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**Home sweet home? Long-term educational  
outcomes of childcare arrangements in Finland**

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## Introduction

The Finnish day care system is considered to be one of the most universalistic in the world. The law on day care defines a subjective right to full-day care for all children under pre-primary school age (six years). As it stands now, the law does not exclude any groups such as the children of unemployed or student parents.<sup>1</sup> Day care is also heavily subsidized by the state and completely free for low-income families. Yet around 40 per cent of children aged one to five who are entitled to day care are actually taken care of at home. This is a substantially higher number than in any other Nordic country with similar high-quality day care systems.

One of the main reasons behind this rather surprising phenomenon is the homecare subsidy paid to parents taking care of their children at home. Whereas the national subsidy is rather small, municipalities are allowed to top up payments. Municipalities are mandated to provide high-quality day care to all those who need it, making the day care system an expensive service. Because of this, small municipalities in particular often find it cheaper to top up homecare subsidies.

However, there are also other, normative reasons why families often prefer homecare. Some developmental psychologists argue that too early day care and separation from the main caregiver, that is the mother, has detrimental effects on a child's psychological well-being. The argument is that not being cared for by your own parent has a negative effect on basic attachment, and this will lead to both behavioural and cognitive problems at a later age. This message fits well with the strong belief held by many that children should be taken care of at home when they are small. In political discussions, the homecare allowance is often justified by arguing that it guarantees families the freedom to choose the type of care that best fits their needs (Hiilamo and Kangas 2009).

Quite naturally, the opposite can be argued as well. Given that day care allows both parents to work, families whose children are in day care tend to have better economic resources, and this is generally found to be good for children. Mothers are able to re-enter the labour market, which should help their careers and provide both economic and status advantages for the family. Even when parents are not working, day care may be advantageous for both children and their parents. In the day care system, highly educated

day care teachers provide high-quality care with social and cognitive stimulation and skills. Parents also have daily contact with other adults, thereby reducing the risk of social exclusion.

Despite the occasionally heated nature of the debate on day care versus homecare and their organization, there is surprisingly little research on the outcomes of the two. This study aims to fill this gap by looking at the long-term educational effects of day care and homecare in Finland. We shall first provide a more thorough outline of Finnish children's day care and homecare systems before describing our data and methods and finally presenting our results.

## **Day care in Finland**

Parental leave in Finland lasts until the child is approximately nine months old if only the mother is on leave and until the child is approximately 11 months old if the father also takes some leave. The potential length of parental leave has remained approximately the same from the mid-1980s until the present day (Haataja 2007). The parental allowance is about 70 per cent of pre-leave earnings. After parental leave, families can choose to receive a homecare subsidy or they can place their children in day care. The latter is organized in day care centres or as family-based day care in which one adult takes care of up to four children, usually in her or his own home. Currently around every sixth child in day care is in family-based day care (Säkkinen and Kuoppala 2015), and among children under the age of three, the proportion is approximately one-third (STM 2013). In 1991, 42 per cent of children aged one to six in municipal day care were in family-based day care (Säkkinen and Kuoppala 2015).

Both forms of day care are heavily subsidized. The system is entirely free for low-income families and the maximum cost for families is around 250 € per month with some slight variation according to municipality. The average cost for municipalities was 63 € per day in 2012, thus totalling over 1200 € per month. The national homecare allowance for the first child is 343 € per month until age three, but some municipalities top that up by even as much as 264 € per month (average 148 € in 2012). Day care turns into pre-primary education at age six (one year before primary school) that is free of charge for everyone and usually organized at day care centres.

The day care system originated in the mid-1960s. At that time, it was pushed by the women's movement. The government plans progressed later during the same decade but for a rather different reason: the diminishing birth rate. Employers in particular were becoming worried about running out of workers during the forthcoming decades. Whereas all birth cohorts born after World War II until the mid-1950s had been larger than average, figures were diminishing fast: the birth cohort born in 1973 was the smallest one since the war until 2015. The law on day care was finally passed in 1973. Although it already required municipalities to organize care provision, the cities and smaller communities were slow to adopt the system. Finally, the right to day care irrespective of parents' labour market status was introduced first for children under three years in 1990 and then for children under six years in 1996.

Multiple regulations guarantee the high standard of care in day care centres. The child/supervisor ratio is relatively low: there needs to be one supervisor for every four children in groups with children under the age of three and one for every seven children in groups with older children.<sup>2</sup> In the municipally run centres, at least one of the supervisors needs to have a university-level formal day care teacher qualification. This restriction does not apply to private institutions or family-based day care. In the latter case, there is also a limit of four children for each adult carer.

Although the quality of day care in Finland is high and the expenses are highly subsidized, Finnish children enter day care less often than children in other Nordic countries. For instance, in 2013, only 28 per cent of children aged up to two years were in formal day care, as contrasted to 47 per cent in Sweden, 55 per cent in Norway, 58 per cent in Iceland, and 66 per cent in Denmark (OECD 2016). It has been argued that the Finnish exception in the Nordic context is at least partly attributable to more negative parental attitudes towards day care in Finland (Hiilamo 2004). It has been noted that the discourse surrounding day care in Finland revolves much around the 'freedom to choose' as compared to for example Swedish rhetoric of homecare as a 'trap for women' (Hiilamo and Kangas 2009). Combined with a public discussion in which day care has been considered to be harmful for at least some children (for example Keltikangas-Järvinen 2012), this has probably led to the current childcare policy and the higher rates of homecare for children under three. Yet institutional economic incentives also matter. It is likely that one of the key explanations is the possibility for parents to receive a homecare

subsidy if they do not place their children in day care when they are less than three years old.

## **Research objectives and expectations**

Based on the previous literature, it is not easy to conclude whether we should expect to find negative or positive associations between attending day care and educational outcomes. Both positive and negative effects of day care on cognitive abilities, personality traits, and socio-economic outcomes have been identified. In Denmark, for instance, Esping-Andersen and colleagues (2012) found that attending high quality day care was associated with higher cognitive scores at the age of 7 that persisted to the age of 11; whereas in the United States, the positive correlation was eroded by the age of 11. Datta Gupta and Simonsen (2010), using Danish register data, did not find any differences in non-cognitive psychological outcomes at the age of seven between children who were in day care and those who had been brought up at home. Havnes and Mogstad (2011), using Norwegian register data, showed strong positive effects of day care on children's educational attainment and labour market attachment and negative effects on welfare dependency. In their more recent paper, the same authors nonetheless showed that similar positive effects on adult earnings were limited to low and middle income families, whereas the effects in high income families were actually negative (Havnes and Mogstad 2015). Dettling and colleagues (1999), using day care centre data from the United States, showed rising cortisol levels during the day among children attending centres that were not found on the days when the children were at home. These led to shyness, impulsivity, poor self-control, and aggression. On the other hand, Harvey (1999) found only minimal effects of early maternal employment status on children's later functioning in the United States. Early maternal working status did not relate consistently to children's development, but working more hours was associated slightly negatively with children's cognitive development through age nine and academic achievement scores before age seven. Some support for positive effects of early employment due to increased family income was also found. Overall, most studies find positive effects on long-term outcomes such as education, and we expect that this is also the case for Finland in which the quality of day care is high (Taguma et al. 2012).

To gain a broad view of the effect, we present the associations between attending day care and three different educational outcomes. The outcomes are: enrolment in upper secondary education at the age of 17, a general upper secondary qualification by the age of 20 (similar to the German Abitur), and enrolment in higher education at the age of 20. The first of the outcomes reflects dropping out of education after high school, which is rather rare in Finland. Any differences in this outcome should suggest effects at the lower end of the educational distribution. The second outcome reflects selection into the ‘academic track’ and differences in the middle part of the educational spectrum. The last outcome, early entry into higher education (at the age of 20), should reflect differences at the top end of the educational distribution.

For each outcome, we present three models. The first model presents the unconditional statistical associations between day care and the educational outcomes. These models should be interpreted only in a descriptive manner because of the strong selection issues that are not yet addressed: it is well known that highly educated and fully employed parents are much more likely to have their children in day care than the unemployed. In the second model, we control for mother’s and father’s education in order to reduce the selection effects. The last models add controls for parents’ unemployment and household income during early childhood. Parental unemployment and household income are partly endogenous with regard to attending day care, and it is likely that we are perhaps over-controlling in the last models. Day care decisions are clearly associated with parents’ labour market participation and thereby also with childhood poverty. We may also be controlling for some other mediating but unobserved factors with these controls (such as parents’ health and personality). Thus the final models should be interpreted with caution. However, although we cannot identify proper causal effects with our design, we believe that the causal estimate is likely to lie somewhere in-between the coefficients of the second (under-fitted) and the third (over-fitted) model.

## **Data and methods**

We use register data obtained from Statistics Finland. The original dataset is a 15 per cent sample of the Finnish population in 1980 including the spouses, children, and grandchildren of the sample persons all followed until 2010. We analyse the children born to the original sample persons in 1989 and 1990.

We utilized register-based information on biological parents, excluding children who were not living with both biological parents at the age of three. This means that we excluded children of divorced, separated, and single parents. These groups are likely to be very different when it comes to both day care arrangements and the effects of day care. We strongly feel that these groups deserve an analysis of their own, but they were excluded from the current analysis due to data limitations.

To identify whether a child was in public day care or homecare, we used register information on homecare allowances paid to parents. As mentioned above, parents of children under the age of three are eligible to receive a homecare allowance as long as the child is not in public day care and the mother (or father) is not on parental leave. The legislation on homecare allowances forced us to restrict our data in two ways. First, we excluded children living in families with another child under the age of one. The mother (or father) of these children would be entitled to the parental leave allowance and thus would not receive the homecare allowance regardless of whether the child was in day care or not. Thus we would not be able to identify the form of care in this group through register data alone. This is likely to mean that first-born children with siblings are under-represented in our sample.

The second restriction is that we analyse the day care of children up to the age of three only. Because parents of children older than this are not entitled to the homecare allowance, we do not have any way of identifying their day care status. Nonetheless, we can assume that many of the children in day care at younger ages continue there at later ages – at least if they have no younger siblings. On the other hand, around one-half of the children who have not entered day care at the age of three can be expected to do so before entering pre-primary education. Thus, even the children who do not enter day care in our analyses may have benefitted from the advantages (or disadvantages) that it brings later on. This means that the effects that we find are not between entering day care versus not entering day care at all, but rather between entering day care versus (possibly) entering sometime after the age of three. Note also that some of the children identified as being in homecare in this way may also have been in private day care; although this proportion was very small in our cohorts (less than 2 per cent, see Pohjola et al. 2013), it was possible to receive the homecare subsidy for this purpose before 1997.

Furthermore, we included parents with a low yearly total amount of homecare allowance in the day care group because it is likely that they have drawn this benefit only during the summer or winter holidays (Hiilamo 2004). Although these children have spent some of their time in homecare, it is likely that they have spent most of the year in public day care.

As some of the earlier literature has identified the age of entry into day care as an important factor behind the differences in outcomes, we include day care status in the analysis as the age children first entered public day care. Although some of the children surely return to homecare later on, most children in our sample stay in day care for the whole observation window once they have entered.

To control for considerable selection effects, we apply multiple measures of parental background based on register data from Statistics Finland. We measure parental education and unemployment as well as household income during the children's early childhood. Parents' education is measured separately for mothers and fathers in three categories: higher education, upper secondary education (both general and vocational), or less. The last category also includes a small proportion of parents with an unknown level of education. Parental education was measured the year the child was born. We measure parental unemployment as the employment status at the end of the year when the child was three years old based on the unemployment register. Household income is calculated per consumption unit (older OECD definition) and measured as the average when the child was up to three years old.

Parental education at the time of birth can be seen as an exogenous variable unlikely to result from the day care choice of the parents but likely to lead to it. However, our other control variables are at least partly endogenous. Both parents' unemployment and household income in early childhood are affected directly and indirectly by the childcare decision. We can clearly see parental unemployment being entwined with childcare decisions: parents are more likely to be unemployed if their children are in homecare; but it is difficult to say how much of the unemployment is more or less voluntary resulting from a preference to take care of the child at home. As far as this is the case, the negative mediating effect of unemployment leads to over-controlling and biases the association between homecare and educational outcomes upwards (or day care and educational outcomes downwards). In the case of household income, the homecare decision lowers the income level of the parent staying home and is thus part of the childcare decision as



a whole. Controlling for household income partly controls for the unavoidable consequences of homecare and can thus be seen as controlling for a mediating effect in a similar fashion as parental unemployment. Controlling for the lost financial resources can also be expected to bias the association between homecare and educational outcomes upwards (or between day care and educational outcomes downwards).

We further include gender as an individual level control because it is known to affect educational outcomes significantly.

Our final sample consists of 13 859 children. One should note a further restriction of our data: the sample includes very few children with an immigrant background because most immigrants arrived in Finland in the 1990s or later and most of those who are included have one Finnish-born parent.

All models have been run as logistic regression models given that all the dependent variables are binary. To test the robustness of the results on municipality-level circumstances, we also ran multilevel models with municipality-level fixed effects. The results presented here were robust with these models (multilevel model results available from the authors). The results tables present the coefficients as percentage point differences based on average marginal effects.

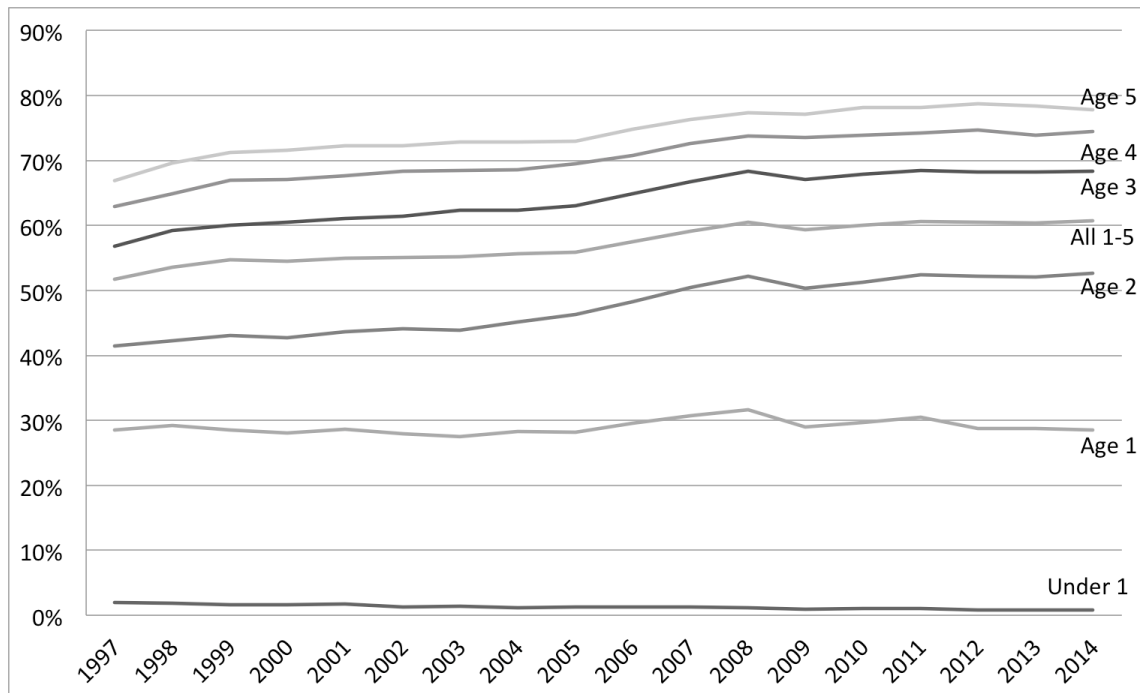
## **Results**

### **Descriptive results**

Finnish children enter day care relatively late compared to other Nordic countries, although rates have been rising (Figure 1). Slightly over one-half of two-year olds were in public day care in 2012. At the time of our sample cohorts in the early 1990s, the rates were slightly lower (Table 1). Nevertheless, 80 per cent of five-year olds were in public day care in 2012. Whilst currently only approximately 15 per cent of children in day care are in family-based day care, in the early 1990s the proportion was over 40 per cent (Säkkinen and Kuoppala 2015). Among the children in day care within our sample, the proportion is also likely to be higher because younger children tend to be in family-based day care more frequently than older children (STM 2013).

**Figure 1. Number of children in day care in recent years.**

*Source: Säkkinen and Kuoppala (2015)*



It can also be seen from Table 1 that family background is strongly associated with the age at which children enter day care. Just by looking at day care attendance by age and mother's education, we can see that children of highly educated mothers are much more likely to enter day care at younger ages. Only 35 per cent of children with highly educated mothers had not been in day care by the age of three, whereas the corresponding percentage was 61 for children whose mothers have only lower secondary education or less. The difference is clear both according to entry age and the total rate of entry.

Previous studies suggest that there is strong intergenerational persistence in educational attainment even in the Finnish context (Erola 2009). This is why this selection into day care by parental educational background necessarily leads to a positive association between children's day care attendance and educational outcomes. In order to reduce the bias, we then employed multivariate regression models to further study the association between day care and educational outcomes.

[TABLE 1 ABOUT HERE]

## Multivariate results

We present our multivariate model results in Table 2. We run three models for each of the outcomes. The first models (M1a–M3a) show the association between age at entry into day care with only gender as a control variable. These models show the association between day care and education without taking family background into account. The second models (M1b–M3b) show the association between day care and educational outcomes when controlling for parental education. This should control for a large part of the family background effects. The final models (M1c–M3c) show the association including also mother’s and father’s unemployment and household income as controls. These variables further control for the family background bias but are also partly endogenous, meaning that the family’s day care decisions might well partly affect these factors, and therefore we may be controlling away part of what is a substantially important association.

Models with interactions between parental education and day care were also tested but are not reported here because the interactions were not statistically significant, suggesting that the consequences of day care are similar for all socio-economic groups. We return to this null finding in the discussion.

[TABLE 2 ABOUT HERE]

When looking at upper secondary education enrolment at the age of 17, we can see clearly that it is associated positively with day care: children who have been in day care in early childhood are less likely to drop out of education no matter at what age they entered day care (M1a). However, when controlling for parental education, we can see the associations weakening, so that statistical significance is lost for all but the children who entered day care at the age of two. Furthermore in the last model (M3a), controlling for family background more extensively makes the association disappear. Either the association is related to differences in family background or it is mediated by the lower household income and labour market ties of parents.

Thus, if the causal association between day care and dropping out before completing upper secondary education exists at all, it is likely to be weak. On the one hand, this is somewhat surprising, because previous studies reporting an association between early childcare and negative personality outcomes (Park and Honig 1991) would lead us to

expect an association with dropping out of education too. On the other hand, because other studies have shown positive effects of day care on cognitive outcomes (Esping-Andersen et al. 2012), this could also prevent school dropout. Either neither of these applies in this case, or the two effects balance each other out.

The second set of models (M2a–M2c) present the association between day care and whether a general upper secondary qualification has been obtained by the age of 20. From the first of these models, we can already see that the associations are much stronger compared to the earlier models. Children who entered day care around the age of two are on average 14 percentage points more likely to obtain a general upper secondary qualification. After controlling for parental education, strong associations still remain for entry into day care. Interestingly, the association is strongest for children who entered day care at the age of two (six percentage points) and almost as strong for children entering day care at the age of three (five percentage points). This is significantly stronger than for children entering day care at the age of one (three percentage points). This might be an indication of positive and negative effects working simultaneously: negative ones for the youngest and positive ones for the older children. After controlling for parental employment status, the direction of the effect remains the same for the two older entry ages but is statistically insignificant at the 0.05 confidence level for all ages. This again can be interpreted as either no effect or an effect mediated by these factors.

Last we turn to entry into higher education. The associations in these models (M3a–M3c) are not as strong as in the second models (M2a–M2c) but stronger than in the first ones (M1a–M1c). The association is explained largely by parental education. As in the earlier models, the positive association between entry into higher education by the age of 20 and day care is either a selection bias due to family background or it is mediated through the lower income and labour market ties of parents staying at home.

## **Discussion and conclusion**

We have analysed the association between day care and three different educational outcomes in early adulthood (enrolment in upper secondary education at age 17, general upper secondary qualification at the age of 20, and enrolment in higher education at the age of 20) and found positive associations for all three. Half or more of this advantage

was explained by the positive selection into day care of children with highly educated parents. In all cases, we conclude that the association is either due to selection or is mediated by lower family income or lower labour market ties of the parents. Because these variables are partly endogenous, it is difficult to separate confounding and mediating effects.

Although our data did not allow for any other means of identifying whether our associations are causal than extensive control for parental background with register-based information, we feel confident in hypothesizing at least that the causal effects of day care on educational outcomes on early adulthood are very unlikely to be negative. This is indeed in line with the results of studies employing methods and data more appropriate for making causal estimations (Havnes and Mogstad 2015). The unobserved parental characteristics might bias our estimates either downwards or upwards. Possible upward biases might result for example from parents with children in day care also choosing better schools or tracks for them in later years. This is possible to some extent, although quality is high throughout the Finnish educational system. Downward biases might result from unobserved health or other difficulties forcing parents to choose day care instead of homecare as well as resulting in lower educational outcomes of the children later on. We acknowledge the possibility of these biases, but expect them to be relatively small. Furthermore, parents' decisions on entering their child into day care are likely to depend on the entirely unmeasured inherent characteristics of the child. Depending on the situation, slow development or developmental disorders in the child may well influence the day care decision. It is difficult to say anything certain about the magnitude and direction of the biases this could cause, but we expect them to be relatively small.

With greater uncertainty, but still confidently, we conclude that day care in Finland is likely to influence educational outcomes in a positive way. This effect might either be mediated through closer labour market ties and the better economic situation of the parents, or work directly through positive cognitive effects on children. The positive effects are strongest for entering day care at the age of two. The question is why this is not the case for entering day care earlier. If the popular developmental psychology reasoning is followed, this may be because of the negative effects on basic attachment. Even if this is the case, it would nonetheless seem that the positive effects of day care are likely to overcome its negative effects. Another possibility is that the youngest children

are the most likely to enter family-based day care in which the advantages of formal centre-based day care – delivered by staff with higher qualifications – are lacking. Unfortunately our data do not allow us to test this assumption. Moreover, it is also likely that the average effects of formal day care may have improved for more recent cohorts, because the proportion of children in day care centres as opposed to family-based day care has increased.

We did not find a heterogeneous effect according to parental education, although this could have been expected based on some previous studies indicating positive effects for low and middle income families and even negative effects for high income parents (for example Havnes and Mogstad 2015). One possible explanation has to do with the relatively high rate of homecare in Finland, even though the rights to day care are on a level with or even better than those in other Nordic countries. This could lead parents more inclined to homecare (lower educated and low income families) to keep their children at home longer than would be beneficial for their development, thereby leading to less positive effects of day care for these groups. In another context such as other Nordic countries in which the cultural pressure runs in the opposite direction (the norm is to enter day care early), this selection could lead to more negative effects for groups otherwise equally inclined to day care (highly educated and high income parents) and more positive effects for groups inclined to homecare. However, we were not able to test this assumption empirically here and it remains only a hypothesis.

Finland is an example of a Nordic welfare state system with a large number of young children still being taken care of outside of public and private day care. Considering the overall high quality of the Finnish comprehensive school system, it is perhaps surprising that day care still has a positive effect on educational outcomes in young adulthood after comprehensive school. We could expect the effect to be stronger in other less equal education systems with high quality day care. Late tracking and the homogeneous quality of comprehensive schools most probably iron out part of the effects of day care.

The homogeneous effect across social strata and the higher participation rate in day care of the children of highly educated parents works in the direction of strengthening social inequalities. This is unfortunate, because day care could increase social mobility in the same way as comprehensive school has been shown to do (Pekkarinen et al. 2009). Fortunately, the effects are relatively small, and the effect on educational inequality

overall is modest and overshadowed by the general intergenerational persistence of educational attainment.

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## Endnotes

1 At the time of writing this law is about to be changed, so that in August 2016 the right to day care will be restricted to 20 hours per week; municipalities are required to provide fulltime care only to children with working or studying parents.

2 The law will also change with regard to the maximum group size: it will grow to eight per adult for children age three or above in August 2016.

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## Tables in the text

**Table 1. Mothers' education and the age of entering public day care in the sample of 1989 and 1990 cohorts (including only nuclear families and excluding children with under 1-year-old siblings)**

	Age of entering public day care				Total (%)	Total (N)
	Around 1	Around 2	Around 3	Later or never		
Primary education or lower	12.75	10.61	16.04	60.61	100	2376
Upper secondary education	16.96	16.65	17.25	49.14	100	6539
Higher education	22.39	23.32	18.97	35.32	100	4944
Total (%)	18.18	18.00	17.66	46.17	100	13 859

Source: Own calculations based on the dataset from Statistics Finland.

**Table 2. Association between age of entry into public day care and educational outcomes in early adulthood (logistic regression models with results as average marginal effects [AME]; N = 13 859)**

	Entry into upper secondary education at age 17			General upper secondary qualification at age 20			Entry into higher education at age 20		
	M1a	M2a	M3a	M1b	M2b	M3b	M1c	M2c	M3c
<i>Age of entry into public day care (ref. Later than age 3 or never)</i>									
Around the age of 1	0.01**	0.01	-0.00	0.08**	0.03**	-0.01	0.07**	0.02*	0.01
Around the age of 2	0.03**	0.02**	0.01	0.14**	0.06**	0.02	0.09**	0.03**	0.01
Around the age of 3	0.01*	0.01	0.00	0.10**	0.05**	0.02+	0.07**	0.03**	0.02+
<i>Female (ref. Male)</i>									
	-0.00	-0.00	-0.00	0.16**	0.16**	0.16**	0.10**	0.10**	0.10**
<i>Mother's education (ref. Less)</i>									
Upper secondary education		0.03**	0.03**		0.12**	0.11**		0.10**	0.10**
Higher education		0.05**	0.05**		0.29**	0.25**		0.23**	0.21**
<i>Father's education (ref. Less)</i>									
Upper secondary education		0.02**	0.02**		0.06**	0.06**		0.04**	0.04**
Higher education		0.03**	0.03**		0.27**	0.22**		0.18**	0.15**
<i>Father's unemployment (ref. Not unemployed)</i>									
			-0.01			0.04**			0.05**
<i>Mother's unemployment (ref. Not unemployed)</i>									
			-			-			-
			0.01**			0.05**			0.03**
<i>Household income per consumption unit (ref. Lowest)</i>									
Second quantile			0.01			0.01			-0.01
Third quantile			0.02*			0.05**			0.02
Fourth quantile			0.02**			0.10**			0.05**
Highest quantile			0.01			0.18**			0.07**

Source: Own calculations based on the data set from Statistics Finland. \*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$