sweden. Workers at large estates formed social ties with weak connections: families moved continuously between locations, and the turnover of new families was high. Agrarian communities of freeholders, on the other hand, created networks with strong social ties. These communities experienced limited migration and were able to form long-lasting interdependent relationships between families. Although the strength and structure of pre-industrial networks varied, these networks often formed along hierarchical relations and more seldom to lateral peers. While industrialisation and urbanisation did disrupt old social networks, they did not necessarily create new networks that spanned across local boundaries. New social relations were often formed with others within the same location, creating sub-networks within

a specific occupation or workplace (308-310).

In early modern Sweden, the church had an important role in legitimising the hierarchical vertical social structure. Although the original message of Lutheran reformation emphasised an individual Christianity, the church and its priests were to be incorporated into the state-building process during the following centuries (Hsia, 1989: 19-21; Malmstedt, 2002). One of the Ten Commandments, "Honor thy father and thy mother", was extended outside parental relations, legitimising authorities such as freeholders, parish priests or kings. During the 19th century, the church lost its influence, and attendance at communion and catechetical examinations declined (Bäckström, 1999). At the same time, the free churches, temperance movements, philanthropic associations and suffrage movement emerged, and, by the end of the century, union and socialist political organisations took form. Voluntary associations gathered men and women under a common interest such as salvation, suffrage or sobriety, and, although these interests were diverse, they shared a common trait of promoting competing religious, political and ideological cultures that enabled new ways of organising society. The emergence of these mass movements has been seen as a resistance against old social hierarchies, where the middle and working classes gathered in new political and cultural constellations that could form norms and values legitimising new forms of social authority (Jansson, 1982: 42). They represent here a horizontal type of social organisation – *Gesellschaft*.

Voluntary associations

Some of the voluntary associations fall within the term *Folkrörelsen* (the popular movement): these are the free churches, temperance associations and workers' organisations, which consisted of unions and socialist political groups. These associations were also the prime focus of *Folkrörelseprojektet* (the Population movement project), which, under the leadership of Sven Lundkvist, set out to investigate the development and effect of the Swedish popular movement from 1850-1920 in the context of other social changes (Lundkvist, 1977). Within the project, the *popular movement* were defined as those in which membership was voluntary, large, and idealistic, with members striving for a collective long-term object (Lundkvist, 1980: 226). The term popular movement is closely related to the international term *voluntary association*, which Sills (1968) defines in the International Encyclopedia of Social Sciences as a group: "(1) that is formed in order to further some common interest of its members; (2) in which membership is voluntary in the sense that it is neither mandatory nor acquired through birth; and (3) that exists independently of the state". The main difference between these definitions is Lundkvist's requirement of a large membership and Sills' requirement of independence. However, the free churches, temperance associations and workers' movements were, during a period, independent of

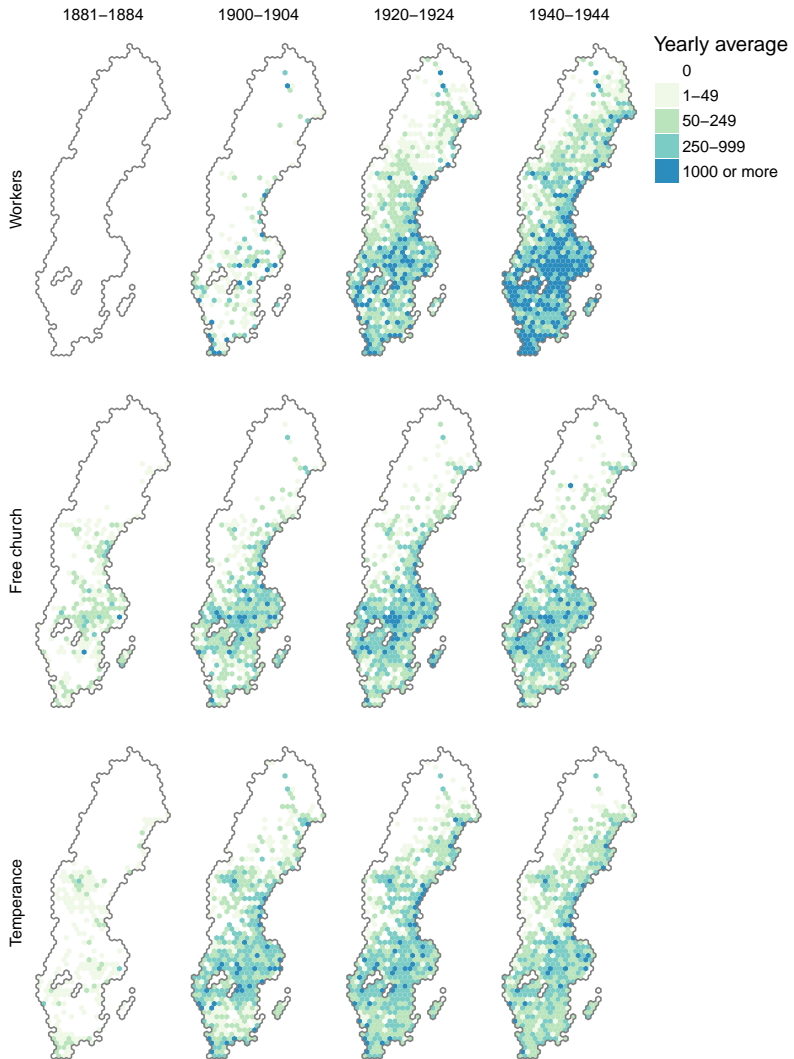


FIGURE 4.1: Location and size of voluntary associations, 1881-1944. Sources: Junkka (2015); Andrae (1984).

the state; thus, both definitions fit these groups. It is the large membership that distinguishes these organisations from other voluntary associations at this time; these were mass movements. Other associations such as the liberal suffrage movement or the bourgeois philanthropic movement never attracted memberships as large as the others. Although they are interesting because of their resistance to or promotion of the active use of birth control (Gordon, 1973; Kling, 2007), they are not the primary focus of this thesis due to their small numbers. However, they are important as secondary networks, as influencers of or antagonists to the free churches, temperance associations, unions and political organisations, with respect to the creation of shared identities.

The history of voluntary associations extends back before the 19th century; however, it was in this century that these groups formed into stable associations that grew into mass movements. Initially, they grew out of international counterparts such as the International Order of Good Templars (IOGT), The Blue Ribbon (Frånberg, 1985), the Baptist movement (Lundkvist, 1977: 47-48) or the European labour unions (Åmark, 1986: 55-64). These associations were part of a larger social movement that gathered individuals across Europe and North America during the 19th and early 20th centuries (Gamm & Putnam, 1999; Tilly, 2004: 38-64). These groups gathered around a common ideational goal such as personal salvation, abstinence from alcohol or workers' rights. To achieve these goals, they strove to change society at large, creating political legitimacy for themselves and their interest groups, changing political order and societal norms (Jansson, 1982: 42; Tilly, 2004: 38-64).

In Sweden, the associations were first found within urban areas but soon spread throughout the entire country, as illustrated in Figure 4.1. The free churches, or rather the larger revival movement that they were a part of, re-emphasised the reformation view on Christianity, as well as voluntary personal salvation and the right to interpret God's word. Baptist congregations had formed previously in the 1850s before legislative changes in the 1860s, and 1870s made these congregations legal, and by the end of the decade, the Baptists consisted of 95 congregations with over 4,300 members. The movement soon gathered a large number of individuals in mass baptisms, local meetinghouses and newly built churches (Gustafsson, 1953; Lindberg, 1985; Lundkvist, 1977: 48-49). After rapid growth in the 1880s, the free churches stagnated and experienced slow growth until the 1930s, as shown in Figure 4.2. The data here captures the majority of the free churches except for the Pentecostal, which was a small church up until the 1930s, after which it grew to be the largest free church in Sweden, replacing the Swedish Missionary Church (Stävare, 2007: 89-90; Andrae, 1984).

The first wave of the temperance movement started in the 1830s and reached its peak around 1845, when the membership has been estimated to have been as high as 100,000, or perhaps even more. The primary message was abstinence from hard liquor and moderation when it came to other

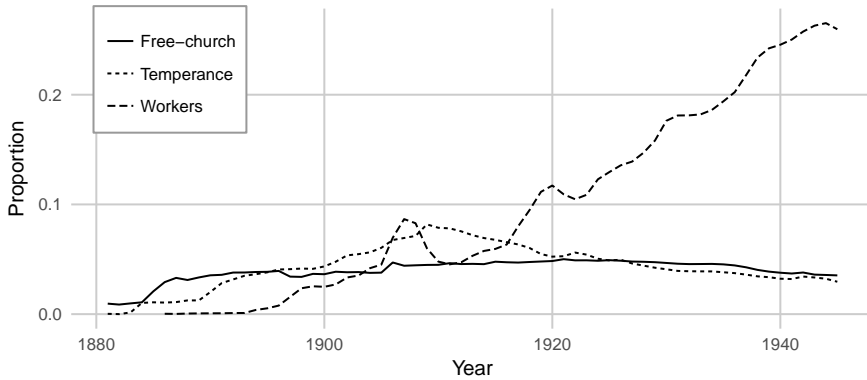


FIGURE 4.2: Size of voluntary associations in proportion to the size of the adult population (ages 15-65) between 1881 and 1945. Sources: Andrae (1984); Hofsten & Lundström (1976).

forms of alcohol. The movement had close ties to the ongoing revival movement and was mainly driven by the upper middle class. In the 1850s, the movement rapidly declined and was never able to establish any form of sustainable and active associations. A more formalised temperance movement came with the second wave around 1880, through the establishment of the IOGT (Kettil & Frånberg, 1985; Lundkvist, 1977: 50-52). Around the turn of the century, its membership had surpassed that of the free churches, and at its peak, around 1910, it had almost 350,000 members. This peak, however, was followed by a steady decline.

Organised unions were not established until the 1870s, first organising craftsmen who were united under protectionistic goals. However, the workers' movement was soon linked with the socialist political movement, and when the Swedish Social Democratic Party (SAP) was formed in 1889, there was already an established workers' movement to build upon (Lundkvist, 1977: 53-55; Åmark, 1986). The movement took off after the turn of the century, with membership peaking around 1907, which is attributed to nationwide recession and the following general strikes. Even though the membership declined afterwards, it soon recovered and would include around 20 percent of the adult population in 1930, as illustrated in Figure 4.2. The workers' movement was, up until 1900, concentrated in urban areas, as depicted in Figure 4.3, while the temperance associations and free churches were strongest in rural areas, dominated by the Swedish Missionary Church (*Missionsförbundet*), Baptists (*Baptisterna*), the IOGT and the Blue Ribbon (*Blåbandet*).

The voluntary associations not only strove for some common cause but worked to change their members' lifestyles and give them new ideals – to integrate their members and to make them feel affinity was of utmost

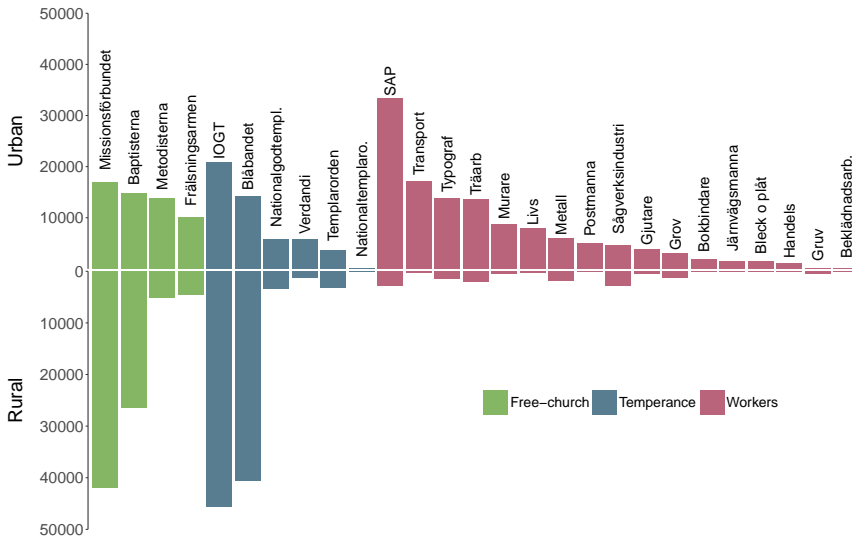


FIGURE 4.3: Size of voluntary associations in 1900 in rural and urban parishes. Urbanisation is calculated based upon population density, see Junkka (2018c) for further details. Sources: Andrae (1984); Minnesota Population Center (2015).

importance. Becoming a member was not only an act of affiliation but entailed entering into an associational way of life. Each member was part of a local organisation, a temperance lodge, union or free-church congregation that had its own board, held elections, had regular meetings in permanent locations, and arranged workshops, seminars, lectures and social events. Rydbeck (1995) argues that the associations functioned as an alternative society, mirroring the functions and structure of the state. They often organised in a state-like fashion, collecting fees from members who created mutual funds that were redistributed through the mother organisations. They kept track of members in census-like formats, even handing out migration papers (*flyttningsbetyg*) when members moved to another location (27). Education was seen as a complement to the central ideational goals of the societies. The associations saw themselves as a counterbalance against immoral or destructive forces in society, and thus needed to support positive developments such as the education of their members (Ambjörnsson, 1998; Rydbeck, 1995: 22). At regular, often weekly, meetings the members gathered, not only to deal with official tasks such as the registration of members, but often to arrange or conduct discussion seminars, reading circles, oral readings from the association's library or to listen to and participate in musical performances (Rydbeck, 1995: 170-172, 196-197). Children were organised into youth groups, whose activities were often similar to those of formal education, with a strong emphasis on the ideational norms of the association (Rydbeck, 1995: 212). Initiation rituals and ceremonies were especially

important practices within the free churches, through public confessions and baptisms, and temperance associations, through ceremonial pledges. These rituals helped to legitimise the organisations and created a sense of having been chosen, for their members. The associations were often seen as and spoken of as second families, members often addressing their fellow peers as brothers or sisters. They were often thought of as communities in which members took care of each other, but also controlled one another (Ambjörnsson, 1998: 71-77).

Social discipline and control formed an integral part of the association's activities, maintained and monitored by all members, as the behaviour of others was seen to be crucial to their own status. Members were to behave respectably and in a controlled manner not only within the association, but also outside of it, publicly and privately. Violations were punished by sanctions, stripping of rights and, even, expulsions (Ambjörnsson, 1998: 77-78; Kennerberg, 1996: 94-101). Men's roles within the associations could be attained through their participation in the group's workshops and seminars, learning the role and skills of governance. Women's roles were given in relation to their status as mothers or wives, extending these roles into the organisation (Ambjörnsson, 1998: 145-148; Rydbeck, 1995: 42). As seen, the social support attained by affiliation was significant, and the internal social pressure to conform to social norms was high within the associations. Also, the membership base was quite diverse, spanning across old social boundaries of family and community, and enabling many bridges of social learning between members of different backgrounds.

However, in terms of social class and age, the voluntary associations were quite homogeneous groups, consisting of young men and women from the working and middle classes. Although there were large differences between associations when it came to gender composition, the free churches were dominated by women, who made up approximately two-thirds of the members, compared to the temperance associations, which had roughly equal numbers of male and female members, and the workers' movement, which was dominated by men. The free churches also had a greater social span, gathering individuals from both the lower working classes and the upper middle class, while the temperance movement attracted individuals from the middle class and the skilled working class. The workers' movement consisted almost exclusively of young men with lower-middle-class or working-class backgrounds (Lundkvist, 1977: 77-80). Membership turnover was highest within the temperance movement, followed by the workers' movement, and, although expulsions were common in the free churches in the early years, they were soon formed into relatively stable groups (Lundkvist, 1977: 64).

The influence of the association extended beyond their members into society at large; the workers' movement, temperance associations and free churches worked actively to affect politics and change policies. Jansson (1982) argues that the temperance associations functioned as the first well-

organised modern political party within Sweden, and their collective actions were successful in introducing alcohol restrictions. The workers' movements became a base for the Swedish socialist party that was crucial in formulating political family policies in the 1930s and onwards, forming an ideological base for the growing Swedish welfare state (Axelsson & Wisselgren, 2016; Möller, 1990). It was not only the workers' movement and temperance associations that were successful in getting members into positions of authority on both a local and national level, so also were the free churches (Lundkvist, 1977: 162-174). Thus, through collective action, the voluntary associations affected societal structures, such as political policies related to emancipation, workers' rights, alcohol laws and societal morality, the effects of which extended beyond the membership base.

Voluntary associations and birth control

Within the larger 19th-century European and American social movements, birth control was a highly debated issue, discussed in relation to perceptions of overpopulation, class conflicts and family morality. The neo-Malthusian movement saw overpopulation as a problem for society, leading to poverty, illegitimate children, prostitution, drinking and infanticide. This was also seen as a problem that could be solved by limiting fertility through the active use of birth control, which was a controversial statement that sparked debate across Europe in the late 19th century. Levin (1994) studied the Swedish movement where the debate began when Knut Wicksell held a neo-Malthusian lecture at the Verdandi student union in 1880, in which he promoted the use of contraceptives, a lecture that was shortly thereafter published and disseminated nationwide (49-63). The lecture not only provoked reactions from liberal women's organisations and radical socialist groups, but the subject of sexual morality came to be debated within the larger popular movement. The resistance against the neo-Malthusians was great: the liberal women's movement saw it as a threat against women's suffrage, as it removed their primary argument against intercourse; however, abstinence was seen as the key to social morality. Resistance was also found within the leading groups of the workers' movement; they argued that contraceptives were an individual issue and not a collective one. However, they agreed that overpopulation was a problem, but that economic prosperity would lead to people making the right decisions when it came to family formation, which would give the same result (Levin, 1994: 287, 312). The debate was fuelled further by an even more radical lecture by Hinke Bergegren five years later called *Kärlek utan barn* (Love without children) (Levin, 1994: 312).

Contraceptive propaganda was spread throughout the voluntary associations, primarily in the workers' organisations (Kling, 2007: 132-133). However, issues of birth control were debated within the larger movement, as evident, for example, by the public debates in response to the writings of

Frida Stéenhoff around the turn of the century in Sundsvall. In an analysis of the debate, Kling (2007) shows that Stéenhoff propagated for a radical change of sexual morality and the use of birth control in her literary works. In 1908, her play *Penningen och kärleken* premiered at the IOGT meeting house in Sundsvall, showing the close ties between birth control agitators and the voluntary associations. In the public debate that followed, representatives of liberal women's movements as well as Christian revival movements argued against Stéenhof's liberal view on sexuality. According to the critics, women and men were not similar; they were equal but separate (in line with the views of difference feminism), and a woman's status in society depended on her ability to uphold a high societal morality and respectability, including sexuality. Through the debate, it becomes evident that birth control in itself was not the issue; control of sexuality was instead seen as a sign of decency and good moral values (65-68).

The voluntary associations were also active in the debate in the years before the contraceptive law of 1910. The workers' movement supported the law against the spread of information promoting contraceptives; family sizes should be limited not at the cost of sexual morality, but rather through self-control. The same arguments were found within the free churches: abstinence was the preferred method of fertility limitation, and even though the younger generations of evangelicals expressed a resistance to the law, this was due to their view that individual choice should not be limited (Kristenson, 1997: 149-160). Although there was resistance against the neo-Malthusian arguments for the use of contraceptives, the debate made sexuality and reproduction into a topic for voluntary associations, and when *Riksförbundet för sexuell upplysning* (the Swedish Association for Sexual Education, or RFSU) was established in 1933, the voluntary association functioned as an infrastructure for the distribution of information, even recruiting individual associations as member organisations of RFSU (Kling, 2007: 139-140).

Voluntary associations and respectability

As discussed in the previous sections, the actions of members were important for the social status of other members. Members were expected to behave in accordance with the dominant norms and values within the association; this included the use of birth control. The ideas of respectability were especially important for the members of the voluntary associations. Ambjörnsson (1998; 1993) has shown that the idea of the conscientious worker (*den skötsamma arbetaren*) was important for shaping working-class identities within the voluntary associations. As described in the theory section, *conscientiousness* refers to a consciously controlled life, a life of orderliness, diligence, honesty, sobriety, dependability and steadiness. Conscientiousness describes how the working class appropriated middle-class family ideals and fielded it with

their own meanings.

Knowledge and education was an integral part of this ideal, a necessity to control one's actions in order to change society for the better. However, the meaning of respectability took different forms within the different associations. The free churches and the temperance associations stressed the individual aspects, and individual salvation, of the Christian faith or sobriety. The unions emphasised a collective meaning where respectability also entailed solidarity; to be disloyal to one's fellow workers was immoral and uncivilised. The voluntary associations created networks of individuals where these ideals were professed and debated. What was considered a good person and what was considered moral and immoral behaviour was formed by the members, ideals and values that extended beyond the place of work and encompassed the entire social life. These ideals and values became a part of their identities, creating boundaries to others by how they differed, between good workers and ignorant workers, between working class and middle class, between men and women (Ambjörnsson, 1998: 9). Family formation was part of this process; within the workers' movement and the temperance associations, forming a family was an essential part of becoming respectable, and it was through men's roles as fathers and breadwinners that they could achieve respectability (Horgby, 1993). However, large families were seen as a sign of poverty and unrespectability; thus, birth control became a means to conform to these ideals (Kling, 2007). Ambjörnsson's (1998) study of voluntary associations in Holmsund shows that the organisations not only distinguished themselves as political instruments but also as structured networks of social relations where a common language was created, where morality and respectability were central to the formation of shared identities.

The meaning of respectability within the workers' movement and the temperance movement focused on masculine attributes, promoting the active role of men to take control of their fertility, which could include the use of contraceptives. The free churches concept of respectability lay closer to the middle-class ideals of respectability. Female respectability was seen as natural and given, and it was the woman's obligation to lift her husband to the same moral level as she. Women were thus given a moral superiority and authority over birth-control matters through their role as mothers and wives. Birth control through abstinence was seen as a tool for achieving respectability and as part of being a good Christian (Kling, 2007; Pasture & Art, 2012). Oral reading was a common activity among the voluntary associations. In a study of the reading culture of the temperance association, Rydbeck (1995) finds that the literature read extended beyond alcohol-related topics. The members read and debated books on topics such as marital relations and parent-child relations, as well as what constituted a proper household. These were books that described middle-class ideals of family and family relationships, central to the ideas of respectability (274-300; see also Kling, 2007: 94-100).

Chapter 5

Research design

The main ideas in the current thesis developed over the course of the research process. The point of departure was fertility decline and secularisation, which was also the main theme of the first published research paper (see Junkka & Edvinsson (2016)). After this publication, the thesis broadened to encompass the three main voluntary associations and social networks in general, the central theme of the thesis. The overarching strategy of the research papers was to contextualise birth-control behaviours within delimited social networks – voluntary associations and spatial communities.

As outlined in the theory chapter, social interaction effects on fertility occur as individual action is influenced by the attitudes and behaviours of others. The influence diffuses new behaviours or perpetuates old ones through social network mechanisms – social learning, social support and social pressure. A common strategy employed in contemporary studies of fertility and social network mechanisms is to gather social network data on social ties, fertility behaviours and the strength of the relationships between individuals through surveys or structured interviews. None of these methods was available for this investigation of historical populations in Sweden between 1850 and 1950. Instead, other strategies were employed. The first strategy was to capture the effect of social interactions by contextualising reproductive behaviours by connecting individuals to formal social networks – different types of voluntary associations. By using previous studies of these networks, we can gain knowledge on the structure of the networks and the dominant norms and values within them. Through this strategy, it was possible to study two forms of social interactions effects: participation and exposure effects. Participation effects occur through membership in a voluntary association. Drawing upon findings from previous studies of voluntary associations, it is assumed that the voluntary associations created distinct structural environments upheld by the attitudes and behaviours of their members. Through their membership, individuals formed social ties to other members and were thus influenced by the practices of others

through social interaction mechanisms. Exposure effects occur as people live near an association, and couples would, therefore, be more likely to be connected to an existing member and to be exposed to the collective actions of the associations. This strategy enables analysis of social interactions and fertility on a large scale, which can reveal patterns and measure effects on an individual level without actual data on the social ties between individuals.

The second strategy was to use spatial proximity as a proxy for social ties. Spatial distance is one of the best predictors of whether or not individuals know each other, both in the 19th and 20th centuries, as well as in the 21st century (Zhang & Pang, 2015; Marsden & Friedkin, 1994). By measuring the distance between ego and others, it is possible to reconstruct networks of neighbours. These networks represent individuals who were able to have regular face-to-face meetings and were therefore likely to be subject to social interaction effects on fertility (Hedström, 1994; Marsden & Friedkin, 1994). This strategy enables the study of two forms of social interaction effects, neighbourhood-level correlations and between-neighbour diffusion effects. Correlations or similarities in fertility between couples in adjacent neighbourhoods occur, as people were likely to know each other across neighbourhoods. Fertility behaviours would diffuse between couples in different neighbourhoods through social interaction, leading to spatial autocorrelations in fertility. At the couple level, the past practices of their neighbours would influence a couple's decision; thus by measuring changes in fertility among the neighbours of each couple throughout their reproductive age, it is possible to study the association between neighbours' behaviours and couples' fertility.

The primary limitation of these strategies is that they cannot determine causality. The first strategy can only show associations between network affiliation and fertility behaviours; these associations, in turn, could be caused by underlying factors that affect both the propensity to be a part of a specific network and fertility. Although the second strategy goes beyond mere affiliation by using spatial proximity as proxies for social ties, the effect of neighbours' behaviours could also be caused by underlying factors, such as socioeconomic similarities between neighbours or due to people's tendencies to cluster together with similar people (McPherson et al., 2001). A third analytical strategy was thus to control for these confounding factors by using regression-based methods to measure effects of neighbours' behaviours and network affiliation on fertility outcomes. By using regression-based methods, the analysis in all research papers can control for a portion of the selection bias introduced by people's tendencies to self-select into networks.

To study patterns in the relationship between fertility and social interactions, I measured individual-level fertility and network effects on different levels of society (see the summary of the thesis design in Table 5.1). In the first paper (Junkka, 2018c), I studied the effect on net fertility of the workers' movement, the temperance association and free-church activity on a parish

TABLE 5.1: Project design

Article	Scope	Time	Networks
I	National level Sweden	1890-1900	Voluntary associations
II	Local level Sundsvall region	1860-1921	Free-churches
III	Local level Skelleftåe region	1880-1949	Union and temperance associations
IV	Local level Skelleftåe region	1850-1950	Neighbourhoods and neighbours

level across the whole nation at two specific points in time, 1890 and 1900. The following three papers were set within two local contexts in Northern Sweden, investigating social interaction effects throughout the whole life course of individuals across the fertility transition. Paper 2 (Junkka & Edvinsson, 2016) studied the effects of family-level free-church affiliation; paper 3 (Junkka, 2018a) focused on the effect of union and temperance association membership, and the fourth and final paper (Junkka, 2018b) studied social interaction effects between neighbours and across neighbourhoods. By combining different scales of analysis and measurement with individual-level fertility as a common outcome, this thesis can analyse how patterns of fertility decline are connected to social networks and social interactions.

Although these combinations of strategies are well suited for the objectives of this thesis, they have some limitations, primarily as they rely on the quantification of action. The procedure often results in overlooking issues of individual agency and gender power relations. Men and women are often assumed to be unanimous in their fertility decisions, and the asymmetrical power relationships between them are not taken into account (Mackinnon, 1995; Watkins, 1993). Individual attributes are ascribed to both parties; one example is how the occupation of the husband is seen as the sole indicator of the couple's socioeconomic status, even though the working lives of both husband and wife affected the couple's decisions (Gittins, 1982; Janssens, 2014; Seccombe, 1992). An alternative strategy would be to focus on one delimited population and conduct an in-depth analysis of the political system, gender relations, social conflicts, economic development and subjective views on family and fertility, in line with Greenhalgh's (1995) concept of situated fertility. However, as argued previously in this thesis, this form of strategy is limited by its ability to reveal patterns at the expense of understanding the particular.

Fertility rates can be viewed as mere aggregations of events and exposure. However, Johnson-Hanks (2007) argues that they are also part of the social environment that structures individual actions, and thereby quantifications of social practices. Actions, even those as personal as deciding to have a child, consistently conform to social norms, or as Johnson-Hanks

puts it:

[...] no one jumps off a bridge because the number of suicides falls below the previous year's total; yet, suicide rates remain remarkably stable.

– Johnson-Hanks (2007: 3)

Shared practices structure the social environment; thus, by studying the patterns in rates and differences between groups, we can get an understanding of how and why social norms elicit particular actions, such as the decision to use birth control, and the population outcome of these practices – low fertility.

Sources and sample

No single source can provide individual-level information on fertility and social networks for the whole nation across the fertility transition. Instead, this information is collected from different sources and combined into separate analyses in each research paper. The sources for each article are discussed in depth in the respective research paper; in this section, I will discuss the overall strategy of source selection, how the different sources complement each other and the limitations of the selection of sources, and I will also describe the sample populations. The sources and samples are summarised in Table 5.2.

The base of the analyses comprises of historical demographic data on individual-level fertility. Data on individual-level fertility for the entire nation was collected from the 1890 and 1900 Swedish censuses, which provide a snapshot of the entire Swedish population at two time-points. Longitudinal data on fertility was obtained from the demographic databases POPUM and POPLINK, which provide detailed information on reproductive

TABLE 5.2: Sources and sample

Paper	Sources	Time	Sample size
I	Swedish censuses	1890, 1900	1 068 224 individuals
	Popular move. database	1885-1900	8 121 organisations
II	POPUM	1860-1900	9 318 couples
	Parish registers	1860-1921	1 156 Free church members
III	POPLINK	1875-1949	17 792 couples
	Membership rolls	1875-1940	1 386 members
IV	Popular move. database	1881-1945	354 organisations
	POPLINK	1850-1950	20 439 couples

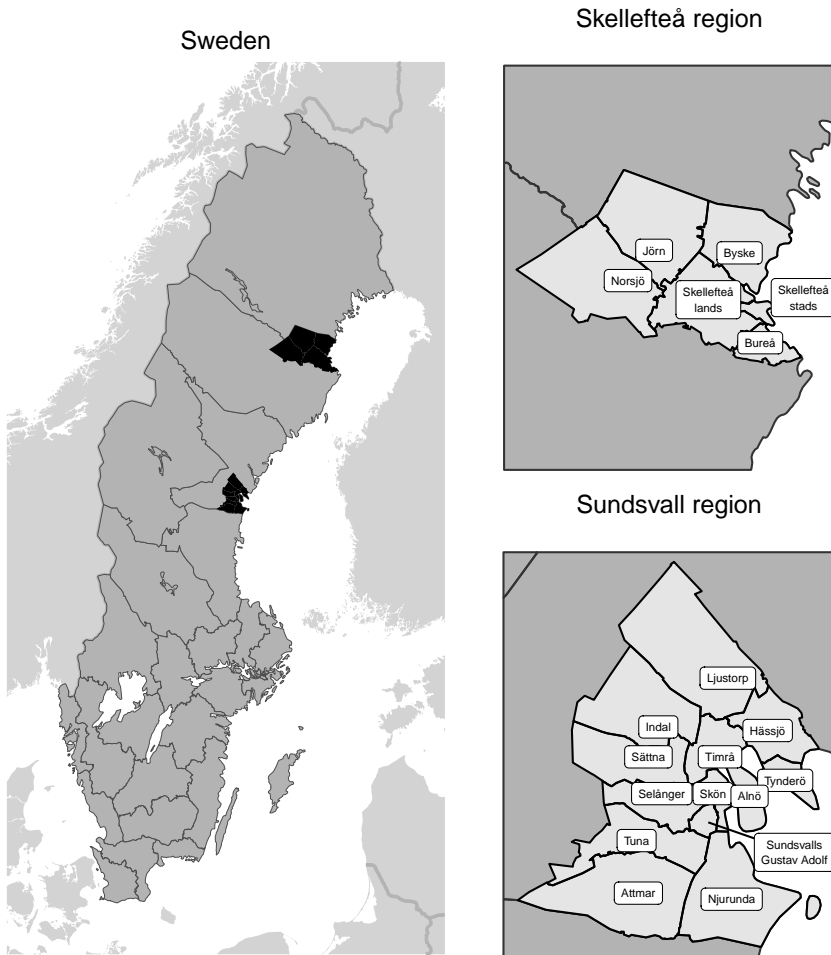


FIGURE 5.1: Map of parishes in the POPUM and POPLINK samples. Source: Junkka (2015).

behaviours over the entire fertility transition for two populations in northern Sweden: the Skellefteå region and the Sundsvall region, seen in Figure 5.1.

The two regions consist of parishes surrounding the coastal towns of Sundsvall and Skellefteå. Demographically, both regions had a higher fertility than the overall fertility levels in Sweden. As shown in Figure 5.2, total marital fertility rates (TMFR) were highest in Västerbotten, the county of the Skellefteå region, before the transition, while TMFR in Västernorrland, the county of the Sundsvall region, was close to the Swedish average. Not only was the level of fertility higher, fertility decline started later in these regions than in most of Sweden, around the turn of the 20th century. Although both regions lie in the north of Sweden, they were considerably different. Sundsvall experienced much earlier and more rapid urbanisation and industrialisation than Skellefteå. Industrialisation was driven by the expanding sawmill industry from the 1870s onward. A steady stream of young men and women moved to the sawmill region, particularly around the coast and near the large rivers (Edvinsson, 1992). At the same time, the Sundsvall region experienced rapid secularisation, in the form of decreasing attendance at communion and catechetical examinations (Bäckström, 1999). Skellefteå, on the other hand, experienced much slower industrialisation; although some sawmills were established in the 1870s, industrialisation and proletarianisation did not take hold until after the turn of the century through the growth of the mining industry (Gaunitz et al., 2002). Secularisation in the Skellefteå region took different forms than in Sundsvall. The free church was established relatively early in Sundsvall, in the 1870s (Andrae & Lundkvist, 1998). In Skellefteå, the revival movement was limited to the intra-church group EFS (Gelfgren, 2003). However, the workers' movement and the temperance associations grew rapidly in both regions following similar patterns of expansion, as in the rest of Sweden (Andrae & Lundkvist, 1998). To a certain extent, the two regions represent two distinct social and economic environments: Skellefteå centred around village life, social stability, forestry and farming, and Sundsvall centred around the sawmill industry and rapid urbanisation.

Information on social network membership is limited to spatial proximity in these demographic sources. The overall strategy in the thesis was to combine the demographic data with external sources, either on a contextual level or on an individual and family level. It is only through this combination that I could study the influence of social networks on fertility, outside that of spatial proximity or networks of kin. The external information consists of information on voluntary associations, their size on a local level and individual level membership, which has been linked to the demographic data.

The 1890 and 1900 Swedish censuses, used in research paper 1, do not contain any information on children ever born. Therefore, I used the number of children under five years of age in married women's households as a proxy for net fertility. The Swedish census contains explicit information

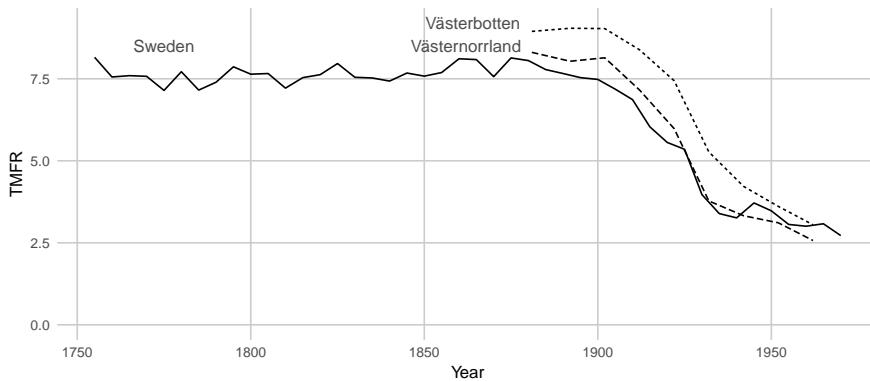


FIGURE 5.2: Total marital fertility rates in sampled counties, compared to Sweden as a whole, 1755-1970. Source: Hofsten & Lundström (1976).

on the relationship between children and their mothers; this means that the risk of mismatching children with their parents is very low. However, net fertility is biased by mortality; maternal mortality reduces the number of mothers observed in the censuses, while child mortality reduces the number of children within a woman's household. Around the turn of the century, mortality was spatially clustered, primarily showing distinct differences between urban and rural areas (Edvinsson, 1992; Edvinsson et al., 2008). This means that a large part of the mortality-related differences in net fertility was shared on a local level, which can be controlled for in a regression analysis through estimations of spatial random effects.

The second paper used data from the POPUM database (Vikström et al., 2002), and papers 3 and 4 used data from the POPLINK database (Westberg et al., 2016). Both databases are based on digitalised church records. The POPUM database contains information from the 18th century until around 1900, while POPLINK extends POPUM by following individuals up until the 1960s. The digitalisation of church records was performed by the Demographic database at Umeå University. By digitalising and linking information from marriage, death, birth and migration books with information from the catechetical examinations, the Demographic database has created longitudinal event history information for every individual in the registered parishes. The procedure makes it possible to follow individuals through the sources, as they moved within the region, from their birth or immigration until they died or moved out of the region.

Paper 2 used data from the Sundsvall parishes in the POPUM database. Because the database ends in 1900, just as fertility started to decline in the region, the sample is complemented by manual registration of the 1869-1870 birth cohort. Information on the birth cohort from POPUM is complemented by manual registering events from the church records up until 1921.

These demographic datasets were combined with external sources. Paper 2 used information on free-church affiliation on a family level to assess the effects of social networks on fertility. Information on free-church affiliation was obtained from information on the affiliation of parents from birth records or information on affiliation from the catechetical examinations. The information was gathered by manually going through all birth records, and when the affiliation was uncertain, checking the notes in the catechetical examinations. The registration was performed in two waves; the first wave of registration on all events starting from the 1860s was performed by Sören Edvinsson. The second wave continued registration up until 1921 and was performed by Johan Junkka and a data entry assistant. To secure consistent registrations, a custom registration application was developed for the second wave. The application allowed for continuous validation of data input, which minimised the risk of errors. The data on free-church affiliation was then linked to individuals in the demographic dataset.

The first and the third papers used aggregate information on voluntary association size by local chapters, as a measurement of voluntary association activity on a local level. Aggregate level information was gathered from the popular movement database (Andrae & Lundkvist, 1998), which was collected by the popular movement project in the 1960s and was then made available for public use by the Swedish National Data Service (2017). The project aimed to investigate the development of voluntary associations and how they were affected by and, in turn, affected Swedish society and its development (Lundkvist, 1977, 1980). One of the outcomes of the project was a database consisting of annual membership numbers for almost every local organisation of the free churches, temperance associations, unions and socialist party. The data was collected from aggregate membership records that were sent to the mother organisations, which, years later, was recorded by the project members and organized as a database (Andrae, 1984). However, membership was not always reported annually, and, even though a semi-automatic method was employed, some transcription errors remain. The missing values were imputed using linear interpolation, and the transcription errors were replaced by estimated membership numbers through outlier detection. In addition, the locations of the local organisations were geocoded to make it possible to link the membership data to the demographic data at different levels of aggregation. The full procedure is recorded in an R package hosted on GitHub (Junkka, 2017).

Paper 3 used individual information on temperance and union membership to assess the effects of social network affiliation on fertility. Individual-level membership data was gathered from the original membership records of the organisations from the archive. All original records with membership data between 1875 and 1940 were photographed: 2,828 documents from 15 unions and 13 temperance associations. Individual membership was transcribed and entered into a database using a custom registration application. This enabled continuous data validation, which minimised the risk of

transcription errors. These records, in turn, were linked by the Demographic database at Umeå University to individuals in the POPLINK database. The analysis can thus, not only account for individual-level membership for both men and women, but also the timing of joining, which makes it possible to separate selection effects from social interaction effects.

Instead of linking external data to the demographic ones, paper 4 used information on places of residence to construct neighbourhoods and neighbour relationships at a couple level. POPLINK contains information on places of residence that the individuals resided in; the locations in POPLINK were primarily geocoded by the Demographic database but were also complemented by the author for a complete geocoding of all locations in the sample. The region consists of six large parishes, which were divided into smaller neighbourhoods that were used as a proxy for spatial communities. All couples in locations that fell within the boundaries of a neighbourhood were thus assumed to have stronger ties to each other than to others in neighbourhoods further away. The geocoded data also allows for the reconstruction of neighbour relations, where spatial distance was used as a proxy for whether or not individuals knew each other and to determine the strength of their relationships.

All articles used contextual information based upon the geographical boundaries of parishes. Parish boundary data was collected from the Swedish National Archive, which has created shapefiles of parish and county boundaries, and their changes from approximately 1700-1970 (Riksarkivet, 2016). However, the shapefile created by the Swedish National Archive was unsuitable for quantitative geographical analysis, because of inconsistent polygons and missing information on counties. To account for these problems, the original boundary data was processed to remove inconsistencies. In addition to allowing for repeatable consistent analysis, the geographical data was wrapped into an R package called *histmaps* (Junkka, 2015). The package also contains reproducible scripts for the procedure of tidying the dataset.

The main problem of the original boundaries as recorded by Riksarkivet is that some polygons overlap and others do not fully touch, even though they are adjacent. In addition, the link between counties and parishes was updated using information from *Sveriges församlingar genom tiderna* (Skatteverket, 2005). The website, based upon a book (Riksskatteverket, 1989), contains more detailed information on parish county changes, and thus allows for the creation of more accurate county boundaries over time, including a separation of Stockholm County and Stockholm Stad County. To use the information on parish-county links from the book, the information had to be scraped and transformed into a structured data format. The procedure entailed scraping information on each parish and then parsing the descriptive text for each parish to create a structured dataset containing information on parish identifiers such as name and parish code, as well as county inheritance. The data from *Sveriges församlingar genom tiderna* was

then linked to the parish boundary data, by matching names and parish codes. The full dataset and process are documented at GitHub (Junkka, 2016). The combined parish boundary data were then aggregated to county boundaries for each point in time when a parish shifted county inheritance, which created a more accurate county boundary map for Sweden between 1800 and 1970.

Furthermore, to allow for aggregation of geographically consistent information over time, one needs to account for boundary changes. This was done by extracting the smallest common boundaries for all overlapping parishes over a specific time period. To allow for consistent aggregation in all articles, the method was built into the `histmaps` package (Junkka, 2015).

In addition, this thesis utilised complementary aggregate level data from Statistics Sweden (1969) and Hofsten & Lundström (1976), on national- and county-level population size and total fertility rates. These sources were used only as descriptive, enabling macro-level comparisons of fertility differences, on a national and local level.

Analysis

The outcome of interest in all the research papers presented here is marital fertility. As discussed in the Introduction, it is assumed in this thesis that the fertility transition was caused by couples irreversibly changing their behaviours and adopting an increased use of birth control. This resulted either in spacing behaviours, by waiting longer between births, or stopping behaviours, by couples stopping from having more children before the end of their childbearing age. The primary focus of this thesis is not to determine the actual technique of limiting fertility. Instead, I assume that fertility was limited both through stopping and spacing. However, the different techniques might be related to different views on sexuality connected to religiosity. From an analytical perspective, both stopping and spacing would lead to a lengthening of birth intervals, which is measured primarily using event history analysis or as the sum result of the timing of births, as the number of children born within a given time period. Although the overarching methodological strategy was to use regression-based methods, each paper applied a different strategy specific to the data and the problem, with the choices of methods being discussed in depth in each paper. An overview of the methods can be seen in Table 5.3.

Research papers 2, 3 and 4 all measured fertility as the risk of having another birth using event history analysis, primarily Cox proportional hazard models (Cox, 1972), methods that are suitable for analysis of longitudinal event history data. As paper 1 used panel data for two time-points, it was not possible to estimate the timing of births, but rather the aggregate outcome, the number of children under five, which was estimated using

TABLE 5.3: Methods

Article	Outcome	Independent variable	Quantitative methods
I	Children under 5	<ul style="list-style-type: none"> • Voluntary association activity on a parish level 	<ul style="list-style-type: none"> • GLM Poisson regression
II	Risk of another birth	<ul style="list-style-type: none"> • Free-church affiliation on a family level 	<ul style="list-style-type: none"> • Event history analysis
III	Risk of another birth	<ul style="list-style-type: none"> • Union and temperance membership on an individual level • Union and temperance association activity on a sub-regional level 	<ul style="list-style-type: none"> • Propensity Score Matching • Event history analysis
IV	Risk of another birth	<ul style="list-style-type: none"> • Neighbourhood-level spatial autocorrelations • Practices of neighbours 	<ul style="list-style-type: none"> • Moran's I • Event history analysis

Poisson regressions. Mixed-effects models are used in the research papers to control for unobserved heterogeneity. These random effects can arise due to variations between locations or due to differences that are unique to a certain couple and would, therefore, affect all births of the same mother and father. However, as these differences cannot be measured directly, through biological or behavioural information, or the lack of contextual information on, for example, the level of industrialisation, the effects are estimated as random effects drawn from a probability distribution (Bates et al., 2014, 2015; Therneau & Mayo Clinic, 2016; Therneau, 2012).

Ethical considerations

This thesis is not only relevant to academic scholars, but it can also be relevant to people who have or are living in the areas of investigation, or to those who in some way feel connected to the people and issues being investigated. Therefore, it is of great importance to respect and understand individual's rights to privacy, especially as the thesis uses personal information on an individual level. The parts of the thesis that used data where the subjects could still be alive were approved by the national ethical review board at Umeå University, and all individual-level information after 1920 was anonymised by the Demographic database at Umeå University. All external information linked to post-1920 data was also anonymised, and all linking was done by the Demographic database, which stored the keys for linking. Furthermore, for all published papers, the codes used to produce the analysis have been published in the public repository Github to allow for reproducible research. All data for which it is possible to spread publicly has also been published on Github, and in

the cases where this is not possible, dummy data is provided to allow for reproducible research. The individual-level data is also an enormous asset that enables powerful statistical analysis that can deal with high levels of complexity and gives us a better understanding of the relationship between structure and individual agency, gender and fertility, on a large scale.

Chapter 6

Summary of research papers

Contribution of co-author

One of the papers were co-authored with another researcher: Junkka, J., & Edvinsson, S. (2016). Gender and fertility within the free churches in the Sundsvall region, Sweden, 1860–1921. *The History of the Family: An International Quarterly*, 21(2). In this paper, I constructed the initial scientific problem, the outline and the theoretical perspectives; performed the statistical analysis and wrote the majority of the paper. Sören Edvinsson and I collaborated in collecting the source material, and Edvinsson continuously provided input on structure, theory, data and interpretations of results.

Paper I: Voluntary associations and net fertility during the Swedish demographic transition

The first research paper studies the effect of voluntary association activity on a parish level and individual-level net fertility across Sweden in 1890 and 1900. The growth of voluntary associations at the end of the 19th century entailed a radical shift in the landscape of social relations in Sweden. Studies of post-transitional societies have shown that fertility is affected by social interactions; however, the use of social network theory in the study of the European fertility transition has not been utilised to the same extent. Additionally, previous studies have shown that voluntary associations were associated with fertility limitation through the idea of respectability. An idea which was an important part of the identity creation process within voluntary associations. By combining micro-census data from 1890 and 1900 with local level membership data for three voluntary association groups, the paper assesses the effect of parish-level voluntary association size on individual-level net fertility using mixed-effects Poisson regression models.

Overall, the results show that the stronger free-churches were on a parish level, the lower net fertility was at an individual level both in 1890 and 1900. The size of the workers' movement had a negative effect on fertility only in 1900, while temperance association size showed no association to fertility. This suggests that the adoption of fertility limitation during the transition was associated with the creation and diffusion of the idea of respectability within large social network organisations. Furthermore, the results suggest that the strength of the effect of voluntary association size was dependent on the structure of the social network – their size, density and homogeneity. The free churches created dense heterogeneous networks through systems of social control, while the high membership turnover of the temperance association created social relations where the connections between nodes were sparse and weak. Additionally, the effect was also dependent on the context of which the voluntary association operated. Workers' movement activity had only significant effects on fertility in urban areas while the free churches showed effects both in urban and rural areas. However, the results are limited by data limitation, as the effect is estimated only at an aggregate level, the association between low fertility and voluntary association activity could be an effect of reverse causation, where couples with few children would be more likely to join an association. However, overall the results of the paper indicate that the connection between respectability and family limitation was not limited to a few subpopulations in Sweden, but can be generalised across the whole nation.

Paper II: Gender and fertility within the free-churches in the Sundsvall region, Sweden, 1860–1921

The second research paper focuses on the role of free-churches and secularisation for the fertility transition in a local context using longitudinal historical demographic data. The role of secularisation in the European fertility decline has been of interest to demographers, who often explore the relationship on a macro-level or by identifying religious affiliation by proxy. However, the relationship has not been thoroughly studied on an individual level utilising indicators of personal religious conviction and affiliation. Secularisation is often seen as an abandonment of traditional religious values which transfers fertility decisions from a societal level to an individual level, allowing for fertility limitation. However, as argued in the paper, secularisation is better seen as a process where the meaning of religion was challenged and changed. Secularisation entails an increase in cultural competition, which allows for new interpretations of the meaning of childbearing and fertility limitation for one's religious identity.

This paper aims to examine reproductive practices by religious affiliation to better understand the impact of secularisation on fertility decline. This is accomplished using event history analysis of longitudinal parish register data from Sundsvall (1860 – 1921) where religious affiliation is identified on a family level. Reproductive practices are analysed using cohort TFR, descriptive statistics and Cox proportional hazard regressions. The results show that free-church affiliates had, overall, a higher probability of having another child than did affiliates to the state church. However, these differences decreased over time, and as fertility dropped throughout society free-church affiliates showed the strongest significant reduction in the probability of another birth. This indicates that over time, within the free churches, ideas about respectability and restraint came to mean that birth control, in the form of abstinence and spacing of births within marriage, became an important practice in the formation of gendered religious identities – leading to a relatively early decrease in fertility.

Paper III: The influence of voluntary associations on fertility during the Swedish demographic transition, 1880-1949

The third paper continues to study the effect of voluntary associations across the life course of individuals in a local context, in this case, the unions and temperance associations in the Skellefteå region. However, in this paper, the analysis is extended, studying how both individual-level participation and neighbourhood-level exposure to voluntary associations affected marital fertility. This is achieved using longitudinal historical demographic data from northern Sweden of married couples between 1880 and 1949, linked with individual-level information on voluntary association membership and contextual level information on voluntary association size. However, as both participation and exposure effects could be affected by selection bias, different strategies are applied to account for these effects. Exposure effects are estimated on a neighbourhood-level using mixed-effects Cox regressions which makes it possible to control for both contextual-level and individual-level confounding factors. Participation effects are adjusted for confounders using propensity score matching, which matches each member to a control group with a similar distribution of individual and contextual level attributes. The difference in fertility between members and non-members are then estimated using Cox regressions.

The results show that male union members and temperance members had a lower risk of experiencing another birth than non-members (32.5 % and 39.3 % lower risk), while female members show no difference in fertility compared to the control group. Furthermore, the analysis of exposure effect shows that it was only union activity that had a negative effect on fertility

(12 % lower risk) while temperance association activity had very weak negative effects (1 %). The results suggest that reproductive decisions were not simple responses by the individual couple to structural changes, but also shaped within the social networks which they were part of. Furthermore, the effect was dependent on the type of social interaction mechanisms operating within the network, the structure of the network and the position people held within it – in this case their gender.

Paper IV: Spatial diffusion of fertility decline in Northern Sweden, 1850-1950

The fourth paper expands upon the social network perspective by studying social interaction effects beyond the voluntary associations – among neighbours and across neighbourhoods in the Skellefteå region. The European fertility transition has been shown to display significant spatial patterns. Patterns which have been interpreted as either evidence for the role of cultural diffusion mechanisms, where new behaviours spread more easily among similar people, or as mere effects of social and economic structural differences between locations, and the clustering of similar people in the same area. This study attempts to address these issues by measuring diffusion effects at a much smaller geographical scale than previous studies, using longitudinal demographic data from the Skellefteå region in northern Sweden from 1850 to 1950.

This was done by exploring spatial patterns at two geographical scales, between neighbours and across neighbourhoods. Neighbourhood autocorrelations in fertility would occur as couples in adjacent neighbourhoods were influenced by each other's behaviours independently of structural similarities. This is tested by estimating a neighbourhood-level random effect using mixed effect Cox regression, and then measuring to what extent these random-effects correlated between adjacent neighbourhoods using Moran's I. On an individual level, spatial diffusion effects is measured by first estimating how the risk of having a child changed for a couples' neighbours over either, a long-term (the previous 10 years) or a short-term (the previous five years), and then incorporating these measurements as couple-level features in mixed-effects Cox regressions.

The results show that couples in adjacent neighbourhoods had similar fertility at the onset and during the fertility transition, and not after or long before. Similar patterns were found for effects of long-term changes in neighbour fertility, while short-term effects showed the opposite pattern. Short-term effects did only affect fertility before or after, and not during the fertility transition. These results suggest that couples fertility was affected by social interaction mechanisms within networks of neighbours, not only during but also before and after the European fertility transition, creating spatial fertility patterns.

Chapter 7

Concluding discussion

The aim of this thesis is to investigate how social interactions influenced the fertility decline during the Swedish demographic transition between 1850 and 1950. This was done by analysing the relationship between marital fertility and social interactions in four separate research papers. In this chapter, I will first, summarise the results of the four research articles, in terms of social interaction effects. Then, I will analyse these results through a social network perspective. Discussing in particular how differences in effects over time and between networks were related to the structure of the network, the position individuals held within them and normative structural changes – secularisation and the emergence of the respectability discourse.

Social interaction effects

Overall all the four papers provide support for social interaction effects. The results show associations between low fertility and a reduction in neighbour fertility, joining a workers' organisation, a temperance lodge, a free-church or just living near one of these organisations, at least in certain situations. However, there are significant differences between the type of network and the type of social interaction effect as seen in Figure 7.1. Each point in the Figure represents the effect of social interactions estimated in a regression analysis while controlling for confounding factors. The effects are measured either as hazard ratios when estimated using Cox regressions in paper 2, 3 and 4 or as incidence rate ratios when estimated using Poisson regression in paper 1. However, both of these measurements show the relative difference in fertility compared to a reference group. In the case of exposure effects, the reference group are areas without any voluntary association activity, for direct membership effects the reference group are non-members, and for changes in neighbour fertility the reference is no change in fertility compared to a reduction of one standard deviation. Although each of these

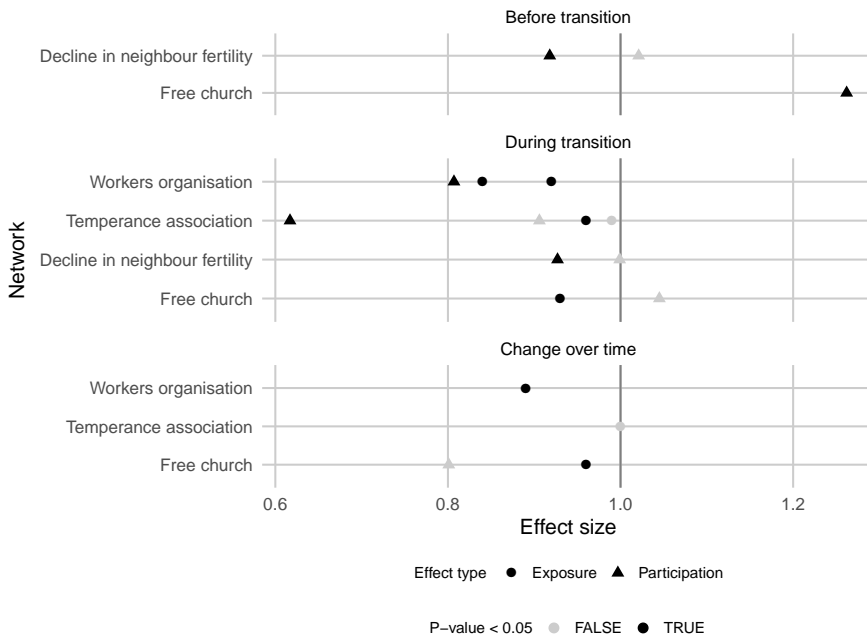


FIGURE 7.1: Social interaction effects by type of social network. Effects sizes from the four research papers. See Table 7.1 for details.

TABLE 7.1: Summary of social interaction effect from the four research papers.

Paper	Type of effect	Period	Effect size	P-value
I	Free church * time	Change over time	0.960	0.000
I	Temperance * time	Change over time	1.000	0.079
I	Workers * time	Change over time	0.890	0.000
I	Free church exposure	During	0.930	0.000
I	Temperance exposure	During	0.990	0.140
I	Workers exposure	During	0.920	0.000
II	Free church membership	Before	1.262	0.050
II	Free church * time	Change over time	0.801	0.100
II	Free church membership	During	1.045	0.500
III	Male union membership	During	0.807	0.000
III	Male temperance membership	During	0.617	0.003
III	Female temperance membership	During	0.906	0.740
III	Union exposure	During	0.840	0.000
III	Temperance exposure	During	0.960	0.013
IV	Decrease in neighbour fertility	Before	1.021	0.130
IV	Decrease in neighbour fertility	Before	0.918	0.000
IV	Decrease in neighbour fertility	During	0.927	0.000
IV	Decrease in neighbour fertility	During	0.999	0.920

effects is measured in separate analyses using different models, they all represent the relative effect of different types of social interactions, and by displaying them all together, it is possible to summarise the findings and analyse patterns in these results.

The results of paper 1 show that there was an association between voluntary association exposure at a parish level and individual level fertility in Sweden. In 1890 the negative effect was only visible for the free churches, an effect that grew stronger in 1900, at this point workers' movement exposure also showed a negative association to fertility. However, the results showed no association between exposure to a temperance association and fertility neither in 1890 or 1900. What is not included in Figure 7.1 is the difference in effect between different locations. The results of paper 1 show that the free churches were the only association that had a negative effect in rural areas, while the exposure effect of the workers' movement was limited to urban areas. The findings are further corroborated in paper 3 where the exposure effect is studied at a sub-parish level, within neighbourhoods in the Skellefteå region. Living near an active union did lower the risk of another birth by 16 percent while living near a temperance lodge had a much smaller effect, a 4 percent lower risk. These results are in line with previous works that have studied the relationship between the growth of social movements and fertility at an aggregate or within a limited population, both in Sweden (Larsson, 1984; Lockridge, 1983; Warg, 2002) and Europe (Szreter, 1996; Lesthaeghe & Wilson, 1986; Schwarzkopf, 2007).

Participation in voluntary associations shows stronger associations to fertility compared to exposure effects. Paper 2 and 3, which investigate how membership in a local union, temperance association or free church affected the fertility of married couples and individuals, find support for an association between membership and increased use of birth control during the fertility transition, in the Skellefteå and Sundsvall regions. However, this effect varied over time and differed by type of association. Paper 2 shows that families affiliated with a free-church had higher fertility than other families before the transition. During the transition, on the other hand, free-church affiliates had a more substantial reduction in fertility than others. The results suggest that while their religious conviction elicited higher fertility before the transition, it did not hinder fertility limitation during the transition. Instead, the results suggest that free church families limited their fertility through the spacing of births, in line with previous studies of communities with high degrees of religiosity such as the Mormons (Anderton & Bean, 1985). Even stronger effect was found for participation in unions and temperance associations in paper 3. The results suggest that men who joined these associations had a much lower risk of having an additional child than men who did not. However, the results do not find any association between women's participation and their fertility. Overall, this is in line with studies of contemporary populations in Nepal and Cameroon, which suggests that birth control knowledge was diffused among members

through social interactions, creating associational cultures that legitimised and incentivised an increased use of birth control (Barber et al., 2002; Valente et al., 1997).

Furthermore, the results of paper 4 suggest that the social interaction effect was not limited to voluntary associations, but that couples fertility decisions were also influenced by their neighbour's behaviours within the Skellefteå region. The results show that, if fertility declined among a couples married neighbours over a long term (the previous ten years), the couple would be more likely to practice fertility limitation themselves. However, this was only visible during the transition and not before or after. On the other hand, short-term changes in neighbour fertility (over the past five years) was only associated with couples fertility before and after the transition, and not during. Also, differences in fertility between neighbourhoods peaked during the fertility transition while the correlations in fertility between adjacent neighbourhoods peaked just at the onset of the transition. This shows that spatial correlations in fertility were not limited to a provincial or country level during the European transition, as shown by previous studies (Goldstein & Klüsener, 2014; Klüsener et al., 2016; Watkins, 1990), but fertility behaviours also diffused at a smaller geographical scale, and that the effect was not limited to periods when fertility declined.

The difference in effect between participation and exposure is visible in Figure 7.1. While significant participation effects spanned between 0.927 to 0.617 in relative effects, the exposure effect spanned between 0.990 to 0.840. This means that at most, participation was associated with a 38.3 percent lower fertility while exposure at most to a 16 percent lower fertility. The largest difference between exposure and participation effect are seen for the temperance associations. Modest exposure effects of temperance associations were found in the Skellefteå region while there was no effect when we look at the whole nation. At the same time, the largest participation effect is seen for male temperance members who had the absolute lowest probability of having another birth compared to non-member men.

In conclusion, the results show that social interactions were important for the adoption of low fertility. Suggesting that increased use of birth control was spread through networks of neighbours and among peers within free-churches, temperance associations and workers' organisations, even living near one of these organisations lowered couples fertility. However, the effectiveness of these interactions did differ by type of organisation and over time, differences that were related to differences in network structure, the position of individuals and normative and economic structural factors.

Network structure and network mechanisms

The difference in effects is related to differences in network structure – the composition of network members, their diversity, their size, the strength of

ties and the type of social network mechanisms operating within the networks. From a social network perspective, voluntary associations function in general as bridges of social interactions over traditional social boundaries of family and kin. As these associations were formed, individuals created weak social ties to other members. Granovetter (1983) argues that weak ties, in turn, strengthen social learning mechanisms as these ties span over social boundaries creating many bridges of social interaction that increases the opportunities to learn new behaviours from others. Over time, the members would form stronger ties, and new attitudes and behaviours would be formed into social norms, strengthening social pressure and social support mechanisms. Discipline and control was an integral part of the association's activities. The status of each member did not only depend on their own behaviours, but also by the behaviours of their fellow brothers and sisters. Conforming to associational norms was thus of utmost importance, upheld by the members through systems of social control where violations were punished through sanctions, stripping of rights or expulsion (Ambjörnsson, 1998; Kennerberg, 1996). Also, membership in these networks provided social support that a large family previously could give. For example, through the association's members could get access to systems of private health insurance (Andersson & Eriksson, 2017), economic support that would have lowered the economic benefits of children (McDonald, 2000).

The social interaction effects extended beyond the membership base, couples in proximity to the associations would be more likely to be connected to members through social ties than other couples. Social ties that enabled the diffusion of birth control practices through social learning; however, as these couples were not part of the association the couples would not be under the same social pressure as members, and therefore the effect of these interactions was weaker.

Additionally, the effect of membership varied between voluntary associations, variations related to the social composition of the members. The three voluntary association types had diverging social structures. The workers' movement was relatively homogenous, primarily attracting young men from the skilled working class. The temperance associations were more diverse in terms of gender and social class, they had an equal gender balance, and the members came from both the working and middle classes. Although the free churches were dominated by women, the membership base was even more diverse than the other associations, composing of members from all social classes (Lundkvist, 1977). Socially diverse networks have also been shown to facilitate better the diffusion of birth control practices (Watkins & Danzi, 1995), findings that are supported by the results of paper 2 and 3. Joining the more social diverse temperance associations had a greater effect on fertility for men than joining a union, and free-church affiliates had a relatively early reduction in fertility during the transition compared to non-members.

The effect on the rest of society was much more diverse, also dependent

on the structure of the network. When looking at the whole of Sweden in 1890 and 1900, temperance association activity within a parish did not have any effect on individual level fertility. Even when looking at temperance association activity at a neighbourhood level within the Skellefteå region, across the whole transition the effect was minimal (1 percent lower risk). The effect of workers' movement activity and free-church activity, on the other hand, did have greater effects on individual-level fertility within a parish. Although the temperance associations were diverse in terms of age and class they had a much higher membership turnover than any other organisation (Lundkvist, 1977). People joined, often before they turned 20 and remained only for a short time. During its initial years, the temperance associations grew through high recruitment, which surpassed the membership losses. However, the membership base stabilised quite early, around 1910 and then slowly declined. Although the high membership turnover meant that many individuals came into contact with a temperance association, it is possible that it could not create as many lasting ties to former members as the other associations; and thus, shows very weak exposure effects.

As previously noted, social interaction effects extended beyond that of voluntary associations into networks of neighbours. The results of paper 4 suggest that these effects were dependent on different forms of social interactions at different temporal and geographical scales. People who live near each other are more likely to have face-to-face meetings and thus more likely to form close relationships with strong social ties (Hägerstrand, 1967; Zhang & Pang, 2015; Marsden & Friedkin, 1994), and as more and more neighbours adopted an increased use of birth control the social pressure to conform to new ideals grew. Couples with neighbours who had started to limit their fertility was, therefore, more likely to limit their fertility themselves, and couples with neighbours that did not change their behaviour were less likely to limit their own fertility. This is in line with studies of post-industrial populations where women in networks of with many pregnancies were more likely to become pregnant themselves (Bernardi, 2003). The neighbour effect extended beyond one's direct neighbours across neighbourhoods. As the distance grows between couples, they will be less likely to form close relationships. Instead, spatial proximity across neighbourhoods would create relationships with weak social ties, and many weak ties would strengthen social learning mechanisms (Granovetter, 1983). Thus, we see spatial autocorrelations in fertility of couples in adjacent neighbourhoods just at the onset of the fertility transition and during the transition, suggesting that new behaviours were diffused through social learning.

However, social interaction effects were not limited to periods when fertility declined; couples responded to the actions of neighbours also before and after the fertility transition. These effects were only visible for short-term changes in neighbour fertility, effects that would be relatively immediate. Before the transition social interactions could function as chan-

nels of diffusion of information on how to respond to short-term economic stress. Previous studies suggest that families foresaw economic hardship as they were more likely to decide to wait to have another child in response to changes in grain prices (Bengtsson & Dribe, 2006; Hammel & Galloway, 2000). The results of paper 4 suggest that this effect was accompanied by social learning mechanisms among neighbours, through which appropriate behaviours was diffused. However, the effect is also visible after the transition, suggesting that social interactions also functioned as channels of social support. By synchronising the timing of childbirth to their neighbour's behaviours couples could draw upon the social support that arises when they have children at the same time, findings which are in line with studies of post-industrial populations (Balbo & Barban, 2014; McDonald, 2000). Thus, social support, social learning and social pressure played different roles at different points in time; before, during and after the fertility transition.

Overall, the results of this thesis show that social interactions affected fertility during the whole study period, from 1850 to 1950. However, the strongest effects were seen during the transition. This was a time of large-scale social and economic change when many regions in Sweden experienced rapid industrialisation and urbanisation. Although we do not know how couples reasoned about these new circumstances and how this affected their decisions on childbearing, research on contemporary developing populations provides results which we can draw upon. In their analysis of fertility in Kenya, Bongaarts & Watkins (1996) argues that in times of rapid socioeconomic change, information of prices on, for example, education was imperfect. Thus, there was an uncertainty of the net-benefits of a set of alternative actions, such as the decision to use birth control or have another child. At this point, people drew upon the experience of others to make more informed decisions. It is quite likely that the same process was in effect during the Swedish transition. The perceived relative cost of children was formed through social interactions, where the structural conditions were interpreted and understood. Increased use of birth control spread within networks of association members, friends, acquaintances and neighbours. Through social interactions, their decision-making processes were connected to structural conditions, shaping the onset and pace of the decline. Over time these new practices are formed into social norms about what constitutes respectable reproductive behaviour.

Structural effects

Social interactions did not only affect couples' fertility by the diffusion of birth control practices, but these practices were also legitimised within a normative context. Social interactions connected individual action to structural changes. Within the voluntary associations, respectability became associated with low fertility, and birth control became an essential practice

in the creation of shared class-bound gendered identities. Birth control becomes a mean to conform to ideas of respectability, a way to strive for an ideal image of family and gender. Ideational theory, as it is formulated by Lesthaeghe & Surkyn (1988), connects fertility decline to individualisation. The effect of normative changes is from this perspective a shift from societal normative control of fertility to individual control. Normative effects would thus, work through the disconnection from contextual restraints through forces such as secularisation, rather than a shift in context. However, as been argued by Johnson-Hanks (2008) and others (Bernardi & Klaerner, 2014; Greenhalgh, 1995), actions continued to be embedded, limited and enabled by their social context. Secularisation represents, from this perspective, an increase of cultural competition. The Swedish voluntary associations are a manifestation of this process, a radical shift in the landscape of social relations. The ideational effect is not the abandonment of old traditional norms but the construction of new ones. In the case of the voluntary associations, it is the construction of gendered identities in relation to what is perceived as respectable.

According to the idea of *respectability*, women achieved femaleness by giving in to nature, by becoming a wife and a mother she reaches her full potential. She is emotionally invested in her children, and motherhood stands in contrast to her sexuality. Giving in to her sexuality would derive her emotional investments in her children. Thus sexuality is a threat against motherhood and therefore a threat against femaleness and women's respectability. Manliness, on the other hand, was achieved through the taming of his natural drive, a violent, brutal uncontrolled sexuality. The man became respectable through civilisation, by controlling himself, acting respectable towards his wife by taking into account the threat sexuality was towards her femaleness. Thus, according to the norm, the respectable women had a lower sexual drive, and the respectable man could control his sexual drive. A small family was thus a sign of a respectable family (Kling, 2007; Skeggs, 1997).

This idea of respectability took hold within in Sweden in the second half of the 19th century, and was not limited to issues of personal life, but also apart of the public debates about societal morality and decency. Progressive movements, such as the neo-Malthusian movements, socialist women's groups or the women's emancipation movement spurred debates regarding what constitutes moral and immoral behaviour, and birth control and sexuality was part of this discourse (Kling, 2007; Levin, 1994). Voluntary associations became platforms for these discussions, and associational life became an important part of individuals strive for respectability (Ambjörnsson, 1998; Horgby, 1993; Kling, 2007). By becoming a member of an association, individuals were part of the creation and diffusion of the idea of respectability, both among its members but also among the rest of society as seen by the results of this thesis. The role of voluntary associations for the creation and diffusion of new family ideals is also highlighted by

Szreter (1996) and Schwarzkopf (2007), who identifies the British feminist movements and the socialist movement as important in the diffusion of new gendered ideals of family life, which induced fertility decline. In Sweden, the link between free-churches and low fertility has been shown at an aggregate level in previous studies (Larsson, 1984; Lockridge, 1983). The role of women's groups within the voluntary associations in a mining community in northern Sweden has also been shown to have been important for the relatively early fertility decline among the local working-class (Warg, 2002). The results of this thesis support these findings; it shows that the effects were not limited to Britain, remote areas of Sweden or contemporary societies (Barber et al., 2002; Valente et al., 1997). In this sense, social interactions appear to be a general aspect of how changes in fertility behaviour come about as a response to structural changes. In Sweden, the respectability discourse and social interactions within voluntary associations facilitated new ways of incorporating shared reproductive practices into gendered identities which legitimised and incentivised low fertility.

However, the idea of respectability took different forms in different networks. How birth control practices became viewed as acceptable behaviours in relation to respectability was affected by the context in which it operated. This is most evident by the different effects the position of the individual within the network had in different voluntary associations, in this case, their gender. At an individual level, it was only male union and temperance members which exhibited significant fertility limitation during the transition compared to other men. Female temperance members showed no difference in fertility compared to other women. On the other hand, members of the female-dominated free-churches did start to limit their fertility much earlier than the rest of the population. The gender of the members had quite a different effect in different contexts. However, if we assume that gender is not a fixed attribute, but a social construction, the perception of femaleness and manliness in relation to reproduction could take on different meanings in different contexts. Respectability within the free-churches specifically and Christian associations in general, connected femaleness to moral responsibility. Although men were perceived to have a stronger sexual drive, manliness was associated with the curbing of this natural drive. Women were seen to have the moral responsibility to lift her husband to the same standards as her, to help her husband be civilised. Respectability within the free-churches gave, therefore, women a moral power over sexuality without threatening the gender order (Kling, 2007; Brown, 2009; Pasture & Art, 2012). Being a respectable woman within the free-church entailed sexual restraint through the practice of abstinence and spacing of births.

In the workers' movement, including the temperance associations, the bourgeois idea of respectability was adopted and transformed to become a part of working-class family ideals. The meaning of birth control for one's gendered identity was incorporated into male identities. Fertility limitation was seen as a part of manliness, a way of becoming a responsible worker,

through sobriety, orderliness and by taking responsibility for your family. A large family was seen as a sign of poverty and irresponsibility (Ambjörnsson, 1998; Horgby, 1993). Manliness was thus connected to fertility limitation, in a way which was not present in the free churches. The results of this thesis suggest that the adoption of fertility limitation was dependent on how new reproductive practices were integrated into individual gendered identities. Over time these new shared practices were formed into social norms, connecting respectability with family limitation, diffused within social networks.

The results show that gendered effects on fertility are not uniform across populations, the meaning of childbearing differs between social context. This pattern is not limited to Sweden but found across Europe during the fertility transition. Women working within the British textile industry had an early decline in fertility. Gittins (1982) argues that women started to reduce their fertility not only because of the increase in their real wages which raised the opportunity cost of their time but also because their work entailed a less rigid gender order. Because of this, women's negotiation power towards their men increased, which resulted in them having fewer children than other women. Gittins argument is that women have a greater interest in reducing the number of pregnancies they experience as they take the greater risk and burden of childbearing (see also Seccombe (1992)). However, women's workforce participation did not always lead to lower fertility. Women who worked within the textile industry in the Netherlands during the fertility transition did not reduce their fertility to any greater extent than other women. The increased negotiation power was not used to reduce fertility, Janssens (2007a) argues instead that the high incidence of child labour increased the net benefits of another child, keeping fertility at high levels. Another interpretation is that childbearing had different meanings for femaleness and manliness in the different contexts. This is more inline with Praz (2007) interpretation of the differences in fertility between Catholics and Protestants in late 19th-century Switzerland. Within the Catholic context, sex within marriage was seen as a male privilege, and female submission and obedience were promoted. Among the Lutherans, manliness was instead connected to respectability towards his wife and family, and sexuality was not seen as a religious issue to the same extent. The difference in the construction of gender between the two religious groups made fertility limitation part of Protestant family building while it remained a threat to Catholic gendered identities.

As been argued here, normative structural changes were connected to individual practices through social interactions; however, the social networks which people were part of did not only work to influence peoples behaviour, it also worked in the other direction – influencing the structural environment. *Collective action* refers to actions taken by a group of people to achieve some common goal. This is an important impact of the voluntary association. Through collective action, these organisation worked to change

society and had significant impacts on the political and social history of Sweden (Lundkvist, 1980). However, their impact was not limited to the political sphere; they were important in shaping new working-class and middle-class cultures, promoting education and increasing the availability of contraceptive knowledge in society at large. Through the growth and activities of the movement, the associations were part of changing societal norms on family and fertility limitation. Norms which in turn were diffused within the voluntary association networks. As the membership grew, more people adopted new practices and attitudes which in turn affected public discourse on morality and respectability, to be more in line with perspectives held by its members. Thus, the individual members of the voluntary association could, through collective action change the same normative structures which they help to diffuse.

Pro-contraceptive propaganda was often distributed through the temperance associations and workers' organisations, and local chapters were hosts to pro-contraceptive plays and lectures (Kling, 2010; Levin, 1994; Rydbeck, 1995). Education was always central to the activity of the voluntary association. To educate their members and spread knowledge was seen as part of their mission to change their members to ideal citizens or ideal Christians. Through regular meetings, seminars and lectures the associations functioned as a form of adult education. In addition, the organisation of youth groups became an increasing part of the associational activities (Ambjörnsson, 1998; Kennerberg, 1996; Lundkvist, 1980). Increased availability of education has been connected to low fertility in several ways. Micro-economic theory asserts that a decrease in the cost of education would lead to a decrease in the cost of child quality, which in turn would lead to a replacement effect, lowering the demand for child quantity (Becker, 1960). Alternatively, education has been argued to break down traditional normative systems which legitimised high fertility behaviours (Caldwell, 1980). In other words, the collective action of voluntary associations changed the structural environment which limited and enabled people's interests in and perceptions of birth control.

Although the studies in this thesis have highlighted the importance of social networks and normative changes, it does not provide evidence against the role of economic structural factors. Instead, it argues that the perceptions of both economic and normative change were created and diffused through social interactions. The results of this thesis also find links between economic development and fertility decline, for example, it supports the hypothesis that there was a shift in the relationship between fertility and socioeconomic status during the transition (Skirbekk, 2008). While the higher socioeconomic classes had higher fertility before the transition, they were also the vanguards in the transition in line with previous studies (Dribe & Scalone, 2014; Dribe et al., 2017). The argument in this thesis is that these structural changes were accompanied by normative changes and social interaction mechanisms, which shaped the course of the Swedish fertility transition. However, this

is also a limitation of this thesis. Although social interaction effects would diffuse both normative and socioeconomic structural factors, this thesis has focused on the former. Thus, there is a need for research that focuses on how the interplay between economic changes and social interactions functioned in determining fertility behaviours.

Implications

Although the Swedish voluntary associations (*Folkrörelsen*) were unique in their distinct associational form, they were also a manifestation of a broader global development, the emergence of large social movements (Gamm & Putnam, 1999; Tilly, 2004). Movements which have been shown to be associated with fertility decline, in the US and Europe at an aggregate level (Lesthaeghe & Wilson, 1986; Lockridge, 1983), and in developing countries at an individual level (Barber et al., 2002; Valente et al., 1997). This indicates that social movements, at large, played a role in shaping the fertility decline on a global scale, even in Sweden. The results also suggest that social interaction mechanisms were even more general, and not limited to formal networks. Social interactions diffused fertility limitation within personal networks of neighbours, or as been shown by studies of post-industrial population, between friends and peers (Balbo & Barban, 2014; Bernardi & Kläerner, 2014; Keim, 2011). During the European transition, social interactions diffused low fertility behaviours across regional boundaries within nations (Goldstein & Klüsener, 2014; Klüsener et al., 2016) or extending over national borders (Watkins, 1990, 1992, 1986). Results that suggests that social interactions induced fertility change under very divergent structural conditions, sometimes independently of socioeconomic development.

In a paper, Szoltysek (2007) argues that historical demographers attempt to provide one unified explanation of the European fertility transition has failed. The field has not been able to construct any grand narrative as imagined by van de Kaa (1996) a decade earlier. No single factor has been identified as the cause of the transition. Instead, the results show a diversity of transitions, of micro-histories with their own internal logic. The same conclusions are drawn by Szreter (2011). The European fertility decline is a history of multiple transitions, transitions that occurred under diverse circumstances with no singular explanation. The observations are not new, almost two decades earlier Gillis et al. (1992b) proposes that the role of historical researchers is to look at how low fertility was achieved in such dissimilar ways. However, most of western Europe experienced the transition at approximately the same time, simultaneously as industrialisation, urbanisation and secularisation. How can we explain the diversity of the fertility transition and the simultaneousness, how can we connect structural changes to individual action?

One alternative has been argued for by micro-economic theory. The

transition is driven by one common feature, economic development, which changed the demand for children. However, as been argued in this thesis, micro-economic reliance on assumptions of economic rationality is problematic. Social network theory can function as an alternative, working as a middle range theory that attempts to connect structural changes to individual action through social interactions. By applying a social network perspective on an analysis of the historical fertility transition, we can connect individual action to normative changes which accounts for local structural differences. A social network perspective can highlight the particular, how a fertility transition in a given area is shaped by its unique historical context, how economic and normative changes were incorporated into locally shared identities, and how this, in turn, shaped the local fertility transition. At the same time, a social network perspective can show the common patterns, how economic changes, transformations of social relations or secularisation, enables and limits individual action, creating patterns within the historical fertility transition.

Just as Szoltysek (2007), Szreter (2011) and Gillis et al. (1992b) argue, the European fertility transition is a history of multiple transitions, however, affected by some common structural factors, mediated by social interaction within local contexts, creating distinct transitions. Given the impact the demographic transition has on human society, it is also important to understand how the particularity of these transitions, and the patterns which it displays, has affected post-transitional societies. It is possible that the fertility transition was not only essential for future economic growth (Galor & Weil, 2000), overpopulation (Notestein, 1953), age structure (Malmberg & Sommestad, 2000) and climate impact (O'Neill et al., 2005; Scovronick et al., 2017), but that it was also part of reshaping gender relations and class-bound identities. The meaning of manliness and femaleness was reconstructed in relation to new family formation practices, which in turn would affect gender relations in post-transitional societies. The Swedish case is a good example of this process, the ideas and practices concerning birth control and family formed during the demographic transition among members in the voluntary associations are echoed in the population policies of the emerging Swedish welfare state of the 1930s, distinguishing the respectable population from the unrespectable through perceptions of their reproduction.

This thesis shows that future research which applies a social network perspective on the analysis of historical demographic process would yield new insights into old problems. For example, the decrease in infant mortality was not immune to the influence of social interactions, the diffusion of breastfeeding practices and knowledge about infant health has been argued to be important factors in the mortality decline (Sundin & Willner, 2007). The importance of social relations for the development of social differences in health has spurred discussions, showing a field in need of thorough analysis (Harris, 2005; Putnam, 2004; Szreter & Woolcock, 2004). The respective role of family socialisation effects on fertility in contrast to friends relations

before and during the transition is also underexplored. Future historical demographic research needs to take into account the importance of others in their analysis of the historical demographic process. Today, new historical demographic databases are created at a rapid pace, allowing for the study of historical populations at a greater scale than ever before. However, these databases are often based upon sources with limited information on social ties beyond that of family and kin. This thesis shows that it is possible to broaden these historical datasets at larger scales by linking them with external sources at a contextual, family and individual level, creating richer datasets that allow for the study of social interactions and demographic change. The four research paper has been enabled by the use of such datasets. However, it has also been limited by the lack of information on actual social ties. Methodological developments in Bayesian spatial analysis (Zhou & Hanson, 2017) and the application of Agent-based modelling in demographic research (Grow & Bavel, 2017) represents potential tools to overcome these problems, which could be applied by future research to study the role of social interactions for demographic change at a large scale across different populations.

Sammanfattning på Svenska

Mellan 1870 och 1930 sjönk fertiliteten i Sverige från ca 4.5 barn per kvinna till 1.8. Denna fertilitetstransition var inte unik utan fertiliteten sjönk ungefär samtidigt i hela västvärlden. Även fast denna transition sammanföll med industrialisering, urbanisering och en nedgång i dödstal, så följde inte alltid nedgången ekonomisk och social modernisering utan skiljde sig istället åt på ett markant vis mellan olika typer av kulturella sammanhang. Dessa skillnader anses visa att fertiliteten spreds mellan människor genom sociala interaktionsmekanismer inom sociala nätverk.

Syftet med denna avhandling är att studera hur sociala interaktioner påverkade fertilitetsnedgången under den svenska demografiska transitionen mellan 1850 och 1950. Detta görs genom att analysera spridningsmönster av reproduktiva beteenden bland gifta män och kvinnor i två typer av nätverk; formella nätverk i form av folkrörelseorganisationer och rumsliga nätverk av grannar och grannskap. Effekten av sociala interaktioner studeras i sin tur på olika nivåer i fyra delstudier; på makronivå över hela Sverige, på en mesonivå mellan grannskap inom församlingar och på en individnivå i Skellefteå- och Sundsvalls-regionerna.

Sammanfattningsvis visar de fyra delstudierna att sociala interaktioner påverkade fertiliteten såväl innan som under och efter fertilitetstransitionen. Effektens styrka varierade dock över tid och mellan olika typer av nätverk, variationer som var relaterade till ekonomiska och sociala skillnader men även till nätverkens struktur – deras storlek, styrka och sammansättning. Medan arbetarrörelsens och frikyrkorörelsens relativa storlek på en församlingsnivå var associerad med låg äktenskaplig fertilitet i Sverige, tyder resultaten av avhandlingen på att nykterhetsrörelsen inte hade någon relation till nedgången i födelsetal. Samtidigt visar resultaten att nykterhetsrörelsens manliga medlemmar i Skellefteå hade en större benägenhet att begränsa sin fertilitet än icke-medlemmar. Samma beteendeskilnader återfinns också för fackföreningsmedlemmar i Skellefteå och bland familjer som var affilierade med en frikyrka i Sundsvall. Att vara medlem i en folkrörelse hade en betydligt kraftigare negativ effekt på fertiliteten än att bara bo nära en av dessa organisationer.

Bland medlemmar inom lokala folkrörelseorganisationer skapades

nätverk med starka sociala kopplingar, sociala relationer som i sin tur skapade stora möjligheter för socialt lärande (där individen antar nya beteenden efter att ha observerat andras attityder och beteenden), socialt tryck (där individer anpassar sina beteenden för att undvika konflikter eller passa in i en grupp) och socialt stöd (där individen får tillgång till ekonomiska och sociala resurser som underlättar barnbegränsning). Samtidigt kom barnbegränsningen att inkorporeras i idéer om respektabilitet inom folkrörelsen. En liten familj blev en symbol för respektabilitet, och barnbegränsning blev ett medel för att upprätthålla sin identitet, såväl inom nykterhetsrörelsen som arbetarrörelsen och frikyrkorörelsen. Genom sociala nätverksmekanismer spreds och legitimerades nya barnbegränsande beteenden mellan medlemmar. Betydelsen av dessa mekanismer var dock beroende av nätverkets struktur. Även fast nykterhetsrörelsen var en organisation med stor social spridning så hade den också en relativt hög medlemsomsättning. Medlemmarna var yngre än inom de andra rörelserna och stannade kvar under en relativt kort tid. Det är möjligt att denna skillnad i nätverkets struktur utgör en förklaring till att nykterhetsrörelsen inte hade samma effekt på det övriga samhället som arbetarrörelsen eller frikyrkorna, då de inte kunde skapa lika många stabila sociala relationer till före detta medlemmar.

Avhandlingen visar även att sociala interaktionseffekter inte var begränsade till folkrörelsen utan också påverkade fertilitetens rumsliga mönster. Giftpar i intilliggande grannskap hade liknande fertilitetsbeteenden just i början av fertilitetstransitionen samt under transitionen. Dessa rumsliga korrelationer i beteende återfinns dock inte innan eller efter transitionen. Samma typ av mönster återfinns också i rumsliga egocentrerade nätverk, där giftpars fertilitet påverkades av deras grannars beteenden under de senaste 10 åren. Detta visar på att det fanns en långsiktig social interaktionseffekt mellan grannar och grannskap under transitionen. Det motsatta mönstret återfinns istället för kortsiktiga granneffekter, där grannars beteenden under de senaste fem åren endast påverkade ett gift pars fertilitet innan och efter transitionen och inte under.

Resultaten som presenterats i avhandlingens delstudier visar att sociala interaktioner påverkade den äktenskapliga fertiliteten under hela studieperioden från 1850 till 1950. Men de starkaste effekterna återfanns under själva transitionen. Detta var en tid av strukturell omvälvning i form av mortalitet-snedgång, industrialisering, urbanisering och sekularisering. Förändringar som skapade en osäkerhet vad gällde de upplevda ekonomiska fördelarna med att skaffa många barn eller använda sig av barnbegränsning. Resultaten av avhandlingen föreslår att sociala interaktioner då fick en större betydelse för människors handlande. Sociala interaktioner gav ett ramverk för hur de skulle agera, utifrån vilket människor drog nytta av andras erfarenheter i deras reproduktiva beslut. Barnbegränsande praktiker spreds inom nätverk av medlemmar, grannar, vänner och bekanta. Inom nätverken inkorporerades dessa nya gemensamma reproduktiva praktiker i skapandet av kollektiva idéer om ett respektabelt familjeliv.

Samtidigt påverkade folkrörelsemedlemmarnas kollektiva handlande samhällets strukturella förutsättningar för fertilitetsbeteenden – framförallt i form av utbildning och kunskap om och normer runt preventivmedel. Utbildning ses av såväl ekonomer som sociologer som en viktig determinant för fertilitetstransitionen. Även fast utbildning i sig aldrig var den centrala frågan för varken frikyrkorna, arbetarrörelsen eller nykterhetsrörelsen så var kunskap och kunskapsförmedling en central aktivitet i föreningslivet. Genom deras kollektiva handlande ökade utbudet och efterfrågan på utbildning i samhället i stort. Dessutom fungerade folkrörelserna som plattformar för spridningen av och diskussion om preventivmedelspropaganda samt nya idéer om familjeliv och barnbegränsning. De enskilda medlemmarnas agerande kunde, genom kollektivt handlande sprida och legitimera nya idéer om barnbegränsning och de respektable familjelivet som inkluderade en liten familj.

Även fast den svenska folkrörelsen och dess betydelse för det svenska samhället var unikt på många sätt så var den också en del av en större global social rörelse. Den svenska rörelsen hade sina rötter i internationella föregångare som under 1800-talet och början av 1900-talet kom att påverka det sociala och politiska livet i hela västvärlden. Dessa var sociala rörelser vars framväxt har visat sig vara associerad med fertilitetstransitionen i såväl Europa, Amerika som Afrika och Asien. Denna avhandling bidrar till detta forskningsfält som menar att sociala rörelser spelade en viktig roll i att forma fertilitetsnedgången på en global skala. Resultaten av avhandlingen indikerar också på att sociala interaktionsmekanismer sträckte sig utanför dessa sociala rörelser, och spred barnbegränsande praktiker i personliga nätverk mellan grannar, vänner och bekanta. Detta är i linje med tidigare forskning som menar att fertilitetsnedgången spreds genom sociala diffusion mellan regioner och över nationsgränser, interaktionseffekter som framkallade fertilitetstransitioner under en mängd olika strukturella förutsättningar, ibland oberoende av socioekonomisk utveckling.

En viktig slutsats i denna avhandling är att fertilitetsmönster inte kan förstås endast av individuella attribut såsom ålder, klass och utbildning. Fertilitet är inte bara en fråga om biologisk reproduktion utan också en handling av kulturell reproduktion, en handling som är inbäddad i nätverk av sociala relationer. För att förstå demografiska processer, såsom den svenska fertilitetstransitionen måste vi ta hänsyn till människors sociala relationer. Genom att applicera ett socialt nätverksperspektiv på viktiga historiedemografiska frågor såsom sociala ojämlikheter i hälsa eller nedgången i spädbarnsdödlighet har vi möjlighet att ge nya insikter till gamla problem.

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Reports from the Demographic Data Base

1. *Time, Space and Man. Essays on Micro demography. Reports from the symposium Time, Space and Man in Umeå, Sweden June 1977.* Eds. Jan Sundin and Erik Söderlund (Stockholm 1979).
2. *Tradition and Transition. Studies in microdemography and Social change.* Eds. Anders Brändström and Jan Sundin (Umeå 1981).
3. Kenneth A. Lockridge. *The Fertility Transition in Sweden: A preliminary Look at Smaller Geographic Units, 1855-1890* (Umeå 1983).
4. *Society, Health and Population During the Demographic Transition.* Eds. Anders Brändström and Lars-Göran Tedebrand (Umeå 1988).
5. Robert C. Ostergren. *Patterns of Seasonal Industrial Labor Recruitment in a Nineteenth Century Swedish Parish: The Case of Matfors and Tuna, 1846-1873* (Umeå 1990).
6. Bobbi S. Low, Alice L. Clarke and Kenneth A. Lockridge. *Family Patterns in Nineteenth-Century Sweden: Variation in Time and Space* (Umeå 1991).
7. Sören Edvinsson. *Den osunda staden. Sociala skillnader i dödlighet i 1800-talets Sundsvall. (The unhealthy town. Social inequality regarding mortality in 19th Century Sundsvall)* (Umeå 1992).
8. Lars-Göran Tedebrand. *Gullholmen – Ett bohuslänskt fiskeläges demografi (Gullholmen – The demography of a fishing community in the province of Bohuslän)* (Umeå 1993).
9. *Health and Social Change. Disease, Death and Public Care in the Sundsvall District 1750-1950.* Eds. Anders Brändström and Lars-Göran Tedebrand. (Umeå 1993).
10. *Swedish Urban Demography during Industrialization.* Eds. Anders Brändström and Lars-Göran Tedebrand. (Umeå 1995).
11. *Orphans and Foster children. A historical and cross-cultural perspective.* Ed. Lars-Göran Tedebrand. (Umeå 1996).
12. Peter Sköld. *The Two Faces of Smallpox – A Disease and its Prevention in Eighteenth- and Nineteenth-Century Sweden* (Umeå 1996).
13. *Population Dynamics During Industrialization.* Eds. Anders Brändström and Lars-Göran Tedebrand (Umeå 2000).
14. Anna Lundberg. *Care and Coercion. Medical Knowledge, Social Policy and Patients with Venereal Disease in Sweden 1785-1903.* (Umeå 1999).
15. Ann-Kristin Högman. *Ageing in a changing society. Elderly men and women in urban Sweden 1830-1930.* (Umeå 1999).
16. *Sex, State and Society. Comparative Perspectives on the History of Sexuality.* Ed. Lars-Göran Tedebrand (Umeå 2000).
17. Peter Sköld, *Kunskap och kontroll. Den svenska befolkningsstatistikens historia.* (Umeå 2001).
18. *Nordic Demography in History and Present-Day Society.* Eds. Lars-Göran Tedebrand and Peter Sköld (Umeå 2001).

19. Ólöf Garðarsdóttir. *Saving the child. Regional, cultural and social aspects of the infant mortality decline in Iceland, 1770–1920.* (Umeå, 2002).
20. Stefan Warg. *Familjen i gruvmiljö. Migration, giftermåls mönster och fertilitet i norrbottnisk gruvindustri 1890–1930.* (Umeå 2002).
21. Lotta Vikström. *Gendered Routes and Courses. The Socio-Spatial Mobility of Migrants in Nineteenth-Century Sundsvall, Sweden.* (Umeå 2003).
22. Per-Olof Grönberg. *Learning and Returning. Return Migration of Swedish Engineers from the United States, 1880–1940.* (Umeå 2003).
23. Per Axelsson. *Höstens spöke – De svenska polioepidemiernas historia, 1880-1965.* (Stockholm 2004).
24. *Befolkningshistoriska perspektiv. Festskrift till Lars-Göran Tedebrand.* Red. Anders Brändström, Sören Edvinsson, Tom Ericsson och Peter Sköld (Umeå 2004).
25. Elisabeth Engberg. *I fattiga omständigheter. Fattigvårdens former och understödstagare i Skellefteå socken under 1800-talet.* (Umeå 2005).
26. Maria J. Wisselgren. *Att föda barn – från privat till offentlig angelägenhet. Förlossningsvårdens institutionalisering i Sundsvall 1900–1930.* (Umeå 2005).
27. Hans Nilsson och Lars-Göran Tedebrand. *Familjer i växande städer. Strukturer och strategier vid familjebildning i Sverige 1840-1940* (Umeå 2005).
28. Sofia Kling. *Vi våga ej helt leva: Barnbegränsning, sexualitet och genus under den svenska fertilitetstransitionen.* (Umeå 2007).
29. Leonardo Fusè. *Parents, children and their families: Livingarrangements of old people in the XIX century, Sundsvall region, Sweden.* (Umeå 2008).
30. Tom Ericsson. *I giljotinens skugga. En historia om en minoritet under franska revolutionen.* (Umeå 2009).
- 31 a). Gabriella Nordin. *Äktenskap i Sápmi. Giftermålsmönster och etnisk komplexitet i kolonisationens tidevarv, 1722-1895.* (Umeå 2009).
- 31 b). Maria Bergman. *Constructing communities. The establishment and demographic development of sawmill communities in the Sundsvall district, 1850-1890.* (Umeå 2010).
32. Glenn Sandström. *Ready, Willing and Able: The Divorce Transition in Sweden 1915-1974.* (Umeå 2012).
33. Helena Haage. *Disability in Individual Life and Past Society. Life-Course Perspectives of People with Disabilities in the Sundsvall Region of Sweden in the Nineteenth Century.* (Umeå 2017).
34. Johan Junkka. *Shared practices. Social networks and fertility decline during the Swedish demographic transition, 1850-1950.* (Umeå 2018).