



Article

Teenage Time Use and Educational Attainment in Adulthood in Finland

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Abstract: We investigated the role of teenage everyday social ties in educational outcomes by examining the association between teenage time use and educational attainment in adulthood. The sample consisted of young people aged 10–18 from the 1979 Finnish Time Use Survey, and the same respondents' educational attainment later in life recorded from population register data at the year of 40th birthday ($n = 366$ men and 393 women). We assessed the associations of time spent with the parents, on studying, leisure activities, as well as social connectedness with friends and participation in extracurricular activities, with educational outcomes. Our findings indicated that time spent with the father is positively associated with the likelihood of completing tertiary education for both daughters and sons. In particular, time spent with lower-education fathers was associated with teenagers' future tertiary education. However, intense friendships and participation in extracurricular activities were not associated with academic achievement later in life. The findings suggest that educational attainment is partly explained by teenage time spent with the family. Less-educated fathers can enhance the attainment of higher education of their children by spending more time with their teenage children.

Keywords: time use; family time; extracurricular activity; intergenerational educational attainment; gender



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1. Introduction

Youth is a period of life which not only requires continuity in family interactions, but also detaching oneself from family networks (Crosnoe and Trinitapoli 2008; Holland et al. 2007). Youth research has stressed the role of youths' everyday social ties—the “linking of lives” (Elder 1994)—with family, peers, and society. In this article, we took a multidimensional look at teenagers' everyday social lives and analysed to what extent time with parents and spent on social activity were associated with educational attainment later in life. We estimated both families' and friends' exclusive social relationships (i.e., “strong” social ties) and participation in extracurricular social activity (i.e., “weak” social ties; Ferlander 2007; Holland et al. 2007; Snellman et al. 2015; Weininger et al. 2015). We used time use data, which is a rich source for evaluating social phenomena at the population level (Gershuny and Sullivan 1998).

We started from the understanding that social capital in youth is a key prerequisite for a successful transition to adulthood. It enables a deeper sense of capability and belief in one's own chances in the future (Morrow 1999; Ravanera et al. 2003). In addition to time with the family, spending time with peers and leisure activity are core elements in children's and young people's lives, as it can provide mutual support and shape the building of personal capacities (Morrow 1999; Korkiamäki 2011; Ravanera et al. 2003; Smith and Skrbiš 2016). Yet there is a scarcity of longitudinal data that makes it possible to explore the long-term impacts of youths' social ties and everyday life.

We followed the idea that social connectedness in youth becomes an “investment in social relations with expected returns in the marketplace” (Lin 2001, p. 19) in adulthood. There is a variety of mechanisms that contribute to younger generations’ educational attainment. Children’s futures are in many ways determined by their early lives and socio-demographic background: biology (genes), childhood health, children’s and their parents’ cognitive and non-cognitive skills, childhood family socio-economic position, neighbourhood and community, and institutional environment (schools and education systems, welfare institutions and policies) (Nolan et al. 2011; Ermisch et al. 2012). According to Nolan et al. (2011), who base their view on a range of empirical studies, family origin contributes the most to children’s futures. Parental socio-economic position (education, income, occupation, wealth, and employment; see Ermisch et al. 2012, p. 9; Erola et al. 2016) is the key determinant of intergenerational mobility of children (Nolan et al. 2011; Lawrence 2016). As summed up by Nolan et al. (2011, p. 344), “parental education is a significant predictor of the level a child will attain, and education in turn is a key predictor of earnings and income, occupation and social class”. Yet also other social contexts, outside the family, affect young people’s lives, increasingly by age. Social and cultural influences are “not reducible to material situations” (Weininger et al. 2015, p. 481).

We estimated, first, the “strong social ties” which involve “inward-looking bonds” and informal and emotional support given and shared by a homogeneous group with exclusive identity, i.e., family and friends (Ferlander 2007; Holland et al. 2007). Second, we explored the “weak social ties”, which include extracurricular activity that enhances the development of “outward-looking connections” and makes it possible to encounter people across different backgrounds (Ferlander 2007).

This article used the Finnish Time Use Survey (FTUS) and diary data from 1979 for young people aged 10–18. FTUS also contains register data on education achieved later in life. We estimated how time spent with mother and father, time devoted to studying and leisure, social activity with friends and leisure pursuits, and voluntary activity contributed to achieving higher education. Before presenting the research design (Section 2), results (Section 3), discussion (Section 4), and conclusion (Section 5), we first will discuss past research on family time, family members’ gender, and intergenerational educational attainment (Section 1.1), teenage time use relative to extracurricular activity (Section 1.2), and the context of the study, Finland (Section 1.3).

1.1. Family Time, Gender, and Intergenerational Educational Mobility

There are many mechanisms behind the intergenerational transmission of education (e.g., Esping-Andersen 2004). Empirical studies use a range of data and techniques to estimate how economic/material, cultural/educational and social spheres affect children’s cognitive, socio-emotional and physical abilities and well-being (Ermisch et al. 2012; Erola et al. 2016; Burger 2016; Milkie et al. 2015) and how these relate to economic outcomes (income, labour market position) and educational achievement (e.g., maths or literacy scores, degrees).

Parents can transfer embodied capital such as cultural knowledge and social skills and ties to children prior to school age (Esping-Andersen 2004). One important means for such a transfer is through family time. Many earlier studies have stressed the role of time spent with parents, but they have tended to use rather simple indicators of family activity and cross-sectional data (see e.g., Milkie et al. 2015). Based on an extensive review of earlier studies, Lawrence (2016) pointed out that highly educated parents may assume greater responsibility for their children’s school achievement, as well as provide information and guidance on how to apply and prepare for admissions, and on which higher education institutions to consider. Furthermore, Milkie et al. (2015) showed that family time investments become even more important in adolescence, both in terms of decreased delinquent behaviour and increased pro-social action.

The role of both children’s and their parents’ gender in intergenerational education transmission has been addressed in several studies (see Amin et al. 2015). According to

Raley and Bianchi (2006), the child's gender may be associated with a wide range of child outcomes and parental behaviours (together with siblings' gender). Fathers sometimes seem more committed to their sons than to their daughters, whereas mothers may care for their children in a more egalitarian manner.

Teenagers spend more time with their mothers than with their fathers, according to both our own data (Table 1) and other studies (e.g., Offer 2013). There is a longstanding debate on what Milkie et al. (2015) described as "sacred maternal time investments", highlighting the irreplaceable role of mothers in children's developmental outcomes; there is no strong empirical evidence to back up this assumption. Milkie et al. (2015) showed that research findings point towards the role of family characteristics such as wealth and education instead of "extensive mothering". The findings of Milkie and colleagues underscore the importance of shared time with both parents. This "whole family" time becomes increasingly important in adolescence in terms of several positive outcomes (academic performance, behaviour, substance use). They found no evidence that maternal time is associated with positive adolescent outcomes. However, maternal education level is associated with better reading and maths results. Interestingly, family meals were found to be more often eaten together if the mother was highly educated. Another finding concerned fathers' presence when having family meals: Offer (2013) showed that eating together with the father is associated with adolescents' emotional well-being.

Table 1. Descriptive statistics. The Finnish Time Use Survey (FTUS) 1979 and population register data on education at the age of 40.

Variable	Freq.	Mean/%
<i>Study time</i>	759	0.54 h/diary day
<i>Leisure time</i>	759	0.64 h/day
<i>Time with mother</i>	759	3.34 h/day
<i>Time with father</i>	759	3.05 h/day
<i>Age</i>	759	14.22
<i>Number of siblings</i>	759	1.54
<i>Child's education</i>		
primary or secondary	390	51
tertiary	369	49
<i>Mother's education</i>		
primary	473	63
secondary or tertiary	278	37
<i>Father's education</i>		
primary	403	57
secondary or tertiary	306	43
<i>Mother's employment status</i>		
Not employed	229	30
Employed	530	70
<i>Father's employment status</i>		
Not employed	163	21
Employed	596	78
<i>Time spent with friends</i>		
no friends, or rare meeting	11	1
1–3 times per month	28	4
1–2 times per week	138	18
3–4 times per week	135	18
almost every day	447	59
<i>Number of friends</i>		
0–1	22	3
2–4	492	65
5+	245	32

Table 1. Cont.

Variable	Freq.	Mean/%
<i>Participation in hobbies</i>		
no	491	65
annually	23	3
monthly	63	8
participating weekly	179	24
<i>Participation in sport</i>		
no	489	65
annually	33	4
monthly	21	3
participating weekly	211	28
<i>Gender</i>		
Girl	393	52
Boy	366	48
<i>Standard of living</i>		
Bad-mediocre	169	22
Good	590	78
<i>Diary days</i>		
Both weekdays	439	58
Weekday and weekend day	211	28
Both weekend days	106	14
<i>Chronic illness, injury or problem</i>		
No	600	79
Yes	159	21

Earlier research has suggested that shared family time tends to decrease towards adolescence. In families with teenagers, family meals, watching television, shopping, and visiting relatives are the most common shared activities (Crosnoe and Trinitapoli 2008; Turtiainen et al. 2007). As for gender, it has been reported that low-education fathers spend more time with older sons when they grow up; this “boy effect” is not found among highly educated fathers who have overall higher levels of father–son time (Raley and Bianchi 2006; Bonke and Esping-Andersen 2011).

Gendered family practices may translate into certain gender roles in education and employment during the courses of children’s lives. Research on intergenerational educational attainment has produced evidence that, typically, daughters follow their mothers’ educational paths. In Greece, for example, where intergenerational mobility overall has increased in recent decades, daughters’ educational attainment continues to be affected by parental and especially mothers’ educational attainment (Daouli et al. 2010). Amin et al. (2015) concluded that mothers’ educational attainment is transmitted to their daughters not only regarding education but also entry into the labour market. In line with that, Wight et al. (2009) pointed out that parental employment and education affect family time use. They found that in the United States, maternal employment is associated with an increased amount of supervised teenager activities.

Over time, Daouli et al. (2010) found a convergence in how maternal and paternal educational background affect children’s future education. Nevertheless, there is still evidence that poorly educated mothers more often transmit their status to their children, especially to daughters. In Sweden, Amin et al. (2015) found a weakening father–son link in intergenerational education, but mothers’ educational background continued to influence their daughters’ educational attainment over time. In the context of parental divorce, educated parents’, especially mothers’, children suffered less in terms of psychological well-being and academic achievements (Mandemakers and Kalmijn 2014). Moreover, Erola et al. (2016) analysed how the age of children and youths differentiates the effect that mothers’ and fathers’ educational background had on their children’s achievement. In infancy, mothers’ educational attainment was a more powerful factor for children’s future life courses, whereas fathers’ educational attainment explained educational outcomes

among young adults. In [Breen and Jonsson \(2005\)](#), family effects were more pronounced in children's earliest educational transitions.

1.2. Teenage Time Use: Friendships, and Social Activity

For a long time, adults' fundamental orientation towards youths involved control. In research, this meant that "peer" time was often considered in terms of (risky) health behaviour (e.g., [Zuzanek 2005](#)), or that youths were approached as a "social problem" ([Turtiainen et al. 2007](#)). This "problem focus" of youth research and policies has increasingly shifted towards ways of fostering the identity and agency of youth ([Holland et al. 2007](#)), which is critical for successful transitions later in life. Besides family, the most influential factors in young people's lives include peer groups and the ways in which youths support, control, motivate, include, and exclude each other in their everyday social contexts ([Korkiamäki 2011](#)).

Hobbies and civic and political participation are considered to enhance social trust alongside other active time use, such as sport and reading ([Romer et al. 2009](#)). In longitudinal studies, these extracurricular activities became indicators of academic achievement. Participation in sport is associated with higher education and income, probably because it strengthens non-cognitive skills (teamwork, leadership) and contributes to youths' future networks ([Crosnoe and Trinitapoli 2008](#); [Pfeifer and Cornelißen 2010](#); [Snellman et al. 2015](#)). Again, the family plays a role in the participation of children in extracurricular activity. In studies assessing how socio-economic conditions and cultural orientations of families affect the participation of children, consistently, class gradients have been found in participation in and families' expenditure on all extracurricular activities ([Weininger et al. 2015](#)). [Nordlander \(2016\)](#) found that participation in cultural activities could significantly reduce the difference in school grades between young people from lower-class origins and young people from white-collar origins. Thus, engagement in different activities can reduce inequalities in educational opportunity.

Overall, everyday life is a central interest in youth studies. The time use data applied in this study allowed us to construct measures for study, leisure, social activity, and contact with friends. Time use data revealed, for example, that boys spent more time exercising, using computers, and in paid work than girls, whereas girls tended to read more than boys ([Pääkkönen 2005](#); [Österbacka and Zick 2009](#)). Time use data also revealed that around 1979 (the survey year), Finnish schoolchildren spent more time studying than in the following decades: after the 1970s, free time increased, and contracted (study/working) time decreased, as in youth and adult populations across industrialised countries. Instead of computers and smart devices, which today are important in young people's time use, in 1979 television took up one third of schoolchildren's free time ([Pääkkönen 2005](#)).

1.3. The Context: Finland

The degree of intergenerational transmission of education in any country reflects its level of equality of opportunity. Finland is considered to represent a Nordic welfare state with a high standard of public social services and income redistribution, and as such to support equality of opportunity ([Burger 2016](#)). It has in place a universal system of childcare and education, which means that children from different social origin groups receive equal treatment.

Finland introduced a nine-year comprehensive school system in the 1970s ([Pekkarinen et al. 2009](#)). The cohorts in our study (born in 1961–1969) were the first to enter this system, which extended obligatory schooling from age 11 to age 16. The reform boosted intergenerational income mobility. Similar findings have been reported from Sweden and Norway ([Nolan et al. 2011](#)).

Our FTUS data represent the 1970s, a period still marked by rapid modernization. Educational levels rose in all younger cohorts, urbanization advanced, and the occupational structure changed ([Nolan et al. 2011](#)). A specifically Nordic feature is women's high labour market participation rate. Finland has had a strong dual-earner culture. Both

participation in labour and full-time employment have been typical among parents. Among cohorts born in the 1960s, approximately one-sixth of both mothers and fathers were still farmers. However, the share of parents engaged in non-manual labour increased quickly (Sirniö et al. 2017). Among Finnish wage earners in the 1970s, approximately one-fifth of employed men had a partner who mainly took care of home, while no employed women had a home-making partner (Tammelin 2009, p. 59).

2. Materials and Methods

2.1. Hypotheses

We wished to establish whether social time use contributed to teenagers' educational attainment, as measured by tertiary graduation by age 40, signalling the importance of strong and weak social ties and connectedness. FTUS data provided an excellent opportunity to estimate which youth activities became meaningful in educational attainment over time.

Hypothesis 1 (H1). *We first hypothesise that spending time with the parents is positively associated with the probability that young people attain tertiary education.*

Hypothesis 2 (H2). *We also hypothesise that by contributing to the quality of family time, both mothers' and fathers' post-primary educational attainment is positively associated with the rate of tertiary completion among young people (e.g., Amin et al. 2015; Lawrence 2016).*

Hypothesis 3 (H3). *Moreover, we hypothesise that being academically and socially active in teenage years increases the probability of attaining a tertiary level education. We will disaggregate to compare different types of social and extracurricular time use. First, we will estimate time devoted to studying, expecting to find that increased study time predicts increased completion of tertiary education (H3A). Second, we expect to find that increased overall leisure time is associated with lowered probability of tertiary education (H3B), through indicating less active time. Third, we expect that as social ties are necessary in the process of finding one's own agency in young people, more social ties are associated with increased completion of tertiary degrees (H3C). Finally, we expect that extracurricular activity, i.e., participation in hobbies, sport, and societal activities, is associated with increased higher educational attainment in adulthood (H3D).*

2.2. Materials: Time Use Survey, Diary and Follow-Up Register

Time use surveys and diaries have a century-long history (Gershuny and Sullivan 1998). Over 24-h periods, "activity" is assessed in 10 to 15 min periods, with a distinction made between "necessary" time (sleeping, eating, hygiene), "contracted" time (work and study), "committed" time (domestic work) and leisure (e.g., Pääkkönen 2005). The attached "with whom" measures indicate if time was spent alone, with the mother, father, other family member, or with someone else.

Diary-based time use data are a useful source for studying the duration of specific activities, and the social context of activities (Gershuny and Sullivan 1998). This information is more detailed and, in some respects, more reliable than the respondent's memory and the subjective categories used in standard surveys. As time use diaries always add up to 24 h per day and the information is collected "in the moment", they are much less prone to over- and underestimations (Kan and Pudney 2008; Niemi 1993; Schulz and Grunow 2012).

FTUS exceptionally comprises both survey, diary and register data. FTUS data include survey measures on youths' social background and their everyday activities and social lives. The survey data is important, since time use diaries collect individual information for two days, in line with the harmonised European time use study guidelines, which suggest one weekday and one weekend day. Merged registers, therefore, enable the analysis of educational attainment, as they annually describe the latest gained educational degree in the population. Our analysis was restricted to young people aged 10–18 who were in education and living in their parental home with both of their parents ($n = 759$). There were

20 young people who had no mother and 96 who had no father. Those children not having either mother or father were excluded from the analyses, as by definition they would not be able to spend time with both parents.

2.2.1. Key Variables

The dependent variable, tertiary level education, was defined as a registered educational degree for the respondents by the year they turned 40. As the respondents were born in 1961–1969, their education level was recorded as of 2001–2009. Children's education was coded as a dichotomised variable, with 0 indicating that the respondent did not have a tertiary education and 1 that they did (0 = ISCED \leq 4, 1 = ISCED \geq 5).

The descriptive statistics of variables are presented in Table 1. The FTUS 1979 measures originated either from the survey or the diary part of the study. In the diaries, respondents described their main activity for each 10-min period for two consecutive 24-h cycles. From this accurate daily diary data, we used time spent “with someone” and studying or in leisure activities. We distinguished between time spent with mother and father. Our respondents spent 3.5 h a day with their mothers (mean of the two diary days), and slightly more than three hours with their fathers. Our other diary measures included time spent studying and in leisure activities.

The survey measures of teenagers' social connections and activity described their number of friends (0–1, 2–4, 5 or more) and the frequency of meeting these friends (no friends or rare meeting, 1–3 times per month, 1–2 times per week, 3–4 times per week, almost daily). The majority of both boys and girls had at least two friends, and more than half of them met their friends almost daily. We also included indicators for participation in hobbies and sport (not at all, annually, monthly, and weekly).

Key variables also included gender and mother's and father's education. In 1979, most of the adult population in Finland did not have a higher education. According to FTUS 1979 (Table 1), 63 per cent of teenagers' mothers and 57 per cent of their fathers had no more than a primary education, which meant that they might have left school by the age of 11 (see [Pekkarinen et al. 2009](#)). Only six per cent of mothers and one-tenth of fathers in our data had a tertiary education. We therefore decided to compare parents who had no more than a primary education with all other education categories. One-third of mothers and 43 per cent of fathers had more than a compulsory basic education (Table 1). As approximately half of their children achieved a tertiary education later in life, in these cohorts, the Nordic schooling system and generous social and welfare services contributed to enhancing educational transitions and overall mobility relative to social and industrial change ([Nolan et al. 2011](#)).

2.2.2. Controls

We controlled for some important factors (Table 1), starting with the respondent's age in 1979 (10–18). Age was added to the models as a continuous variable. Next, in FTUS 1979, the respondents completed diaries for two consecutive days specified by Statistics Finland. We included a technical control that considered if these days were both weekdays or weekend days, or a combination of a weekday and a weekend day. These days represented all of the days of three months—September, October, and December—in 1979.

We also considered the socio-economic position of families. This is particularly important because the economic, social, and cultural capital of young people and their families are unequally distributed ([France 2016](#); [Erola et al. 2016](#)). Finnish families are typically dual-earning, with couples working full-time and sharing equal gender roles ([Bittman 1999](#); [Pääkkönen 2005](#); [Tammelin 2009](#)). Besides education, the general level of standard of living was included as a measure of household's socioeconomic position (bad/mediocre or good). We also considered urban/rural living environment, but did not include this indicator since it was weakly correlated with key variables.

Furthermore, parental labour market position was controlled for with maternal and paternal employment (mother/father working or not working). In total 70 per cent of the

respondents' mothers and 78 per cent of their fathers were employed. We also controlled for the number of siblings in the family and a chronic illness, injury, or other such problem of the respondent. Due to the lack of measures and the small number of respondents, however, we could not control for parental divorce or death of a parent. The correlations between all variables are presented in Appendix A.

2.3. Analytical Procedure and Methods

The diary days represent population-level time use, with "days" representing the analytical unit instead of individuals. For the individual-level analysis, the data were converted to a wide format, i.e., two diary days were represented by different variables, not cases. These daily time-use variables were then summed up to form indicators of individuals' average time use. The amount of time spent with parents, or time spent studying or in leisure activities, represents the mean for the two consecutive days.

The 1979 FTUS used a top-coding of diary "with whom" variables ranging from 0 to 990 min, with the highest category including the (more theoretical) values from 1000 to 1440 min per diary. Time spent with mother and father, studying and in leisure activities were treated as continuous variables and presented as hours per day. Only a few reported no time spent with their mothers. Another few stayed together (probably spent whole day/s at home) all the time.

We employed generalised structural equation models (GSEM) to estimate the direct and indirect effects of parental education and teenagers' time use on their educational attainment. A basic structural equation model (SEM) is well suited to multiple equation models such as mediation analysis, but is restricted to linear models. In contrast to linear SEM models, a GSEM can incorporate any distribution from an exponential family using a link function. Indirect effects can be tested, which is the strength of GSEM. The GSEM is an extension of SEM (see e.g., Hoffmann 2004). In essence, this enabled the use of a structural equation modelling framework with, e.g., ordinal and categorical dependent and mediator variables. We estimated a binary logistic model for the main dependent variable, i.e., child's tertiary education. For mediators, i.e., teenager time use, we estimated both linear (time spent with mother, father, studying and in leisure activities), and ordinal logistic (number of friends, frequency of meeting friends, hobbies, and sport) models. All variables in the models were observed, and no unobserved latent variables were estimated. The significance of indirect effects was estimated using the delta method. To investigate gender differences in direct and indirect effects, the GSEM models were estimated separating girls and boys. All models were estimated using the Stata 15 *gsem* command. The final analysis comprised 692 teenagers, 337 boys and 355 girls.

Weaknesses and Strengths

Our data had some limitations. We could not control for mother's age, although becoming a mother at a younger age predicts a lower academic achievement for the child (Duncan et al. 2018). We could not control for factors in early childhood, health indicators (Björklund et al. 2012), substance or alcohol use, nor for cognitive or personality traits. Recently, these viewpoints have been increasingly studied (e.g., Ryberg et al. 2017). We were unable to estimate the quality of time spent with parents—family time can also mean having arguments—nor consider whether mothers chose to spend much time with their teenagers or remained at home involuntarily (Ashbourne and Daly 2010; Kjærgaard Thomsen 2015; Milkie et al. 2015). Nor did we have an opportunity to evaluate more than two generations. Recently, a Swedish study found that "long-run social mobility" was lower than expected (Lindahl et al. 2015). Finally, FTUS 1979 was not household-based and therefore we could not compare the amount or timing of activities that all family members spent together. Time spent with parents and time spent in sport, for example, may overlap (Crosnoe and Trinitapoli 2008).

As for the strengths, the data represented all cohorts of the Finnish population born in 1961–1969. Second, there was no selection bias in the data, a common problem in non-

population surveys. The original sample was drawn from the population register. Statistics Finland follows rigorous sampling and data collection procedures, and has been closely involved in international efforts to develop time use surveys (Niemi 1993).

We chose to use the 1979 data because it provided information on both parents' education and position in the labour market. This is important because many earlier studies on intergenerational mobility only addressed father-son effects (e.g., Buis 2013; Breen and Jonsson 2005). Furthermore, many studies on family time use focused narrowly on just a few activities or used retrospective (survey) measurements (see Milkie et al. 2015). Time diary data include all time and activities over two 24-h cycles. Moreover, the rich survey data included measurements of social activity and friendships. Finally, our data allowed us to follow teenagers' educational attainment later in adulthood.

3. Results

Results from GSEM models are presented in Table 2 (both genders), and Tables 3 and 4 (separately for girls and boys). Evidently, parental education and time spent with parents influenced both teenagers' use of time and educational attainment. These effects were, however, dependent on the gender of the teenager. In a stepwise procedure, we first considered whether the education of parents was associated with time use, since time use of adolescents is most likely related to the educational attainment of parents per se.

We found that the daughters, but not sons, of more educated mothers spent less time with both of their parents. Potentially, educated mothers spent more time working than other mothers. By contrast, fathers' post-primary education correlated with increased time spent by sons in sport and leisure. More educated mothers' and fathers' daughters more often involved themselves in hobbies. Based on descriptive analysis (not presented), we also found that girls spent slightly more time studying than boys, who in turn spent somewhat more time in leisure activities. Girls also participated in hobbies more actively than boys, who in turn were more active in sport, had more friends and met friends more often.

Table 2. Generalised structural equation model (GSEM) on young people's time use and educational achievement. FTUS 1979, young people aged 10–18. First step models tested for the teenager's time use and social connectedness in 1979, $n = 759$. Full model tested for education achieved by 40, $n = 692$.

Key Variables	Study Hours ¹	Leisure Hours ¹	Time with Mother ¹	Time with Father ¹	Number of Friends ²	How often Meets Friends ²	Hobby ²	Sport ²	Child's Tertiary Education ³
Study hours									1.04 (0.75)
Leisure hours									0.20 (0.68)
Time with mother									−0.19 * (0.10)
Time with father									0.12 (0.10)
Number of friends									0.00 (0.16)
How often meets friends									−0.11 (0.09)
Hobby									0.08 (0.07)
Sport									0.07 (0.06)
Mother secondary or tertiary educ.	−0.01 (0.01)	−0.00 (0.01)	−0.28 * (0.16)	−0.34 ** (0.16)	0.08 (0.19)	0.00 (0.17)	0.21 (0.19)	0.06 (0.18)	0.37 ** (0.18)
Father secondary or tertiary educ.	−0.01 (0.01)	0.04 *** (0.01)	−0.01 (0.16)	0.06 (0.15)	0.13 (0.18)	0.07 (0.17)	0.54 *** (0.18)	0.44 ** (0.18)	0.58 *** (0.18)
Teenager gender male	−0.03 *** (0.01)	0.05 *** (0.01)	−0.09 (0.18)	0.02 (0.16)	0.55 *** (0.17)	0.62 *** (0.16)	−0.39 ** (0.17)	0.30 * (0.17)	−0.67 *** (0.18)
Constant	0.46 *** (0.04)	0.64 *** (0.05)	4.79 *** (0.70)	3.89 *** (0.52)					−1.54 (0.96)

Controlling for: mother employed, father employed, number of siblings, age of child, standard of living, chronic illness, weekday of diary. Analyses restricted to teenagers in education and living in their parental home. ¹ First step linear model; ² First step ordinal logistic model; ³ Binary logistic full model. Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; unstandardised coefficients, standard errors in parentheses.

Table 3. Generalised structural equation model (GSEM) on young people’s time use and educational achievement. FTUS 1979, girls aged 10–18. First step models testing for daughters’ time use and social connectedness in 1979, $n = 393$. Full model tested for education achieved by 40, $n = 355$.

Key Variables	Study Hours ¹	Leisure Hours ¹	Time with Mother ¹	Time with Father ¹	Number of Friends ²	How often Meets Friends ²	Hobby ²	Sport ²	Child’s Tertiary Education ³
Study hours									0.93 (1.10)
Leisure hours									−0.16 (1.06)
Time with mother									−0.41 ** (0.19)
Time with father									0.32 * (0.18)
Number of friends									0.16 (0.23)
How often meets friends									−0.11 (0.13)
Hobby									0.08 (0.09)
Sport									0.10 (0.09)
Mother secondary or tertiary educ.	0.01 (0.02)	0.00 (0.02)	−0.63 *** (0.21)	−0.61 *** (0.21)	−0.20 (0.27)	0.16 (0.23)	0.42 * (0.26)	0.19 (0.27)	0.51 * (0.27)
Father secondary or tertiary educ.	−0.03 (0.02)	0.03 (0.02)	−0.16 (0.21)	−0.17 (0.21)	0.06 (0.26)	0.23 (0.22)	0.73 *** (0.24)	0.32 (0.25)	0.55 ** (0.26)
Constant	0.50 *** (0.05)	0.64 *** (0.06)	5.10 *** (1.11)	3.65 *** (0.77)					−1.28 (1.42)

Controlling for: see Table 2. ¹ First step linear model; ² First step ordinal logistic model; ³ Binary logistic full model Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; unstandardised coefficients, standard errors in parentheses.

Table 4. Generalised structural equation model (GSEM) on young people’s time use and educational achievement. FTUS 1979, boys aged 10–18. First step models testing for sons’ time use and social connectedness in 1979, $n = 366$. Full model tested for education achieved by 40, $n = 337$.

	Study Hours ¹	Leisure Hours ¹	Time with Mother ¹	Time with Father ¹	Number of Friends ²	How often Meets Friends ²	Hobby ²	Sport ²	Child’s Tertiary Education ³
Study hours									0.86 (1.10)
Leisure hours									0.55 (0.91)
Time with mother									−0.05 (0.10)
Time with father									0.02 (0.11)
Number of friends									−0.09 (0.24)
How often meets friends									−0.12 (0.15)
Hobby									0.06 (0.10)
Sport									0.03 (0.09)
Mother secondary or tertiary educ.	−0.03 ** (0.01)	0.00 (0.02)	0.19 (0.27)	0.01 (0.26)	0.33 (0.26)	−0.19 (0.28)	0.04 (0.28)	−0.08 (0.26)	0.16 (0.27)
Father secondary or tertiary educ.	0.02 (0.01)	0.04 ** (0.02)	0.02 (0.25)	0.13 (0.23)	0.18 (0.26)	−0.04 (0.29)	0.32 (0.28)	0.61 ** (0.27)	0.67 ** (0.26)
Constant	0.39 *** (0.06)	0.72 *** (0.07)	4.71 *** (0.74)	4.41 *** (0.76)					−2.50 * (1.38)

Controlling for: see Table 2. ¹ First step linear model; ² First step ordinal logistic model; ³ Binary logistic full model Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; unstandardised coefficients, standard errors in parentheses.

Second, considering the tertiary degree attainment of the studied young people, similar gender differences existed (Tables 2–4). Overall, in our sample, girls were more likely to gain a higher education. We found that both maternal and paternal post-primary education further increased the probability of gaining tertiary education for girls. Meanwhile in boys, only fathers’ post-primary education was associated with sons’ probability of gaining tertiary education.

Considering our hypotheses, after controlling for parental education, background factors, and time use, only time spent with the mother had a statistically significant, direct effect on the daughter's education in adulthood. As opposed to the expectation in H1, however, this association was negative (Table 3). We presume that girls who spent a lot of time with their mothers might have been less active in their other spheres of life, which is indicative evidence against "intensive mothering" (see [Milkie et al. 2015](#)). However, time spent with fathers increased the probability of daughters attaining tertiary education. Thus, H1 is partially supported. The findings did not give any support to Hypotheses H3A–D, i.e., that being academically or socially active in youth increases the chances of attaining a higher education later in life.

In addition to direct effects, we also tested for the indirect effects of parental education on the child's education mediated by time use, which is the strength of our method, GSEM.¹ Within this analysis, we tested H2 by adding an interaction between parents' education and parental time. H2 was partially confirmed, as we found that there was a significant interaction effect at the 10 per cent risk level between father's education and time spent with the father on the child's tertiary education. This effect was somewhat stronger for boys. Figure 1 presents this interaction effect for the total sample. The interaction effect is caused by the fact that time spent with the father could have a positive effect on educational attainment only if the father had a lower level of education. It seems that fathers could compensate for the "negative effect" of their lower education on their child's educational attainment by spending more time with their teenagers. Thus, the hypothesis regarding the "higher quality" of time spent with an educated parent received no support. We found no other statistically significant indirect effects that could mediate the association between maternal or paternal post-primary education and the teenager's education later in life.

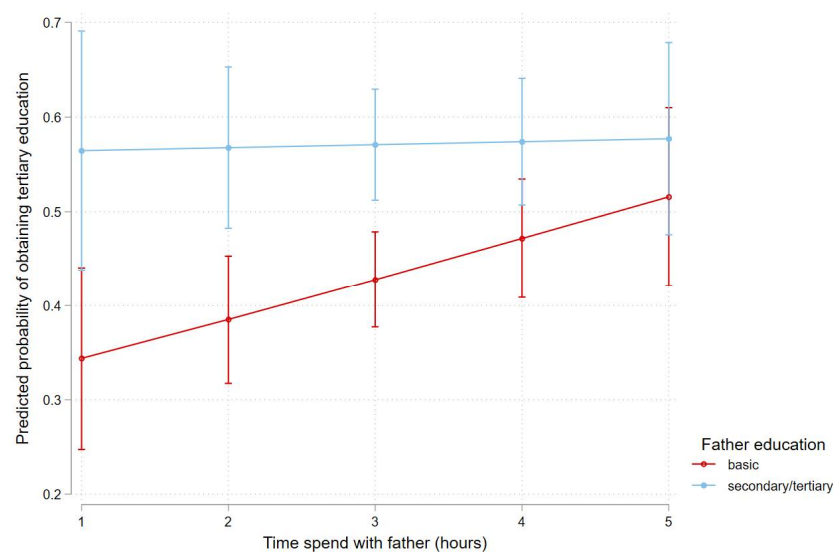


Figure 1. Interaction of fathers' education with time spent with fathers in 1979 on teenager's likelihood of completing tertiary education by the age of 40.

Overall, the explanatory power of parents' educational background was quite stable throughout the analysis. This suggests that findings based on time spent with parents can complement the understanding of the determinants of children's educational attainment, but do not supersede earlier findings. Hence, as expected, parental education was transmitted to children. Fathers' post-primary education independently and strongly contributed to the future educational attainment of both daughters and sons. Our contribution is to add that lower-educated fathers could enhance the attainment of higher education of their children by spending more time with them during teenage years.

4. Discussion

In this study we set out to explore how time spent during adolescence with mother and father, in studying, in leisure, and in other social connectedness and activities, contributed to children's educational attainment. We used Finnish time use survey data and diaries of teenagers aged 10–18 from 1979, and combined these sources with register follow-up data on the completion of a higher education by the age of 40. We examined the gender effects of both the children and their parents. Many earlier analyses of "family time" using time use data have approached the subject from the vantage point of parents with young children (e.g., [Bonke and Esping-Andersen 2011](#)). Our focus was on teenagers, and on how a range of everyday factors was associated with their educational attainment.

First, earlier research on intergenerational educational mobility has mostly focused on the role of the family's material wealth, parental education, and socio-economic position. According to [Schneebaum et al. \(2015\)](#), mothers' education is a stronger determinant of daughters' education and fathers' education is a stronger determinant of sons' education (see [Amin et al. 2015](#)). We found a similar gendered pattern (see also [Daouli et al. 2010](#); [Amin et al. 2015](#)) implying the transmission of mother's education to daughters only. In Finland, practically all girls enter the labour market after a period of studying. We assumed that mothers may have a more important influence on occupational rather than educational choices, since there is comparatively high gender segregation in the Finnish labour market. Women work in different, lower-paid sectors than men (sectoral segregation), and men are more likely to work in managerial positions (hierarchical segregation; [Sirniö et al. 2017](#)), thus making women only secondary earners in their households. Such segregation may explain our finding that fathers' post-primary education contributed to both daughters' and sons' educational attainment, whereas mothers' education was not related to sons' education.

Our results can confirm another "role model effect" ([Amin et al. 2015](#)) in how fathers' education influences their children's education. In our sample, there was a substantial "educated father gradient" in the achievement of tertiary education in boys, in particular, referring to the importance of social stratification ([Nolan et al. 2011](#), p. 344). However, our contribution was to show that this intergenerational pattern of educational attainment becomes somewhat modified, in that time spent with less-educated fathers can compensate for the lack of paternal educational achievement.

Although children's educational outcome is highly dependent on their parents' educational level, our findings showed that increases in paternal time can somewhat boost the chance of teenagers attaining tertiary education later in life. [Milkie et al. \(2015\)](#) showed that family time investments become more important in adolescence than in childhood. "Being there" for teenagers may deter and prevent risk-taking, but also increase pro-social thinking. Our results suggested that less-educated fathers in particular could contribute to their teenagers' educational achievement in a positive manner by being present and actively spending time with their daughters and sons. However, the same was not true for mothers. Instead, we found that increased time spent with mothers negatively affected teenagers' educational attainment. We assume that the effect of maternal time can be interpreted against the reality that in Finland, most mothers were—and still are—employed in the services sector, contributing less to families' economic status. In 1979, 70% of the mothers of the studied teenagers were working (versus 78% of fathers, [Table 1](#)). There was a minority of mothers who only stayed at home, spending the highest amount of time with their teenagers. In this context, staying at home may have been involuntary ([Ashbourne and Daly 2010](#); [Kjærgaard Thomsen 2015](#)). Thus, we propose that fathers' parenting time may be a more powerful predictor of the child's education, since they can have more decisive influence on children's later attainment via higher status in the family's socio-economic hierarchy, as well as via higher social capital and networks that become transmitted to the children's advantage.

As for study and leisure time use and time spent with friends, we found no associations between time use in teenage years and educational attainment later in life. Thus, our

analysis did not lend support to the boosting role of teenage friendships in educational attainment. According to [Smith and Skrbiš \(2016\)](#), certain friendship events such as being bullied or falling in love are significantly associated with academic achievement. [Turtiainen et al. \(2007\)](#) also reported that increased family time in teenage years might signal lacking or problematic peer contacts. We could not estimate these effects.

Similarly, we found no evidence that “weak social ties”, i.e., social activity or extracurricular activity (participation in hobbies), contributed to educational attainment, even if there is a growing body of research into how participation in non-professional sport contributes to future education ([Nordlander 2016](#); [Pfeifer and Cornelißen 2010](#); [Snellman et al. 2015](#)). However, it is known that participation in extracurricular activity is dependent on parents’ social class, education and familial wealth ([Nordlander 2016](#)). Also other unobserved factors could be traits, such as being extroversive or ambitious ([Snellman et al. 2015](#); [Weininger et al. 2015](#)). The difference in findings might also be due to result of different measurements in the studies.

More longitudinal research is still needed to estimate younger people’s use of family and social time. With the growth of educational opportunities and rising levels of education across the population, it is possible that the intergenerational links from parents to their children have changed between cohorts (e.g., [Daouli et al. 2010](#)). The Nordic educational system somewhat boosts intergenerational mobility (e.g., [Ermisch et al. 2012](#)). The cohorts included in our study (those born in the 1960s) were the first to benefit from the new Finnish comprehensive school system in the 1970s ([Pekkarinen et al. 2009](#)).

5. Conclusions

Overall, time use in youth is an important mechanism that produces social stratification in the population. We found support for the hypothesis that strong (family) social ties are associated with young people’s educational attainment later in their life. Based on our findings, lower-education fathers, in particular, could improve their children’s chances of achieving higher education by participating in the teenagers’ lives and spending time with them. We welcome more research in estimating if intergenerational mobility can be partly explained by time use. It is important to stress that young people should not be treated as “passive recipients” of intergenerational social capital (see [Holland et al. 2007](#)). Instead, we should make good use of data gathered from young people themselves, across cohorts and countries, treating their social behaviour as a valuable source of information on their everyday life and strong and weak social ties, possibly determining their future educational attainment.

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Informed Consent Statement: Informed consent has been obtained from the subjects in 1979, relative to data collection. Combining the follow-up data was allowed after ethical and legal consideration (Statistics Finland’s licence No. TK-53-828-20). The data is accessed in Statistics Finland’s remote service Fiona, only.

Data Availability Statement: The data cannot be made openly available. The detailed description of the data collection is available at https://www.stat.fi/til/akay/index_en.html.

Conflicts of Interest: The authors declare no conflict of interest.

Ethics Statement: This research has passed ethics review checks.

Appendix A

Table A1. Correlations (Spearman) between variables. FTUS 1979, children aged 10–18.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
(1) Child education	1.00																		
(2) Study hours	−0.03	1.00																	
(3) Leisure hours	0.03	−0.84	1.00																
(4) Time with mother	0.02	−0.14	0.18	1.00															
(5) Time with father	0.04	−0.15	0.18	0.93	1.00														
(6) Number of friends	−0.03	0.01	0.03	0.01	0.00	1.00													
(7) Meet friends freq.	−0.03	−0.09	0.17	−0.05	−0.07	0.11	1.00												
(8) Hobby	0.07	−0.09	0.09	0.06	0.10	−0.05	0.00	1.00											
(9) Sport	0.08	−0.03	0.07	0.02	0.03	0.12	0.15	0.05	1.00										
(10) Mother educat.	0.15	−0.08	0.07	−0.03	−0.04	0.01	0.05	0.08	0.09	1.00									
(11) Father educat.	0.18	−0.07	0.12	0.01	0.02	0.02	0.07	0.14	0.13	0.30	1.00								
(12) Mother empl.	0.09	0.07	−0.05	0.02	0.00	0.03	0.06	−0.00	0.03	0.07	0.05	1.00							
(13) Father empl.	0.09	−0.03	0.02	−0.03	0.04	−0.01	0.02	0.01	0.03	0.09	0.12	0.19	1.00						
(14) Boy	−0.15	−0.08	0.14	0.01	0.02	0.13	0.16	−0.08	0.07	0.01	0.00	−0.06	−0.03	1.00					
(15) Age	0.02	0.23	−0.16	−0.16	−0.16	0.08	−0.13	−0.14	−0.12	−0.09	−0.07	0.03	−0.03	−0.03	1.00				
(16) Siblings num.	−0.07	0.03	−0.08	0.02	0.05	0.02	−0.11	0.04	−0.04	−0.01	−0.06	−0.09	−0.01	−0.04	−0.04	1.00			
(17) Both weekend days	0.05	−0.58	0.52	0.07	0.07	−0.05	0.01	0.03	0.01	0.00	0.04	−0.10	−0.01	−0.00	0.01	0.03	1.00		
(18) Chronic illness	0.00	−0.07	0.04	0.01	0.00	−0.06	−0.05	−0.05	0.03	0.02	−0.04	−0.03	0.02	−0.05	−0.04	−0.01	0.07	1.00	
(19) Standard of living	0.16	−0.10	0.14	0.03	0.04	−0.01	0.16	0.09	0.13	0.23	0.24	0.06	0.05	0.00	−0.06	−0.11	0.06	−0.02	1.00

Tables attached in a separate file.

Notes

¹ Results available from authors upon request.

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